

Causal Factors Influencing Acceptance of Online Payment via QR Code of Consumers in Phuket City Municipality

by

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Abstract

The purposes of this research were to investigate the level of attitude, marketing mix and acceptance of online payment via QR Code system and to access the causal factors influencing acceptance of online payment via QR Code of consumers in Phuket City Municipality. This research is quantitative research. Questionnaires were used to collect data from 400 consumers having online payment via QR Code experience Phuket City Municipality by using purposive sampling method. Descriptive statistics and Structural Equation Model (SEM) were performed for data analysis. The research showed that most of the samples have the opinion of attitude, marketing mix and acceptance of online payment via QR Code system of consumers in Phuket City Municipality were in high level. The attitude towards online payment via QR code has a direct and statistically significant positive influence on marketing mix variables. Marketing mix variables have a direct and statistically significant positive influence on the attitude towards accepting online payment via QR code. Overall, attitudes towards online payment via QR code, direct and indirect influences, have a statistically significant positive impact on the attitude towards accepting online payment via QR code, with an explanatory power of 87%. The attitude towards accepting online payment via QR code can also explain 87% of the variance in marketing mix variables.

Keywords: Attitude, Marketing Mix, Acceptance, Online Payment, QR Code System

1. Introduction

1.1 Background and Importance of the Problem

In the present day, information technology and communication have rapidly evolved and can be applied across all industries. Computers have become more capable, versatile, smaller, and lighter. They have been integrated with various mobile devices, such as smartphones, which now possess both communication and processing abilities similar to computers (Thamonwan Wannasilp, 2020). These mobile communication devices have been developed in various forms to accommodate

different usage scenarios. They offer wireless data communication and portability, enabling users to access them anytime and anywhere, providing convenience and eliminating the need to be tied to traditional personal computers. These advancements align well with the current trend towards a cashless society, offering solutions to various problems related to carrying cash or credit cards during transactions, such as insufficient cash, security concerns, lack of change, malfunctioning card systems, etc. This transformation in consumer behavior has been facilitated by the convergence of both parties through the widespread use of mobile internet-enabled devices and various banking applications developed in the past (Laddawan Someran, et.al. 2021). QR Code, which stands for "Quick Response Code," is a two-dimensional barcode that evolved from the traditional barcode system to make data storage and retrieval easier and more efficient. With mobile communication devices like smartphones, scanning QR codes has become a simple task. Many countries have adopted QR codes as a medium for payment, by inputting the necessary payment information and linking it to credit cards, debit cards, or bank accounts, gaining significant popularity in countries like China (Nootchanart Suttiwong (2018). In Phuket province, several commercial banks have expanded and supported the use of QR code payments for various businesses. This system benefits both consumers and merchants, offering convenience without the need to carry multiple cash or card transactions and providing a safer payment method, reducing the risk of financial information theft. It has been widely adopted by numerous merchants, restaurants, street vendors, and motorbike taxis, receiving positive feedback from both sellers and buyers.

1.2 Research Question

However, in some areas, the adoption of QR code payments is not yet popular due to various issues, such as internet signal problems and the lack of compatible smartphones among sellers (Porntipa Leewiwatanakul. 2019). Hence, studying the causal factors that influence consumer acceptance of QR code payments in the Phuket Municipality area is essential. This research is not only academically beneficial but also valuable for governmental organizations, commercial banks, medium-sized enterprises, and consumers in Phuket province and its neighboring regions. It can help enhance or modify the service processes and improve the efficiency and competitiveness of organizations, aligning them with their goals. Ultimately, e-payment systems will enhance business agility, increase efficiency, and reduce operating costs, contributing to the country's competitive advantage.

