Technology Acceptance Affecting Purchase Decisions for Food Delivery by Mobile Phone Application of Consumers in Phra Nakhon Si Ayutthaya, Thailand

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Abstract

The purposes of this research were 1) to study technology acceptance and purchase decisions for food delivery by Mobile phone application of consumers in Phra Nakhon Si Ayutthaya Province and 2) technology acceptance affecting purchase decisions for food delivery by Mobile phone application of consumers in Phra Nakhon Si Ayutthaya Province. The sample group used in this study was 384 consumers purchase decisions for food delivery by Mobile phone application of consumers in Phra Nakhon Si Ayutthaya Province. The tools used to collect data are questionnaires. The statistics used for data analysis were Frequency, Percentage, Mean, Standard Deviation and Multiple Regression Analysis. The results of the study found that: 1) technology acceptance of consumers in Phra Nakhon Si Ayutthaya Province at a high level, purchase decisions for food delivery by Mobile phone application of consumers in Phra Nakhon Si Ayutthaya Province at a high level and 2) technology acceptance by perceived compatibility, perceived ease of use, perceived security risk and perceived trust affecting purchase decisions for food delivery by Mobile phone application of consumers in Phra Nakhon Si Ayutthaya Province.
Keywords: Technology Acceptance, Purchase Decisions, Food Delivery, Mobile Phone Application

Introduction

At present, the restaurant business model has changed according to consumer behaviors to meet the diverse needs that change according to the situation. In the past, consumers who wanted to use restaurant service often traveled to the restaurants. However, in the present situation, the behavior of consumers in using the restaurant services has changed especially those who live in large cities or economic and industrial cities. The behavior is changed to ordering food to eat at home or at workplace to avoid traffic congestion. According to the study by INRIX in the Global Traffic Scorecard Report in 2017, it was found that Thailand was the country with the most traffic congestion No. 1 in the world with an average road time of 56 hours per year. In addition, the Kasikorn Research Center found that traffic problems affect the economy and

lifestyle of people. Coupled with limited parking spaces and time-consuming waiting in line to buy food, the consumers therefore avoid problems by using online food ordering services to save the time for traveling and waiting for the food. From the situation of the Covid-19 pandemic affecting the change in the way of living and many aspects of human daily life, technology play more role. Moreover, the government has set public health measures on social distancing to reduce the risk of disease exposure (Food and Drug Administration, 2021). The impact of the Covid-19 epidemic and government measures requires all sectors to adapt to the situation in order to survive. The adaptation in various forms will occur with the developed technology. For this reason, the new business model is created, namely, online food ordering via an application that can add convenience because the food ordering application can be downloaded and installed on mobile phone in order to be able to order food as needed. This is an alternative to meet the lifestyle of today's consumers and create the business opportunities for entrepreneurs (Phongsupat, 2018).

The electronic commerce concept leads to the development of applications which are created for use on mobile phones to be the sales channel for products and services served as an intermediary to expand access to goods and services between the operators and consumers. The application will provide the system for ordering goods and services including financial transactions. The focus is on the modern user interface easy to use with quick access. There is secure payment system (Phithiwatchotikul, 2017). The application that is popular and important in the current situation is the food delivery application. According to survey of Electronic Transactions Development Agency (ETDA) on the behaviors of using online food delivery services among Thai people, it was found that 85% of users ordered food online. The Gen Y consumers aged 19-38 use the service the most with 51.09%, followed by Gen X, aged 39-54 years (Electronic Transaction Development Agency, 2020). The operators have designed applications for consumers to choose restaurants, food items as they like. There are also payment channels to choose following the convenience of customers. In addition, in the situation of the Covid-19 epidemic, the government has a policy to adjust the eating patterns to change to buy back to eat at home. This allows restaurant operators to adjust their strategies in using applications for expanding sales channels to meet the needs of consumers in the digital era and to create business opportunities for restaurant operators appropriately (Phongsupat, 2018).

