

Analysis of the Development of Sambal Products Made from Fishery Products at MSMEs in Pangandaran Regency A Case Study of Sambal Sambat and Sambel Ummi

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Abstract—Product development is one of the efforts that micro, small, and medium enterprises (MSMEs) can undertake to maintain competitiveness through product variation, improvements in production processes, packaging, and marketing. Chili sauce products utilizing local food resources and fishery products have opportunities to generate added value in Pangandaran Regency. This study aimed to analyze product development in two chili sauce MSMEs in Pangandaran Regency, namely Sambal Sambat and Sambel UYS, based on raw materials, equipment, formulation and production processes, product form and size, packaging, and marketing techniques. A descriptive qualitative method with a case study approach was used. Data were collected through field surveys, interviews with MSME owners or managers, observation of products and production processes, and documentation conducted. According to the findings, Sambal Sambat possesses four variations based on squid, anchovy, and torch ginger. Sambel UYS has six variants, uses several semi-mechanical tools, applies PET jar packaging with aluminum foil seals, and has a broader marketing network through stores, minimarkets, resellers, and cross-regional distribution. Differences between the two MSMEs were mainly found in product variety, production technology, packaging, and marketing reach. These findings indicate that product development in MSMEs involves not only adding product variants but also adapting production processes, packaging, and marketing channels to business capacity and market needs.

Keywords— Pangandaran, product development, chili sauce, MSMEs; fishery products.

I. INTRODUCTION

Product development is one of the marketing strategies frequently employed by business owners—including micro, small, and medium-sized enterprises (MSMEs)—in an effort to sustain and expand their businesses. According to Siregar et al. (2020), business development encompasses product development, which is one of the key strategies that MSMEs must adopt to overcome the various challenges they face in running their businesses. Product development is not merely limited to creating new variants but can also be achieved through the improvement or refinement of existing products. This is consistent with research conducted by Ningsih et al. (2024), which demonstrates that product innovation in

businesses, whether microenterprises or SMEs, is frequently conducted in a unified manner with marketing and rebranding strategies.

Product development plays a crucial role in ensuring the sustainability of a business, particularly for SME operators navigating increasingly dynamic market competition. Badawi & Nugroho (2022) emphasize that the sustainability of SMEs is heavily determined by the business owners' ability to foster innovative behavior in their product development processes. Without continuous development efforts, a business risks losing relevance in the eyes of consumers and falling behind competitors who are more adaptable to market changes. Siregar et al. (2020) also explain that the limitations of SME entrepreneurs in developing their businesses and products are one of the main obstacles hindering business growth in various regions. Thus, a business's ability to consistently develop its products can be viewed as a key factor in both competitiveness and long-term business sustainability.

Our group's selection of MSME products in Pangandaran as the subject of this study was based on several considerations. First, sambal is a culinary product that represents both national identity and the socio-cultural identity of Indonesia. Amin et al. According to (2024), almost every region in Indonesia possesses its own distinctive sambal, with Pangandaran Regency being the most notable among them. Second, sambal with a distinctive flavor based on local ingredients has the potential to be developed into a premier culinary product and offers promising market opportunities for boosting the region's economic value, as also demonstrated in the same study. Third, Pangandaran Regency is also renowned for its seafood; in addition to being sold directly by fishermen or collectors to consumers, this seafood can also be processed into ready-to-eat sambal products with a certain shelf life. Based on the uniqueness of the products, their economic potential, and their role as part of the region's culinary identity, two chili sauce MSMEs in Pangandaran were deemed relevant and representative to serve as the subjects of product development analysis in this study. This study aims to analyze the chili sauce

product development efforts undertaken by chili sauce MSMEs in Pangandaran Regency.

II. RESEARCH METODE

This study employed a qualitative descriptive method using a case study approach at two micro, small, and medium-sized sambal businesses in Pangandaran. The research was conducted on September 22 and 24, 2026, at two sambal MSMEs located in Pangandaran Regency, namely Sambal Sambat and Sambel Ummi. The instruments used in the study included interview guidelines, observation sheets, and a camera as a documentation tool to support data collection regarding the MSMEs' products and production processes. Data were collected through on-site surveys at the MSMEs' locations, interviews with the owners or managers of the MSMEs, and observations of the production processes and final products. The data obtained were then described and compared based on raw materials, production processes, product shape and size, packaging, and marketing techniques.