1.3 Research Objective

- (1) To study the level of Attitude, marketing mix and acceptance of online payment via QR Code system of consumers in Phuket City Municipality
- (2) To study the causal factors influencing acceptance of online payment via QR Code of consumers in Phuket City Municipality

2. Literature Review

2.1 Related Concepts and Theories

Attitude is a critical factor that enables humans to navigate the complexities of this world without becoming overwhelmed by confusion. Attitudes towards various aspects help simplify experiences significantly. Since humans cannot remember all events and objects in the world, experiences related to these must be categorized and emotionally processed (Tueanjit Putipongpokai. 2014). Hence, attitude becomes a vital mechanism influencing the social interactions of individuals

in society. This topic has drawn significant interest from social psychologists in their studies. Attitudes are formed through learning and are thus subject to change, although they can also be relatively stable over extended periods (Tanyawan Kertsombat. 2008). In this research, attitudes refer to the feelings, thoughts, beliefs, and inclinations that individuals exhibit in response to stimuli. These attitudes are reactive responses that can influence an individual's positive or negative reactions towards persons, objects, and situations in their environmental context. Such attitudes can be learned or managed through experiences, and they can be assessed either formally through surveys or informally through direct observation of behavior. The attitudes considered in this study pertain to Customer Cost, Convenience, Communication, and Format.

In the context of the marketing mix, factors encompass the essential elements directly associated with products or services presented to consumers, aimed at influencing their purchase decisions and optimizing overall customer satisfaction (Kotler, Philip. 2003). Numerous factors contribute to customer satisfaction, including the following key components: Product: This pertains to the diverse range of car insurance policies offered by companies, thoughtfully designed to meet specific customer requirements concerning coverage and compensation conditions. Price: Referring to the monetary value customers are required to pay to ensure their car insurance policy is suitable and provides adequate coverage. Distribution Channels: These channels represent the various avenues through which insurance policies are distributed, such as bank brokers, department stores, convenience stores, and the internet, providing consumers with a wide array of access points to the services. Promotion: This involves a consistent advertising and promotional campaign designed to bridge the information gap between sellers and consumers or targeted groups. For instance, offering insurance premium discounts to customers with a good driving record or attractive incentive programs. Personnel: Encompassing the employees or service providers responsible for ensuring customer satisfaction by providing expert assistance, promptly resolving customer issues, maintaining professionalism, and exhibiting excellent interpersonal skills. Physical Evidence and Presentation: Referring to the presentation or development of formats that enable consumers to perceive the quality and value of a service. This includes elements like the environment of a service location, company uniforms, and the company logo. Process: This pertains to the strategies employed to provide services to customers, ensuring they receive maximum satisfaction. Examples include offering a variety of payment options, a swift evaluation and settlement process, and the ability to report accidents via mobile devices (Chalermrat Khemrat and Ratthaburut khumsap. 2022). By effectively managing and considering these factors, car insurance companies can enhance their offerings and optimize customer satisfaction, ultimately contributing to their success in the market.

Technology acceptance" refers to the willingness and readiness of individuals or users to adopt and use a particular technology. It encompasses the attitudes, beliefs, and perceptions of users towards the technology, as well as their intention to use it in their daily activities or work processes. Technology acceptance is a crucial factor in determining the success of any technological innovation or implementation, as it directly impacts the adoption and usage behavior of individuals or organizations. Understanding the factors that influence technology acceptance can help researchers and businesses identify barriers and facilitators to technology adoption, leading to the development of strategies to enhance user acceptance and overall technology utilization. Characteristics of Innovations Affecting Acceptance (Pornchanok Palaboon. 2016): Relative Advantage: This refers to the level of perception or belief that the new attributes are better than existing ones, which are replaced by the new innovation. Compatibility: This relates to the level of consistency with existing experiences and needs. If the innovation aligns well with existing elements, it is more likely to be accepted easily. Complexity: This represents the level of difficulty in understanding and using the trusted innovation. Innovations with lower complexity are more likely to be accepted. Trialability: This indicates the level at which results can be observed through testing and practice. Ideas that can

be tested or experimented with before full adoption are more likely to gain greater acceptance. Observability: This pertains to the level at which processes can be observed transparently (Laddawan Someran, et.al. 2021). In the context of business management and technology acceptance, understanding these characteristics is essential for introducing new innovations successfully. By focusing on relative advantage, compatibility, complexity, trialability, and observability, businesses can increase the chances of customer acceptance and successful integration of innovative technologies into their operations.

