

Assessing the Marketability of Locally Produced Chili Paste in Apayao as a Basis for Extension Services of the BSBA Program

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Abstract

This study aimed to assess the marketability of locally produced chili paste in Apayao as a basis for BSBA extension services. It was anchored on Consumer Behavior Theory, Sensory Evaluation Theory, Value Chain Theory, and Diffusion of Innovation Theory to explain consumer preferences, product acceptability, and adoption. A descriptive research design combining quantitative and qualitative approaches was employed. Data were collected from 50 respondents, including consumers, farmers, and producers, using a structured questionnaire and sensory evaluation based on a 9-point Hedonic Scale. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to analyze the data. The findings revealed that respondents were primarily middle-aged, predominantly male, and regularly engaged in cooking. Chili paste was widely consumed daily or several times a week, commonly purchased from local markets, online platforms, and sari-sari stores. The product demonstrated high sensory acceptability across all attributes, with texture receiving the highest rating. Results also indicated strong product acceptability, high purchase intention, and positive perceptions of price and packaging. Consumers showed a high willingness to pay across different product sizes, reflecting strong perceived value. Marketing and distribution preferences emphasized the importance of product labeling, social media promotion, accessibility in local stores, and preference for locally produced products. The study concludes that locally produced chili paste in Apayao has strong market potential and consumer acceptance. It recommends enhancing product development, expanding distribution channels, implementing flexible pricing strategies, and strengthening training and extension services for farmers and producers. The study aligns with SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 12 (Responsible Consumption and Production) by promoting value-added agricultural products and local enterprise development. It contributes to socio-economic and community sustainability by supporting income generation, local innovation, and inclusive rural development.

Keywords: Chili paste, Consumer behavior, Marketability, Product acceptability, Sensory evaluation, Value chain, Willingness to pay

1. Introduction

Pepper, one of the earliest known spices dating back 6,000 years, remains widely used globally for its culinary, nutritional, and medicinal value. It is low in calories and cholesterol-free while providing essential vitamins and antibacterial benefits. Its versatility in enhancing flavor, color, and preservation in various food products has sustained its global demand. In line with evolving consumer preferences toward natural and health-oriented food products, spices such as chili have gained increased importance in both local and international markets (Khanal et al., 2021). In the Philippines, chili paste reflects cultural culinary practices, particularly in spice-prevalent regions such as the Cordilleras. Despite strong consumer demand for spicy food, chili farmers in Apayao largely sell raw produce, limiting economic potential. Transforming chili into value-added products such as chili paste presents an opportunity to improve income and market access while aligning with agricultural development initiatives. This study evaluates the marketability of locally produced chili paste in Apayao, focusing on consumer preferences, product acceptability, and economic potential to inform BSBA extension services and support local farmers.

1.1 Background of Chili Paste Marketability and Chili Farmers in Apayao

Pepper (*Capsicum* spp.) has long been recognized for its nutritional and medicinal benefits, including antibacterial properties and its role in reducing risks of diseases such as diabetes, cancer, and arthritis. Its widespread use in food processing enhances both flavor and visual appeal in various dishes. Globally, the demand for spices has increased due to changing dietary patterns and a growing preference for natural ingredients. Countries such as Nepal highlight the importance of spices as both culinary and therapeutic components, producing a wide range including chili, black pepper, and cardamom (Khanal et al., 2021). In the Philippine context, chili paste is a common condiment embedded in local cuisine, especially in regions with strong spice-oriented traditions. However, in Apayao, despite being an agricultural

province, farmers primarily sell raw chili, limiting opportunities for value addition and income generation. This situation underscores the need to explore product development and market expansion through chili paste production.

1.2 Themes on Consumer Preferences, Sensory Acceptability, and Chili Paste Marketability

Existing literature highlights three major themes: nutritional and functional benefits of spices, consumer-driven demand for natural products, and the economic potential of value-added agricultural goods. Spices, particularly chili, are recognized not only for flavor enhancement but also for their health benefits, including antibacterial and disease-preventive properties. These attributes contribute to increasing global demand for spice-based products. Consumer behavior studies emphasize that food preferences are shaped by cultural exposure and habitual consumption, as seen in the high frequency of spicy food consumption among Filipinos. Sensory attributes such as taste, aroma, and texture significantly influence product acceptance and repeat purchase behavior (Lawless and Heymann, 2010). Furthermore, value chain perspectives suggest that converting raw agricultural products into processed goods increases profitability and market competitiveness (Porter, 1985). This reinforces the importance of developing chili paste as a value-added product to enhance farmer income and local economic development.

