

Factors Influencing Satisfaction of Using Food Delivery Service: A Case Study in Nakhon Ratchasima District, Nakhon Ratchasima Province, Thailand

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Abstract— During the outbreak of COVID-19, the city is locked down and restaurants have temporarily limited service, so food delivery service through various applications has become an essential channel. The competition among operators can be achieved by making customers satisfied with their services, which will lead to customer loyalty. This research aims to study the factors influencing food delivery service satisfaction with a case study of food delivery service in Mueang Nakhon Ratchasima District, Nakhon Ratchasima Province, Thailand. The online questionnaire was used to collect the data by simple random sampling method. Descriptive statistics were analyzed for a total dataset of 404 samples. Factor analysis was used to analyze the dataset before forecasting by the multiple linear regression method. The study found that there were 5 factors influencing food delivery service satisfaction, consisting of 3 marketing mix factors: Product (P1), Price (P2), and Personnel (P5), and 2 factors of the theory of technology acceptance include Perceived Ease of Use (T1) and Subjective Norm, at the significant level of 0.05. The results of this study are expected to be useful to food delivery application operators that can be used as a guideline to improve and develop their delivery services according to consumer needs and to help businesses compete in the food delivery market sustainably.

Index Terms—Food delivery service, marketing mix, multiple linear regression, satisfaction, technology acceptance

I. INTRODUCTION

Nowadays, the Thai global society is in the era of an economic system and digital society where the internet and digital technology are not the only tools used to support work, but the internet and digital technology have played a very important role in restructuring the activities of trade, service, and business. Operations using digital technology will lead to the development and creation of new business models and

innovations. For example, a startup business where entrepreneurs develop food delivery service platforms via online applications to respond to the needs of consumers with changing behavior as well as to prepare and adapt to changes in digital technology. Until the beginning of the year 2020, Thailand had an outbreak of the COVID-19 virus. As a result, the Thai government must take drastic measures to shut down businesses or temporarily limit the services of businesses, including the restaurant business that only has a buy-back channel. Therefore, food delivery service through various applications has become an essential channel for both restaurant business operators and consumers. Kasikorn Research Center (2020) [1] states that the volume of food delivery services through food delivery service platforms in the first half of 2020 has grown by about 150 percent compared to the same period in 2019. After the outbreak of the COVID-19 virus has eased. The Thai government has allowed various restaurant businesses to resume their operations. As a result, the volume of food delivery services via food delivery service platforms decreased compared to the early stage of the COVID-19 outbreak. However, it was still higher than before the outbreak of the COVID-19 virus. Kasikorn Research Center sees that the number of times using the food delivery service for the whole year 2020 will be 66 - 68 million times or a high increase of 78 - 84% compared to the year 2019. This is considered a continuous growth that attracts new food delivery service providers to compete in this service business and increase the competition of food delivery service providers. Currently, there are 4 main service providers, namely Grab Food, Get Food, Food Panda, and Line Man, with more competition to maintain and increase the business's market share. Each service provider has developed and improved its own service process to be more efficient, able to meet the needs of customers, and gain greater consumer satisfaction. The satisfaction of using the service will lead to the behavior of using the service repeatedly. This will result in loyalty to the service, turning into a positive relationship and returning regularly. Therefore, maintaining and increasing market share and competitiveness will be possible in the long term.

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This research focuses on what factors can indicate customer satisfaction with food delivery services. The scope of the study area is in Mueang Nakhon Ratchasima District, Nakhon Ratchasima Province, Thailand. The results of the study will be useful for entrepreneurs to use as a guideline to develop applications and create marketing strategies that can respond to the behavior of using food delivery services most effectively.

II. CONCEPTUAL FRAMEWORK FOR THE RESEARCH

This research reviewed the characteristics of food delivery application services and theories about satisfaction assessment of food delivery services. The conceptual framework of the research determined the factors that may affect food delivery services that consist of 2 main independent variables: marketing mix factor (7Ps) and technology acceptance factor (4Ts). The conceptual framework of the research has been defined as shown in Figure 1.