2.2 Conceptual Framework

Research conceptual framework was shown in Figure 1.

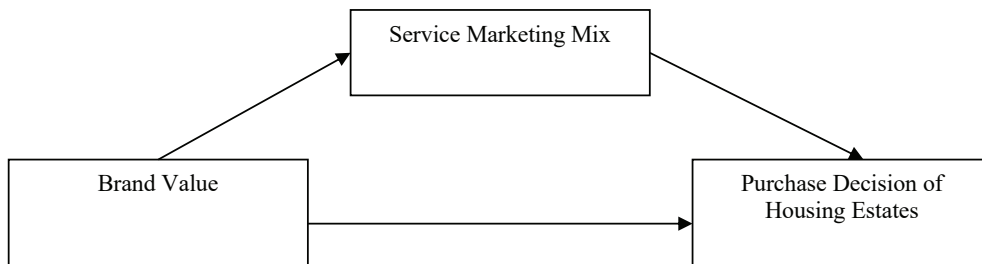


Figure 1 Conceptual Framework

2.3 Research Hypothesis

From the research conceptual framework, the hypothesis of the research can be established as follows:

Hypothesis 1, Attitudes towards online payment via QR Code have a significant positive direct relationship with the marketing mix variables of consumers in the municipality of Phuket. The study results confirm that this relationship is statistically significant at a meaningful level.

Hypothesis 2, Marketing mix variables have a significant positive direct and indirect relationship with the acceptance of online payment via QR Code by consumers in the municipality of Phuket. The study results support the significance of both direct and indirect relationships at a meaningful level.

Hypothesis 3, Attitudes towards online payment via QR Code have a significant positive direct relationship with the acceptance of online payment via QR Code by consumers in the municipality of Phuket. The study results validate this significant relationship.

Hypothesis 4, Attitudes towards online payment via QR Code have a significant positive indirect relationship with the acceptance of online payment via QR Code by consumers in the municipality of Phuket. The study results confirm the significance of this indirect relationship.

Hypothesis 5, Attitudes towards online payment via QR Code have a significant positive overall relationship with the acceptance of online payment via QR Code by consumers in the municipality of Phuket. The study results support the significance of this overall positive relationship.

3. Research Methodology

3.1 Research Design

This research uses a quantitative research methodology.

3.2 Population and Sample

The population used in the study was the consumers having online payment via QR Code experience Phuket City Municipality. The population was large and the exact number of the population was unknown. Therefore, the minimum sample was calculated from the formula of W.G. Cochran, the level of confidence is 95% and 5% error level, 384 samples were obtained. To prevent errors in questionnaires collection and research evaluation, the researcher therefore, determined the sample size for a total of 400 samples.

3.3 Research Instruments

The tools used in this research were questionnaires, with the following steps of development and verification respectively:

1) Document study, Textbooks and related research, and a questionnaire was created to cover the research objectives.

2) Take the generated questionnaire for a content validation test with an expert academics in the relevant field of 3 people. From the test results, it was found that the IOC of all questions in the questionnaire. The value is between 0.51 - 1.0 indicates that all questions pass the specified criteria.

3) The revised questionnaire was tested with customers of the full-service car care business in Phuket, the number of 30 people. From the test results, it was found that the messages in all groups of questionnaires had a confidence coefficient between 0.746 - 0.899, greater than 0.7. That meant all questions passed the specified criteria.

3.4 Data Collection

In this research, a purposive sampling method was used.

