Journal of Agricultural Socio-Economics (JASE)
eISSN 2745-6897 | pISSN 2745-6889
Volume 6 Issue 1 (2025) Page 40-48
DOI: http://dx.doi.org/10.33474/jase.v6i1.23898
Submit: 14-05-2025 | Accepted: 20-06-2025| Publish: 30-06-2025

ASSESSING THE ECONOMIC ADDED VALUE OF FUNCTIONAL FOOD INNOVATION: A CASE STUDY OF PAK CHOY FLOUR BY MAHESTY MSMES IN MALANG, INDONESIA

Shinta Maulita, Zainul Arifin, Titis Surya Maha Rianti*
Universitas Islam Malang, Malang, Indonesia

*Correspondent Author Email: rianti.titis@unisma.ac.id

Abstract. Mahetsy MSMEs processes pak choy vegetables into functional food products, such as pak choy vegetable flour, to extend shelf life and increase added value. However, the amount of added value generated from the processing is unknown. This study aims to analyze the added value generated from processing pak choy vegetables into pak choy vegetable flour by Mahesty MSMEs. The qualitative and quantitative approach employs a purposive sampling method, specifically using business actors as key informants. Data were obtained through interviews, direct observation, and internal company documentation. The analysis method in this study used the Hayami method. The results of the analysis showed that the added value generated from processing one kilogram of pak choy vegetables for IDR 22,000 into pak choy vegetable flour provided an added value of IDR 45,000, or 46.7 percent, which falls within the high added value category (more than 40 percent). This study demonstrates that processing pak choy vegetables into flour offers high economic value to raw materials and holds promising business prospects for developing functional foods. This study suggests that Mahesty MSMES systematically strengthens the system of recording costs and production administration to improve business efficiency and sustainability. The results of this study can serve as a reference for making strategic decisions, as well as encouraging the innovation of derivative products and the development of partnerships to expand the market for Mahesty MSMEs' products.

Keywords: Added Value; Vegetable Flour; MSMEs; Pak choy; Functional Food

INTRODUCTION

Pak choy is a leafy green vegetable widely consumed in various Asian cuisines and increasingly popular in health-conscious markets around the world. It is well-regarded for its nutritional content, including high levels of vitamins A, C, and K, as well as calcium, folate, and antioxidants. These attributes make pak choy a promising raw material for the development of functional food products. However, despite its nutritional advantages, pak choy is a highly perishable commodity. Its limited shelf life presents challenges in post-harvest handling, distribution, and marketing, particularly in regions where cold storage infrastructure is inadequate or consumer demand is inconsistent (Arimurti & Hesti Nur'aini, 2023). This perishability leads to potential economic losses, limits access to distant markets, and constrains the profitability of producers and small-scale enterprises engaged in its cultivation and distribution.

To address these challenges, processing pak choy into durable and value-added forms becomes essential. In agroindustry, value-added processing refers to any process that enhances the value of a raw material by transforming it into a different product that commands a higher market price and/or meets specific consumer needs (Apriyani et al., 2021). That includes improving product quality, extending shelf life, enhancing nutritional benefits, or creating new forms for ease of use. The concept of value addition not only aims to increase the economic return to producers but also strengthens supply chain resilience, supports diversification, and fosters rural entrepreneurship (Sriwana et al., 2022). Applying value-added strategies to perishable commodities like pak choy can reduce post-harvest losses while simultaneously expanding their utility and marketability.

One innovative form of value addition is processing pak choy into vegetable flour, a shelf-stable, functional food ingredient that is versatile and rich in essential nutrients. This transformation not only increases the product's economic value but also enables its integration into various healthy food applications, such as bread, pasta, cakes, cookies, and snacks (Sulaeman et al., 2023). Vegetable flours are also increasingly viewed as suitable alternatives for individuals with dietary restrictions, including gluten intolerance or low-calorie dietary requirements (Irawan Riky et al., 2024). Moreover, as consumers become increasingly health-conscious and aware of the functionality of food, the demand for plant-based, natural, and nutrient-dense food ingredients continues to grow, making vegetable flour a viable innovation in both domestic and export markets. In addition to its functional benefits, vegetable flour reduces waste and increases the utilization of agricultural produce that might otherwise spoil during peak harvest periods.

