

# FACTORS INFLUENCING ON INTENTION TO USE SELF-SERVICE PARCEL DELIVERY SERVICE: AN EMPIRICAL CASE STUDY OF METROPOLITAN AND GREATER BANGKOK AREA

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## Abstract

*The retail sales of global e-commerce are continuously growing, and e-commerce has gained a huge share from physical retail over the last decade because of the impact of better internet access and technology development. All these make online shopping easier and more convenient. However, e-commerce businesses face many problems especially the risk of delayed delivery that is the delivery process that delays the arrival of parcels for the customers. This delay called “Last Mile Problem” has negative effects on the online shopping of customers”. Delivery service providers have developed the Self-service Parcel Delivery Service to solve the last mile problem. Self-service parcel delivery Service is popular among online customers in many countries around the world. Thai delivery service providers have introduced this service for Thai online customers. This research aims to determine the factors that have influence on intention to use Self-service Parcel Delivery Service in Thailand. This research used the non-probability sampling where the respondents were selected by convenience sampling technique, judgement sampling technique, snowball sampling technique and quota sampling technique. Multiple Linear Regression was used to investigate the impact, relationship, and difference between dependent and independent variables. In addition, Independent Sample T-Test was employed to distinguish the mean difference between intention to use Self-service Parcel Delivery Service among people who live in Bangkok -metropolitan and non -metropolitan. The results from 400 respondents showed that location convenience is the most influential factor toward intention to used Self-service Parcel Delivery Service and that there is no significant mean difference in the intention to use Self-service Parcel Delivery Service among people who live in Bangkok-metropolitan and Non-Bangkok metropolitan. This study offers valuable theoretical and managerial implications for delivery service providers to concentrate on their marketing strategies and services customization for target customer groups.*

**Keywords:** Self-service parcel delivery service, Risk of delayed delivery, Location convenience, Innovativeness, Optimism, Perceived time pressure, Need of human interaction,

## 1. INTRODUCTION AND STATEMENT OF PROBLEM

In the era of e-commerce, the retail sales of global e-commerce have 13% growth and e-commerce has gained a huge share from physical retail over the last decade due to the impact of better internet access and technology development. Moreover, online shopping comprises 54% of smartphone activity. Companies themselves try to adapt to mobile platforms in order to offer convenient and fun shopping experience. (Brenda, 2018). The average digital adult spends five hours per day on the mobile device and “50% of the time is spent on social messaging, media and entertainment applications”. Moreover, the fast growing yet low market share of e-commerce means there is an opportunity for new players to get in to the e-commerce market. The largest e-commerce market is in China and is expected to reach 672 billion USD in 2020, followed by USA which is expected to reach \$340 billion USD. In addition, the retail e-commerce sales in China is expected to increase to 956 billion USD in 2022. The fast growing trend of e-commerce encourages companies and players to enter the e-commerce market. Customers benefit because they have more retailer choices. There were 730 million internet users in China in 2017 that make up 40% of global retail e-commerce, and mobile payment market is escalating 11 times of the U.S. market size. These is brought about by more than 300 million middle class consumers with increasing disposable income and rising consumption in China (Polina, 2017).

Thailand is the second largest economy in Southeast Asia and has the highest number of internet users with approximately 57 million internet users using digital technologies, mobile, and e-commerce. The growing internet in Thailand makes it a keen environment for e-commerce businesses. In 2018, the Thai e-commerce market was valued at 3.5 billion USD and is expected to generate revenue growth rate of 13.2 percent annually, and is also expected to reach 5.8 billion USD in 2022 (Vasundhara, 2018). In addition, Thai people have used more social media to communicate to each other. The increasing use of the internet, smartphones, and credit cards contribute to the fast-growing e-commerce in the Thai market (Aparna, Arnika, Pilasinee & Vaishali, 2017). The delivery logistic has been increased along with e-commerce business growth.

However, there are many problems of delayed delivery which have negative effects on online shopping. The last mile delivery is a major issue for businesses, especially for those who require delivery from warehouses to customers in e-commerce business. The issue is fundamental for the efficiency of delivery logistics. The issue has been called "The Last Mile Problem" (Lalamove, 2017). The Last Mile Problem is essentially bridging the last mile of delivery for goods from distribution hubs to customers. The delivery service providers have introduced and provided Automated Postal Machine in order to reduce the last mile problems for the customers. In 2018, there were many companies that provided Automated Postal Machine for their customers, such as FedEx, UPS, DHL, Kerry, Lalamove, Thai Post, SCG etc. Furthermore, the Automated Postal Machine is a tool for e-commerce companies to provide delivery services for customers such as Amazon.com and Big C.

The Self-service Parcel Delivery Service is popular in the USA, European countries, and China. In the USA, the Automated Postal System Market is expected to be worth 1,022.2 million USD by 2023 (Marketsandmarkets, 2018). The Self-service Parcel Delivery Service also expanded to Thailand in 2016. Thai and international logistic companies and delivery service providers proposed to reduce the last mile problem.