4. Data Analysis and Findings

4.1 Introduction

In this research study, there are two types of statistics used for data analysis:

1) Descriptive statistics: Frequency, percentage, arithmetic mean, standard deviation were used. The interpretation was then performed using the Interpretation Criteria using the mean of the question points. The interpretation criteria have been set for 5 levels (Thanin Silcharu, 2020) as follows:

Score 4.21 – 5.00 is the highest level, Score 3.41 – 4.20 is high level
 Score 2.61 - 3.40 is moderate, Score 1.81 - 2.60 is low
 Score 1.00 – 1.80 is the lowest level.

2) Inferential statistics: Structural Equation Model: (SEM) was used in this research.

4.2 Data Analysis of the Quantitative Data

4.2.1 Demographic Information

From the research results, it was found that the majority of respondents were female, accounting for 54.5%. The male respondents accounted for 45.5%. The highest age group was between 26 to 30 years, representing 40.0%, followed by the age group of 18 to 25 years at 39.0%. The largest marital status was single, making up 57.5%, while married respondents accounted for 34.5%. The highest educational level achieved was a bachelor's degree at 47.5%, followed by diploma/vocational degree at 28.5%. The majority of respondents were self-employed/business owners, comprising 32.2%, followed by students at 23.7%. In terms of personal income, the highest proportion fell within the range of 15,001 to 30,000 baht, accounting for 36.5%, while the range of 30,001 to 50,000 baht per month represented 25.5%.

4.2.2 Levels of Attitude, Marketing Mix and Acceptance of Online Payment via QR Code System of Consumers in Phuket City Municipality

Levels of attitude, marketing mix and acceptance of online payment via QR Code system of consumers in Phuket City Municipality were shown in table 1.

Table 1 Perception levels of attitude, marketing mix and acceptance of online payment via QR Code system of consumers in Phuket City Municipality

Factors	Average	S.D.	Level
Attitude of online payment via QR Code			
1. Customer Cost	4.10	0.78	High
2. Convenience	4.07	0.80	High
3. Communication	4.06	0.76	High
4. Format	4.11	0.76	High
Service marketing mix			
1. Product	4.07	0.77	High
2. Price	4.09	0.77	High
3. Place	4.06	0.78	High
4. Promotion	4.04	0.77	High
5. Personal	4.08	0.76	High
6. Physical appearance	4.09	0.76	High

7. Process	4.13	0.72	High
Acceptance of online payment via QR Code			
1. Comparative Advantage	4.12	0.74	High
2. Complexity	4.12	0.77	High
3. Observability	4.13	0.80	High
4. Compatibility	4.19	1.40	High
5. Perceived Risk	4.18	0.78	High

From Table 1, most of the samples have the opinion of attitude, marketing mix and acceptance of online payment via QR Code system of consumers in Phuket City Municipality were in high level. The majority of respondents have a high level of overall attitude towards all aspects, ranked in descending order as follows: Physical Appearance (Average score = 4.11) Cost (Average score = 4.10) Convenience (Average score = 4.07) and Communication (Average score = 4.06), respectively. Moreover, the majority of respondents have a high level of opinion on the importance of marketing mix factors in all aspects, ranked in descending order as follows: Process (Average score = 4.13) Presentation Format (Average score = 4.09) Price (Average score = 4.09) People (Average score = 4.08) Product (Average score = 4.07) Place and Distribution (Average score = 4.06) Promotion (Average score = 4.04), respectively. Furthermore, the majority of respondents have a high level of acceptance towards online payment via QR Code in all aspects. The ranking of their opinions from highest to lowest is as follows: Compatibility (Average score = 4.19), Perceived Risk (Average score = 4.18), Observability (Average score = 4.13), and Comparative Advantage and Complexity (Average score = 4.12), respectively.

4.2.2 Causal Factors Influencing Acceptance of Online Payment via QR Code of Consumers in Phuket City Municipality

Causal factors influencing acceptance of online payment via QR Code of consumers in Phuket City Municipality is shown in Figure 2 and Table 2 & 3.

