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A VALUE-ADDED ANALYSIS OF THE *PEMPEK* BUSINESS IN TENGGARONG, INDONESIA

ANALISIS NILAI TAMBAH USAHA PEMPEK DI KECAMATAN TENGGARONG KABUPATEN KUTAI KARTANEGARA

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Abstract

The processing of fisheries products, characterized by the diversification of processed goods, presents a promising avenue for entrepreneurial endeavors. Product diversification holds the potential to augment the intrinsic value of products and concurrently elevate public consumption of fisheries-related commodities. This research aims to analyze the prospective added value stemming from the pempek businesses in Melayu Sub-District, Tenggarong, Kutai Kertanegara. The acquired data underwent meticulous processing, tabulation, and subsequent analytical examination, characterized by both descriptive and value-added analyses, utilizing the Hayami model. The research showed that the managed pempek businesses are predominantly of small scale, utilizing relatively simple technology. On average, a single production cycle yields 126.64 kg, or monthly output of 633.2 kg. The value-added analysis reveals a figure of 186,734 IDR per kg, with a commendable value-added ratio of 70.95%. This signifies that the conversion of belida fish into pempek not only imparts substantial value but also presents a highly promising avenue for further expansion and development.

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***Keywords*:** Added Value, Pempek, Hayami Model, Indonesia.

1. INTRODUCTION

The maritime and fisheries sector plays a pivotal role in underpinning national economic development. Even amid the COVID-19 pandemic, this domain has demonstrated resilience, making a substantial contribution to the economy, notably in the provision of protein and employment opportunities. The interconnection between the advancement of the fisheries sector and other economic domains is highly significant, as supported by the findings of Nurlina, N. (2018). These findings suggest that adept management of the marine and fisheries potential can yield positive repercussions for the growth of adjacent sectors.

The processing of fisheries products stands as a manifestation of product diversification, offering the potential to augment product value through the creation of diverse processed variants. Concurrently, Herawati, V. E. *et al*. (2020), posit that the diversification of processed fisheries products holds allure and contributes to the sustainability of businesses (Uyunun, 2020). Through the diversification of processed fisheries products, not only can the longevity of fish be prolonged, but it also enriches the array of fish-based menu selections. Prameswari, G. N. (2018) explains that the introduction of varied processed fish products can stimulate heightened interest in fish consumption, particularly among children.

The quality of *pempek* processing is intricately linked to the quantity and type of fish utilized. The fundamental raw material for the fish component may be sourced from either marine or freshwater origins. The quality and flavor profiles of *pempek* products are contingent upon the proportion of fish incorporated; a diminished percentage correlates with diminished *pempek* quality. Riana (2006) posits that, in essence, both freshwater and marine fish can serve as foundational constituents for *pempek* production, albeit marine varieties often exhibit a more pronounced fishy aroma. Murtado, A. (2016), in his investigative study, employed freshwater fish (specifically, snakehead fish) as the principal ingredient in the manufacturing process, resulting in favorable responses.

The production of *pempek* in Melayu Sub-District, Tenggarong, Kutai Kartanegara Regency leverages the potential of local fish, particularly the *belida* fish, serving as its primary raw material. The *belida* fish is distinguished by its unique flavor, delicious flesh, and widespread popularity among the local populace (Sunarno, 2002). Notably, it commands a relatively high market price (Wibowo, 2011). Initiated in 2016, the *pempek* businesses in Melayu Sub-District persist and have exhibited commendable growth in production over successive years.

