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Factors Influencing the Acceptance and Usage of Food Delivery Applications by Consumers in Bangkok and the Bangkok Metropolitan Region

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Abstract

This research aims to investigate the factors influencing the acceptance and usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region. It also seeks to compare these factors using the modified Unified Theory of Acceptance and Use of Technology (UTAUT2), incorporating performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit as independent variables.

Data were gathered from 425 consumers in Bangkok and the Bangkok Metropolitan Region through survey questionnaires. Content validity was ensured through expert reviews, and measurement reliability was assessed using Cronbach's Alpha coefficient. Discriminant validity was evaluated using correlation coefficients and Analyze data to determine the relationships between variables using multiple regression analysis.

The research findings reveal that habit is the most influential factor impacting the acceptance and usage of food delivery applications by consumers, with a Beta coefficient of 0.701. This is followed by performance expectancy (Beta coefficient = 0.158), social influence (Beta coefficient = 0.103), and hedonic motivation (Beta coefficient = 0.096). Conversely, factors such as effort expectancy, facilitating conditions, and price value were found to have no significant impact on consumers' acceptance and usage of food delivery applications.

Keywords: Food Delivery Applications, Acceptance and Usage of Technology, UTAUT2

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Introduction

Since the COVID-19 pandemic, people across the world have significantly changed their behaviors and activities from the pre-pandemic era in various aspects. This includes a transformation in work patterns from traditional commuting to online work, a shift in education to online learning, and even daily routine activities towards more reliance on digital platforms. Consequently, technology has been increasingly playing a vital role in daily lives in all aspects, affecting people's behaviors. The COVID-19 situation has seemed to improve since some countries in Southeast Asia returned to normalcy and reopened borders for normal travel. Thailand started transitioning back to normalcy with the notification of the Ministry of Public Health on September 19, 2022 (Ministry of Public Health, 2022) that COVID-19 was classified as a communicable disease under surveillance. This important point returns people to normal lives. However, some organizations continue to implement measures that are similar to those during the outbreak. In summary, although the situation of the COVID-19 pandemic has transitioned towards normalcy, technology continues to play a significant role in various aspects of daily life, including the popularization of food delivery services, especially among new users in major cities in Thailand. According to the Year in Search Thailand 2020 report, which studied the searching of users on Google's platform, it found that although online food ordering has been growing since the pre-COVID-19 pandemic, the outbreak significantly boosted its popularity, particularly among new users in major cities of Thailand.

In 2023, the Creative Economy Agency (Public Organisation) released a report summarising global trends and emerging consumer behaviours of Thai Small and Medium-sized Enterprises (SMEs). The report stated that consumers across all generations have adapted and are using online platforms more frequently to facilitate their daily lives. Food delivery applications have become one of the popular choices that customers use to enhance their daily convenience. Additionally, the Kasikorn Research Center presented that the market trend of food delivery has increased since 2022 due to service providers who continuously boost their sales by running promotions. However, in 2024, the Kasikorn Research Center predicts a decrease in the number of food delivery orders from online applications due to a reduction in customers' needs. This is because consumers have returned to full-time work at offices and food prices in the applications have been increased (Kasikorn Research Center).

However, it is not important how the market trend of the food delivery service is. Ordering food online through applications on mobile devices is still in demand. As observed from the Kasikorn Research Center's assessment, it is projected that in the year 2024, the food delivery market in Thailand will reach an estimated value of 86 billion baht. Additionally, according to the report of Momentum Works from Singapore, titled 'Food Delivery Platforms in Southeast Asia' (Momentum Works, 2023), which demonstrated data and in-depth analysis of the food delivery business in six major markets in the region, it is evident that there have been key players and market shares in the food delivery platform service providers in Thailand since 2022 as follows: Grab Food at 51%, LINE MAN at 24%, Food Panda at 16%, Robinhood at 6%, and SHOPEE Food at 3%. In 2023, Momentum Works also reported that Grab Food maintained the top market share at 47%, followed by LINE MAN at 36%.