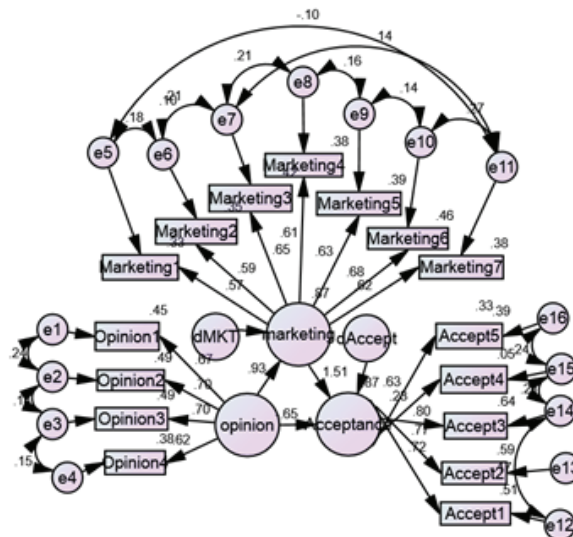


Figure 2 Structural Equation Model

Table 2 Analysis of the goodness-of-fit index of the structural equation modeling

Indicator	Criteria	Measured Indicator	Decision
Chi-square	$p > 0.05$	98.01 ($p = 0.062$)	Pass
Chi-square/DF	< 2.00	1.257	Pass
CFI	> 0.90	0.99	Pass
GFI	> 0.90	0.97	Pass
AGFI	> 0.90	0.95	Pass
RMSEA	< 0.05	0.025	Pass

From Table 2, it was found that the P-value is statistically significant at 0.062, with a predetermined criterion that it should be greater than 0.05. The result of the Chi-square test is 98.01, and the degrees of freedom (df) are 78. The ratio of Chi-square to df is 1.257, which is less than the specified criterion. The Goodness-of-Fit Index (GFI) is 0.97, exceeding the required threshold. The Adjusted Goodness-of-Fit Index (AGFI) is 0.95, also surpassing the specified criterion. The Comparative Fit Index (CFI) is 0.99, meeting the specified threshold. The Root Mean Square Error of Approximation (RMSEA) is 0.025, which is below the specified criterion. Based on the fit indices mentioned above, it can be concluded that the hypothetical research model is consistent with the observed data.

Table 3 Direct influence, indirect influence, and cumulative influence of causal factors

Independence Variable	Attitude			Marketing		
	DE	IE	TE	DE	IE	TE
Dependence Variable						
Marketing	0.933**	-	0.933**	-	-	-
$R^2 = 0.87$						
Acceptance	0.111*	0.648*	0.759*	1.508**	-	1.508**
$R^2 = 0.87$						
Remarks	* $p < 0.05$, ** $p < 0.01$					

From Table 3, the following key findings can be observed:

The attitude towards online payment via QR Code has a direct positive influence on marketing mix variables with a direct influence size of 0.933, which is statistically significant at the 0.01 level. The marketing mix variables have a direct positive influence on the acceptance of online payment via QR Code with a direct influence size of 1.508, which is statistically significant at the 0.01 level. The attitude towards online payment via QR Code has an overall influence on the acceptance of online payment via QR Code, with a total influence size of 0.759. This influence is further divided into a direct influence size of 0.111 and an indirect influence size (mediated by marketing mix variables) of 0.648. The overall influence is statistically significant at the 0.05 level. The coefficient of determination (R^2) for the acceptance of online payment via QR Code is 0.87, indicating that the attitude towards online payment via QR Code and marketing mix variables can collectively explain 87% of the variance in the acceptance of online payment via QR Code. The

coefficient of determination (R^2) for the marketing mix variables is 0.87, signifying that the marketing mix variables can collectively explain 87% of the variance in the acceptance of online payment via QR Code. These results highlight the significant influence of attitude and marketing mix variables on the acceptance of online payment via QR Code, which can be valuable insights for businesses in their strategic planning and marketing efforts.

