

# Packaging Development of Bangchang Chili Paste in Bangchang Community, Amphawa District, Samut Songkhram

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## ABSTRACT

This research aimed to 1) study the relationship between demographic characteristics and chili paste's trade label management, 2) study the relationship between chili paste's trade label management and consumer satisfaction, 3) analyze the packaging style and product shelf-life that related to chili paste's trade label management, and 4) analyze the ability to explain variations in the packaging style, product shelf-life, chili paste's trade label management, and consumer satisfaction. The research target group was 385 consumers and tourists in Bangchang Community, Amphawa District, Samut Songkhram Province, randomized by a snowball approach. To analyze our data to determine the results, we employed descriptive statistics, inferential statistics, Pearson's product-moment, correlation, chi-square, and multiple regression analysis. The study found that the demographic characteristics of gender, age, educational background, and occupation were a positive indicator for chili paste's trade label management. We also found that the chili paste's trade label management was related to the consumer's satisfaction, and 49% of all consumers will be satisfied. Besides, 50% of all packaging styles and 49% of products' shelf-life were related to the chili paste's trade label management, respectively. 55% of all could explain the variance of consumer's satisfaction at significance level 0.05. Our research findings can contribute to sustainable packaging innovations that allow community members to participate in the product design and promote sustainability.

**Keywords:** Satisfaction, packaging style, product shelf-life, trade label management

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## INTRODUCTION

Efficient packaging attracts consumers and influences their decision to buy a product. It allows producers to achieve their selling goal and benefit for product outcome. Improper packaging, conversely, reduces consumers' confidence in the product and decreases their interest in the product (Rojanabenjakun et al., 2021). Improper packaging poses a variety of problems for consumers. For instance, it may trigger consumers to consume dangerous food, as leakage or badly sealed containers may also cause contamination from fungi and mold. Thus, suitable packaging should have physical properties that can safely protect the inside product. Good packaging must not change the flavor of the product and should be stable and compatible with the product inside. Additionally, suitable packaging should clearly indicate the nutritional and informative food details for the consumers (Pranee, 2013). Moreover, producers should use local materials for packaging (Buaclee, 2018), which will promote sustainability for local people and increasingly attract consumers' interest (Chiawchan, 2014). Ultimately, because good packaging influences consumers' decision to purchase the product, when producers consider effective means of attracting customers, they must consider not only quality of the product, but also suitable packaging (Dowduen, 2014).

In Thailand, "Nam Prik" or chili paste is a famous product that most families consume. Thai people regularly consume Nam Prik, and we have many variations of Nam Prik across the country. For instance, in Northern Thailand, people eat Nam Prik Ong (spicy Northern paste with pork and tomatoes). In Northeastern Thailand, people eat Nam Prik Pla-ra (spicy chili paste with fermented fish) and Nam Prik Kong Pon (spicy dried shrimp chili paste). In central Thailand, people eat Nam Prik Kapi (spicy shrimp paste) and Nam Prik Ma Khram

(spicy tamarind paste). In the South, people eat Nam Prik Kong Sieb (Phuket style spicy dried shrimp chili paste), Nam Prik Ra Kam (spicy snake fruit chill paste), and Nam Prik Pao (spicy roasted chili paste). Therefore, it is evident that although each region has different food and taste characteristics, they commonly use Nam Prik.

In this research, we focused on Nam Prik and a famous dish in the lower central region of Thailand, specifically in the Bangchang Community in Amphawa District, Samut Songkhram Province. The researchers observe that a local-style chili paste in the Bangchang Community is a unique product with an outstanding taste. Local people in the Bangchang community perceive this product very highly. The recipe has been continuously updated and improved over the course of the past 120 years and has become an OTO product (One Tambon, One Product) of Samut Songkhram due to its popular taste. However, despite the high-quality of the product itself and its highly liked taste, the packaging in a present market is not great. Its design is outdated and fails to keep the product safe. Thus, to achieve greater product success in the market, it would be beneficial to promote this product with a better packaging design. For instance, producers should create packaging with an attractive outer container and other beneficial properties such as extended shelf-life duration extension that prevents odor, color, fungi, insects, and flavor changes. The design should be more suitable to the product, easy to use, and clearly declare nutrition information, and the FDA mark. This product development will increase Nam Prik's value, build a better product image, and stimulate its cognition in the Bangchang community.