Value-added analysis aims to ascertain the increment in value resulting from the transformation of inputs during the processing of raw materials into refined products. Added value—delineated as a shift in value induced by the treatment of inputs in the processing procedures (Imani, 2016)—stands as a pivotal metric derived from the economic endeavors of business units. It serves as a cogent portrayal of the economic robustness inherent in these businesses (Aji *et al*., 2018; Caruntu & Lapadusi, 2012). This analytical method has found application across diverse commodities, encompassing milk processing (Istiani & Soetriono, 2022), Arabica coffee (Hasni & Auliaddin, 2022), corn (Hutauruk *et al*., 2018), *Calina* papaya (Rizqiah & Setiawan, 2014), nutmeg (Mujiburrahmad *et al*., 2019), seaweed (Subhan, 2014), and *lemuru* fish (Aji *et al*., 2018).

The value-added analysis in this research utilizes the Hayami method, which integrates both value-added and marketing methodologies (Hayami *et al*., 1987). As asserted by Hidayat

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et al. (2012), the Hayami method is known for its user-friendly application and its capacity to yield comprehensive insights into the economic prowess of the undertaken business. However, it is crucial to note that the derived added value applies solely to a single production cycle period.

A fisheries commodity that exhibits added value is the *belida* fish, representing a local potential in Kutai Kartanegara Regency. The acquisition of *belida* fish involves the use of traditional and environmentally friendly capture methods, thereby preserving the quality of the caught fish, essential as the primary raw material for *pempek* processing. Consequently, this research aims to analyze the added value derived from the *pempek* business in Melayu Sub-District, Tenggarong, Kutai Kertanegara Regency. The findings of this study are expected to provide valuable insights for entrepreneurs and policymakers, guiding business development strategies aimed at augmenting income and welfare.

2. METHODS

This study utilized a survey method, incorporating both observations and interviews with the respondents. The collected data primarily consisted of information derived directly from *pempek* business operators, encompassing respondent identity details and comprehensive business-related data such as investment, costs, production, and marketing aspects. Secondary data were obtained from pertinent studies, the village office, the Central Bureau of Statistics of Kutai Kartanegara, and the Fisheries and Marine Office of Kutai Kartanegara. The respondent selection followed a census method, encompassing all *pempek* entrepreneurs in Melayu Sub-District, Tenggarong, Kutai Kertanegara Regency, resulting in a total of 5 respondents. Furthermore, data analysis was executed qualitatively and descriptively, augmented by a value-added analysis.

2.1 Value-Added Analysis

The computation of added value using the Hayami method follows the outlined procedure:

Table 1. Calculation Procedure for Value Added Using The Hayami Method

	Variable	Value
I.	**Output, Input and Price**	
	1. Output (Kg)	(1)
	2. Input (Kg)	(2)
	3. Labor (day)	(3)
	4. Conversion factor	(4) = (1)/(2)
	5. Labor coefficient (day/Kg)	(5) = (3)/(2)
	6. Output price	(6)
	7. Labor wage (IDR/day)	(7)
II.	**Revenue and Profit**	
	8. Raw material price (IDR /Kg)	(8)
	9. Other input contributions (IDR /Kg)	(9)
	10. Output value (IDR /Kg)	(10) = (4) x (6)
	11. a. Value added (IDR /Kg)	(11a) = (10) – (9) – (8)
	b. Value added ratio (%)	(11b) = (11a/10)x100%
	12. a. Labor income (IDR /Kg)	(12a) = (5) x (7)
	b. Labor share (%)	(12b) = (12a/11a)x100%
	13. a. Profit (IDR /Kg)	(13a) = (11a) – (12b)
	b. Profit rate (%)	(13b) = (13a/11a)x100%
III.	**Business owner compensation**	

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14. Margin (IDR /Kg)	(14) = (10) –(8)
a. Direct labor income (%)	(14a) = (12a/14)x100%
b. Other input contribution (%)	(14b) = (9/14)x100%
c. Owner profit (%)	(14c) = (13a/14)x100%

Source: Hayami et al (1987), Febriyanti (2017)