The COVID-19 pandemic led to a change in people's lifestyles, resulting in increased adaptation and the use of technology, making technology an indispensable part of daily life. One aspect of incorporating technology into daily life is the usage of food delivery platform service

providers, which have a market value in Thailand of more than 80 billion baht. As the information above and a few major players in food delivery platform service providers in Thailand, the researchers are, therefore, interested in exploring the factors that drive consumers to use food delivery applications. The anticipated benefits of this research include the ability to compare the factors influencing the acceptance and usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region. This finding can be valuable for organizations or interested parties seeking to improve their food delivery application services. The specific objectives of this research are as follows paragraph.

Research Objectives

This research utilizes factors from the modified Unified Theory of Acceptance and Use of Technology (UTAUT2) to investigate the factors influencing the acceptance and usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region. The objectives of the study are as follows:

1. To study the factors influencing the acceptance and usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region.
2. To compare these factors using the modified Unified Theory of Acceptance and Use of Technology (UTAUT2).

Literature Review

Theoretical

The modified Unified Theory of Acceptance and Use of Technology (UTAUT2) is a theory jointly developed (Venkatesh et al., 2012) by integrating eight behavior theories. These theories include the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), the Theory of Planned Behavior (TPB) (Ajzen, 1985), the Technology Acceptance Model (TAM) (Davis et al., 1989), the Model of PC Utilization (MPCU) (Thompson et al., 1991), The Diffusion of Innovation Theory (DOI) (Rogers, 1995), the Motivational Model (MM) (Vallerand, 1997), the Social Cognitive Theory (SCT) (Compeau & Higgins, 1995), and the combined TAM and TPB (C-TAM-TAB) (Taylor & Todd, 1995). This integration aims to improve the model's comprehensiveness and relevance, particularly in consumers' usage context. The further study revealed that the key factors influencing behavioral intention are Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value, and Habit. Additionally, Gender, Age, and Experience Serve as Supplementary Variables. This can be summarized in the model depicted in Figure 1.

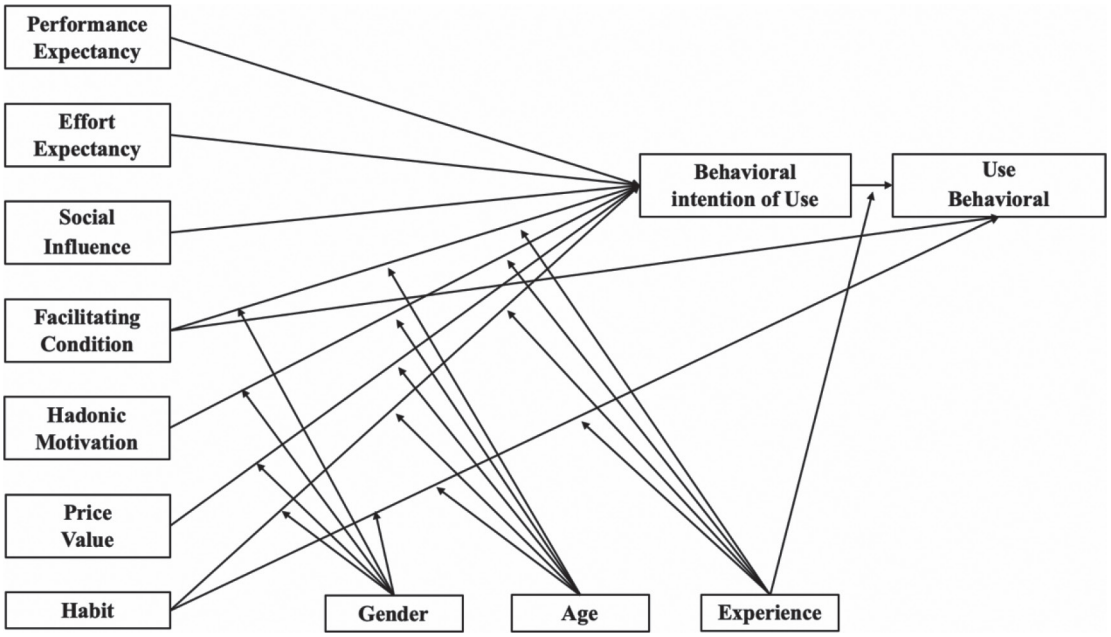

Figure 1 The Relationship Model of Factors in UTAUT2 (Venkatesh et al., 2012)