The researchers see that product development for Bangchang chili paste is necessary to help spread this product's popularity; therefore, the researchers want to develop the unique packaging for this community.

**OBJECTIVES**

1. To study the relationship between demographic characteristics and chili paste's trade label management.
2. To study the effect of chili paste's trade label management on consumer satisfaction.
3. To analyze the relationship between packaging style, product shelf-life, and chili paste's trade label management.
4. To analyze the variations in packaging style, product shelf-life, trade label management, and consumer satisfaction.

**HYPOTHESES**

1. Chili paste's trade label management affects consumers differently based on their demographic characteristics of gender, age, educational background, income, and occupation are related to chili paste's trade label management.
2. Chili paste's trade label management affects consumer satisfaction.
3. Packaging style and product shelf-life are related to the chili paste's trade label management.
4. Packaging style, product shelf-life, and trade label management can explain the variance of consumers' satisfaction.

**METHODOLOGY**

This research employed a quantitative approach to study 1) the relationship between demographic characteristics and chili paste's trade label management, 2) chili paste's trade label management towards consumer satisfaction, 3) packaging style and product shelf-life as related to trade label management, and 4) the ability to explain the variations in packaging style, product shelf-life, trade label

management, and consumer satisfaction. The target group was 385 consumers and tourists in Bangchang Community, Amphawa District, Samut Songkhram who consumed Bangchang chili pastes. Snowball sampling was using to collect data. Research was conducted between October 2020 and December 2020.

**DATA ANALYSIS**

The research used descriptive statistics such as percentage, mean, and standard deviation to analyze the relationship between demographic characteristics and trade label management. The study also referred to multiple regression analysis methods to analyze trade label management with consumer's satisfaction, packaging style, and product shelf-life related to trade label management. Inferential statistics, Pearson's product-moment correlation coefficient, and regression coefficient were used to analyze the ability to explain variations in packaging style, product shelf-life, trade label management, and consumer satisfaction.

**RESULTS**

The majority of participants were female (82.1%) aged between 51-60 years old (21.8%). Most of them were business owners (35.8%). 40.8% had a bachelor's degree and 38.4% earned at least 25,000 Baht per month in income. The results revealed that the majority of participants strongly they agreed with the packaging style, which should keep the product safe to eat for a more extended time ( $\bar{x}$ =4.52). In terms of trade label design, the majority also strongly agreed that a brand logo should be unique and easy to remember ( $\bar{x}$ =4.70). In terms of product shelf-life, the participants strongly agreed that packaging should not affect product flavor ( $\bar{x}$ =4.70).

**Table 1.** Descriptive statistics of level of agreement in packaging development (N=385)

Packaging development	$\bar{x}$	S.D.	Result
<b>1. Packaging style</b>			
1.1 Suitable size	4.42	1.32	Strongly agree
1.2 Strong and protective	4.49	1.22	Strongly agree
1.3 Keeps the product safe to eat for longer period of time	4.52	1.17	Strongly agree
1.4 Sealed to prevent accidental opening	4.53	1.27	Strongly agree
<b>2. Trade label design</b>			
2.1 Trade label colors are distinctive and attractive	4.59	1.31	Strongly agree
2.2 Brand logo is unique and easy to remember	4.70	1.27	Strongly agree
2.3 Contains complete and accurate nutritional information	4.60	1.36	Strongly agree
2.4 Put Thai FDA certifications on the label to build consumer trust	4.49	1.35	Strongly agree
2.5 Contains a warning for food allergies	4.66	1.14	Strongly agree
2.6 Indicates manufactured date and expiry date	4.69	1.18	Strongly agree
<b>3. Product shelf-life</b>			
3.1 Prevents odor and color	4.58	1.21	Strongly agree
3.2 Does not affect product flavor	4.70	1.09	Strongly agree
3.3 Protects product from any damage	4.64	1.27	Strongly agree
3.4 Prevents water, humidity, gas, and insects from contaminating product	4.52	1.18	Strongly agree
3.5 Extends product shelf-life from 30 days to 50 days	4.38	1.18	Strongly agree

Table 1 shows that the targeted respondents strongly agreed with the importance of an efficient packaging style that should keep the product safe to eat for an extended time ( $\bar{x}=4.52$ ). In terms of trade label design, the majority also strongly agreed with the statement that a brand logo

is unique should be easy to remember ( $\bar{x} =4.70$ ). Additionally, for product shelf-life, the respondents strongly agreed with the idea that packaging should not affect product flavor ( $\bar{x}=4.70$ ).

