

Factors influencing the decision to purchase mackerel products from Si Vieng Thong Cold Room in Vientiane Capital, Lao PDR

Maitree Kittiwetcharak¹, Kamoltip Panyasit², Sup Amornpinyo³, Montri Singhavara⁴,
Supreeya Wangsathian⁵

1, 2, 3 Department of Business Administration, Faculty of Interdisciplinary Studies, KhonKaen University,
Thailand

4 Department of Economics, Faculty of Economics, Maejo University, Thailand

5 E&E Intelligence Unit, Electrical and Electronics Institute, Thailand

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Abstract: The purpose of this research is to examine the elements that influence people's decisions to purchase mackerel products from Si Vieng Thong Cold Room in Vientiane Capital, Lao PDR. The sample group was 400 people. Use questionnaires as a tool to collect data. Descriptive statistics were used to describe general information and buying behavior, and inferential statistics through the Logit Model were used to study the variables influencing the purchase of mackerel products. The study's findings revealed that most of the sample groups were females, between the ages of 21 and 40, with a bachelor's degree and a monthly wage ranging from less than 20,001 to 30,000 Baht. The reason for consuming mackerel the most is its delicious taste. Most forms of consumption require cooking first. The amount of consumption per person is about 1-2 baskets, with a frequency of about 2 weeks to consume mackerel. The time of consumption was mostly in the evening. In terms of the marketing mix (4 Ps), it was at a high level. As for the variables influencing the decision to buy mackerel products, age (AGE), income (INC), and marketing mix (4 Ps) were statistically significant.

Keywords: Mackerel buying behavior, Marketing mix, Consumption of mackerel, Logit Model

1. Introduction

Mackerel is a low-cost source of protein from the sea compared to other types of seafood that have high nutritional value, including protein and various minerals. Mackerel is a nutritious food. For 100 grams of mackerel, the nutritional information is as follows: Energy 262 kilocalories, Protein 24 grams, Total fat 18 grams, Cholesterol 75 milligrams, Sodium 83 milligrams, Potassium 401 milligrams, Vitamin A is 3.6% of the recommended daily intake; Vitamin C is 0.7% of the recommended daily intake; Calcium is 1.2% of the recommended daily intake; and Iron is 8.7% of the recommended daily intake (NESDC, 2022). Mackerel, scientifically known as Indo-Pacific Chub Mackerel, is a species of sea fish. They are often found in large schools at depths not exceeding 30 meters, with water temperatures not dropping below 17 degrees Celsius. They thrive in the Gulf region due to the favorable climate and abundant food sources.

Mackerel spawn twice a year, from February to March and from June to July. The primary spawning grounds in the Gulf of Thailand are in two major areas: the waters off Surat Thani Province and Mae Ramphueng Cape in Prachuap Khiri Khan Province. They prefer deeper seas for spawning. As the mackerel fry grow, they start swimming towards the coastal areas of the Gulf of Thailand. After six months, they become fully mature, and during this period, they can be caught by fishermen year-round. According to statistics from the Policy and Development Division of the Department of Fisheries, in the year 2020, a total of 15,225 tons of skipjack tuna were caught in the waters of Thailand, with an estimated value of 922,832,000 Baht. Due to its abundance in the Gulf of Thailand, skipjack tuna holds significant economic importance. It remains popular among Thai consumers and is widely used in Thai cuisine. Its nutritional value, especially its high protein content and various minerals such as calcium and iron, contribute to its popularity as a healthy and affordable seafood option. With changing environmental conditions and economic challenges, the fishing of skipjack tuna has become more difficult.

However, its popularity among consumers and its affordability continue to drive demand for this nutritious and delicious fish. As a result, skipjack tuna remains a significant component of Thai dietary preferences and contributes to the country's economic well-being in the current context (Sirichaiekwat, 2021).