1.3 Local, National, and Global Context of Chili Paste Production and Consumption

Globally, spices remain essential in culinary traditions and food industries, with increasing demand driven by health-conscious consumers and the preference for natural ingredients. Nationally, the Philippines demonstrates strong consumption of spicy foods, reflecting a stable market base for chili-based products. Locally, Apayao is characterized by agricultural productivity but faces economic challenges, including limited infrastructure, market access, and processing technologies. While chili is culturally relevant in the region, the absence of value-added processing limits its economic contribution. Government initiatives supporting agricultural mechanization and value chain development provide an enabling environment for product innovation such as chili paste production.

1.4 Theoretical Basis of Consumer Behavior, Sensory Evaluation, and Value Chain in Chili Paste Marketability

This study is grounded in four complementary theories explaining marketability and product adoption. Consumer Behavior Theory explains how cultural, social, personal, and psychological factors influence purchasing decisions, guiding the analysis of demographics, consumption habits, and purchase intent (Engel, Blackwell, and Miniard, 1995). Sensory Evaluation Theory provides a framework for assessing product acceptability based on sensory attributes such as appearance, aroma, taste, texture, and spiciness, which directly affect consumer satisfaction and repeat purchases (Lawless and Heymann, 2010). Value Chain Theory emphasizes the importance of transforming raw products into higher-value goods to improve competitiveness and income, supporting the development of chili paste as a value-added product (Porter, 1985). Diffusion of Innovation Theory explains how new products are adopted based on perceived benefits, compatibility, and ease of use, relevant to encouraging farmers and consumers to embrace chili paste production and consumption (Rogers, 2003).

1.5 Research Gaps on Chili Paste Marketability and Need for BSBA Extension Services in Apayao

Despite strong consumer demand for chili-based products and the known benefits of spices, there is limited research on the marketability of locally produced chili paste in Apayao. Existing practices focus primarily on selling raw agricultural products, overlooking opportunities for value addition and income diversification. There is also a lack of localized data on consumer preferences, sensory acceptability, pricing strategies, and marketing approaches specific to chili paste products in the region. Additionally, limited integration of extension services in product development restricts farmers' ability to innovate and access broader markets. This study addresses these gaps by assessing consumer behavior, product acceptability, and market potential, providing a basis for evidence-driven extension programs and sustainable livelihood development.

1.6 Alignment of Chili Paste Marketability Study with Relevant Sustainable Development Goals (SDGs)

This study aligns with several Sustainable Development Goals: SDG 8 – Decent Work and Economic Growth: By promoting value-added chili paste production, the study supports income generation and livelihood improvement for local farmers. SDG 12 – Responsible Consumption and Production: The research encourages efficient use of agricultural resources through processing and reducing post-harvest losses. SDG 2 – Zero Hunger: Enhancing agricultural productivity and food processing contributes to food security and improved nutrition. SDG 9 – Industry, Innovation and Infrastructure: The study supports local innovation in food processing and value chain development. These alignments demonstrate the study's contribution to sustainable agricultural and economic practices.

1.7 Importance of Chili Paste Marketability Study to Multidisciplinary Sustainability and Community Development

The study contributes to socio-economic sustainability by enabling farmers to increase income through value-added production and improved market access. It supports community sustainability by strengthening local agricultural systems and promoting inclusive economic participation in rural areas such as Apayao. From a technological and innovation sustainability perspective, the research encourages the adoption of food processing techniques and product development

aligned with market demands. Additionally, it contributes to institutional sustainability by informing BSBA extension services, enabling evidence-based programs that enhance farmer skills, entrepreneurship, and long-term economic resilience. Overall, the study integrates agricultural development, consumer behavior, and market innovation to promote sustainable rural livelihoods.

2. Material and methods

2.1 Research Design

The study employs a descriptive research design integrating both quantitative and qualitative approaches. Quantitative data are collected through surveys and sensory evaluation to obtain measurable information on consumer characteristics, behaviors, and preferences. Qualitative data are gathered through open-ended questions to capture suggestions and opinions. This design is appropriate for describing marketability and identifying areas for product improvement.