In this regard, Mahesty MSMEs, located in the Blimbing District of Malang City, Indonesia, represent a noteworthy case of grassroots innovation in the urban agro-industrial landscape. This enterprise has initiated the production of pak choy vegetable flour using high-quality, pesticide-free pak choy cultivated independently through hydroponic methods. The processing is conducted without the use of chemical preservatives or artificial additives, ensuring that the final product maintains its natural nutritional profile and meets growing consumer preferences for clean-label and organic food products. By positioning itself within the healthy food segment, Mahesty MSMEs has the potential to reach niche markets while promoting environmentally sustainable production practices. The value proposition of its product lies in both the quality of inputs and the integrity of the processing methods.

However, despite the novelty and market promise of pak choy flour, a critical gap remains in empirical data on the actual economic value generated through this innovation. Understanding the extent of value addition is essential for assessing business feasibility, informing investment decisions, and guiding operational improvements. Without such analysis, it is difficult for enterprises like Mahesty MSMEs to justify expansion, attract partners, or participate in broader value chains. Quantifying value added also provides a foundation for improving cost efficiency, refining pricing strategies, and identifying key drivers of profitability within the production process. Furthermore, accurate economic evaluation is crucial for engaging with financial institutions and public-sector programs that support MSMEs, particularly in the agrifood innovation sector.

Although numerous studies have addressed value-added analysis in the context of agro-industrial products, few have explicitly focused on horticultural products, and even fewer on hydroponically grown leafy vegetables processed into flour. Previous research has primarily examined value-added products such as robusta coffee powder (Adita et al., 2022), salak chips (Aponno & Siahaya, 2023), tofu (Yosifani et al., 2021), pineapple dodol (Fadhilah & Purnomo, 2023), and coconut-based products (Lawalata & Imimpia, 2020). While these studies have contributed to the methodological development of value-added analysis, particularly through the application of the Hayami Method, they do not address the unique challenges and opportunities associated with processing fresh, perishable vegetables into functional food ingredients. Moreover, most existing studies are based in rural or plantation settings, with limited attention to urban-based MSMEs engaged in the innovation of healthy food.

Given this backdrop, the present study aims to fill an important research gap by evaluating the economic value added of pak choy vegetable flour produced by Mahesty MSMEs in Malang, Indonesia. Specifically, the research aims to: (1) calculate the added value per unit of processed product using the Hayami Method; (2) identify the contribution of key production inputs (raw materials, labor, supporting materials) to the overall value chain; and (3) evaluate the business implications of this innovation in terms of feasibility, efficiency, and potential for scale-up. The study employs a mixed-methods approach, combining quantitative analysis of production and cost data with qualitative insights from direct observation and interviews with key stakeholders. Through this approach, the research provides a holistic picture of how urban-based agro-processing enterprises can contribute to food system transformation.

The findings of this study are expected to offer practical implications for business actors, development practitioners, and policymakers. For MSMEs, the results can inform improvements in business management, cost accounting, and product pricing. For government and support institutions, the study provides evidence to inform the design of targeted interventions, such as training, mentoring, and financing schemes, aimed at strengthening the capacity of MSMEs in the functional food sector. At

a broader level, the study underscores the potential of local agricultural commodities to be transformed into high-value products that meet both nutritional needs and market demands, thereby contributing to inclusive economic development, food diversification, and agricultural resilience.

Pak choy flour production by Mahesty MSMEs offers an instructive case of how value-added innovation can bridge the gap between sustainable agriculture and market-driven food innovation. By systematically analyzing the economic added value of this product, the study not only contributes to academic knowledge but also supports the practical advancement of MSMEs as key players in Indonesia's evolving agrifood sector.