Currently, due to the changing environment and economic downturn, the availability of mackerel has become scarcer. This, coupled with the economic challenges, has led to a decline in the mackerel sales business. However, mackerel remains a popular choice for consumption among consumers. Mackerel is highly regarded as a staple in Thai cuisine. It is available in various forms, including fresh and steamed. Mackerel is often deep-fried and enjoyed with spicy shrimp paste or used to make mackerel chili paste. Fresh mackerel is commonly used to make mackerel soup, which is rich in omega-3 fatty acids and helps reduce the risk of heart disease and stroke. It also lowers cholesterol and the inflammation mentioned above, maintaining healthy blood thickness. Mackerel is an affordable source of nutrition and offers numerous health benefits. Given this information, the researcher is interested in studying factors influencing the decision to purchase mackerel products from Si Vieng Thong Cold Room in Vientiane Capital, Lao PDR.

2. Research objectives

To analyze factors that influence mackerel product purchases from Si Vieng Thong Cold Room in Vientiane Capital, Lao PDR.

3. Literature Review

There are 5 main theories for the concepts and theories used in the study, which are as follows: 1) Theories of demographic characteristics. 2) The theory of attitudes 3) Theoretical Consumer Behavior 4) Marketing mix theory, 5) Measurement concepts, and 6) Logit model.

3.1 Theories of demographic characteristics

According to Satawat (2003), people with various demographic features have distinct psychological qualities. The analysis was based on the following variables: gender, age, education, and socioeconomic status.

3.2 The theory of attitudes

According to Phanthumnawin (1981), attitude is a psychological variable that influences behavior more than other psychological traits like personality, motivation, and perception, resulting in a person acting adversely or favorably. As a result, a person is more inclined to respond in a specific manner to that person or scenario.

3.3 Theoretical Consumer Behavior

Solomon (1996) describes consumer behavior as "any activity of a purchaser that is directly connected to the selection, purchase, and usage of products and services." This includes the purchase decision process that directs or prescribes such action to satisfy the demand and needs of consumers.

3.4 Marketing mix theory

The Marketing Mix is a crucial component of marketing operations. It is a factor that the company can influence. Businesses must develop a marketing mix that may be used to design marketing initiatives (Sereerat, 2007). The marketing mix comprises of items (Product), distribution (Place), and pricing determination (Price). Advertising and marketing (Promotion) The marketing mix is also known as the 4Ps. These four components are all interconnected. Each of the Ps is equally essential. However, each marketing executive is responsible for developing a plan. By concentrating on which P is more important in order to satisfy the demands of the marketing goal, which is the purchaser.

3.5 The Measurement concepts

The concept of the Likert Scale (Likert, 1932) was used to analyze and measure attitudes and marketing mix. The following are the scoring criteria:

Table 1: Scores of Attitude Measurement Questions

Attitude level	Scores
Very Important / Strongly Agree	5
Important / Agree	4
Moderately Important / Undecided	3
Slightly Important / Disagree	2
Unimportant / Strongly Disagree	1

Source: Adapted from Butchanon (2015, p.17)

And there is an interpretive criterion derived from the mean when analyzing data related to opinions or attitudes, as shown in Table 2.

Table 2: Interpretation criteria

Mean	Interpretation
4.21-5.00	Very Important / Strongly Agree
3.41-4.20	Important / Agree
2.61-3.40	Moderately Important / Undecided
1.81-2.60	Slightly Important / Disagree
1.00-1.80	Unimportant / Strongly Disagree

Source: Ruangraphan, 1996

3.6 Logit Model

The logit model, also known as binary logistic regression analysis, is frequently used in different disciplines of study, including behavioral studies and decision-making. And this has led to broad use since binary logistic regression is a straightforward and understandable technique for assessing and interpreting findings. This involves determining the correlation between a single dependent variable and several independent variables. There are just 2 possible values for the dependent variable, 1 and 0, which represent the options to choose or not choose or buy or not buy. The independent variable utilized in the analysis might be either a quantitative or a qualitative variable, depending on the study. The following restrictions apply to this type of study nonetheless:

- 1) Survey tolerances must be independent of each other (independence of errors).
- 2) The dependent variable has a linear relationship with the logical function of the continuous independent variable.
- 3) Independent variables are not related or do not cause multicollinearity.
- 4) Binary logistic regression analysis requires a larger sample size (n) than normal regression analysis. The sample size is $n \geq 30p$, where p is the number of independent variables.