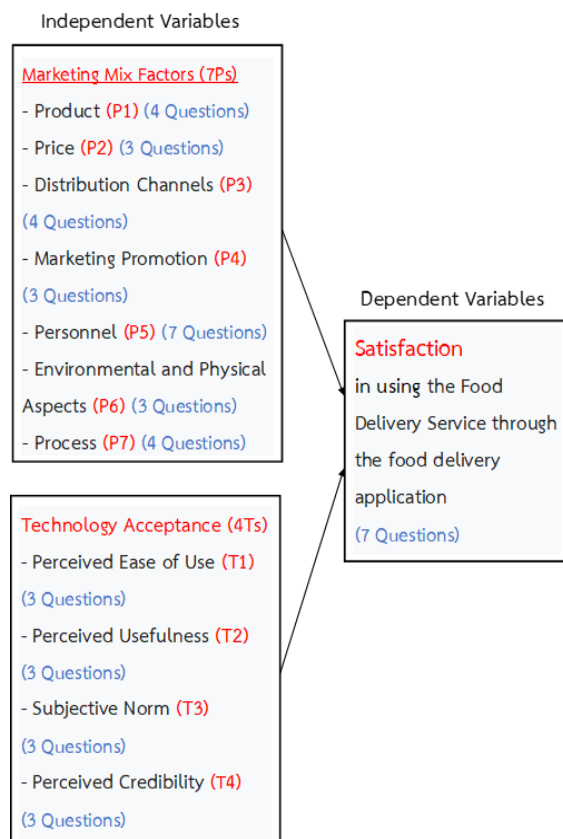


Fig. 1. Conceptual framework for the research

- **Marketing mix:** marketing management responds to the needs and satisfaction of consumers effectively. Marketers must truly understand the needs of consumers. Many scholars have discussed the meaning of the term marketing mix in many meanings; e.g. Kotler (1998)[2] marketing mix is a marketing tool that can be controlled. Business organizations often use it to meet the preferences and needs of their target consumers. In the past, the marketing mix consisted of 4 variables(4Ps): product (P1), price(P2), place or channel of product distribution(P3), and marketing promotion(P4). Later, it was developed by thinking of 3 additional variables (3Ps), namely

People(P5), Physical Evidence(P6), and Process(P7) in order to comply with important concepts in modern marketing especially in the service business as mentioned by [3]

- **Technology acceptance:** A study of theories and concepts of technology acceptance. The scholars discussed the theory and concept of technology acceptance. The meaning of technology acceptance is a psychological process for an individual person that starts from acknowledging news about innovation or technology until accepting that technology and using it openly. This process may take a slower or faster time depending on the essential factors, namely the person and the nature of the technology [4].

- **Satisfaction:** the theory and concepts of satisfaction, [5] define satisfaction as responding to basic human needs and reducing physical and mental stress. It is a state of feeling for a person who is happy, cheerful, and able to create a positive attitude towards a person towards one thing which will change according to their satisfaction with that [6] define satisfaction as the feeling that arises when a need is met with some degree of accomplishment. Similarly, [7] stated that satisfaction is a need-based incentive that is large enough to induce a person to act in response to his or her needs which differs from person to person.

III. METHODOLOGY

The study was conducted during the COVID-19 pandemic. The research was conducted using a survey method, distributing online questionnaires generated from literature reviews and research papers. A total of 426 respondents were selected by simple random sampling. The remaining 404 completed questionnaires were selected as data for the study. Factor analysis is used to group related independent variables into the same group. Later, the obtained data will be analyzed for correlation by multiple linear regression to prove which factors affect satisfaction. Questionnaires have passed the accuracy measurement with an IOC index of 0.50 or higher [8] A Cronbach's Alpha Coefficient of correlation is between 0.720 and 0.926 [9] The questions were evaluated on 5 levels according to Likert Scales: most agree, highly agree, moderately agree, least agree, and least agree. The criteria for scoring the opinion level are as most agree, equal to 5, strongly agree equal to 4, moderately agree equal to 3, agree less equal to 2, and least agree equal to 1.

A. Factor Analysis

It is necessary to verify the data used in the analysis according to the critical conditions that must be considered, namely:

- The variables selected for each component analysis must be correlated with each other. This can be verified with Barlette's Test of Sphericity statistics.
- The variables selected for each component analysis must be predictable with other variables without inconsistency. It can be verified with statistics Kaiser-Meyer-Olkin Measure of Sampling Adequacy

Table 1 shows that Bartlette's test of sphericity statistical test shows that Barlette's test of sphericity (P-value = 0.000) is statistically significant. Kaiser-Meyer-Olkin measure of sample adequacy values greater than 0.5 [10]. Therefore, it can be concluded that each variable has a relationship with each other and is suitable for further factor analysis.

TABLE I. RESULTS OF VALIDATING THE DATASET USED IN THE FACTOR ANALYSIS TECHNIQUE.