Performance Expectancy refers to the level at which individuals believe that using a system will help users gain rewards or benefits from their usage. Importantly, expectations of performance influenc the intention to use the system (Venkatesh et al., 2003).

Effort Expectancy refers to the level of convenience associated with using a system, which is crucial, especially in the initial stages of adopting new behaviors or activities. Expectations regarding effort exertion are significant both in the context of usage and in influencing intention to use the system (Venkatesh et al., 2003).

Social Influence refers to the level of perception at which individuals perceive the importance of others and believe that they should choose to use a particular system (Venkatesh et al., 2003).

Facilitating Condition refers to the level at which individuals believe that infrastructure and technical aspects of a system support its usage (Venkatesh et al., 2003).

Hedonic Motivation refers to the enjoyment or satisfaction derived from using technology (Venkatesh et al., 2012).

Price Value refers to the comparison of the value between the costs incurred in using technology and the benefits derived from using it (Venkatesh et al., 2012).

Habit refers to the tendency to exhibit automatic behavior patterns resulting from past learning experiences (Venkatesh et al., 2012).

Research

Research studies that employ factors from the UTAUT2 model to examine the acceptance and use of food delivery applications include the study on the "Determinants of continuous intention on food delivery apps" (Lee et al., 2019), "The study on the key determinants of continuance usage intention: An empirical study of mobile food delivery apps among Malaysians" (Yapp & Kataraian, 2022) and the study on "Consumers' Food Delivery Apps (FDAs)

continuance intention: An empirical investigation using the extended UTAUT2 model" along with data quality, time saving, and convenience factors (Mohammad & Sume, 2023). All studies found that factors from the UTAUT2 model influenced the use of food delivery applications. However, the specific factors that exhibited significant effects varied across the studies.

Furthermore, there are studies that have applied factors from the UTAUT2 model to examine the acceptance and use of other technologies, such as the trust factor as independent variables in studying the behavior and factors affecting dietary supplements purchasing decisions on the application Shopee for different generation: Gen X and Gen Y (Sombatcharoenmuang, 2021), the study on factors affecting electrical machines purchasing intention on online marketplaces (Inthrachom, 2022), the user acceptance of Autonomous Public transport Systems (APS): Extended UTAUT2 (Korkmaz et al., 2022), the factors influencing intention to use Mobility as a Service (MaaS) in Bangkok (Pakpisutkul, 2022) and the study examining the factors affecting teachers' use of digital learning resources with UTAUT2 (Avci, 2022). The findings indicate that the UTAUT2 factors employed in these studies influenced the use of the aforementioned technologies. However, the specific factors affecting technology use varied across studies, depending on the particular research context.

Conceptual Framework

From the study of relevant theories, it was found that various factors influencing the acceptance and use of technology according to the UTAUT2 theory can be used to explain the acceptance and usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region. However, some factors do not influence the acceptance and usage of food delivery applications. Therefore, the researcher has excluded age, gender, and experience from the study (Pakpisutkul, 2022). As a result, the conceptual framework can be illustrated as shown in Figure 2.