III. RESULTS

This study was conducted on two chili sauce MSMEs in Pangandaran Regency: Sambal Sambat and Sambel Ummi UYS. These two MSMEs were selected because their products utilize local food ingredients and fishery products as part of their chili sauce development. Although they offer the same type of product, they differ in terms of business development stage, number of variants, production process, packaging, and marketing reach. The variations in product development in MSMEs demonstrate that they are not always carried out in the same manner, but are tailored to the needs and capabilities of each business.

A. Business Profile

Sambal Sambat was launched in early 2024 through the Unpad Preneur program at Padjadjaran University. The business idea originated from the potential of local food resources in Pangandaran Regency, which were deemed to be underutilized particularly "kecombrang" and fishery products. This potential was then developed into a sambal product as a way to utilize local ingredients and increase the value of food products.



Fig. 1. Sambel Sambat

Sambal Sambat's management structure consists of several departments CEO, finance, marketing, operations, and

technology and includes one local employee from a group of women in the PKK (Family Welfare Movement) in Cinta Ratu Village. The developed products consist of four variants: Original squid sambal, green chili squid sambal, anchovy sambal, and "kecombrang" anchovy sambal. At the time of the study, Sambal Sambat's production activities were not yet operating on a regular basis because some team members were focused on completing their final projects. Nevertheless, there are plans to resume business operations in the near future.

Sambel Ummi was founded by Mrs. Yeni Shihat and her husband in November 2019 in Pangandaran Regency. The business was launched after they lost their jobs during the COVID-19 pandemic and was later developed into a food business based on local ingredients. Sambel Ummi offers six main varieties: *Sambal Kecombrang*, *Balado Jambal*, *Jambal Hijau*, *Cumi Hijau*, *Cumi Asin*, dan *Sambal Bawang*. The greater number of varieties indicates that the business has diversified its products based on different raw materials and flavors. Diversification is a form of product development that MSMEs can use to offer consumers more choices while adapting products to market needs. Research by Lestari and Junedi (2024) also shows that product diversification and packaging design are key factors in the success of MSME businesses.



Fig. 2. Sambel Ummi

In comparison, Sambal Sambat is still in the development and market testing stages, whereas Sambel Ummi has achieved more mature business growth. These differences are evident in the number of variants, production systems, packaging, and market reach. This situation indicates that business development is determined not only by the age of the business but also by the entrepreneur's ability to develop products in line with market conditions.

B. Raw Material Development

The use of fishery products such as squid, anchovies, and salted "jambal roti" fish, as well as local horticultural commodities such as "kecombrang flowers" and chili peppers by Sambal Sambat and Sambel Ummi, demonstrates the commitment of these two food MSMEs to exploring the potential of Pangandaran Regency. This approach adds significant value to fresh food ingredients that were previously sold directly without processing. The incorporation of these local ingredients not only increases the products' economic

value but also creates a unique identity that sets them apart from typical sambal.

The correlation between the utilization of local ingredients and business competitiveness is consistent with the findings of Wahyono & Syah (2026), who state that one form of product innovation in culinary MSMEs involves the use of local raw materials to differentiate menus and strengthen competitiveness in the market. The development of specific product characteristics based on regional potential serves as a crucial foundation for MSMEs in establishing product positioning (brand positioning) amid intense market competition.

Sambal Sambat's development strategy focuses on in-house formulation research and market testing to gauge consumer preferences regarding heat level, savory flavor, and seasoning balance (salt and sugar). Including consumer feedback in these flavor adjustments reflects a market-oriented innovation approach. As explained by Pangestuti and Sudrajat (2025), product innovation in culinary SMEs generally stems from consumer demand and market feedback that is tested in stages.

This process of market testing and formulation adjustments is crucial for micro-scale SMEs to minimize the risk of product failure. Yuniarti and Maulana (2026) emphasize that market-driven product innovation has a very strong and significant positive impact on enhancing the competitiveness of SME products. Flavor and packaging adjustments that are tailored to consumer preferences have proven to be crucial indicators of establishing a competitive edge for food products.

The approach implemented by Sambel Umami demonstrates a transition toward medium-scale commercialization through the adoption of a semi-mechanized system (a spice-chopping machine) and the use of salted ingredients (salted jambal roti fish and salted squid) to reduce the moisture content of the ingredients. The steps of draining oil and cooling the product for at least six hours before packaging aim to prevent the formation of water vapor condensation inside the packaging. These technical steps are crucial for the physical stability and shelf life of processed sambal products.