Variable	Bartlette's Test of Sphericity	Kaiser-Meyer-Olkin in Measure of Sampling Adequacy
Question items of the independent variable (40 questions)	<i>P-value = 0.000</i>	0.951
Question items of the dependent variable (7 questions)	<i>P-value = 0.000</i>	0.899

The result of the factor analysis, There are the remaining 3 factors include Product (P1), Price (P2), and Personnel (P5) from the 7Ps of the theory of marketing mix, and 2 factors include Perceived Ease of Use (T1) and Subjective Norm(T3) from 4Ts of the theory of technology acceptance. As for the component analysis of the 5 satisfaction variables, the question items were grouped with a good correlation in the factors.

B. Multiple Linear Regression Analysis

The multiple linear regression analysis was examined using Pearson correlation (p-value < 2.2e-16) to test whether the independent and dependent variables were linearly correlated. The variance inflation factor (VIF is 1.390 - 2.216) is not more than 10 and the tolerance is more significant than 0.10, with a tolerance of 0.451 to 0.719, explaining that the independent variables are not related or independent (no-multicollinearity). Homoscedasticity was validated using the non-constant variance score test statistics (p-value=0.697) and the last statistical Durbin-Watson value to verify the variable data's no-autocorrelation. (Durbin-Watson =1.830) [11].

IV. RESULTS AND DISCUSSIONS

The dataset was obtained from the population sample in 20 subdistricts, Mueang Nakhon Ratchasima District, Nakhon Ratchasima Province, Thailand. A total of 404 respondents found that most of the respondents were female, representing 62.13 percent aged in the range of 20-30 years. Most of the respondents about 61.88 percent had a bachelor's degree or equivalent. Later, 33.17 percent have a career as private employees or contractors, and 48.76 percent have an average monthly income is less than 15,000 Baht. The current residential characteristics are detached houses, townhouses, and townhomes representing 62.38 percent and the remaining residential areas in the city subdistrict 37.62 percent are condominium, apartment/dormitory, and commercial building as shown in Table 2.

The data in Table 3 shows the average opinion of the marketing mix (7Ps) of respondents which found that the average opinion of the marketing mix is between 3.922 - 4.218, and the standard deviation is between 0.646 - 0.786. Product (P1) has the highest mean of 4.218 whereas Price (P2) has the lowest at 3.922. Later, the average opinion of the respondents

in the technology acceptance questionnaire (4Ts), the highest mean is perceived ease of use (T1), equal to 4.155, and the least is marketing promotion (T4), equal to 3.993. The standard deviation of the technology acceptance is between 0.625 - 0.691. However, the result of the survey on the satisfaction of the respondents found that the average satisfaction of using food delivery services in 20 sub-districts is between 3.429 – 4.712, with a mean value of 4.097.

TABLE II. FREQUENCY AND PERCENTAGE PROPORTION OF RESPONDENTS

Respondent information	Frequencies	Percentage
Sex		
Male	153	37.87
Female	251	62.13
Status		
Single	264	65.35
Married	135	33.42
Others	5	1.24
Age		
Less than 20 years	36	8.91
20 – 30 years	250	61.88
31 – 40 years	82	20.30
41 – 50 years	26	6.44
More than 51 years	10	2.48
Occupation		
Students	126	31.19
Government employees	83	20.54
Private Employees	134	33.17
Personal business	61	15.10
Monthly income		
Less than 15,000 Bath	197	48.76
15,000 - 25,000 Bath	131	32.43
25,001 - 35,000 Bath	45	11.14
35,001 - 45,000 Bath	157	3.71
45,001 - 50,000 Bath	7	1.73
More than 50,000 Bath	9	2.23
Current residence		
House/Townhouse/Townhome	252	62.38
Condominium	8	1.98
Apartment/dormitory	124	30.69
Commercial building	20	4.95

TABLE III. MEAN AND STANDARD DEVIATION OF MARKETING MIX AND TECHNOLOGY ACCEPTANCE

Factor	Mean	SD
Marketing mix (7Ps)		
Product (P1)	4.218	0.669
Price (P2)	3.922	0.786
Distribution Channel (P3)	4.160	0.697
Marketing Promotion (P4)	4.114	0.703
Personnel (P5)	4.041	0.702
Environmental and Physical Aspects (P6)	4.064	0.646
Perceived Credibility (P7)	4.017	0.727
Technology acceptance (4Ts)		
Perceive Ease of Use (T1)	4.155	0.642
Perceive Usefulness (T2)	4.128	0.625
Distribution Channel (T3)	4.028	0.684
Marketing Promotion (T4)	3.993	0.691

The data describing the behavior of the sample shown in Table 4 found that most of the respondents have a frequency of using food delivery service twice a month, representing 36.14%. They often use the food delivery service for dinner at 32.92 percent or for lunch at 31.93 percent. The main purpose of using the food delivery service is convenience and speed. The average cost of using the food delivery service is 50 - 100 baht per time, representing 37.78 percent. However, it was found that most of them had experience in using the Food Delivery service for more than 12 months, representing 35.15%.