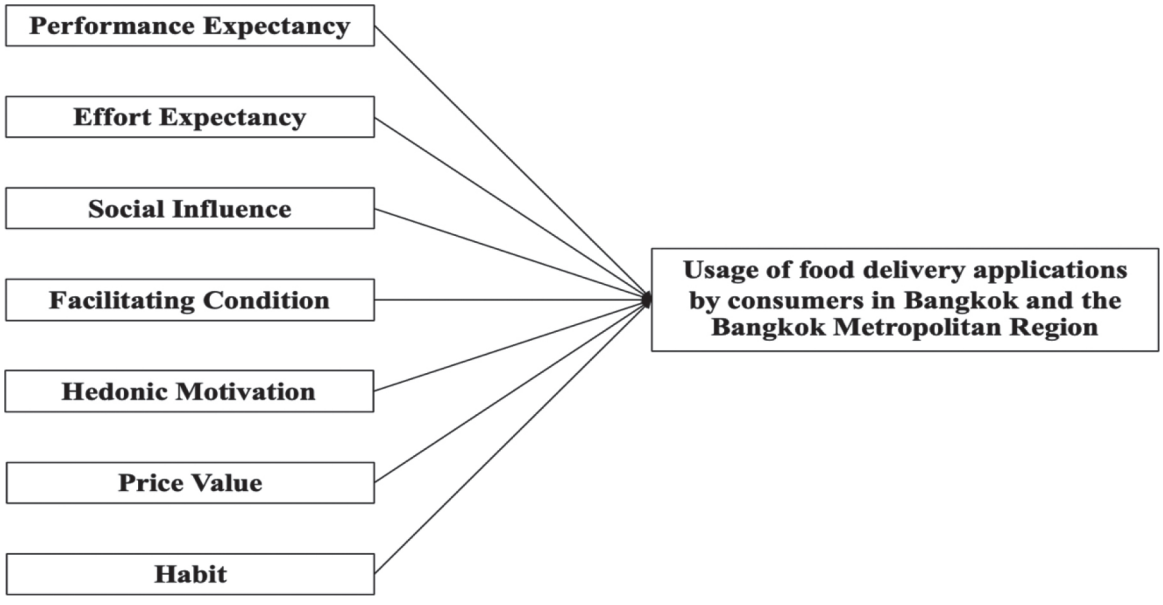

Figure 2 Framework for Studying Factors Influencing the Acceptance and Usage of Food Delivery Applications by Consumers in Bangkok and the Bangkok Metropolitan Region, Adapted from UTAUT2 Theory (Venkatesh et al., 2012).

Research Hypothesis: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Condition, Hedonic Motivation, Price Value and Habit have relationships to the usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region.

Methodology

This research is a quantitative study, conducted by survey research methodology. The data was collected through questionnaires.

The Population and Sample Size comprise the consumers in Bangkok and the Bangkok Metropolitan Region who have previously used food delivery applications. As this is a survey research with a known total population, the researcher employed Taro Yamane's formula (Yamane, 1973) to determine the sample size.

To represent the population size of Bangkok and the Bangkok Metropolitan Region (more than 100,000 people) in the formula to calculate the sample size according to Taro Yamane's formula with a 95% confidence level (e = 5%), the researchers needed to use a sample group size of 400 people to prevent errors in data collection or unusable data. This research has a sample size of 425 people.

Research Instrument

This research is quantitative research, which uses an online questionnaire to collect data in accordance with the research objectives. The questionnaire structure consists of three parts. Part 1 includes screening questions to verify if respondents have previously used food delivery applications in Bangkok and the Bangkok Metropolitan Region. Part 2 comprises personal data questions including gender, age, education level, occupation, and monthly income. Questions in Part 2 are closed-ended questions using nominal and ordinal measures. Part 3 consists of questions related to factors that influenc consumer acceptance and the usage of food delivery applications in Bangkok and the Bangkok Metropolitan Region. The questionnaire in Part 3 involves a rating scale with 29 items, categorized as an interval scale by dividing the measurement into 5 levels (Five-Point Likert Scales).

Data Collection

The researcher conducted quantitative data collection through survey research, gathering primary data directly from the population and sample groups with closed-ended questions. This was processed through an online platform (Google Forms). Additionally, secondary data was collected through a literature review, including theories, documents, and related articles, to provide foundational information for the research.