METHODS

2.1 Research Location

This research was conducted at Mahesty MSMEs, located in the Blimbing District of Malang City. Data collection took place from January to February 2025. The research location was selected puIDRosively based on the recent innovation of Pak Choy vegetable flour, which was first introduced by Mahesty MSMEs in 2023. To date, no comprehensive study has analyzed the added value generated from the processing of pak choy vegetables into flour, making this research both relevant and timely.

2.2 Samples

The respondents in this study were business actors at Mahesty MSMEs who served as key informants. Data were collected through direct interviews using a structured questionnaire. The questionnaire was designed to obtain essential information, including the price and quantity of raw materials, labor costs, total production, selling prices, and the prices and quantities of supporting materials.

2.3 Data Analysis

This study employed a mixed-methods approach, combining both qualitative and quantitative descriptive analyses. A qualitative approach was employed to explore the profile of Mahesty MSMEs, their production activities, and the detailed stages involved in processing pak choy into vegetable flour. The quantitative approach involved numerical analysis to calculate the amount of economic added value generated from the processing activities.

Both primary data (obtained directly from interviews and observations) and secondary data (collected from company records and relevant documentation) were utilized in this study. To analyze the added value, this research adopted the Hayami Method, a well-established approach in value-added analysis for agro-industrial products.

The Hayami Method is particularly suitable because it not only quantifies the added value of the product but also evaluates key economic indicators, including the conversion factor of inputs to outputs, labor coefficients, added value per unit, and the contribution of other inputs. This method enables a comprehensive assessment of the value generated throughout the production process and the efficiency of resource utilization. According to Lili et al., (2021), the Hayami value-added analysis is an effective tool to determine the economic potential and viability of agricultural product processing efforts.

.

RESULTS AND DISCUSSION

3.1 Company Overview

Mahesty MSMEs is a business micro, small, and medium enterprise that has existed since 2021 and is located at Jalan Ciliwung Airdas 15, Malang City, East Java 65122. This business was founded and managed by Anastasia Esti. An owner of the company at the time of production, and Sri Lestari Mahanani as finance manager at the time of production. MSMEs Mahesty focuses on processing vegetables, especially pak choy. It started from the abundance of productivity of vegetable pak choy in the garden, which led hydroponics to make a reason for MSMEs, Mahesty to produce various processed vegetable pak choy.

Mahesty MSMEs utilizes potential results harvested most effectively and tries to create a mark plus for local agricultural products. Innovation becomes the key in every line of production, as proven by a variety of unique products made from basic vegetables that have been introduced to the market. The first products launched were dawet vegetables in 2021, followed by vegetable jelly candy fruit in 2022, and flour vegetable pak choy, which was introduced in 2023. All products are developed with consideration for taste, nutritional value, as well as sustainability, so that MSMES Mahesty is capable of competing in the local market while contributing to the resilience of food based on vegetables

Figure 1. Pak choy Vegetable Flour

3.2 Functional Foods Pak choy Vegetable Flour

Functional foods refer to food products that not only serve as sources of basic nutrition but also provide physiological benefits that contribute to maintaining health and preventing diseases. According to Nanda Triandita (2020), functional food is defined as food or food ingredients that can supply essential nutrients while also supporting optimal growth and body development. A wide range of horticultural commodities has been explored for their potential as functional foods. Among them, pak choy (Brassica rapa subsp. chinensis) stands out as a nutrient-dense vegetable with significant promise for value-added innovation.

Pak choy is rich in essential micronutrients, including fiber, calcium, potassium, vitamin A, vitamin C, and folate. These nutrients are widely recognized for their roles in supporting the immune system, promoting digestive health, and enhancing metabolic function. Based on a study by Dong et al. (2024), regular consumption of pak choy may help maintain digestive tract health, prevent constipation, reduce the risk of certain cancers, and alleviate symptoms such as throat irritation and coughing. Additionally, the antioxidant content in pak choy contributes to its role in supporting a healthy lifestyle, making it suitable for consumption across various age groups (Ompusunggu & Daeli, 2024).