There are cultural attractions in Phra Nakhon Si Ayutthaya Province that attract tourists from all over the world. It is an economic city with many industrial estates causing the expansion of the community to increase and has diverse population causing a large number of restaurant operators to support the demand and increasing consumer diversity. With a lifestyle that requires competition and hustle, food consumption behaviors change according to lifestyles that require convenience and speed, especially in ordering food. This makes it necessary to use a food delivery ordering platform for convenience. The consumers do not have to waste time traveling. They can wait for food to be delivered to their residence without having to find a parking space, etc. (Suwannatat, 2020). In Phra Nakhon Si Ayutthaya Province, there are service providers of food delivery ordering platforms, consisting of Line Man, Food Panda, 7-Delivery, and Grab Food. Each application will have similar usage features with the difference in service fees, payment method, application method, usage menu, service areas, and service time to respond to the behavioral needs of diverse consumers (Chalermdaen, 2020). From the research findings on technology acceptance, it was found that the perception on benefits, the ease of use, the ease of access, the convenience of transactions, and the convenience after purchase affect the purchasing decision of food delivery businesses in Thailand (Peemanee & Wongsahai, 2020). These can support the concept of technology adoption that can be used as a factor in food purchasing decisions via the mobile application of consumers and can increase

business opportunities to increase the competitiveness of food ordering application operators appropriately.

From the background and significance mentioned above, the researchers were interested in studying the adoption of technology that affected the decision making of food delivery orders via the mobile application of consumers in Phra Nakhon Si Ayutthaya Province. The information obtained from the research could be used by relevant people as the guideline for developing applications that can meet the needs and create satisfaction for consumers. In addition, the information can be used to develop strategies to support business growth and create a competitive advantage in the future.

Research objectives

1) To study technology acceptance and purchase decisions for food delivery by mobile phone application of consumers in Phra Nakhon Si Ayutthaya Province.

2) To study technology acceptance affecting purchase decisions for food delivery by mobile phone application of consumers in Phra Nakhon Si Ayutthaya Province.

Research Methodology

Population and Samples

The population used in this study was consumers who ordered food delivery via mobile application in Phra Nakhon Si Ayutthaya Province which the exact number was unknown. The sample group used in this study consisted of an unknown number of consumers who ordered food delivery via mobile application in Phra Nakhon Si Ayutthaya Province. The researchers determined the sample size by using the sample size formula of Cochran (1953). The confidence level was 95% at an error of $\pm$ 5%. A total of 384 samples were obtained. There are two steps, namely, the quota sampling method, to select the sample by taking into account the proportion of population of each district and the Accidental sampling according to the number of samples of each district.

Research Tools

In this research, the researchers used the questionnaires as the tools for collecting data divided into 4 parts as follows:

Part 1 was the questions about general information of the respondents consisting of gender, age, occupation, average monthly income, applications to order food delivery and domicile. These were closed-ended questionnaires and multiple choices.

Part 2 was the questions on the opinion about consumer technology acceptance in Phra Nakhon Si Ayutthaya Province. The questionnaire was an estimation scale. There were 5 levels of answer for each question; the most, very much, moderate, less, and the least.

Part 3 was the questions on the opinion about the decision to order food delivery via mobile application of consumers in Phra Nakhon Si Ayutthaya Province. The questionnaire was an estimation scale. There were 5 levels of answer for each question; the most, very much, moderate, less, and the least.

Part 4 Additional suggestions which were open-ended questions.

Tool quality inspection: 1) Content validation by experts was done to check the correctness of the questions and the language used in each question. The content fidelity was determined by the IOC by assessing whether the question was consistent with what was being studied or not. The consistency assessment criterion was determined by scoring (Sincharu, 2012). The results of the content validity analysis revealed that all questions had the calculated IOC value greater than or equal to 0.50 signifying that this questionnaire content accuracy can be taken to the next step. 2) The Reliability was checked by bringing the questionnaire to try out with consumers who use food delivery service via mobile application in Phra Nakhon Si Ayutthaya Province, who were not the sample group for 30 sets in order to find the reliability value using Cronbach's Alpha Coefficient method and the alpha coefficient formula. The reliability value