2.2 Locale of the Study

The study is conducted in selected municipalities in the Province of Apayao, particularly in areas with potential consumers of locally produced chili paste and communities with chili farmers and local producers, such as Kabugao and Conner.

2.3 Respondents of the Study

The respondents consist of potential consumers, farmers, and producers of locally produced chili paste in the Province of Apayao.

2.4 Sample and Sampling Procedure

Participants are selected from identified communities in Apayao where both consumers and chili producers are present. The sampling focuses on individuals who are relevant to the study, including those who consume chili products and those involved in chili production and processing.

2.5 Research Instrument

The primary research instrument is a structured questionnaire designed in alignment with the study objectives. It includes sections that gather demographic information, consumption habits, and product familiarity. It also incorporates a sensory evaluation component using a 9-point Hedonic Scale to assess appearance, aroma, taste, texture, spiciness, and overall liking. In addition, the instrument measures product acceptability and purchase intent, including willingness to pay, and identifies marketing and distribution preferences. It also collects suggestions for product improvement. To ensure reliability and validity, the questionnaire undergoes expert validation and pre-testing prior to data collection.

2.6 Data Gathering Procedure

Data collection begins with securing approval from relevant authorities and obtaining consent from respondents. Questionnaires are then distributed to selected participants with clear instructions, particularly for the sensory evaluation component. Sensory testing sessions are conducted where respondents taste the chili paste and evaluate it using the 9-point Hedonic Scale. After completion, the questionnaires are collected and reviewed to ensure completeness before analysis.

2.7 Data Analysis Techniques

The collected data are analyzed using descriptive statistics, including frequency counts, percentages, means, and standard deviations. These are used to summarize respondent profiles, consumption habits, sensory evaluation results, product acceptability, and marketing preferences. Mean scores from the 9-point Hedonic Scale are computed to determine the level of product acceptability across sensory attributes. Willingness to pay is analyzed using frequency and percentage distributions based on price ranges. The results are organized and interpreted to address the study objectives.

3. Results and Discussion

3.1 Consumer Profile, Behavior, and Product Evaluation

3.1.1 Demographic Characteristics of Respondents

The study involved 50 respondents, with the majority belonging to the 40–50 age group (44%) and 30–40 age group (40%), while younger (18–30) and older (50 and above) groups each comprised 8%. Male respondents accounted for 62%, while females comprised 38%. In terms of occupation, employed individuals represented 30%, followed by unemployed (24%), self-employed (22%), students (16%), and retirees (8%). Regarding income, 36% earned ₱15,000 and above, 32% earned ₱5,000 and below, while the rest fell within ₱8,000–₱10,000 (18%) and ₱5,000–₱8,000 (14%). Most respondents cooked regularly, with 70% cooking several times a week and 30% cooking daily. These findings indicate that the market is largely composed of middle-aged, predominantly male, and economically diverse consumers who regularly prepare food at home. This suggests a stable and consistent demand for condiments like chili paste, while also emphasizing the need for segmented marketing strategies that consider income variability and lifestyle differences.

3.1.2 Consumption Habits and Brand Preferences

The results show that 64% of respondents use chili paste daily, 26% several times weekly, and 10% weekly, indicating frequent consumption. In terms of purchasing locations, 50% buy from local markets, 26% purchase online, 20% from sari-sari stores, and 4% make their own chili paste. Brand preference is nearly evenly divided, with Mitchili at 52% and KIMCHILI at 48%. These findings suggest that chili paste is a staple product with strong and consistent demand. The dominance of local markets highlights their importance as primary distribution channels, while the significant share of online purchases reflects growing digital consumption trends. The close competition between brands indicates opportunities for differentiation and targeted marketing to influence brand switching behavior.

3.1.3 Sensory Acceptability of Chili Paste

The sensory evaluation results show high acceptability across all attributes. Appearance and spiciness both received mean scores of 7.64, aroma scored 7.80, taste and overall liking scored 8.00, and texture received the highest score of 8.18, all corresponding to “Like very much” to “Like extremely.” These results indicate that the product meets consumer expectations in terms of sensory quality, with texture being the strongest attribute. The consistently high ratings suggest strong potential for customer satisfaction and repeat purchases, as sensory appeal plays a critical role in food preference and product loyalty.