3.5.1 Logit model analysis

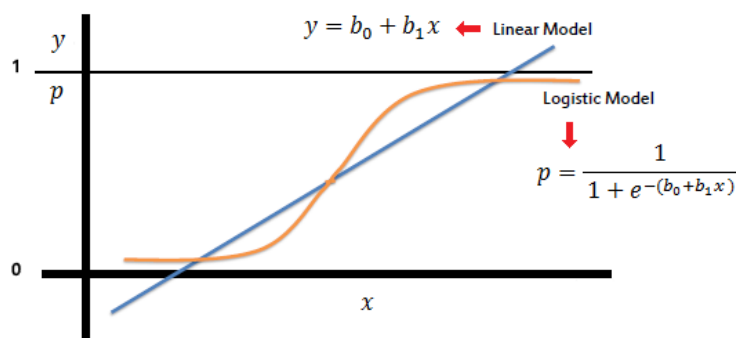


Figure 1. Logit model analysis

Source: Sayad (2023)

The analytical properties of the logit model graph are S-shape nonlinear. Because the distribution of data is in the range of 0 to 1, the relationship must be adjusted to be in a linear form using the odds ratio format, and the errors must be independent of each other (independent sampling). There is no problem with the independent variables X having a relationship together (multicollinearity) (Charoensit, 2017, pp.1-9).

4. Research Methodology

This study involved survey research, statistical analysis, and descriptive data presentation. The population and samples, tools used in the study, and data analysis are as follows:

4.1 Population and Sample

The population for this study consists of residents in the four districts, namely Champasak, Chitato, Sisattanak, and Sokkonthong, in Vientiane, Laos, totaling 336,292 individuals (Worldometers, 2023). For this reason, researchers used the Taro Yamane method (Yamane, 1973, p. 125) to generate a sample size that was representative of the population at a 95 percent confidence level. We obtained a total of 400 samples from the calculations.

4.2 Data Collection

The questionnaire was used as a research tool in this study. The questionnaire was divided into 2 parts: 1) personal data and behavior of the sample; and 2) information about attitudes toward the marketing mix. The second part was an attitude test with five levels (Likert scale) for each sub-topic (by selecting only one response). Therefore, it was necessary to develop a research tool by searching for content validity using the Item Consistency Index (IOC) of three experts. The evaluation's findings indicated that the value was not less than 0.50 but rather ranged from 0.67 to 1.00, so the questionnaire was found to be appropriate for usage (Turner and Carlson, 2003). And A sample of 30 individuals was used to examine the reliability of the questionnaire (reliability test). By setting the acceptance criteria for Cronbach's alpha coefficient at 0.70 or higher (Cronbach, 1951), the reliability test results were higher than 0.80.

4.3 Data Analysis

Inferential statistics were employed to evaluate factors influencing decisions to purchase mackerels using a logit model (Wiboonpong and Hemwanich, 2013, pp. 98–107), while descriptive statistics were used for analyzing general data. The equation used to study the factors influencing the decision to buy mackerel can be shown as follows:

$$Y_i^* = \beta_i'X_i + u_i$$

When Y_i^* is Dependent variable, X_i is Independent Variable and u_i is Disturbance term

Study variables and their details are displayed in Table 3

Table 3: Variables Used in the Study

Variables	Description
Dependent Variable (Y)	
Purchase decision (BUY)	1: Buy, 0: Not Buy
Independent Variable (X)	
Gender (GEN)	1: Male, 2: Female
Age (AGE)	1: < 21 (Reference Group) 2: 21-30 3: 31-40 4: 41-50 5: 51-60 6: >60
Level of education (EDU)	1: Undergraduate (Reference Group) 2: Bachelor's degree 3: Postgraduate
Income (INC)	1: < 10,000 Baht/Month (Reference Group) 2: 10,001-20,000 Baht/Month 3: 20,001-30,000 Baht/Month 4: 30,001-40,000 Baht/Month 5: > 40,000 Baht/Month
Occupation (OCC)	1: Government employee or State enterprise 2: Personal Business 3: Private company employees 4: Student 5: Others (Reference Group)
Marketing Mix (4Ps) - Product (P1) - Price (P2) - Place (P3) - Promotion (P4)	It is a value that ranges from 1 to 5. 1: Strongly Agree 2: Agree 3: Undecided 4: Disagree 5: Strongly Disagree