**Table 2.** Descriptive statistics of satisfaction level of packaging development (N=385)

Packaging development	$\bar{x}$	S.D.	Result
<b>1. Packaging design</b>			
1.1 Colorful distinguished label	4.48	1.25	Very satisfied
1.2 Unique font	4.40	1.24	Very satisfied
1.3 Brand logo harmonizes with packaging	4.56	1.17	Very satisfied
<b>2. Packaging attractiveness</b>			
2.1 Advertising text on trade labels encourages consumers to come back and buy again	4.58	1.25	Very satisfied
2.2 Outstanding packaging compared to competitors	4.72	1.23	Very satisfied
2.3 Can be used as a souvenir for festive seasons	4.54	1.28	Very satisfied
<b>3. Packaging properties</b>			
3.1 Quality of the product is safe for consumption	4.58	1.22	Very satisfied
3.2 Filling size is reasonable	4.62	1.24	Very satisfied
3.3 Can be opened and eaten easily	4.69	1.22	Very satisfied

Table 2 shows that the majority of participants were satisfied by the packaging of the chili paste. Most of the respondents were very satisfied with brand logo is an important part of packaging in general ( $\bar{x}=4.56$ ). In terms of packaging attractiveness, the majority were very satisfied with packaging and found it to be outstanding compared to the competitors ( $\bar{x}=4.72$ ). In addition to the

packaging properties, most participants agreed with the statement that packaging should be easy to open and convenient to use ( $\bar{x} =4.69$ ). Moreover, the research indicated that the demographic characteristics of gender, age, educational background, income and occupation were associated with trade label management. See Table 3

**Table 3.** Correlation matrix (Pearson's product-moment correlation coefficient) of demographic characteristics and trade label management (N=385)

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13
<b>Demographic characteristic</b>	1												
Gender	0.00*	1											
Age	0.00*	0.00*	1										
Educational background	0.00*	0.79	0.00*	1									
Income	0.00*	0.26	0.00*	0.00*	1								
Occupation	0.00*	0.34	0.00*	0.23	0.00*	1							
Trade label colors are distinctive and attractive	0.00*	0.00*	0.00*	0.38	0.00*	0.01*	1						
Brand logo is unique and easy to remember	0.00*	0.00*	0.00*	0.87	0.63	0.00*	0.00*	1					
Complete and accurate nutritional information	0.00*	0.00*	0.00*	0.82	0.41	0.98	0.00*	0.00*	1				
Thai FDA certifications are on the label	0.02*	0.74	0.01*	0.35	0.29	0.03*	0.00*	0.00*	0.00*	1			
Contains a warning for food allergies	0.00*	0.00*	0.00*	0.21	0.10	0.09	0.00*	0.00*	0.00*	0.00*	1		
Indicates manufactured date and expiry date	0.07	0.00*	0.35	0.19	0.34	0.15	0.00*	0.00*	0.00*	0.00*	0.00*	1	
<b>Chili paste's trade label management</b>	0.00*	0.00*	0.00*	0.24	0.01*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	1

Note: 1 = Demographic characteristic  
 2 = Gender  
 3 = Age  
 4 = Educational background  
 5 = Income  
 6 = Occupation  
 7 = Trade label colors are distinctive and attractive

8 = Brand logo is unique and easy to remember  
 9 = Complete and accurate nutritional information  
 10 = Thai FDA certifications are on the label  
 11 = Contains a warning for food allergies  
 12 = Indicates manufactured date and expiry date  
 13 = Chili paste's trade label management

**Table 4.** Regression coefficients of predicted variables and statistics of the trade label management towards the consumer's satisfaction (N=385)