should be greater than 0.70 (Prasitratthasin, 2007). The results of the analysis revealed that the reliability value for the whole questionnaire was 0.958 and the overall reliability value of technology acceptance was 0.958. When separated into the reliability interval between 0.865-0.986, the reliability value of food delivery order was 0.794. When it was split into reliability interval between 0.730-0.943, it signified that the questionnaire was reliable and could be used to store data appropriately.
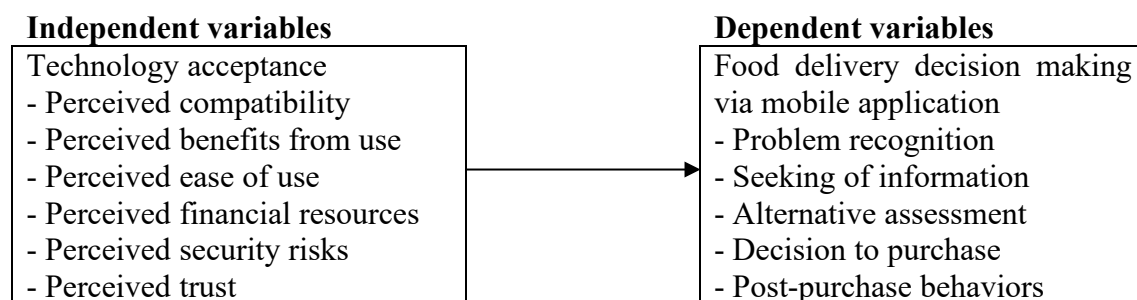
Data Collection

The researchers distributed the questionnaires with consumers who used food delivery service via mobile application in Phra Nakhon Si Ayutthaya Province, amounting to 384 sets according to the quota of each district. The questionnaires were distributed online on the Google Form by submitting questionnaire in the form of questionnaire link and QR Code distributed through the network in each district. The creation of questionnaire had questions to screen the sample, i.e. must be the persons who had used delivery service via mobile applications and resided in Phra Nakhon Si Ayutthaya Province. Therefore, the respondents were considered qualified for the research. When the sample group completed the number of questionnaire response, the researchers checked for accuracy and completeness. Then the data were analyzed with statistical package.

Data Analysis

The researchers analyzed the data using statistics as follows: 1) Descriptive statistical analysis: The statistics used to describe the characteristics of the data collected from the samples included in the study were frequency, percentage, mean and standard deviation. 2) Inferential statistical analysis: For the analysis on technology acceptance that affected food delivery decision making via mobile application among consumers in Phra Nakhon Si Ayutthaya Province, Pearson's Correlation Coefficient and Multiple Regression Analysis were initially used.

Conceptual Framework

The researchers defined the research conceptual framework based on studies, concepts, theories and researches related to mobile technology adoption and decision making. The research concept can be formulated as follows:

Independent variables	**Dependent variables**
Technology acceptance - Perceived compatibility - Perceived benefits from use - Perceived ease of use - Perceived financial resources - Perceived security risks - Perceived trust	Food delivery decision making via mobile application - Problem recognition - Seeking of information - Alternative assessment - Decision to purchase - Post-purchase behaviors

Research Results

Demographic Factors

Regarding the demographic factors, it was found that most of the respondents were female for 213 people accounting for 55.47%. 165 people were 41-60 years old accounting for 42.97%. 87 people were civil servants / state enterprise employees accounting for 22.66%. 141 people had average monthly income of 20,001-25,000 baht accounting for 36.72%. 106 people ordered food delivery from the Grab Food application accounting for 27.60%. 64 people resided in Phra Nakhon Si Ayutthaya District accounting for 16.66%.

Technology Acceptance of the Consumers in Phra Nakhon Si Ayutthaya Province

The results of analysis on technology acceptance level of consumers in Phra Nakhon Si Ayutthaya Province entirely are shown in Table 1.

Table 1 shows the mean and standard deviation of the technology acceptance level of consumers in Phra Nakhon Si Ayutthaya Province as a whole.