3. RESULTS AND DISCUSSION

3.1 Fisheries Conditions in the Research Location

Kutai Kartanegara Regency, located in East Kalimantan Province, stands out for its robust fisheries production. Geographically, the regency spans between 115°26' E – 117°36' E and 1°28' N – 1°08' S. This strategic geographical placement facilitates fisheries activities in both marine and freshwater domains. The diverse fisheries production involves both capture and cultivation techniques. Capture production from marine waters reaches 43,676.2 tons, complemented by an additional 34,092.3 tons from inland capture fisheries. Aquaculture also contributes significantly, with a total production of 7,377.48 tons, distributed across pond and cage cultures at 243.23 tons and 7,134.25 tons, respectively. Tenggarong District, traversed by the Makaham River, notably contributes 51 tons to the overall production of public waters, encompassing both capture and cultivation fisheries activities (Kutai Kartanegara Regency in Numbers, 2022).

The potential for the development of fisheries processing businesses in Tenggarong District is notably promising. The availability of support from both marine fisheries resources and public water areas stands out as a pivotal factor in advancing fisheries processing production. The growth of the fisheries processing sector holds the capacity to make substantial contributions to the local economy. One notable potential commodity for fisheries processing is the *belida* fish, recognized as a local species in Kutai Kartanegara Regency.

To date, the number of entrepreneurs involved in *belida* fish processing remains relatively limited. The processing of *belida* fish into *pempek* products in Tenggarong District is undertaken by only five individuals. These entrepreneurs fall within the productive age range, specifically between 43 and 51 years. The *pempek* processing ventures initiated by these community members have persisted for a considerable duration, ranging from 2 to 6 years. The positive impact of these processing businesses is evident in the enhanced welfare of the entrepreneurs.

3.2 Pempek Business Performance

The venture into fish *pempek* demonstrates promising prospects and considerable potential for further development. *Pempek* has garnered widespread popularity, extending from urban centers to suburban areas, with appeal cutting across age groups, including the youth, elderly, and children. The distinct flavor profile of *pempek* acts as a major draw for consumers, and the success of the business is heavily contingent on the innovativeness and creativity of *pempek* entrepreneurs in capturing consumer interest. The *pempek* products available in the market exhibit a range of prices, catering to both high-end and economically-oriented consumers. This dynamic market scenario underscores the ongoing prospective nature of *pempek* marketing, positioning it as a promising entrepreneurial pursuit (Suryaningrum, T. D. & Muljanah, 2009). The diverse array of *pempek* shapes in the market includes variations such as *pempek telur*, *pempek lenjer* (large/small), *pempek kapal selam*, *pempek pastel*, *pempek tahu*, *pempek keriting*, *pempek lenggang*, and *pempek adaan* (Alhanannasir *et al*., 2018).

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The *pempek* business in the research area has been in operation for approximately 6 years. Classified as a household business, it utilizes modest equipment and constitutes the primary source of income for the household. The processing of *pempek* predominantly involves the use of *belida* fish as the principal ingredient—a choice upheld over time due to its distinctive flavor profile.

The *pempek* processing involves a series of stages, encompassing fish grinding, dough kneading, *pempek* molding, and cooking (Karneta *et al*., 2013). The quality of the resulting *pempek* is contingent upon the composition of the fish used, with higher quantities of fish contributing to superior quality. Through observations and discussions with industry practitioners, it was discerned that the composition of fish and flour in use maintains a relative equilibrium. A study conducted by Anova and Kamsina (2012) asserts that an equivalent ratio of fish to flour (1:1) yields optimal outcomes concerning taste, aroma, color, and texture. The *pempek* produced exhibits diverse forms, including *lenjer*, *kapal selam*, *adaan*, and *dos*.

In the *pempek* processing, business operators engage in production approximately eight times a month, with adjustments made based on *pempek* demand. Furthermore, the monthly *pempek* production amounts to 633.2 kg, averaging 126.64 kg per entrepreneur. A detailed breakdown of *pempek* production by entrepreneurs in Melayu Sub-District is illustrated in Figure 1. *Pempek* marketing is directly managed by the entrepreneurs, who set up small stalls in front of their homes. *Pempek* is retailed for 70,000 IDR per kg or in pre-packaged, ready-to-consume servings at 15,000 IDR each.