Measure	Unstandardized Coefficients		Standardized Coefficients	t	p-value
	B	Std. Error	Beta		
Constant	1.60	0.18		8.69	0.00
Trade label colors are distinctive and attractive	- 0.07	0.04	- 0.11	- 1.57	0.11
Brand logo is unique and easy to remember	0.35	0.02	0.57	13.75	0.00*
Complete and accurate nutritional information	- 0.11	0.04	- 0.18	- 2.48	0.01*
Thai FDA certifications are on the label	0.21	0.04	- 0.29	- 5.06	0.00*
Contains a warning for food allergies	- 0.02	0.04	- 0.031	- 0.53	0.59
Indicates manufactured date and expiry date	- 0.16	0.04	- 0.23	- 3.71	0.00*

Note: *p*-value <0.05, R=.70, R<sup>2</sup>=.49, F= 61.435

Table 4 indicates that the regression correlation coefficient equated .70, which implies that 49% could predicted variables of trade label management could explain the variance of consumer satisfaction. The results indicate that the lists of packaging as follows were supported Hypothesis 2 at the level of statistical significance 0.05. The brand logo was unique and easy to

remember and the packaging contained accurate nutritional information. Additionally, the packaging showed Thai FDA certifications on the label to build consumer trust and indicated the manufactured date and expiry date. These results support Hypothesis 2, which postulates that the chili paste's trade label management affects consumer satisfaction.

**Table 5.** Regression coefficients of predicted variables and statistics of packaging style towards the chili paste's trade label management (N=385)

Measure	Unstandardized Coefficients		Standardized Coefficients	t	p-value
	B	Std. Error	Beta		
Constant	2.08	0.15		13.839	0.00
Suitable size	0.17	0.02	0.27	6.27	0.00*
Strong and protective	0.14	0.03	0.21	4.61	0.00*
Keeps the product safe to eat for longer period of time	0.05	0.03	0.08	1.78	0.07
Sealed to prevent accidental opening	0.18	0.03	0.29	6.373	0.00*

Note: *p*-value <0.05, R=.68, R<sup>2</sup>=.50, F= 79.56

Table 5 reported that the regression correlation coefficient equated .68, which implied that 50% could predicted variables of the packaging style could predict the variance of chili paste's trade label management. The results specified that packaging that has a suitable size, is strong

and protective, and sealed to prevent accidental openings were related to chili paste's trade label management at the level of statistical significance 0.05. This supports Hypothesis 3.

**Table 6.** Regression coefficients of predicted variables and statistics of product shelf-life towards the chili paste's trade label management (N=385)

Measure	Unstandardized Coefficients		Standardized Coefficients	t	p-value
	B	Std. Error	Beta		
Constant	1.44	0.17		8.49	0.00
Prevents odor and color	0.19	0.02	0.29	7.55	0.00*
Does not affect product flavor	0.13	0.02	0.18	4.70	0.00*
Protects product from any damage	0.12	0.02	0.17	4.27	0.00*
Prevents water, humidity, gas, and insects	0.11	0.02	0.17	4.07	0.00*
Extends product shelf-life from 30 to 50 days	0.14	0.02	0.21	5.38	0.00*

Note: *p*-value <0.05, R=.70, R<sup>2</sup>=.49, F= 73.22

Table 6 reports that the regression correlation coefficient equated .70, which implied the predicted variables of the product's shelf-life could predict the variance of chili paste's trade label management, accounting for 49%. The results specified that packaging that prevents odor, color,

water, humidity, gas, and insects, does not affect product flavor, protects the product from any damage, and extends its shelf-life from 30 to 50 days is related to chili paste's trade label management at the level of statistical significance 0.05, which supports Hypothesis 3.

**Table 7.** Regression coefficients of predicted variables and statistics of packaging style, product shelf-life, and chili paste’s trade label management toward consumer satisfaction (N=385)

Measure	Unstandardized Coefficients		Standardized Coefficients	t	p-value
	B	Std. Error	Beta		
Constant	0.86	0.17		4.81	0.00
Packaging style	0.23	0.04	0.26	5.52	0.00*
Product shelf-life	0.31	0.05	0.30	5.82	0.00*
Chili paste’s trade label management	0.27	0.05	0.26	5.31	0.00*

Note: *p*-value <0.05, R=.74, R<sup>2</sup>=.55, F= 155.00

Table 7 reports that the regression correlation coefficient equated .74, which implied the predicted variables of packaging style, product shelf-life, and trade label management could predict the variance of consumer satisfaction, accounting for 55% at the level of statistical significance 0.05. The results supported Hypothesis 4.