Data Analysis and Statistics Used in the Research

Data analysis was conducted by statistical software to analyze the data collected from the questionnaire. Part 1 consisted of screening questions, and Part 2 involved analysing demographic data with descriptive statistics such as frequency distribution, mean, and percentage. Part 3 involved questions related to factors that influenc consumer acceptance and the usage of food delivery applications in Bangkok and the Bangkok Metropolitan Region, analyzed with multiple regression analysis. The study compared and analyzed the factors influenc consumer acceptance and the usage of food delivery applications in Bangkok and the Bangkok Metropolitan Region.

Research Results

From the study of demographic data and usage of food delivery applications among the sample group, including gender, age, education level, occupation, and monthly income, the data can be summarized in numbers and percentages for the sample group, as shown in Table 1.

Table 1 Descriptive Analysis of Respondent Demographic

Demographic	Frequency	Percentage (%)
Gender		
Male	199	46.824
Female	211	49.647
Not specified	15	3.529
Total	**425**	**100**
Age		
59 Years or Older (Born Before 1965)	100	23.529
44-59 Years (1965-1980)	109	25.647
29-43 Years (1981-1995)	116	27.294
13-28 Years (1996-2011)	100	23.529
Total	**425**	**100**
Education Background		
Undergraduates	99	23.294
Graduate	248	58.353
Postgraduate	78	18.353
Total	**425**	**100**
Gender		
Male	199	46.824
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Not Specified	15	3.529
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Table 1 Descriptive Analysis of Respondent Demographic (Con.)

Demographic	Frequency	Percentage (%)
Education Background		
Undergraduates	99	23.294
Graduate	248	58.353
Postgraduate	78	18.353
Total	**425**	**100**
Occupation		
Government Official	90	21.176
Employees of State Enterprises	37	8.706
Company Employees	115	27.059
Business Owner	53	12.471
Employed	9	2.118
Students	49	11.529
Retired/Unemployed	65	15.294
Others	7	1.647
Total	**425**	**100**
Income		
Under 10,000 Baht	19	4.471
10,001-25,000 Baht	102	24.000
25,001-50,000 Baht	139	32.706
50,001-65,000 Baht	120	28.235
65,001-80,000 Baht	30	7.059
80,001 Baht or Above	15	3.529
Total	**425**	**100**

An observation from data collection is that respondents aged 59 and above were already users of food delivery applications. This is attributed to the use of an online questionnaire for data collection, which included a screening question to ensure that only individuals with actual experience using food delivery applications participated in the study.

Analysis of the data from the sample group, who responded to 29 questionnaire items pertainin pertaining to the research factors, revealed that the majority of respondents agreed with these factors. The mean score was 4.034 with a Standard Deviation (SD) of 0.858.

Content Validity

To ensure the accuracy and reliability of the questionnaire used in hypothesis testing, the researcher presented the questionnaire to experts to verify its content validity, i.e., the consistency between the questionnaire items and the defined concepts. The questionnaire was then revised based on the experts' suggestions.

Scale Reliability Test

The researchers used part 3 of the questionnaire, which contains questions related to factors that affect consumer acceptance and the usage of food delivery applications in Bangkok and the Bangkok Metropolitan Region in order to test the reliability of the measures. This was conducted to assess the reliability and accuracy of the questionnaire's questions. The statistical value used for this test is Cronbach's Alpha, and the results of the reliability test of the measures are shown in Table 2.

Table 2 Cronbach's Alpha Coefficient Value of the Measures (N = 425)

Variable	No. of Item	Cronbach's Alpha (α)
Performance Expectancy (PE)	4	0.746
Effort Expectancy (EE)	4	0.875
Social Influence (SI)	4	0.834
Facilitating Condition (FC)	4	0.719
Hedonic Motivation (HM)	4	0.893
Price Value (PV)	3	0.841
Habit (HB)	3	0.822
Use Behavior (UB)	3	0.916

The Cronbach's Alpha coefficient of the measure ranges from 0.719 to 0.916, indicating that no variable has an alpha coefficient lower than 0.7 (Nunnally, 1978). This suggests that all items in the questionnaire have passed the quality testing of the instrument, hence these items are considered reliable and acceptable.

