

Profitability Analysis of Amplang Fish Cracker Enterprises under Direct and Indirect Sales Systems in Pemangkat District, Sambas Regency

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Abstract. Amplang cracker production is a fish-processing activity with the potential to increase value added and improve the income of coastal communities. Differences in sales systems may affect business costs, revenue, income, efficiency, and profitability. This study aimed to analyze the costs, revenue, income, efficiency, and profitability of amplang cracker businesses using direct and indirect sales systems and to compare the profitability of the two systems in Pemangkat District, Sambas Regency. A quantitative approach with a descriptive-comparative method was employed. The study involved 13 business owners selected through saturated sampling. Primary data were collected through observation, interviews, and questionnaires and were analyzed using total cost, revenue, income, R/C ratio, and profitability calculations. The results showed that the direct sales system generated a total monthly cost of IDR 14,657,466, revenue of IDR 19,306,317, income of IDR 4,648,852, an R/C ratio of 1.32, and profitability of 31.70%. The indirect sales system generated a total monthly cost of IDR 16,754,812, revenue of IDR 21,386,965, income of IDR 4,632,154, an R/C ratio of 1.28, and profitability of 27.60%. Both sales systems were efficient and profitable. Descriptively, the direct sales system achieved higher efficiency and profitability, whereas the indirect sales system generated a higher sales volume and revenue.

Keywords: amplang crackers, business efficiency, direct sales, indirect sales, profitability.

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INTRODUCTION

Fisheries production in Sambas Regency increased during the 2020–2022 period. Total fisheries production rose from 19,401.13 tons in 2020 to 41,887.41 tons in 2022. The largest increase occurred in the marine fisheries subsector, from 15,145.25 tons in 2020 to 39,295.92 tons in 2022 (BPS Sambas Regency, 2023). This condition indicates the availability of raw materials that can potentially be utilized for the development of various processed fishery products. Fish processing can also increase economic value and extend product shelf life compared with selling fish in fresh form.

Pemangkat District is one of the coastal districts and a center of fisheries activities in Sambas Regency. This condition is supported by the presence of the Pemangkat Nusantara Fishing Port as a landing and trading site for fish catches. Some communities in Pemangkat District work as fishers, fish traders, and fishery product processors. Fish processing activities are also widely carried out by women as a source of household income. Agam et al. (2022) stated that 65% of fishers' wives worked as fish processors, contributing

24.04% to total fisher household revenue. One of the processed fishery products produced by the community in Pemangkat District is amplang crackers. Amplang crackers are generally made from Spanish mackerel meat, tapioca flour, eggs, salt, sugar, flavor enhancers, and other additional ingredients. This product has a distinctive taste, relatively long shelf life, easy distribution, and can be marketed as a snack and souvenir product. The availability of fish raw materials makes amplang cracker businesses potentially developable as enterprises based on local fishery resources.

Amplang cracker businesses in Pemangkat District are generally classified as household-scale industries. Most business activities, including raw material procurement, production, packaging, and marketing, are carried out by the business owners. The success of these businesses is influenced by the ability of business actors to control costs and generate profit. Sembiring and Manurung (2018) stated that profit is one of the factors determining business success. The amount of profit is influenced by production costs, selling price, number of products sold, and the sales system applied. Amplang cracker producers in Pemangkat District apply two sales systems, namely direct sales and indirect sales. Direct sales are conducted by producers directly to final consumers without intermediaries. This system allows producers to interact directly with consumers; however, producers must conduct their own promotion and marketing activities. Meanwhile, indirect sales are conducted through agents, stores, or retailers. This system can help expand market reach and increase sales volume, but it may also increase transportation and marketing costs.

Differences in costs, revenue, sales volume, and income between the two systems may lead to differences in profitability levels. A sales system that generates higher revenue does not necessarily provide higher profitability if the costs incurred are also greater. Therefore, business actors need to identify which sales system is more profitable as a basis for making business decisions. Previous studies on fish-based amplang cracker businesses have examined several economic aspects. Sari and Winarti (2022) analyzed the income and business efficiency of Spanish mackerel amplang crackers in Seruyan Hilir District. Husniar et al. (2023) examined the added value, income, and feasibility of fish amplang cracker businesses in Tarakan City, while Feronica et al. (2023) analyzed the added value and profitability of Spanish mackerel amplang processing businesses in Kotabaru Regency. However, the comparison of

profitability based on direct and indirect sales systems, particularly in amplang cracker businesses in Pemangkat District, has not been the focus of these previous studies. Therefore, this study is important to provide information on the profitability levels of both sales systems as a basis for decision-making by business actors. Based on the description above, this study aimed to analyze the costs, revenue, income, efficiency, and profitability of amplang cracker businesses using direct and indirect sales systems, as well as to compare the profitability levels of the two sales systems in Pemangkat District, Sambas Regency.