Based on the study results, the research hypotheses can be summarized as follows:

Hypothesis 1: The attitude towards online payment via QR Code has a significant positive direct relationship with the marketing mix variables of consumers in the municipality of Phuket. The study results confirm this hypothesis, indicating that the attitude towards online payment via QR Code has a direct positive influence on the marketing mix variables with a direct influence size of 0.933, which is statistically significant at the 0.01 level.

Hypothesis 2: The marketing mix variables have a significant positive direct relationship with the acceptance of online payment via QR Code by consumers in the municipality of Phuket. The study results support this hypothesis, showing that the marketing mix variables have a direct positive influence on the acceptance of online payment via QR Code with a direct influence size of 1.508, which is statistically significant at the 0.01 level.

Hypothesis 3: The attitude towards online payment via QR Code has a significant positive overall relationship with the acceptance of online payment via QR Code by consumers in the municipality of Phuket. The study results validate this hypothesis, demonstrating that the attitude towards online payment via QR Code has an overall positive influence on the acceptance of online payment via QR Code. The total influence is divided into a direct influence size of 0.111 and an indirect influence size (mediated by marketing mix variables) of 0.648, both of which are statistically significant at the 0.05 level.

Hypothesis 4: The attitude towards online payment via QR Code has a significant positive indirect relationship with the acceptance of online payment via QR Code by consumers in the municipality of Phuket. The study results confirm this hypothesis, showing that the attitude towards online payment via QR Code has a positive indirect influence on the acceptance of online payment via QR Code. The indirect influence size is 0.648, which is statistically significant at the 0.05 level.

Hypothesis 5: The attitude towards online payment via QR Code has a significant positive overall relationship with the acceptance of online payment via QR Code by consumers in the municipality of Phuket. The study results support this hypothesis, indicating that the attitude towards online payment via QR Code has a positive overall influence on the acceptance of online payment via QR Code. The overall influence size is 0.759, which is statistically significant at the 0.05 level.

These findings provide valuable insights for businesses and marketers in the municipality of Phuket, as they indicate the importance of consumers' attitudes and marketing mix variables in influencing their acceptance of online payment via QR Code.

5. Conclusion, Discussion, and Recommendation

5.1 Conclusion

The main objectives of this study were to investigate the attitudes, marketing mix, and acceptance levels of online payment via the QR Code system, as well as to identify the causal factors influencing consumer acceptance of this payment method in Phuket City Municipality. The research adopted a quantitative approach, employing questionnaires to collect data from 400 consumers who had experience with online payments via QR Code in Phuket City Municipality, using purposive sampling. Quantitative data analysis was conducted using descriptive statistics. The findings revealed that a majority of the surveyed consumers in Phuket City Municipality held highly positive attitudes towards online payment via QR Code, and their perceptions of the marketing mix and acceptance were also at a high level.

Furthermore, the study identified a direct and statistically significant positive influence of attitudes towards online payment via QR Code on marketing mix variables. In turn, marketing mix variables exhibited a direct and statistically significant positive influence on consumers' attitudes towards accepting online payments via QR Code. Overall, attitudes towards online payment via QR Code, both in direct and indirect effects, had a statistically significant positive impact on consumers' willingness to accept this payment method, with an explanatory power of 87%. In other words, 87% of the variance in consumers' attitudes towards accepting online payment via QR Code could be explained by their attitudes towards online payment and marketing mix variables.

In conclusion, this research sheds valuable insights into the crucial role of attitudes and marketing mix variables in influencing consumer acceptance of online payment via QR Code in Phuket City Municipality. These findings have significant implications for businesses operating in the region, highlighting the importance of understanding consumer attitudes and optimizing marketing mix strategies to enhance acceptance of this payment method.