Discriminant Validity by Correlation Coefficient

Analyzing correlation coefficients to study the relationship between variables with the values obtained from statistical software testing reveals that the correlation coefficients for each variable pair range between -0.026 and 0.659. This indicates that there is no high linear relationship between the variable pairs, as shown in Table 3, consistent with Hair et al. (2019). It has been found that when a variable pair has a correlation coefficient equal to or greater than 0.80, there may be issues such as high linear relationships among independent variables or multicollinearity problems in the linear model.

Table 3 Correlation Analysis

Independent Variables	PE	EE	SI	FC	HM	PV	HB
PE	1.000						
EE	0.624	1.000					
SI	0.183	-0.002	1.000				
FC	0.572	0.643	0.009	1.000			
HM	0.403	0.170	0.587	0.253	1.000		
PV	0.89	0.222	0.469	0.270	0.659	1.000	
HB	0.534	0.370	0.203	0.411	0.546	0.560	1.000

Multiple Regression Analysis

From collecting data via a screened questionnaire with a total sample size of 425, the researchers conducted multiple regression analyses to test the research hypotheses. The results of hypothesis testing at a statistically significant level of 0.05 are shown in Table 4.

Table 4 Statistic Used to Assess the Adequacy of the Multiple Regression Equation of Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.872	0.760	0.756	0.4986

From Table 4, the Adjusted R-Square value of 0.756 indicates that the independent variables can partially explain the dependent variable or can explain the expectations regarding Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value, and Habit. These variables have a relationship with the usage of food delivery applications by consumers in Bangkok metropolitan and suburban areas, accounting for 75.6% (based on the guideline that R-Square > 0.5 is considered very good).

Based on the overall hypotheses, the researchers summarized the results from the analysis of variance (ANOVA) as shown in Table 5.

Table 5 Variance Analysis Results

Model	Analysis	Sum of Square	df	Mean Square	F	Sig.
1	Regression	329.125	7	47.081	189.131	0.000*
	Residual	103.666	417	0.249	-	-
Total		432.791	424	-	-	-

Source: *Statistically significant at the level of 0.05

From Table 5, it is found that P-value of the regression is 0.000, which is less than 0.05, leading to the rejection of H_0 and acceptance of H_1. This can be explained as follows: At least one independent variable has a statistically significant relationship with the dependent variable at the 0.05 level.

After establishing the hypotheses regarding the relationship between variables, the researchers proceeded to test these hypotheses against the regression coefficients obtained from the analysis using statistical software, specifically through Multiple Regression Analysis, as shown in Table 6.

Table 6 Regression Coefficient of Independent Variables

Independent Variables	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	VIF
	B	Std. Error				
(Constant)	-1.036	0.261	-	-3.968	0.000*	-
Performance Expectancy (PE)	0.281	0.065	0.158	4.353	0.000*	2.299
Effort Expectancy (EE)	0.017	0.060	0.010	0.275	0.784	2.106
Social Influence (SI)	0.157	0.047	0.103	3.309	0.001*	1.674
Facilitating Condition (FC)	0.107	0.064	0.055	1.656	0.098	1.924
Hedonic Motivation (HM)	0.129	0.051	0.096	2.514	0.011*	2.473
Price Value (PV)	0.016	0.045	0.012	0.349	0.727	2.179
Habit (HB)	0.832	0.039	0.701	21.129	0.000*	1.914