The role of the combination of processing technology and packaging techniques in maintaining the quality of sambal products is reinforced by the findings of Permana et al. (2021) in a study on the development of Andaliman Sambal. This research demonstrated that the interaction between the heating/sterilization process and ingredient formulation significantly affects the product's moisture content, pH, viscosity, and sensory characteristics. Reducing moisture content and controlling pH are highly effective in suppressing microbial activity, thereby extending the product's shelf life without compromising consumer taste acceptance.

A similar finding was reported by Fitriani et al. (2021) where heat treatment and acidity levels were shown to affect the product's physicochemical stability and color. The application of appropriate processing technologies such as sterilization and controlled water evaporation enables instant sambal products to achieve good stability, facilitating wider distribution.

Although innovations in raw materials and processing technologies provide a positive boost to product value-added, the main challenges still faced by both SMEs are price fluctuations and limited availability of raw materials (such as

fresh chili peppers and squid). These supply constraints affect production continuity, particularly for Sambal Sambat, which has not yet begun regular production.

To achieve business sustainability, innovation must not stop at the recipe or production process stage alone but must be integrated into overall business management. As concluded by Noor et al. (2018), consistent product and process innovation is directly proportional to an increase in the competitive advantage of traditional food MSMEs. MSME operators who are able to integrate a smooth raw material supply chain, efficient processing, and unique local flavors will possess a competitive advantage that is difficult for competitors to replicate.

C. Packaging Development

Packaging development for sambal products plays a crucial role, focusing not only on visual appeal and ease of distribution but also on protecting the product from physical, chemical, and microbiological damage. According to Permana et al. (2021), the characteristics of processed food products like sambal are significantly influenced by processing methods, packaging closure systems, and the selection of suitable packaging materials. For Sambal Sambat, packaging development has focused on convenience through sachets (10 grams) and multiple-use jars (150 grams). However, potential leaks and failed container seals can be caused by technical challenges in the lamination process and suboptimal vacuum sealing machines. Technical challenges such as improper headspace or failures in the airtight sealing system can accelerate oxygen ingress and contamination by spoilage microorganisms, ultimately leading to a decline in product quality (Nurminabari et al., 2022).

A significant difference is evident between Sambal Sambat and Sambel Umami. Sambel Umami uses 200-gram packaging made of polyethylene terephthalate (PET) that features an aluminum foil seal on the inside of the lid. The use of an aluminum foil seal on plastic containers or jars has been shown to provide extra protection against the penetration of oxygen and water vapor, as well as exposure to light the main triggers of fat/oil oxidation (Affandi et al., 2020).

In shelf-life testing of fatty food products or processed chili sauces, lipid oxidation triggers the formation of free fatty acids (FFAs) and peroxide compounds, which cause rancid odors and flavors (Bungi et al., 2024; Nurminabari et al., 2022). The use of airtight packaging, such as vacuum sealing or the addition of an aluminum seal, has been shown to significantly reduce the rate of rancidity (TBA/peroxides) and suppress microbial growth (ALT/TPC) compared to plastic packaging without an airtight seal (Purnamasari et al., 2026).

Although the use of packaging materials such as PET and glass jars provides good physical protection, the shelf life of a sambal product remains highly dependent on the product's internal conditions (moisture content, pH, acidity level) as well as storage environmental conditions (temperature and humidity) (Maghu et al., 2019; Mardhiyyah & Ningsih, 2021). Therefore, claims or statements regarding a packaging's ability to maintain product stability for a specific period cannot be directly generalized without conducting separate shelf-life

testing, such as using the Arrhenius approach in Accelerated Shelf-Life Testing (ASLT) or Extended Storage Studies (ESS) (Bungi et al., 2024; Nurminabari et al., 2022; Purnamasari et al., 2026)

Sambel Ummy's plan to transition from PET bottles to cans is a strategic move that aligns with the needs of long-distance distribution and export markets. Without the need for excessive synthetic preservatives, cans or retort pouches significantly extend shelf life by offering high commercial sterility and complete protection against leaks and cross-contamination (Permana et al., 2021). Overall, the differences in the packaging development stages between Sambal Sambat and Sambel Ummy reflect the evolution of the businesses' scale. At the initial stage, improvements were focused on technical reliability (preventing laminate leaks and ensuring the practicality of the sachets), whereas at more advanced business levels, packaging innovations were aimed at meeting commercial food safety standards and expanding the reach of export markets (Affandi et al., 2020; Azizah et al., 2019).