Addressing the growing consumer demand for high-fiber, plant-based, and health-oriented food products, Mahesty MSMEs has pioneered an innovative approach by processing organic pak choy into vegetable flour. This functional food product can be used in the preparation of a variety of healthy foods, such as cakes, bread, biscuits, and snacks. The raw materials used in the production process are 100% organic pak choy cultivated through hydroponic methods in collaboration with local farmer partners. These vegetables undergo strict selection and standardization procedures according to Mahesty's internal quality assurance protocols, ensuring consistent product quality and safety.

According to USDA (2019), 100 grams of fresh pak choy contains approximately 95.32 g of water, 1 g of fiber, 13 kcal of energy, 1.5 g of protein, 105 mg of calcium, and notable quantities of potassium, vitamin A, vitamin C, and folate. In the processing stage, the pak choy undergoes a drying and grinding method designed to preserve its nutritional profile and natural color. Mahesty MSMEs refrains from using any artificial food additives or preservatives, resulting in a pure, organic, and safe end product that aligns with the principles of clean-label food production. The results of the nutritional content analysis of the final product are shown in Table 1.

This nutrient composition indicates that pak choy flour is a high-protein, low-fat, and moderate-carbohydrate product, making it suitable for individuals with dietary goals such as weight management or high-nutrient intake. Mahesty MSMEs currently produces pak choy flour three times per month, with each batch using approximately 30 kg of fresh organic pak choy. The drying process is intensive, yielding only around 1 kg of flour per batch. The final product is then divided into 20 packages of 50 grams, each sold at IDR 75,000. Although this price point is relatively high compared to similar flour-based products in the market, it reflects the quality of the raw materials, the absence of additives, and labor-intensive processing, which can take up to two full days. The higher cost of production, driven by manual handling and quality control standards, also contributes to the pricing structure.

Table 1. Results of Nutritional Test of Pak choy Vegetable Flour by Mahesty MSMEs

Parameter	**Nutrion Facts**	
	Serving Size	100 g
	Calories	342
	Calories From Fat	24
	Weight	**% AKG***
Total Fat	2,63 g	3,65
Protein	18,53 g	34,31
Total Carbohydrate	60,93 g	18,92
Moisture	5,65 g	-
Ash	12,26 g	-

*Percentage of Nutritional Adequacy Rate based on dietary requirement of 2150 kcal

Source: Mahesty MSMES Secondary Data 2023

This nutrient composition indicates that pak choy flour is a high-protein, low-fat, and moderate-carbohydrate product, making it suitable for individuals with dietary goals such as weight management or high-nutrient intake. Mahesty MSMEs currently produces pak choy flour three times per month, with each batch using approximately 30 kg of fresh organic pak choy. The drying process is intensive, yielding only around 1 kg of flour per batch. The final product is then divided into 20 packages of 50 grams, each sold at IDR 75,000. Although this price point is relatively high compared to similar flour-based products on the market, it reflects the quality of the raw materials, the absence of additives, and the labor-intensive processing, which can take up to two full days. The higher cost of production, driven by manual handling and quality control standards, also contributes to the pricing structure.

Despite being a new product, Pak Choy vegetable flour has received strong market acceptance. Its key selling points include nutritional value, practicality in usage, purity, and safety for consumption. Among Mahesty MSMEs' various product lines, this flour has emerged as the most profitable and promising, demonstrating the potential of innovative, locally sourced, health-based food products to strengthen micro-entrepreneurship. The successful market response suggests a growing niche for functional vegetable-based flour products in Indonesia's evolving health food sector.

The innovation of pak choy flour holds strategic value for both economic and public health dimensions. From an economic perspective, the product provides a viable means of enhancing the value of local horticultural commodities, particularly those produced through sustainable practices such as hydroponics. The transformation of low-durability vegetables into high-value, shelf-stable functional products enables MSMEs to enter premium markets and diversify income sources. This approach also supports local supply chains by integrating farmers into value-added production models, thereby enhancing their economic viability.

From a public health standpoint, pak choy flour contributes to the availability of accessible and nutritious food options. Its high protein and micronutrient content aligns with national goals on food fortification and community nutrition improvement. Furthermore, it offers potential for institutional procurement in programs targeting child nutrition, elderly care, and dietary therapy.