### CONCLUSION AND DISCUSSION

The majority of the participants in this study were females aged 51-60 who had a bachelor’s degree, worked as sellers or business owners, and earned around 25,000 Baht per month in income. The majority of participants were strongly agreed with they like the packaging style of the chili paste. Most of them strongly preferred packaging that could keep the product safe for an extended time, which an average score of 4.52. They also strongly preferred a trade label design that depicted a unique and easy to remember brand logo, with an average score of 4.70. The results in terms of product shelf-life also tended in the same direction; The majority strongly agreed that packaging should not affect product flavor with average score of 4.70. Demographic characteristics such as gender, age, educational background, income, and occupation were revealed with a positive result to chili paste’s trade label management. This result implied that chili paste’s trade label management could predict consumer satisfaction. Moreover, the packaging style related to chili paste’s trade label management and product shelf-life can describe the variance of consumer satisfaction at a level of significance 0.05.

#### Hypothesis testing

**Hypothesis 1** expected that demographic characteristics including gender, age, educational background, income, and occupation might be related to chili paste’s trade label management. Our research supported that these demographic characteristics, except educational background, positively affected chili paste’s trade label management. The research results were consistency with Buaclee (2018), who reported the participant’s communication process is related to label design, and the respondents were satisfied with all products created. However, the results indicated a negative relationship between educational background and chili paste’s trade label management, which did not support this hypothesis. **Hypothesis 2** calculated the regression coefficient .70, which supported that the predicted variables of trade label management could explain the variance of consumer satisfaction, accounted for 49%. The results noted that the brand logo was unique and easy to remember related to Steenkamp *et al.*, (1997), who assured consumer decision-making depended on different elements. Consumers

decided to choose a product from their gain information so that product information. Thus, the information should on the packaging should be clear and easy to remember and declared on the packaging label. The label should contain the complete and accurate nutritional information, feature the Thai FDA logo to build consumer trust, and show the manufactured date and expiry date, these results supported Hypothesis 2. The research is in line with that of Sophonratana (2003) and Jaijune (2014), who proved that a brand logo and brand image such as trade logo, trademark, quality assurance mark, and manufactured country effect to consumer’s decision-making.

**Hypothesis 3** also calculated the regression coefficient .68, which supported that the predicted variables of packaging style could explain the variance of chili paste’s trade label management, accounted for 50%. The results demonstrate that packaging style was related to chili paste’s trade label management. This is consistent with Praemanupan *et al.* (2004), who stated that a good product design should include a suitable size for a carry-on and the packaging should be strong and able to protect the inside product. Thus, the researcher should comprehend the structural packaging design and create such an interesting development. Additionally, the designed product should be properly sealed to prevent accident opening. These results supported Hypothesis 3. Apart from the regression coefficient, the predicted variables of product shelf-life can forecast trade label management. The result of packaging prevented odor and color was concerned with Luo *et al.*, (2019), who demonstrated that that colored packaging, especially red, would attract consumers. Packaging that prevented water, humidity, gas, insects, protected against damage, and did not affect the product’s flavor were significant at the significance level of 0.05. This result also supported Hypothesis 3.

**Hypothesis 4** analyzed regression coefficient .74 and supported that the predicted variables of packaging style, product shelf-life, and trade label management could explain the variance of consumer’s satisfaction, accounting for 55% at a significance level of 0.05. The results incorporated Chiawchan (2014)’s argument that the consumers were satisfied with the packaging design. These outcomes support Hypothesis 4 and coincided with Aaker (1991), suggesting that the product label is essential for consumer perception. These findings were in the same direction as Jaimun *et al.*, (2020), who stated that consumers’ satisfaction depended on having an outstanding logo and perfect color. This result was similar to Yuwadee (2013) who confirmed that consumer decision-making is dependent on picture presentation, including logo and trademark.

## RECOMMENDATION

According to this study, the majority of people in Bangchang Community, Amphawa District, Samut Songkhram Province were very satisfied with the packaging style, product shelf-life, and chili paste's trade label management of this product. These findings can serve to further develop packaging innovation that will attract more consumers to buy. The research also recommended that the seller adds more product channels and creates various flavors to support different consumer groups. This suggestion will help the seller increase income and community sustainability.

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## CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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