D. Marketing Development

Marketing strategies for micro, small, and medium-sized enterprises (MSMEs) are closely tied to the maturity level of the business and the phase of its product life cycle. For Sambal Sambat, participation in events such as the Unpad Trainer in Jatinangor and the Goodwood Expo outside Pangandaran, as well as the distribution of free samples as a market test, serve a dual purpose as both a promotional tool and a means of direct product evaluation. This approach aligns with the findings of Pontoh et al. (2023), which indicate that a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis is crucial for MSMEs in responding to intense market competition. Sales that rely solely on the local market have limited scope, so market testing through exhibitions and sample distribution is the most effective way to gauge consumer acceptance before increasing investment in a product.

Unlike Sambal Sambat, Sambel Ummy has implemented a well-established combination of direct and indirect distribution channels. Marketing is conducted through souvenir shops, resellers (in Garut and Bekasi), local minimarkets (30 Alfamart outlets in Pangandaran), and international market penetration (Malaysia, Thailand, and Taiwan), as well as the provision of rebranding or contract manufacturing services. The success of this expansion aligns with the findings of Mardianti (2021), who states that the implementation of a multi-channel marketing strategy can expand marketing reach and increase the effectiveness of product distribution to consumers. Furthermore, the penetration of MSME products into modern retail markets requires structured supply chain planning and negotiations so that products can compete at the national retail level (Shobur et al., 2024).

In its pricing strategy, Sambel Ummy implements price differentiation based on sales channels (Rp25,000 for direct consumers, Rp23,000–Rp25,000 for resellers, and Rp30,000 for modern retailers and souvenir shops). The application of different marketing margins at each level of the channel is, in theory, a way to adjust for operating costs and intermediary costs (Fitriana & Setiawan, 2023). The length of the chosen

marketing channel will affect the margins and overall efficiency of the marketing mix (Fitriana & Setiawan, 2023).

The use of social media platforms such as WhatsApp and Instagram by Sambel Ummy has become part of its daily promotional activities. However, the fact that Sambel Ummy's online marketing is still dominated by resellers indicates an opportunity for the company to develop its own digital channels. According to Suriyanti et al. (2024), the integration of efficient distribution channels with direct social media marketing activities by the company has been shown to significantly improve the marketing performance and sales volume of MSMEs. The independent use of social media, chat commerce, and marketplaces enables SMEs to control their brand identity and interact personally with consumers (Mujianto et al., 2024; Oktyawati et al., 2023). Adequate digital marketing literacy plays a key role in ensuring that business owners do not merely view social media as a form of entertainment, but rather as a means to enhance competitiveness and expand market reach beyond geographical boundaries (Mujianto et al., 2024; Oktyawati et al., 2023).

The development of MSMEs producing chili paste products indicates that innovations in raw materials (such as squid, anchovies, salted fish, and "kecombrang"), packaging strategies, and marketing channels must be developed in an integrated manner. This supports the findings of Ningsih et al. (2024), who emphasize that the integration of product innovation, marketing strategies, and rebranding plans is a top priority in strengthening the image and competitiveness of MSMEs in a competitive market.

The interconnection of these three elements is clearly evident in the development patterns of the two SMEs: Sambal Sambat focuses on product validation and brand introduction through exhibitions, while Sambel Ummy has moved on to the stage of optimizing cross-regional distribution chains, rebranding, and diversifying sales channels. This pattern demonstrates that innovation is not limited to adding new flavor variants but encompasses the entire process—from raw material selection and packaging to sustainable strategies for introducing products to consumers.

IV. CONCLUSION

The development of processed seafood and local food sambal products in Pangandaran Regency by Sambal Sambat and Sambel Ummy demonstrates that MSME innovation is not limited to adding new flavor varieties, but rather involves a gradual integration of improved processing technology, reliable packaging to maintain product quality during storage, and the expansion of marketing channels tailored to the business's capacity. The use of local raw materials such as squid, anchovies, jambal roti, and kecombrang has successfully generated economic value and a unique brand identity, where the sustainability of these businesses is largely determined by the ability of MSME operators to consistently integrate production efficiency, packaging flexibility, and multi-channel distribution strategies.

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