In terms of business potential, the product offers opportunities for downstream innovation. Pak choy flour can be used as a base for derivative products, such as ready-to-bake mixes, high-fiber cookies, or nutritionally fortified noodles. These downstream innovations can help broaden market segments and enable Mahesty MSMEs to expand their footprint beyond niche health markets into mainstream retail.

To fully realize this potential, further steps are needed. Mahesty MSMEs should strengthen branding, cost recording, and nutritional labeling systems, while exploring opportunities for partnerships with health institutions, culinary innovators, and food distributors. In addition, research collaborations with universities can support product development, shelf-life analysis, and consumer acceptance studies.

The development of pak choy vegetable flour by Mahesty MSMEs exemplifies how local food innovation can address nutritional challenges, add value to agricultural commodities, and drive the growth of MSMEs in the functional food sector. Its nutritional composition and market performance underscore the relevance of such products in achieving health-oriented, sustainable, and inclusive food systems.

4.3 Added Value Pak choy Vegetable Flour

Value added to study this analysis uses the Hayami method. The Hayami method not only aims to measure mark-up plus product but also to evaluate the magnitude of the big factor conversion in an effort, the coefficient power work involved, value added per unit of product, the contribution from other inputs, income power work, and benefits gained from the business. Analysis mark plus is used to identify improvement marks on products produced through processing commodities, caused by treatment specific to the commodity.

In the analysis, the mark plus flour vegetable pak choy was measured from the results processing, and the vegetable pak choy organic became flour vegetable pak choy. The ingredients used are organic vegetable pak choy, with a yield of up to 30 kg, and produce flour from vegetable pak choy, with a yield of up to 1 kg. It is due to the lightning process, which takes 48 hours to reduce the water content in vegetable pak choy, resulting in a depreciation of 96.67% of the flour vegetable pak choy for sale, priced at IDR 75,000 per pack, weighing 50 grams.

Value-added processing of vegetable pak choy becomes flour, and vegetable pak choy is counted using the Hayami method. The calculation mark is added in a one-time production process. Production costs for flour vegetable pak choy consist of the cost of materials, raw materials, standard support, and energy. Raw materials for making flour include vegetable pak choy, which is organic. The material standard support includes packaging and power work. Here, this calculation mark, plus the use of the Hayami method, based on the data obtained from spacious, can be seen in the table that follows.

Table 2. Added Value Analysis of Pak choy Vegetable Flour from Mahesty MSME

No	Variables	Mark
Output, Input, Price		
1.	Output/total production (kg/production)	1
2.	Raw material input (kg/production)	30
3.	Labor input (HOK/kg/production)	4.0
4.	Conversion factor (1)/(2)	0.03
5.	Labor coefficient (3)/(2)	0.13
6.	Output price (IDR/kg)	IDR. 1,500,000.00
7.	Average wages of labor per person (IDR/HOK)	IDR. 100,000.00
Income and Profit		
8.	Raw material input price (IDR/kg)	IDR. 22,000.00
9.	Other input contributions (IDR/kg)	IDR. 2,000.00
10.	Product value (4) x (6) (IDR/kg)	IDR. 45,000.00
11.	a. Added value (10) - (8) - (9) (IDR/kg)	IDR. 21,000.00
	b. Value added ratio (11a)/(10) (%)	46.7%
12.	a. Labor income (IDR/kg) (5) x (7)	IDR. 13,333.33
	b. Labor compensation (12a) / (11a) (%)	63.49%
13.	a. Profit (11a) - (12a) (IDR/kg)	IDR. 7,666.67
	b. Profit level (13a) / (10) (%)	17.04%
Remuneration for Production Factors		
14.	Margin (10) - (8) (IDR/kg/production)	IDR. 23,000.00
	a. Labor income (12a) / (14) (%)	57.971%
	b. Other input contributions (9) / (14) (%)	9%
	c. Company profit (13a) / (14) (%)	33.33%