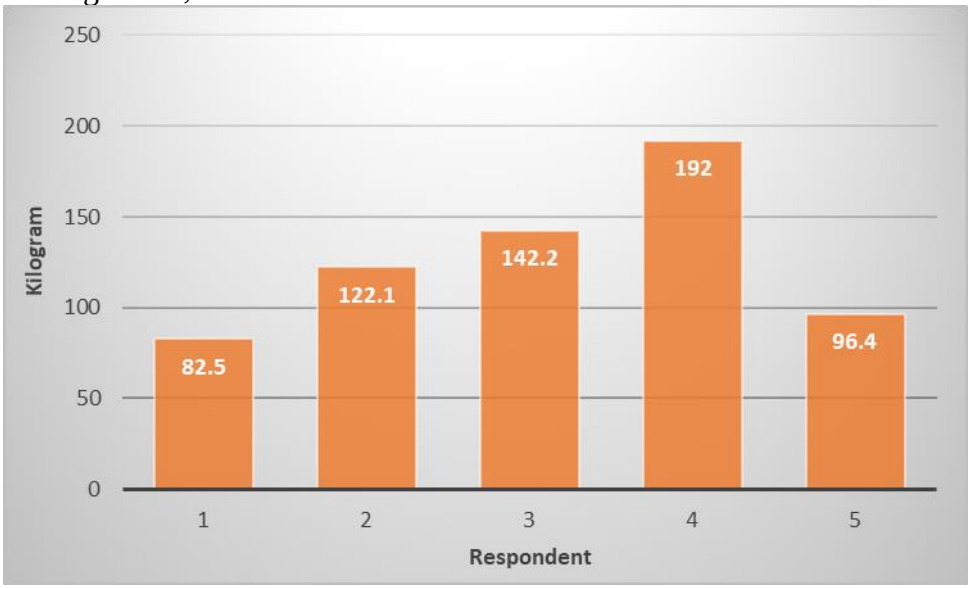

Figure 1. Production Quantity (Kg/Month)

3.3 Value-Added Analysis

The evaluation of added value in the *pempek* processing business, undertaken by entrepreneurs, is derived from the transformation of *belida* fish into processed *pempek* products. The analytical approach employed for quantifying added value utilizes the Hayami method. Notable advantages of this method encompass (1) its applicability within a business's supply chain, (2) its capacity to assess the extent of added value, output value, and productivity, and (3) its capability to determine the remuneration for the ownership of production factors (Hidayat *et al*., 2012). This analysis is designed to appraise the augmentation of raw materials (*belida* fish) throughout the processing stages into *pempek* products. Employing this analysis yields valuable insights into added value, labor remuneration, entrepreneurial profits, and the

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margin derived from the processing of raw materials. The calculated results of added value for *pempek* products are presented in Tables 2, 3, and 4.

Table 2. Result of Analysis of Output, Input, and Price

No	Variable	Formulation	Value
1	Output (kg)	(1)	126,64
2	Input (kg)	(2)	33,60
3	Labor (day)	(3)	9,6
4	Conversion factor	(4) = (1)/(2)	3,76
5	Labor coefficient (day/kg)	(5) = (3)/(2)	0,29
6	Output price (IDR)	(6)	70.000
7	Labor wages (IDR/day)	(7)	60.000

Source: processed primary data, 2022

The results presented in Table 2 reveal that the *pempek* entrepreneurs achieve an average monthly *pempek* production of 126.64 kg, utilizing 33.60 kg of *belida* fish as a raw material input. Labor considerations are focused exclusively on the *pempek* processing phase, and the calculated labor input amounts to 9.60 man-days. The labor engaged in the *pempek* processing emanates from within the family.