Source: *Statistically significant at the level of 0.05

From Table 6, the VIF values are between 1.914 and 2.473, which are not higher than 10. This means none of the independent variables has the problems of multicollinearity or self-correlation (Cooper & Schindler, 2014). Moreover, from the observing statistically significant results at the 0.5 level of significance, with regression coefficients arranged from highest to lowest, it is found that the variables that influence the usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region, with a P-value less than 0.05, are as follows: 1) Habit (HB) has a positive regression coefficient of 0.701, meaning that a one-unit increase in habit will increase the usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region by 0.701. 2) Performance Expectancy (PE) has a positive regression coefficient of 0.158, meaning that a one-unit increase in performance expectancy will increase the usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region by 0.158. 3) Social Influence (SI) has a positive regression coefficient of 0.103, meaning that a one-unit increase in social influence will increase the usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region by 0.103. Additionally, 4) Hedonic Motivation (HM) has a positive regression coefficient of 0.096, meaning that a one-unit increase in hedonic motivation will increase the usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region by 0.096. These relationships can be expressed in predictive equations as follows:

$$\mathbf{Y = -1.036 + 0.281(PE)} + \textit{(EE)} \mathbf{+ 0.157(SI)} + \textit{(FC)} \mathbf{+ 0.129(HM)} + \textit{(PV)} \mathbf{+ 0.832(HB)}$$

Discussion and Conclusion

Most of the sample group consists of females aged between 29 and 43 years old (born between 1981 and 1995), or Generation Y, which is not significantly different from other age groups. They mostly hold bachelor's degrees, with professions predominantly as corporate employees and government officials. Their monthly income ranges from 25,001 to 50,000 Baht and 50,001 to 65,000 Baht.

Based on the analysis according to the hypotheses, it was found that the most influential factor in the acceptance and usage of food delivery applications among consumers in Bangkok and the Bangkok Metropolitan Region is the habit factor ($\beta = 0.701$). Following this is the performance expectancy factor ($\beta = 0.158$), the social influence factor ($\beta = 0.103$), and the hedonic motivation factor ($\beta = 0.096$), respectively. The factors influencing the acceptance and usage of food delivery applications were consistent with the studies of Sombatcharoenmuang (2021), Inthrachom S. (2022), Korkmaz et al. (2022), and Avci (2022). Meanwhile, the effort expectancy factor, the facilitating conditions factor, and the price value factor did not significantly impact the acceptance and usage of food delivery applications among consumers in Bangkok and the Bangkok Metropolitan Region. which was consistent with the studies of Korkmaz et al. (2022), Pakpisutkul (2022), and Yapp and Kataraian (2022).

Recommendations

Recommendation for Organizations

The study findings indicate that the factors that influence the acceptance and usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region, in order of importance: habit as the primary factor, performance expectancy as the secondary factor, followed by social influence and hedonic motivation as the third and fourth most influential factors, respectively. Based on these results, the following recommendations can be made for organizations or companies seeking to utilize this information to adjust their operational strategies:

1. Emphasize building trust and habit formation by creating positive and reliable user experiences. Focus on convenience, safety, and satisfactory interactions to establish confidence and increase the likelihood of repeat usage.
2. Enhance performance expectancy by improving the application's efficiency, such as reducing delivery times and upgrading system quality. These improvements aim to elevate user expectations and satisfaction with the service.
3. Foster engagement and social influence by utilizing compelling social media strategies and promotional campaigns. These efforts aim to enhance user engagement and motivation for continued application usage.
4. Developing hedonic motivation by enhancing enjoyable and interesting experiences through the addition of engaging features and providing a user-preferred experience.
5. Examine other factors such as usability, facilitating conditions, and price value to identify ways to appropriately enhance their impact on the acceptance and usage of the application.

Recommendation for Future Research

This Research on factors that influence the acceptance and usage of food delivery applications by consumers in Bangkok and the Bangkok Metropolitan Region reflects consumer opinions at the time of research. To ensure more comprehensive and beneficial future studies, researchers should consider the following aspects:

1. Examine the relationship between demographic characteristics and usage behavior by analyzing the correlation between demographic factors such as gender, age, education level, and income, and application usage patterns. This analysis aims to understand how different user groups vary in their behavior.

2. Consider factors that may influence the use of food delivery applications, including Economic factors, such as pricing and promotions, Technological factors, such as ease of use and Social factors, such as information sharing and reviews. Additionally, examine other factors that may affect acceptance and usage, such as security and privacy concerns.

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