METHODS

This study used a quantitative approach with a comparative descriptive method. The descriptive method was applied to describe the costs, revenue, income, efficiency, and profitability of amplang cracker businesses, while the comparative approach was used to compare profitability between direct and indirect sales systems (Suryana, 2010). The study was conducted in June 2023 in Pemangkat District, Sambas Regency. This location was selected because it has household-scale industries that produce amplang crackers and apply both direct sales to consumers and indirect sales through agents or retailers.

The study population consisted of all household-scale amplang cracker business actors in Pemangkat District, totaling 13 business owners. The sample was determined using a saturated sampling technique, in which all members of the population were included as the sample. Saturated sampling can be used when the population size is relatively small, allowing all population members to be studied (Riduwan, 2006). Arikunto (2002) also stated that when the population is fewer than 100 individuals, all members of the population should be used as the research sample. Therefore, the number of respondents in this study was 13 business actors.

The data used in this study consisted of primary and secondary data. Primary data were obtained directly from business actors through observation, interviews, and questionnaire distribution. Observation was conducted to directly examine business conditions and amplang cracker production activities, while interviews were used to obtain more in-depth information from respondents (Akhmad, 2015; Zebua et al., 2017). The primary data collected included respondent characteristics, fixed costs, variable costs, production volume, selling price, revenue, income, and sales system. Secondary data were

obtained from the Statistics Office of Sambas Regency, relevant government agencies, books, scientific journals, and previous research findings.

Data were analyzed to determine costs, revenue, income, efficiency, and profitability under direct and indirect sales systems. Total cost is the sum of fixed costs and variable costs. Fixed costs are costs that do not change with changes in production volume, whereas variable costs change according to the quantity of products produced (Suratiyah, 2008). Total cost was calculated using the following formula (Soekartawi, 2016):

$$TC = TFC + TVC$$

where:

TC = total cost (IDR/month)

TFC = total fixed cost (IDR/month)

TVC = total variable cost (IDR/month)

Revenue is the product of the quantity of products sold and the selling price. The amount of revenue is influenced by the quantity of products produced and the selling price received by producers (Mafut, 2017). Revenue was calculated using the following formula (Soekartawi, 2016):

$$TR = Q \times P$$

where:

TR = total revenue (IDR/month)

Q = quantity of products sold (kg/month)

P = selling price of the product (IDR/kg)

Business income or profit is the difference between total revenue and total costs incurred during business activities. Income was calculated using the following formula (Soekartawi, 2016):

$$\pi = TR - TC$$

where:

π = income or profit (IDR/month)

TR = total revenue (IDR/month)

TC = total cost (IDR/month)

Business efficiency was analyzed using the Revenue Cost Ratio, or R/C ratio, which is the ratio between total revenue and total business cost (Soekartawi, 2006). The formula used was:

$$\text{Efisiensi} = R/C$$

where:

R = revenue (IDR/month)

C = total cost (IDR/month)

The criteria for assessing business efficiency followed Nugroho and Mas'ud (2021), as follows:

- **$R/C > 1$** indicates that the business is efficient and profitable.
- **$R/C = 1$** indicates that the business is at the break-even point.
- **$R/C < 1$** indicates that the business is inefficient and incurs a loss.

Profitability refers to the ability of a business to generate profit based on the costs incurred. Profitability was calculated by comparing income or profit with total business costs (Prawirokusumo, 1990):

$$\text{Profitabilitas} = \frac{\pi}{TC} \times 100\%$$

where:

π = income or profit (IDR/month)

TC = total cost (IDR/month)

The criteria for assessing profitability were as follows:

- **Profitability > 0** indicates that the business generates profit.
- **Profitability = 0** indicates that the business is at the break-even point.
- **Profitability < 0** indicates that the business incurs a loss.