Technology acceptance	$\bar{x}$	S.D.	Min	Max	Skewness	Kurtosis
1) Perceived compatibility	3.86	0.57	2.80	4.60	-0.22	-1.01
2) Perceived benefits from use	3.88	0.44	3.00	4.60	-0.35	-0.75
3) Perceived ease of use	3.74	0.69	2.60	4.60	-0.44	-1.24
4) Perceived financial resources	3.78	0.53	2.80	4.60	-0.08	-1.16
5) Perceived security risks	3.77	0.57	2.20	4.80	-0.54	-0.38
6) Perceived trust	3.85	0.56	2.80	4.60	-0.21	-0.99
Total	**3.81**	**0.56**	**3.20**	**4.37**	**-0.35**	**-0.48**

From Table 1, the results of analysis on the opinion level of consumer's technology acceptance in Ayutthaya Province were entirely at a high level ($\bar{x}$ = 3.81, S.D. = 0.56). When considering each aspect by sorting the mean from highest to lowest, it was found that the aspect with the highest mean was the perceived benefit from use with the high level of opinion ($\bar{x}$ = 3.88, S.D. = 0.44). It was followed by the perceived compatibility with the high level of opinion ($\bar{x}$ = 3.86, S.D. = 0.57). The perceived trust had high level of opinion ($\bar{x}$ = 3.85, S.D. = 0.56). The perceived financial resources had high level of opinion ($\bar{x}$ = 3.78, S.D. = 0.53). The perceived safety risks had the opinion at high level ($\bar{x}$ = 3.77, S.D. = 0.57). The perceived ease of use had the opinion at high level ($\bar{x}$ = 3.74, S.D. = 0.69), respectively. It was found that the values were in the range of -0.54 to -0.21, with values not exceeding ±2 considered acceptable at the 0.05 level of confidence (Hair et al., 2006). It was found to be in the range of -1.24 to -0.38, with values not exceeding ±2 considered acceptable (Kline, 2005).

Consumers' Decision to Order Food Delivery Via Mobile Application in Phra Nakhon Si Ayutthaya Province

The results of the analysis on the overall decision to order food delivery via mobile application of consumers in Phra Nakhon Si Ayutthaya Province are shown in Table 2.

Table 2 shows the average and deviation of the consumers' overall decision to order food delivery via mobile application in Phra Nakhon Si Ayutthaya Province.

Decision to order food delivery	$\bar{x}$	S.D.	Min	Max	Skewness	Kurtosis
1) Problem recognition	3.78	0.44	3.00	4.33	-0.32	-0.91
2) Seeking of information	3.87	0.44	3.00	4.33	-0.61	-0.92
3) Alternative assessment	3.97	0.80	2.00	5.00	-0.80	0.12
4) Decision to purchase	3.69	0.70	2.33	4.67	-0.59	-0.85
5) Post-purchase behaviors	3.72	0.68	2.33	4.67	-0.41	-0.59
Total	**3.81**	**0.52**	**3.33**	**4.27**	**-0.28**	**-1.36**

Overall, the opinion of consumers about the decision to order food delivery via mobile application in Phra Nakhon Si Ayutthaya Province were at a high level ($\bar{x}$ = 3.81, S.D. = 0.52). When considering each side by sorting the mean from highest to lowest, it was found that the aspect with the highest mean was the alternative assessment aspect with the opinion at a high level ($\bar{x}$ = 3.97, S.D. = 0.80). It was followed by seeking of information with the opinion at a high level ($\bar{x}$ = 3.87, S.D. = 0.44). The problem recognition had high level of opinion ($\bar{x}$ = 3.78, S.D. = 0.44). The post-purchase behavior had high level of opinion ($\bar{x}$ = 3.72, S.D. = 0.68). The decision to purchase had the opinion at the high level ($\bar{x}$ = 3.69, S.D. = 0.70) respectively. From considering the skew distribution of various variables, it was found that the

values were in the range of -0.80 to -0.32 with values not exceeding ±2. It was considered acceptable at the 0.05 level of confidence (Hair et al., 2006). It was found to be in the range of -0.91 to 0.12, with values not exceeding ±2 considered acceptable (Kline, 2005).

Research Hypothesis Testing

For the hypothesis testing, the researchers examined the properties of the technology adoption factor variables. This avoids the problem of having too high relationship between independent variables (multicollinearity) by examining the relationship between independent variables. The statistical values are Tolerance and Variance Inflation Factor (VIF). The consideration criteria which is Tolerance value should be between 0.10-1.00 and Variance Inflation Factor (VIF) must be less than 10 in order to avoid problem of Multicollinearity or there was no correlation among independent variables (Wanichbancha, 2003). From examining the relationship between independent variables, it was found that the Tolerance of the independent variables was 0.11-0.83 and the Variance Inflation Factor (VIF) of the independent variables was 1.20-2.75. It could be concluded that not all independent variables were related to one another or independent variables of each other. Therefore, the hypothesis can be tested using the multiple regression analysis method appropriately. The results of the analysis are shown in Table 3.