5. Result

5.1 The sample's general personal, economic, and social data.

Most of the samples were female, making up 62.50 percent, it was discovered that they were between the ages of 21 and 40. It finds possessing a bachelor's degree as their highest level of education, 61.00 percent. Students and Personal Business are the top two most common occupations, accounting for 31.50 percent and 29.00 percent, respectively. Their annual income ranges from 20,001 to 30,000 Baht per Month, with the highest percentage representing 36.75 percent (Table 4).

5.2 Information about the sample's behavior.

Regarding the sample group's behavior in selecting mackerel products, the study found that 70.25% buy the products for their own consumption, and the main reason for choosing to consume the products was the delicious taste, with 52.00% of respondents stating it. Most respondents (84.00%) preferred to cook the mackerel

before consumption. When it comes to consumption numbers, 37.50% of respondents consumed mackerel in 1-2 baskets per time, and 39.75% consumed it every 2 weeks. Moreover, 71.75% of respondents preferred consuming mackerel in the evening compared to the morning and noon (Table 4).

5.3 The marketing mix that influences mackerel products.

The research on the marketing mix of the decision-making process was separated into four factors using the 4 Ps marketing mix approach: product, price, location, and promotion. total market mix for mackerel products, with a mean of 4.020 (S.D. = 0.594). When this part was separated by aspect, the product side had the greatest average of 4.324 (S.D. = 0.684), followed by the pricing side with an average of 3.998 (S.D. = 0.837), and the promotion side with the lowest average of 3.728 (S.D. = 0.857). The samples were found to be positive about the marketing mix that influences Mackerel Product as a whole (Table 5).

Table 4: Demographic characteristics of respondents.

Demographic characteristics	Number	Percentage
1. Gender		
Male	150	37.50
Female	250	62.50
Total	400	100.00
2. Age group (years)		
< 21	35	8.75
21-30	158	39.50
31-40	94	23.50
41-50	62	15.50
51-60	42	10.50
> 60	9	2.25
Total	400	100.00
3. Education		
Undergraduate	77	19.25
Bachelor's degree	244	61.00
Postgraduate	79	19.75
Total	400	100.00
4. Income (Baht per month)		
< 10,000	66	16.50
10,001-20,000	121	30.25
20,001-30,000	147	36.75
30,001-40,000	53	13.25
> 40,000	13	3.25
Total	400	100.00
5. Occupation		
Government employee or State enterprises	74	18.50
Personal business	126	31.50
Private company employees	79	19.75
Student	116	29.00
Other	5	1.25
Total	400	100.00
6. Behavior in selecting mackerel products. (Chooses Buy)		
Buy	281	70.25
Not Buy	119	29.75
Total	400	100.00

Table 4: Demographic characteristics of respondents. (Cont.)

Demographic characteristics	Number	Percentage
7. Reasons for choosing to consume mackerel.		
Delicious taste	208	52.00
Useful	116	29.00
Easy to buy	76	19.00
Total	400	100.00
8. Types of eating mackerel.		
Take it to eat.	61	15.25
Cook (fry, roast, boil)	336	84.00
Other	3	0.75
Total	400	100.00
9. Number of mackerel eaten each time. (basket)		
1-2	150	37.50
3-4	140	35.00
5-6	110	27.50
Total	400	100.00
10. Frequency of consumption for mackerel.		
Every week	101	25.25
Every 2 weeks	159	39.75
Every month	140	35.00
Total	400	100.00
11. Time of the Day for consumption.		
Morning	29	7.25
Noon	82	20.50
Evening	287	71.75
Other	2	0.50
Total	400	100.00

Table 5: Attitude information of the sample group

Attitude	Mean	S.D.	Meaning
1.Marketing Mix Attitudes Overview	4.020	0.594	Important
2.Marketing Mix Attitudes (Product)	4.324	0.684	Very Important
3.Marketing Mix Attitudes (Price)	3.998	0.837	Important
4.Marketing Mix Attitudes (Place)	3.964	0.757	Important
5.Marketing Mix Attitudes (Promotion)	3.728	0.857	Important