3.2 Product Acceptability and Market Potential

3.2.1 Product Acceptability and Purchase Intention

Respondents expressed strong agreement across all indicators of product acceptability. The intention to buy the product if available in usual stores recorded a mean of 4.54, while willingness to recommend, perceived price fairness, and packaging attractiveness each scored 4.76. Preference over existing brands scored slightly lower at 4.24, but still within the “Strongly Agree” range. These findings indicate a high level of consumer acceptance and readiness to purchase the product. Positive perceptions of quality, price, and packaging suggest strong market competitiveness, while the slightly lower preference over existing brands indicates the presence of brand loyalty that may require targeted marketing efforts to overcome.

3.2.2 Purchase Intent of Consumers

The results show that 74% of respondents indicated they would definitely buy the product, 24% would probably buy, and only 2% were undecided. This demonstrates an overwhelmingly positive purchase inclination, with 98% of respondents showing favorable intent. The high level of certainty suggests strong alignment between the product and consumer preferences, indicating readiness for market entry and potential for sustained demand.

3.2.3 Willingness to Pay Across Product Sizes

For a 50-g bottle, 98% of respondents are willing to pay ₱50–₱100. For a 100-g bottle, 84% prefer ₱100–₱150, while 16% prefer ₱50–₱100. For a 150-g bottle, 84% are willing to pay ₱150–₱200, and 16% prefer lower price ranges. Similarly, for a 200-g bottle, 84% prefer ₱150–₱200, while 16% opt for ₱100–₱150. These findings indicate strong consumer willingness to pay mid-to-high price ranges, with consistent pricing patterns across product sizes. This suggests that consumers perceive the product as valuable and are willing to pay more for larger quantities, providing opportunities for tiered pricing strategies that balance affordability and profitability.

3.3 Marketing and Distribution Preferences

3.3.1 Consumer Preferences for Distribution and Promotion

The results show that respondents strongly agree that labeling information influences purchasing decisions, with a mean score of 5.00. Social media promotion also received a high mean of 4.98, while willingness to purchase from nearby sari-sari stores and preference for locally produced products both recorded means of 4.68. These findings indicate that consumer decisions are strongly influenced by product transparency, accessibility, and promotion. Clear labeling enhances trust, while social media serves as an effective platform for awareness and engagement. The preference for local products and nearby retail availability highlights the importance of community-based distribution and culturally relevant branding strategies.

4. Conclusion & Recommendations

This study examined the marketability of locally produced chili paste in Apayao and found that the target market is primarily composed of middle-aged, predominantly male consumers with varied income levels who regularly cook at home. Chili paste is widely consumed as a staple condiment, commonly purchased from local markets, online platforms, and sari-sari stores. The product demonstrated high sensory acceptability across all attributes, indicating strong consumer satisfaction. Results further revealed high product acceptability, strong purchase intention, and positive perceptions of price and packaging. Consumers also showed a high willingness to pay across different product sizes, reflecting strong perceived value. Marketing and distribution findings emphasized the importance of accessibility, product visibility, and consumer-

oriented improvements, while also highlighting the need for farmer support and extension services to enhance production and marketability.

Based on the findings, it is recommended that the BSBA program implement targeted marketing strategies focusing on the identified consumer segments and promote chili paste as a staple product aligned with local preferences. Product development should be enhanced by improving flavor, spiciness options, texture, and packaging design, including the introduction of multiple size options and eco-friendly features. Pricing strategies should remain flexible to accommodate different income levels while maintaining perceived value. Distribution channels should be expanded to include convenience stores, grocery outlets, and online platforms to increase accessibility. Additionally, training and support programs should be provided to farmers and local producers to improve production quality, packaging, and marketing skills, while community-based extension services should be strengthened to sustain innovation and improve income opportunities.

The study is limited to a sample of respondents within selected municipalities in Apayao, which may not fully represent the broader market. The findings are based on self-reported data and sensory evaluation conducted within the study setting, which may be influenced by individual preferences and situational factors. Additionally, the focus on descriptive analysis limits the ability to establish causal relationships among variables.

Compliance with ethical standards

The study was conducted following standard research procedures to ensure ethical integrity. Approval was secured from relevant authorities prior to data collection, and participants were informed about the purpose of the study. Participation was voluntary, and respondents provided their consent before completing the survey and participating in the sensory evaluation. All data collected were handled with confidentiality and used solely for research purposes.

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