Table 3 shows the analysis on technology acceptance that affects food delivery decision making via mobile application of consumers in Phra Nakhon Si Ayutthaya Province

Technology acceptance	Decision to buy				
	Regression coefficient		Standard Tolerance	t	p
	(b)	**(β)**			
Fixed value (a)	4.69		0.35		
1) Perceived compatibility	1.04	1.81	0.38	2.76	0.01*
2) Perceived benefits from use	0.04	0.05	0.05	0.78	0.44
3) Perceived ease of use	0.09	0.19	0.03	2.59	0.01*
4) Perceived financial resources	0.00	0.00	0.05	0.03	0.98
5) Perceived security risks	0.17	0.30	0.03	5.90	0.00**
6) Perceived trust	1.03	1.78	0.38	2.72	0.01**
R = 0.41 R^2 = 0.27 Adjusted R^2 = 0.16 SEE = 0.30				F = 12.79	

*Level of significance $p < 0.05$, ** Level of significance $p < 0.01$

From Table 3, the results of the analysis of technology acceptance that affect the decision to order food delivery via mobile applications of consumers in Phra Nakhon Si Ayutthaya revealed that acceptance of technology affected decision-making to order food delivery via mobile applications of consumers in Phra Nakhon Si Ayutthaya Province. This included the perception of compatibility, perception of ease of use, perception of security risks and perception of trust with a statistical significance at the 0.05 level. It can jointly predict the decision to order food delivery via mobile application of consumers in Phra Nakhon Si Ayutthaya Province. The predictive power was 16% (Adjust R Square = 0.16) and could generate forecasting equations for technology acceptance that affect food delivery decision making via a mobile application of consumers in Phra Nakhon Si Ayutthaya Province. The regression equation can be written as:

Y = 4.69 + 1.04 (Perceived compatibility) + 0.09 (Perceived ease of use) + 0.17 (Perceived security risks) + 1.03 (Perceived trust)

Discussion and Conclusion

From the research findings on the adoption of technology that affects food delivery decision making via mobile application for consumers in Phra Nakhon Si Ayutthaya Province, the research results can be discussed according to the following research objectives:

The acceptance of technology by consumers in Phra Nakhon Si Ayutthaya Province overall was at a high level. This is because technology adoption is the behavior of users who understand the technology and realize that the technology will bring benefits to themselves or related activities. That is why they decide to accept that technology and apply it. It describes a person's acceptance and intention of using new technology which caused people to perceive the ease of use and the benefits that will be gained from using new technology. People can learn to use new technology on their own. It is consistent with the research of Phithiwatchotikul (2017) studying the acceptance of mobile phone technology, social media marketing and online consumer behavior that affects the intention of buying online products through the application of consumers in Bangkok. It was found that the acceptance of mobile phone technology and marketing through social media in overall and in each aspect is at a high level. This agrees with the research of Supasakorn (2019) study technology acceptance and electronic loyalty of online food delivery applications among female consumers in Bangkok. It was found that technology acceptance of the application of online food delivery among female consumers in Bangkok as a whole is at a high level.

The decision to order food delivery via mobile application of consumers in Phra Nakhon Si Ayutthaya Province overall is at a high level. This is because purchase decision is to choose something in particular from among the choices available. It is the way consumers make decisions. It consists of intrinsic factors; motivation, perception, learning, personality and attitudes of the consumers reflecting the need and awareness of having a wide selection of products and consumer-involved activities in relation to the information contained herein. The information provided by the manufacturer and finally is the evaluation of those options. This is consistent with the research of Imthamporn (2016) on the subject of technology acceptance, ease of use and social media marketing that affects the decision to use food ordering services through the application of Generation Y consumers. In Bangkok, it was found that the decision to use the food ordering service via the application of Generation Y consumers in Bangkok as a whole, at a high level. This is correspondent with the research of Phongsupat (2018) studying the food application market and consumer behavior towards the decision to use food application service. Food apps, in general and by aspect, are at a high level.