Source: Processed Primary Data, 2025

Based on the calculation of added value analysis using the Hayami method in Table 2, it is shown that the output produced in one production of pak choy vegetable flour is 1 kg, packaged into 20 packages weighing 50 grams each. To obtain this output, 30 kilograms of organic pak choy vegetables are required. Mahesty MSMES sets the price of pak choy vegetable flour at IDR 75,000 per package. The conversion factor obtained is 0.03. This conversion value indicates that processing 1 kg of pak choy vegetables will yield 0.03 kg of pak choy vegetable flour. The labor input used is 4.0 hours of work. The average labor wage per production is IDR 100,000 per person. The labor coefficient value obtained is

0.13 HOK/kg. This coefficient value shows that to process one kilogram of pak choy vegetables into pak choy vegetable flour, 0.13 HOK of labor is required.

Other input contributions are costs incurred in the production process of pak choy vegetables. Other input contributions in the processing of pak choy vegetable flour include packaging. The total value of other input contributions for processing pak choy vegetable flour per production is IDR 60,000. This value is then divided by the amount of primary raw material, namely pak choy vegetables, used in one production process, so that the input contribution is IDR 2,000.

The value of the product produced in manufacturing pak choy vegetable flour is IDR 45,000. The added value obtained from processing 1 kg of pak choy vegetables into pak choy vegetable flour is IDR 21,000/kg. The added value states that every time 1 kg of pak choy vegetables is processed, it will provide an added value of IDR 21,000. The added value is obtained by reducing the product's value with the cost of raw materials and other input costs. At the same time, the ratio of the added value obtained is 46.7%. Therefore, processing pak choy into pak choy vegetable flour adds 46.7% value. However, this value does not include labor compensation.

The higher the value-added ratio obtained, the better the business is run. According to Hubei (1997) and Nur et al. (2020), the ratio mark plus low is 40 percent. The added value is moderate if the ratio value is around 25–40 percent. At the same time, the added value is considered high if the ratio value exceeds 40 percent. Therefore, MSMES Mahesty Pak Choy Vegetable Flour is included in the high steadfast value category with a value of 46.7%.

Labor income obtained in the processing of pak choy vegetable flour is IDR 13,333.33/kg. The percentage of labor or compensation received by workers from added value is 63.49%. This value indicates that every 1 kg of pak choy processed into pak choy flour yields a reward of 63.49%. The amount of profit obtained in making pak choy flour is IDR 7,666 per 1 kg of pak choy vegetables with a profit rate of 17.04%. This value indicates that processing 1 kg of pak choy will yield a profit of 17.04% for the pak choy vegetable flour. This profit shows the total profit obtained from each processing of pak choy vegetables into flour.

The results of the calculation of added value show the margin obtained from the raw material of pak choy vegetables, which is converted into pak choy vegetable flour, distributed among labor income, other input contributions, and company profits. Margin is the difference between the product value and the price of raw materials of pak choy vegetables per kilogram. The margin shows that every time 1 kg of pak choy vegetables is processed into flour, a margin or increase of IDR is achieved. A rate of 23,000/kg is obtained, distributed to each labor factor, namely labor income, at 57.971%. This labor income is part of the margin given to workers or labor involved in the production process; the percentage of labor income is 57.971%. It shows that from the total margin of IDR. 23,000.00, 57.971%, or IDR. 13,333.33 will be given to workers as part of their wages, with other input contributions of 9% and company profits of 33.33% from processing flour and vegetable pak choy. Processing vegetable pak choy into flour, and using the Veggie Powder brand, provides a markup and profit for the company.

CONCLUSION

The research on the Mahesty MSMEs case study in Malang reveals that converting 30 kilograms of pak choy vegetables into pak choy vegetable flour adds a value of IDR 21,000 per kilogram. This results in a value-added ratio of 46.7%, categorizing it inside the high added value range (exceeding 40%). This outcome demonstrates that converting horticulture products into functional food items, such as vegetable flour, can substantially enhance the economic value of basic agricultural supplies. The processing activity enhances the shelf life of perishable vegetables such as pak choy and produces a more adaptable and marketable product suitable for various functional food derivatives.