RESULTS AND DISCUSSION

Business Performance of Amplang Cracker Enterprises Based on Sales System

Table 1 shows that the total cost of businesses using the indirect sales system was higher than that of businesses using the direct sales system. The average cost in the indirect sales system reached IDR 16,754,812 per month, or approximately 14.31% higher than that in the direct sales system. This difference was mainly associated with higher variable costs, including production requirements, labor, and product distribution through agents or retailers.

Business Costs

Fixed costs in both sales systems had the same value, namely IDR 96,697 per month. This similarity occurred because the production process in

both sales systems used the same equipment, resulting in no difference in equipment depreciation costs. In contrast, variable costs in the indirect sales system reached IDR 16,658,115 per month, which was higher than the variable costs in the direct sales system, amounting to IDR 14,560,769 per month. The total cost in the indirect sales system was IDR 16,754,812 per month, or 14.31% higher than the direct sales system, which amounted to IDR 14,657,466 per month. The higher cost in the indirect sales system was associated with a larger marketed product volume and additional requirements for labor and product distribution to agents or retailers.

The cost difference indicates that expanding market reach through intermediaries not only provides opportunities to increase sales volume but also generates additional marketing costs. Pasaribu et al. (2022) explained that differences in fishery product marketing channels can result in differences in margins, marketing costs, and profits received by each marketing actor. Marketing channels involving more institutions generally require additional costs for transportation, handling, storage, and product distribution. Nasikh et al. (2021) also showed that shorter marketing channels tend to be more efficient and can provide more favorable revenue for producers. Therefore, amplang cracker business actors need to compare the additional revenue with the additional costs incurred in each sales system so that the marketing channel used can generate optimal profit.

Table 1. Business Performance of Amplang Cracker Enterprises Based on Sales System

Indicator	Direct Sales	Indirect Sales
Fixed cost (IDR/month)	96,697	96,697
Variable cost (IDR/month)	14,560,769	16,658,115
Total cost (IDR/month)	14,657,466	16,754,812
Sales volume (kg/month)	157.85	172.69
Average selling price (IDR/kg)	122,308	123,846
Revenue (IDR/month)	19,306,317	21,386,965
Income (IDR/month)	4,648,852	4,632,154
R/C ratio	1.32	1.28
Profitability (%)	31.70	27.60

Tables derived from processed primary data do not need to include source information. However, if a table is based on secondary data, the source

must be stated. Therefore, each table should be able to present information independently. Each table must be numbered consecutively and discussed in the manuscript. Table titles should be typed in Daytona 12 pt font, while the source section should be typed in 10 pt font and left-aligned. Tables must not be presented as images in JPG, PNG, or other image formats, but must be created as editable tables in Microsoft Word. Table titles should be placed above the table, left-aligned, and followed by a period after the table number.

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Business Revenue and Income

The sales volume of amplang crackers through the indirect sales system reached 172.69 kg per month, while the direct sales volume was 157.85 kg per

month. The indirect sales volume was approximately 9.40% higher than direct sales. This indicates that the presence of agents or retailers can help producers distribute products in larger quantities. The average selling price in the indirect sales system was IDR 123,846 per kg, whereas that in the direct sales system was IDR 122,308 per kg. Based on sales volume and selling price, business revenue through indirect sales reached IDR 21,386,965 per month, or 10.78% higher than direct sales revenue, which amounted to IDR 19,306,317 per month.

Although indirect sales generated higher revenue, the income obtained from both systems was relatively similar. Income from direct sales was IDR 4,648,852 per month, while income from indirect sales was IDR 4,632,154 per month. The difference in income between the two systems was only IDR 16,698 per month. This condition indicates that the increase in revenue in the indirect sales system was followed by an almost equal increase in costs.

In this study, indirect sales were able to increase sales volume and revenue; however, the additional costs caused net income to be slightly lower than that of direct sales. This finding differs from Fais and Nurohman (2023), who reported that catfish sales through middlemen were more profitable and efficient than independent sales. Sales through middlemen enabled all harvested products to be absorbed, reduced remaining unsold products, and minimized labor requirements for marketing. The difference in findings may be related to product characteristics, as fresh fish has a shorter shelf life than amplang crackers, making sales speed a more decisive factor.