For the factors of technology acceptance that affect the decision to order food delivery via mobile application of consumers in Phra Nakhon Si Ayutthaya Province, the hypothesis testing results revealed that the technology acceptance, perceived compatibility, perceived ease of use, perceived security risks, and perceived trust affected the decision to order food delivery via mobile application of consumers in Phra Nakhon Si Ayutthaya Province. This is because perceived compatibility is the factor that determines the perception of innovation and the extent of potential technology in accordance with the needs and behavioral patterns of technology usage. It is the recognition of innovation and the scope of potential technologies that are in line with the needs and appropriate with consumer behaviors. The perceived ease of use is a factor that affects the perceived benefits from information technology with a level that users believe does not require effort to use. If the user does not put much effort into using it, the user will recognize that the technology can be used resulting in the real adoption of technology. The perceived security risk is a factor that makes consumers perceive security related to transactions with information technology. This could be a risk of losing confidential information or the user's personal information may be disclosed when a transaction takes place. The perceived trust is the credibility of consumers with the use of technology access to products or services including the expectation of purchasing goods or services through transactions on mobile

phone. It is the consumer's consideration to accept and trust in using technology via mobile phones, having confidence in the quality of products or services, online stores and applications. Therefore, technology adoption, perceived compatibility, perceived ease of use, perceived security risks, and perceived trust affected the decision to order food delivery via mobile application of consumers in Phra Nakhon Si Ayutthaya Province. This is consistent with the research of Imthamporn (2016) on the subject of technology acceptance, ease of use and social media marketing that affected the decision to use food ordering services through the application of Generation Y consumers in Bangkok. It was found that the factors affecting the decision to use the food ordering service via the application of Generation Y consumers in Bangkok with statistical significance at the .05 level were the technology acceptance and social media marketing. This is consistent with the research of Tulanon (2019) studying the technology acceptance that affects the decision to buy online products among the elderly. The technology acceptance, perceived compatibility, perceived benefits from use, perceived security risks and perceived trust affected the decision to shop online for the elderly. It agreed with the research of Peemanee & Wongsahai (2020) studying technology acceptance and ease of service affecting purchasing decisions of food delivery businesses in Thailand. It was found that technology acceptance, perceived benefits, ease of use, ease of access, convenience of transactions and convenience after purchase influenced purchasing decisions of food delivery businesses in Thailand.

Research Recommendations

From the research results, it is recommended for food delivery application service providers providing the services through the mobile application to be used as a guideline to promote and develop services as follows:

1) In the perceived compatibility, the applications should be developed to have modern and attractive style in consistence with consumer values and changing situations.

2) In the perceived benefits from usage, the applications should be developed to quickly respond to searching for restaurants or food items. The distance of the restaurant serving should be also adjusted to further in order to help reducing the consumer travel.

3) In the perceived ease of use, the applications should be developed to have easy access to information and reduce the ordering process facilitating consumers.

4) In the perceived financial resources, the applications should be developed to show the cost every time before confirming the purchase. It must be clear and easily observed in order to give consumers confidence in making payments correctly. The payment information should be recorded so that consumers can check back.

5) In the perceived security risks, the applications should be developed to have more effective measures to protect consumer privacy in order to prevent electronic data theft and build trust in application security.

6) In the perceived trust, the applications should be developed to display food images that are similar to the actual food which will be served in order to give consumers trust and confidence in the quality of food they will receive as well as relying on the overall quality of services.

Recommendations For Further Research

1) The problem in ordering food delivery via mobile application of consumers in Phra Nakhon Si Ayutthaya Province should be studied in order to provide the information to the application service providers and use it as a guideline for developing applications to meet the needs of consumers as much as possible.

2) The decision to order food delivery via mobile application of consumers in Phra Nakhon Si Ayutthaya Province should be studied by studying other variables apart from the variables used in this research, such as the marketing mix, customer focus or service quality, etc., to produce research results that cover all variables used in research.

3) Other factors of technology acceptance apart from stated in this research should be studied, such as attitudes of use, intention of use, technology compatibility, etc., in order to increase the perspective for operators about other technology acceptance factors that can be used to improve service efficiency.

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