TABLE IV. FREQUENCY AND PERCENTAGE OF RESPONDENTS FOR USING FOOD DELIVERY SERVICE.

The behavior of food delivery service	Frequencies	Percentage
Frequency of using food delivery service		
<i>1 time per 2 months</i>	34	8.42
<i>1 time per month</i>	77	19.06
<i>2 times per month</i>	146	36.14
<i>1 time per week</i>	67	16.58
<i>2-3 times per week</i>	44	10.89
<i>More than 3 times per week</i>	36	8.91
The most frequent time of using the food delivery service		
<i>Breakfast</i>	8	1.98
<i>Lunch</i>	129	31.93
<i>Dinner</i>	133	32.92
<i>Snack (any time)</i>	95	23.51
<i>Late night meal</i>	39	9.65
The main objective of using the food delivery service		
<i>I don't have time to buy it myself</i>	53	13.12
<i>I want to eat at several restaurants at the same time.</i>	47	11.63
<i>There are many famous restaurants</i>	24	5.94
<i>Parking Concerns</i>	16	3.96
<i>The queue at the restaurant took a long time</i>	43	10.64
<i>I want convenience and speed</i>	129	31.93
<i>There are interesting promotions</i>	92	22.77
The average cost of food delivery service		
<i>Lower than 50 Bath</i>	3	0.74
<i>50 – 100 Bath</i>	153	37.87
<i>101 – 150 Bath</i>	126	31.19
<i>151 – 200 Bath</i>	65	16.09
<i>More than 201 Bath</i>	57	14.11
Experience in using the Food Delivery service		
<i>Less than 3 months</i>	32	7.92
<i>>3 – 6 months</i>	90	22.28
<i>> 6 – 12 months</i>	140	34.65
<i>More than 12 months</i>	142	35.15
Total	404	100

The result of the multiple linear regression is shown in Table 5, this reveals that there are 5 factors influencing the satisfaction of using food delivery service through the application: (P1), (P2), (P5), (T1), and (T3) at a statistical significance 0.05. multiple linear regression equations can be written to predict satisfaction with food delivery services as shown in equation (1) whereby the adjusted r-square is 0.4262.

$$Y = 5.976 + 0.175(P1) + 0.140(P2) + 0.132(P5) + 0.296(T1) + 0.097(T3) \quad (1)$$

TABLE V RESULTS OF MULTIPLE LINEAR REGRESSION ANALYSIS

Factor	Standardized Coefficients		P-value
	B	Std. Error	
Constant		5.976	0.000
Product (P1)	0.175	3.116	0.002
Price (P2)	0.140	2.596	0.010
Personnel (P5)	0.132	2.366	0.018
Perceived Ease of Use (T1)	0.296	6.418	0.000
Subjective Norm (T3)	0.097	2.178	0.030

V. CONCLUSION

The result of multiple regression analysis found factors influencing the satisfaction of food delivery services in Mueang Nakhon Ratchasima District. Nakhon Ratchasima Province (Thailand) has a total of 5 factors, sorted by the coefficient of the regression equation. Namely Perceived Ease of use(T1), Product(P1), Personnel(P5), Price(P2), and Subjective Norm(T3) respectively. The factors that affect satisfaction can be described in detail as follows; The T1 factor can be described as food delivery applications that must be easy to use and updated automatically so that users do not have to keep updating by themselves. Moreover, the application must be used anywhere at the time the customer needs. These results are consistent with [12]. While the satisfaction of the food delivery service of T3 depends on the close ones such as family, and friends who enjoy food delivery services and then encourage others to use the food delivery application together. The satisfaction described in view of P1 is the food application is reliable and secure, has a good image, has a famous restaurant partner, and has a variety of restaurants. In the case of P5, it is delivery staff perform their duties very well with courtesy and correct mistakes in their operations. In addition, food delivery workers should have good delivery skills and deliver food in the condition that the customer wants. Finally, P2 is concerned with food prices and delivery rates must be appropriate to the service distance, and food application service must be cost-effective and great value for their money. [13] found that the marketing mix influenced consumer satisfaction with automated food ordering services.

Due to the research study during the COVID epidemic, the data was collected only through online questionnaires. Further research should collect offline questionnaires and consider a variety of surveys. Other factors such as personal data should be considered. It may affect the satisfaction of using the food delivery service.

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