The conversion factor represents the ratio of output to the raw material used. The research findings revealed a conversion factor of 3.76. This signifies that 1 kg of *belida* fish—utilized as the raw material for *pempek* production combined with other input materials—yields 3.76 kg of *pempek*. This finding aligns with a study by Susilawati (2018), suggesting that the development of processed fish products offers a favorable conversion value compared to raw fish without undergoing processing. It indicates that further processing of fish into different forms can result in a higher added value. Moreover, in the context of preservation processes, as emphasized by Awami *et al*. (2019), although they also enhance the product's value, their impact is not as substantial as that achieved through processing methods.

The added value in the processing of *belida* fish is computed by subtracting the output value from the raw material cost and other input contributions. Table 3 illustrates the results of this calculation, revealing that the transformation of *belida* fish into *pempek* products yields an added value of 186,734 IDR per kg. This signifies that processing 1 kg of raw material (*belida* fish) with an average cost of 65,000 IDR per kg into *pempek* products results in an added value of 186,734 IDR, with a value-added ratio of 70.95%. The substantial returns post-processing present significant opportunities for entrepreneurs to diversify their fish processing into additional products. The detailed computation of revenue and profit for the *pempek* business is provided in Table 3.

Table 3. Revenue and Profit

No	Variable	Formulation	Value
1	Raw material price (IDR /Kg)	(8)	65.000
2	Other input contributions (IDR /Kg)	(9)	11.466
3	Output value (IDR /Kg)	(10) = (4) x (6)	263.200
4	a. Value added (IDR /Kg)	(11a) = (10) – (9) – (8)	186.734
	b. Value added ratio (%)	(11b) = (11a/10) x 100%	70,95
5	a. Labor income (IDR /Kg)	(12a) = (5) x (7)	17.400
	b. Labor share (%)	(12b) = (12a/11a) x 100%	9,31
6	a. Profit (IDR /Kg)	(13a) = (11a) – (12a)	169.334
	b. Profit rate (%)	(13b) = (13a/11a) x 100%	90,68

Source: processed primary data, 2022

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Based on the data presented in Table 3, the obtained profit stands at 169,334 IDR per kg. This implies that from 1 kg of *belida* fish valued at 65,000 IDR per kg, the conversion into processed *pempek* yields a profit of 169,334 IDR, with a profit percentage of 90.68%. This observation underscores the significant added value attributed to fish processing activities. This finding is consistent with a study conducted by Susilawati (2018), indicating that fish processing ventures can attain a profit margin of 92.39%. Furthermore, a study by Aji *et al*. (2018) suggests a profit margin of 71.91% from fish processing.

The compensation for factors involved in the *pempek* processing process is distributed among labor, other input factors, and the business owner. Labor receives a share of 8.77%, other input factors get 5.79%, and the business owner claims 85.44%. The detailed breakdown of this distribution is presented in Table 4.

Table 4. Remuneration for Pempek Business Production Factors

No.	Variable	Formulation	Value
1	Margin (IDR/kg)	(14) = (10) – (8)	198.200
	a. Direct labor income (%)	(14a) = (12a/14) x 100%	8,77
	b. Other input contribution (%)	(14b) = (9/14) x 100%	5,79
	c. Owner profit (%)	(14c) = (13a/14) x 100%	85,44

Source: processed primary data, 2022

4. CONCLUSIONS

Based on the value-added analysis using the Hayami method, the processing of *pempek* made from *belida* fish yields an added value of 186,734 IDR per kilogram. The added value in the *pempek* processing business is influenced by several factors, such as raw material prices, input contributions, and output prices. Furthermore, the value-added ratio obtained from the *pempek* processing is 70.95%.

The margin derived from the *pempek* processing is 198,200 IDR per kilogram, allocated as remuneration for labor at 8.77%, other input factors at 5.79%, and business owner's share at 85.44%.

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