This discovery has significant implications for the advancement of micro, small, and medium-sized enterprises (MSMEs) involved in agricultural processing. Through the implementation of innovative strategies for post-harvest management and product diversification, MSMEs can surmount market limitations associated with the perishability and price volatility of raw vegetables. Specifically, Mahesty MSMEs has proven the viability of transforming a low-durability crop into a high-value, shelf-stable product. That creates new business prospects and market segments, encompassing health-conscious customers and the functional food sector.

Nonetheless, despite the favorable economic returns, numerous opportunities for enhancement exist that could increase the sustainability and scalability of these business models. A primary

recommendation is the establishment of a more organized and methodical cost recording system. Precise financial records are essential for evaluating profitability and identifying inefficiencies in production, pricing strategies, and resource allocation. With effective accounting systems established, Mahesty MSMEs can make more informed decisions that enhance long-term business sustainability and growth.

Moreover, the findings of this study may serve as a paradigm for other MSMEs seeking to enhance value through agricultural innovation. Government agencies and support institutions are encouraged to provide technical assistance, capacity-building programs, and mentoring services, particularly in areas such as business management, food safety standards, marketing, and financial access. Such initiatives will empower MSMEs like Mahesty to improve product quality, broaden their market reach, and make a more substantial contribution to the local economy and rural development.

This study discusses the strategic importance of transforming horticulture goods into functional foods to enhance the revenue of farmers and MSMEs. It demonstrates the potential for innovation-driven growth in the agrifood sector, particularly when bolstered by robust business practices and institutional backing.

REFERENCES

Adita, E. C. S., Simatupang, J. T., & Timbul Soh Berutu, P. S. (2022). *Analisis Nilai Tambah Dan Strategi Pengembangan Agroindustri Kopi Bubuk Robusta*. *8*(1), 2022. https://ejurnal.methodist.ac.id/index.php/methodagro/article/view/1235

Apriyani, D., Muchariman, R., & Trisna Wijaya, Dan. (2021). Peningkatan Nilai Tambah Susu Kambing Etawa di Um Purefresh Kabupaten Ciamis. *Jurnal Pengabdian Siliwangi*, *2*(7), 71–77. https://doi.org/10.37058/jsppm.v7i2.3813

Arimurti, F., & Hesti Nur'aini. (2023). Pengaruh Teknik Penyimpanan Terhadap Mutu Pakcoy (Brassica Rapa L) Serta Konsentrasi Pakcoy Terhadap Sifat Fisik Dan Sensoris Jus Panas (Pakcoy Nanas). *Jurnal Multidisiplin Dehasen*, *2*(2), 277–286. https://doi.org/10.37676/Mude.V2i2.3821

Chrestiana Aponno, & Septina Louisa Siahaya. (2023). Analisis Nilai Tambah Produk Keripik Salak Menggunakan Metode Hayami. *Akua: Jurnal Akuntansi Dan Keuangan*, *2*(3), 206–212. https://doi.org/10.54259/Akua.V2i3.1860

Dameria Feronica, Yudi Ferrianta, & Masyhudah Rosni. (2023). Analisis Nilai Tambah Dan Profitabilitas Usaha Pengolahan Amplang Ikan Tenggiri Di Kecamatan Pulau Laut Utara Kabupaten Kotabaru (Studi Kasus Usaha Amplang Ikan Meilan). *Frontier Agribisnis*, *2*, 182–190. https://doi.org/10.20527/frontbiz.v7i2.9412

Dianti Putri Sulaeman, N., Wagiono, W., & Sari Wulandari, Y. (2023). Analisis Nilai Tambah Dan Pendapatan Diversifikasi Produk Olahan Berbasis Singkong (Studi Kasus Pada "Umkm Serba Singkong" Di Kampung Adat Cireundeu, Kota Cimahi). *Jurnal Agrohita: Jurnal Agroteknologi Fakultas Pertanian Universitas Muhammadiyah Tapanuli Selatan*, *8*(4), 686. https://doi.org/10.31604/Jap.V8i4.13886