Business Efficiency

The R/C ratio of amplang cracker businesses using the direct sales system was 1.32. This value indicates that every IDR 1.00 of cost incurred generated IDR 1.32 in revenue. Thus, every expenditure of IDR 100,000 generated approximately IDR 132,000 in revenue. The indirect sales system produced an R/C ratio of 1.28, meaning that every IDR 1.00 of cost generated IDR 1.28 in revenue, or every expenditure of IDR 100,000 generated approximately IDR 128,000 in revenue. Since the R/C ratios of both systems were greater than one, amplang cracker businesses using either direct or indirect sales systems were classified as efficient and profitable.

Descriptively, direct sales were more efficient than indirect sales. Although direct sales generated lower revenue, the costs incurred were also

lower, resulting in a higher ratio between revenue and cost. This finding is consistent with Sari and Winarti (2022), who obtained an R/C ratio of 1.20 in Spanish mackerel amplang cracker businesses in Seruyan Hilir District. This value indicates that business revenue exceeded the costs incurred, thereby generating profit. However, the R/C ratios in this study were lower than those reported by Husniar et al. (2023) for fish amplang cracker businesses in Tarakan City, which reached 1.59. This difference may be related to variations in production capacity, raw material use, selling price, cost structure, and marketing scale across business locations.

Business Profitability

The profitability of amplang cracker businesses using the direct sales system was 31.70%. This value indicates that every IDR 100.00 of cost incurred generated a profit of IDR 31.70. Meanwhile, the profitability of the indirect sales system was 27.60%, meaning that every IDR 100.00 of cost generated a profit of IDR 27.60. The profitability values of both systems were greater than zero. Thus, amplang cracker businesses using both direct and indirect sales systems were able to generate profit for business actors. However, descriptively, the profitability of direct sales was 4.10 percentage points higher than that of indirect sales.

The higher profitability of direct sales was mainly due to lower total costs. Although indirect sales generated higher sales volume and revenue, the increase in variable costs caused profit to increase less than proportionally. Therefore, the sales system with the highest revenue does not automatically generate the highest profitability. The results show that cost control is an important factor in improving the profitability of amplang cracker businesses. Business actors using the indirect sales system need to evaluate labor, transportation, delivery, and distribution costs to intermediaries. Such cost control is necessary so that increased sales volume can be followed by increased profit.

The profitability values in this study were within the range reported for several fish-based processed product businesses. Cahyahati et al. (2020) reported that the profitability of processed catfish products ranged from 23.58% to 51.14%. Variations in profitability among businesses indicate that product type, production scale, revenue, and cost structure can influence the ability of a business to generate profit.

Feronica et al. (2023) obtained a profitability value of 48.81% for Spanish mackerel amplang businesses in Kotabaru Regency. This value was higher than the profitability of amplang cracker businesses in Pemangkat District. The difference was likely related to production capacity, raw material costs, product prices, sales volume, and the profitability calculation method used. Feronica et al. calculated profitability based on the margin income ratio and margin of safety, whereas this study compared income with total business costs.

Comparison of Sales Systems

The descriptive comparison showed that each sales system had different economic characteristics. Indirect sales generated higher sales volume and revenue but required higher costs. In contrast, direct sales generated lower revenue but resulted in slightly higher income, R/C ratio, and profitability. Based on profitability values, direct sales provided better results than indirect sales. However, this finding does not imply that direct sales are always more profitable for every business actor, as this study did not apply inferential testing of differences. The comparison only describes the average values of the two sales systems during the study period.

Business actors may consider using both systems simultaneously. Direct sales can be used to serve local consumers and individual orders because this system provides higher efficiency and profitability. Meanwhile, indirect sales can be maintained to expand market reach and increase the volume of products absorbed through agents or retailers. This combined strategy should be accompanied by distribution cost control and appropriate pricing. Business actors can set minimum order quantities for agents, combine delivery schedules, evaluate transportation costs, and adjust selling prices based on purchase volume. These steps can help improve the efficiency of indirect sales without reducing the benefits of market expansion.

Overall, both sales systems for amplang crackers in Pemangkat District are feasible because they generate positive income, R/C ratios greater than one, and profitability values greater than zero. Nevertheless, the direct sales system showed better economic performance descriptively, particularly based on income, efficiency, and profitability values.

CONCLUSION

Indirect sales generated higher sales volume and revenue, whereas direct sales generated slightly higher income, efficiency, and profitability because the costs incurred were lower. Therefore, the direct sales system showed better economic performance based on efficiency and profitability levels, while the indirect sales system was superior in expanding product absorption and market reach.

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