5.2 Discussion

From the research results, The variables of attitude towards online payment via QR Code have an overall, direct, and indirect influence on the acceptance of online payment via QR Code in a statistically significant positive manner. This research's findings are consistent with the study conducted by Nootchanart Suttiwong (2018), which investigated the influential factors on the intention to use electronic money (e-Money) payment services in Bangkok. The sample consisted of 400 smartphone users residing in Bangkok. The research revealed that the factors influencing the intention to use e-Money payment services in Bangkok were attitude, perceived ease of use, perceived usefulness, with attitude being the most significant factor. Moreover, the study found that the regression equation can predict the intention to use e-Money payment services in Bangkok with an accuracy of 73.9%.

The marketing mix variables have a statistically significant direct influence on the acceptance of online payment via QR Code in a positive manner. This research aligns with the findings of Walanchanapak (2018), who studied the factors influencing the behavioral intention to use mobile payment services among financial institutions and non-bank service providers. The objective was to investigate the factors influencing the behavioral intention to use mobile payment services among financial institutions and non-bank service providers using a quantitative research method under the Technology Acceptance Model (TAM) and the marketing mix concept. The marketing mix concept includes product factors, price factors, distribution factors, promotion factors, people factors, process

factors, physical evidence factors, and social influence factors. The study collected data from a sample group of consumers in the Bangkok metropolitan area and its vicinity, who have been exposed to mobile payment services since the years 1946-2009, from both financial institutions and non-bank service providers, totaling 405 datasets. The data were analyzed quantitatively using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). The study's results revealed that marketing mix variables positively influence the acceptance and usage behavior of Mobile Payment services.

Attitudes towards online payment through the QR Code system have a direct and positive correlation with the marketing mix variables concerning consumer behavior within Phuket City Municipality. This relationship is statistically significant. The findings of this research are consistent with the study conducted by Nootchanart Suttiwong (2018), which examined the influential factors on the behavioral intention to use e-Money mobile payment applications in Bangkok. The study utilized a sample of 400 smartphone users residing in Bangkok, selected through random sampling. The results revealed that the factors influencing the behavioral intention to use e-Money mobile payment applications in Bangkok were attitude, perceived ease of use, and perceived benefits of using the service. Among these factors, attitudes had the most significant impact on the behavioral intention to use e-Money mobile payment applications. Additionally, the study's regression analysis showed that the model could predict the behavioral intention to use e-Money mobile payment applications in Bangkok with an accuracy of 73.9%.

5.3 Recommendation

5.3.1 Suggestions for Applying the Research Results

From this research, it is possible to develop recommendations for utilization that financial institutions and relevant organizations can implement to enhance the level of acceptance of online payment through the QR Code system among consumers in Phuket City Municipality. The following strategies can be employed:

Strengthening Attitudes and Knowledge: Financial institutions and relevant organizations should focus on fostering positive attitudes and enhancing knowledge among consumers regarding the benefits of using online payment through the QR Code system. The quantitative research findings have demonstrated that attitude has a statistically significant direct and indirect influence on the acceptance of online payment through QR Code, making it crucial to develop initiatives to improve consumer perceptions.

Implementing Marketing Mix Elements: Leveraging marketing mix elements can significantly impact the acceptance of online payment through the QR Code system. Financial institutions and relevant organizations should focus on product development, pricing strategies, distribution channels, and promotional efforts. Additionally, enhancing customer communication and physical presentation can further contribute to higher acceptance rates.

By employing these strategies and taking into account the marketing mix elements, financial institutions and relevant organizations can effectively increase the level of acceptance of online payment through the QR Code system among consumers in Phuket City Municipality. These approaches can lead to higher consumer satisfaction and contribute to the growth of the digital payment ecosystem in the region.

5.3.2 Suggestions for Further Research

(1) For future research, it is recommended to study the causal factors that influence the acceptance of online payment among consumers in Phuket City Municipality using other online payment technologies beyond the QR Code system. By comparing the results of these factors from various online payment technologies, a more comprehensive dataset can be obtained.

(2) It is advisable for future research to conduct repeat studies on this subject during different time intervals. Time changes may impact consumer behavior within Phuket City Municipality due to various external factors that rapidly evolve. These external factors might lead to changes in the acceptance of online payment among consumers in the area.

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