Dong, S., Fang, S., Li, J., Zheng, W., Wang, Z., Hu, J., Zhao, X., Liu, Z., Feng, H., & Zhang, Y. (2024). Comparative Metabolic Profiling of Different Pakchoi Cultivars Reveals Nutritional Diversity Via Widely Targeted Metabolomics. *Journal Food Chemistry*, *22*, 1–10. https://doi.org/10.1016/J.Fochx.2024.101379

Erina Saurmauli Ompusunggu, H., & Meilorika Daeli, P. (2024). Aktivitas Antioksidan Dari Sayur Pakcoy (Brassica Rapa Subsp. Chinensis) Berbagai Jenis Tanam Menggunakan Metode Dpph. *Jurnal Ners Universitas Pahlawan*, *8*(1), 728–733. http://Journal.Universitaspahlawan.Ac.Id/Index.Php/Ners

Irawan Riky, Sudrajat, & Puspitasari Anisa. (2024). Nilai Tambah Dan Strategi Pengembangan Agroindustri Keripik Singkong (Studi Kasus Pada Agroindustri Keripik Singkong Ibu Nining di Desa Gunungsari Kecamatan Sadananya Kabupaten Ciamis). *Jurnal Ilmiah Mahasiswa Agroinfo Galuh*, *11*(1), 56–69. http://dx.doi.org/10.25157/Jimag.V11i1.10400

Lawalata, M., & Imimpia, R. (2020). Analisis Nilai Tambah Dan Pemasaran Produk Agroindustri Kelapa (Cocos Nucifera L.) Pada Perusahaan Wootay Coconut. *Jurnal Agribisnis Sumatera Utara*, *13*(1), 66–80. https://doi.org/10.31289/Agrica.V13i1.3513.G2554

Lili, Q. N., Sudjoni, I. M. N., & Rianti, T. S. M. (2021). Analisis Pendapatan dan Nilai Tambah Produk Kopi Rumput Laut UKM Sasak Maiq di Lombok NusaTenggara Barat. *Jurnal Sosial Ekonomi*

Pertanian dan Agribisnis, *9*(6). https://jim.unisma.ac.id/index.php/SEAGRI/article/view/14087/10786

Nur, K. M., Riza, R. B., & Mifthul, H. K. (2020). Analisis Nilai Tambah Ubi Kayu (Manihot Esculenta Crantz Sin.) Menjadi Tape Di Ud. Wanda Putri Banyuwangi. *Prosiding Seminar Nasional Terapan Riset Inovatif (Sentrinov) Ke-6*, 254–261. https://e-library.poliwangi.ac.id/index.php?p=fstream&fid=3987&bid=10276

Sriwana, I. K., Santosa, B., Tripiawan, W., & Maulanisa, N. F. (2022). *Analisis Nilai Tambah Untuk Meningkatkan Keberlanjutan Rantai Pasok Agroindustri Kopi Menggunakan Hayami*. https://doi.org/10.24853/Jisi.10.1.67-76

Triandita, N., Maifianti, K. S., Rasyid, M. I., Yuliani, H., & Angraeni, L. (2020). Pengembangan produk pangan fungsional dalam meningkatkan kesehatan dan kesejahteraan masyarakat di Desa Suak Pandan Aceh Barat. *LOGISTA-Jurnal Ilmiah Pengabdian kepada Masyarakat*, *4*(2), 457-464. https://doi.org/10.25077/logista.4.2.457-464.2020

Wanda Fadhilah, & Sidik Purnomo, S. (2023). Analisis Nilai Tambah Dan Laba Pada Pengolahan Nanas (Ananas Comosus L.) Segar Menjadi Dodol Nanas Di Kecamatan Jalancagak Kabupaten Subang. *Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis*, *2023*(1), 177–190. https://dx.doi.org/10.25157/ma.v9i1.8343

Yosifani, D. Y., Satriani, R., & Putri, D. D. (2021). Nilai Tambah Kedelai Menjadi Tahu Kuning Dan Faktor-Faktor Yang Memengaruhinya. *Sepa: Jurnal Sosial Ekonomi Pertanian Dan Agribisnis*, *18*(1), 101. https://doi.org/10.20961/Sepa.V18i1.47688