5.4 Factors Influence Purchasing Decisions

Table 6: Estimated Parameters of Factors Influencing Purchasing Decisions (Logit Model)

Variables	Coefficient	Standard Error	P-value	Marginal effect
Constant	0.053	1.492	0.166	-
Gender	-0.002	0.131	0.123	-0.004
Age (> 60 years) ¹				
< 21 years	-1.471*	1.047	0.094	-0.345
21-30 years	0.047**	0.923	0.045	0.095
31-40 years	0.278**	0.928	0.039	0.055
41-50 years	0.091**	0.936	0.039	0.019

51-60 years	0.381*	0.984	0.087	0.073
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Table 6: Estimated Parameters of Factors Influencing Purchasing Decisions (Logit Model) (Cont.)

Variables	Coefficient	Standard Error	P-value	Marginal effect
Level of education (Undergraduate) ¹				
Bachelor's degree	0.2835	0.613	0.675	0.058
Postgraduate	-0.34671	0.368	0.875	-0.070
Income (< 10,000 Baht per month) ¹				
10,001-20,000 Baht per month	0.910*	0.882	0.094	0.162
20,001-30,000 Baht per month	1.145**	0.728	0.041	0.211
30,001-40,000 Baht per month	1.076	0.659	0.145	0.207
> 40,000 Baht per month	0.782	0.676	0.654	0.141
Occupation (Other) ¹				
Government employee or State enterprises	-0.170	0.555	0.765	-0.035
Personal business	-0.022	0.329	0.534	-0.005
Private company employees	-0.533	0.360	0.298	-0.117
Student	-0.345	0.387	0.781	-0.098
Marketing Mix (4Ps)				
Product (P1)	0.786**	0.207	0.046	0.159
Price (P2)	1.460**	0.197	0.023	0.349
Place (P3)	1.126*	0.195	0.065	0.226
Promotion (P4)	1.729*	0.162	0.075	0.512
No. observations	400			
Log likelihood function	-230.176			
Pseudo R ²	0.273			
AIC	1431.256			
BIC	1466.887			
Hosmer & Lemeshow	0.456			

Note: *, **, *** are statistically significant at 0.01, 0.05 and 0.1, respectively.

From Table 6, which shows the factors that affect the purchase of mackerel products, it is found that age affects the purchase of mackerel products. It was found that older age groups tended to buy mackerel products. In terms of income, it was found that those earning between 10,000 and 30,000 baht per month spent more on fish products. And finally, every aspect of the marketing mix affects the purchasing decisions for mackerel products. All the above are statistically significant.

6. Conclusion

In the overview of the article, there is a study of factors affecting the decision to buy mackerel products from Si Vieng Thong Cold Room in Vientiane Capital, Lao PDR. The study found that most of the subjects were female, aged between 21 and 40, with a bachelor's degree. Their income ranged from less than 20,001 to 30,000 baht per month. The reason for consuming mackerel the most is its delicious taste. Most forms of consumption require cooking first. The amount of consumption per person is about 1-2 baskets, with a frequency of about 2 weeks to consume mackerel. In terms of the marketing mix (4Ps), it was at the high level. The time of consumption was mostly in the evening. The factors that affect the decision to buy jewelry are age (AGE), income (INC), and marketing mix (4Ps), with statistical significance.

7. Suggestions for further research

7.1 This study focuses solely on consumers in Vientiane Capital, Lao PDR. As a result, in future studies, the scope of the study should be extended and covered, for example, by surveying provincial areas. Consumers in each

location may differ, allowing us to learn about the thoughts or attitudes of a wider range of consumers.

7.2 Additional variables should be investigated. Behavioral variables, for example, may relate to the decision to purchase mackerel products. Social factors, economic factors, psychological factors, and technological factors must all be considered, and the knowledge gathered must be used to enhance or develop goods or services that better meet the needs of customers.

8. Acknowledgment Statement

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