Therefore, this research aims to determine the factors that influence the intention to use Self-service Parcel Delivery Service in Thailand.

## 2. LITERATURE REVIEW

Yuangao, Jing, Shuiqing and June (2018) believe that there are two kinds of factors that influence the intention to use of Self-service Parcel Delivery Service. These factors are individual factors and situational factors. Parasuraman (2000) stated that individual factors strongly affect new technology acceptance, e.g. self-service parcel delivery that is also considered to be new technology in Thailand. Belk (1975) described situational factors as the behavior of consumers toward the physical or social environment.

### 2.1) Situational factors

Resource matching theory is applied to explain situational factors and how to optimize the consumer's cognitive resources to complete tasks (Anand & Sternthal, 1990). They believed that the consumer's cognitive resources are limited. When consumers matched the cognitive resource with tasks, they may receive the best outcomes and the consumer decision making process will be affected.

#### 2.1.1) Convenient location

The location is important to service providers since the production and service delivery should be efficient. The location of the service provider is important for the customers to receive their deliveries. (Lovelock, 1983). Collier, Moore, Horky, and Moore (2015) used convenient location to explain consumer's perceived time pressure in using self-service technologies. Jones, Mothersbaugh and Beatty (2003) explained the relationship between consumer satisfaction and location convenience and concluded that service providers can leverage convenient location as competitive strategy.

The self-service parcel allows customers to travel to the service point. If the self-service pickup machine is installed far from the customers' convenient location, customers may choose the other alternative services. Moreover, Anand and Sterathal (1990) introduced the resource matching theory and recommended that customers should match the cognitive resource to the task. When the location is too far or difficult for customer to access, the task requires more cognitive resource.

#### 2.1.2) Perceived time pressure

Time pressure is a type of psychological stress that occurs when a person has less time to complete a task. If a consumer perceives time pressure, they cut and focus their choices. In low time pressure situation, consumers are more considerate on their choices, so the judgement may be better than those who have are in time pressured situations (Phil, 2016). Beatty and Smith (1987) focused time pressure in the information processing while Baker and Cameron (1996) included time pressure in service quality evaluations. Stephen and Kirk (2008) claimed the customers may not perceive excellent service delivery when the service providers serve them in a rush. In addition, Herrington and Capella (1995) reported a negative relationship between perceived time pressure and shopper's supermarket purchasing behavior. In real situations, busier customers spend less shopping time in the supermarkets. They prefer online shopping and home delivery. Based on the resource matching theory (Anand & Sternthal, 1990), perceived time pressure will influence the allocation of customer's cognitive resources,

if the perceived time pressure is high, users may not spend too much cognitive resources on the task.

## **2.2) Socialized factors**

The need of human interaction is considered to be a part of consumer coproduction theory of Lovelock and Young (1979). Langeard, Bateson, Lovelock, & Eiglier (1981) and Bitner, Booms and Tetreault (1990) found that human interaction is a socialized factor and it becomes an important factor in responding to consumers when the face-to-face service involves special needs, requirements, or preferences. Diana and Christina (2009) found that human interaction is more important than technological interactions. Human interaction is the most important element of customers' overall satisfaction. Ledingham (1984) found that using videotext service at home cannot compensate for the loss of the need for human interaction. Human interaction as a socialized factor should be considered in this Self-Service Parcel Delivery Service research as part of the home delivery service business. In addition, the consumer behavior should be also described by the need for human interaction as consumer trait. A high level of need for personal interaction has negative effect to the desire to try a self-service technology (Dabholkar, Thorpe, & Rentz, 1996).

## **2.3) Individual factors**

Parasuraman (2000) used four personality traits to measure people's readiness to use new technologies. These are optimism and innovativeness (contributors) and discomfort and insecurity (inhibitors). The contributors are determined only and are considered as individual factor. However, both discomfort and insecurity have not passed the principal components analysis with varimax rotation (Yuangao, et al., 2018).

### **2.3.1) Innovativeness**

Parasuraman (2000) used innovativeness as a factor to investigate the acceptance of a new technology or a new product. Innovativeness can be viewed as the level by which an organization is able to introduce newer technologies than its competitors (Rogers, 2003). Many researchers found that innovativeness has positive influence to organizational performance evaluation (Grawe, Daugherty, & Roath, 2011; Han, Kim, & Srivastava, 1998; Hult, Hurley, & Knight, 2004). Thakur and Srivastava (2015) also suggested that innovativeness has a positive influence on consumer intention to use online retailing and effectively decreased the perceived risk from online shopping. Innovativeness develops the competitive advantage for an organization so the technology should be differentiated and difficult to copy by others in the same industry (Barney, 1991; Day, 2000).

### **2.3.2) Optimism**

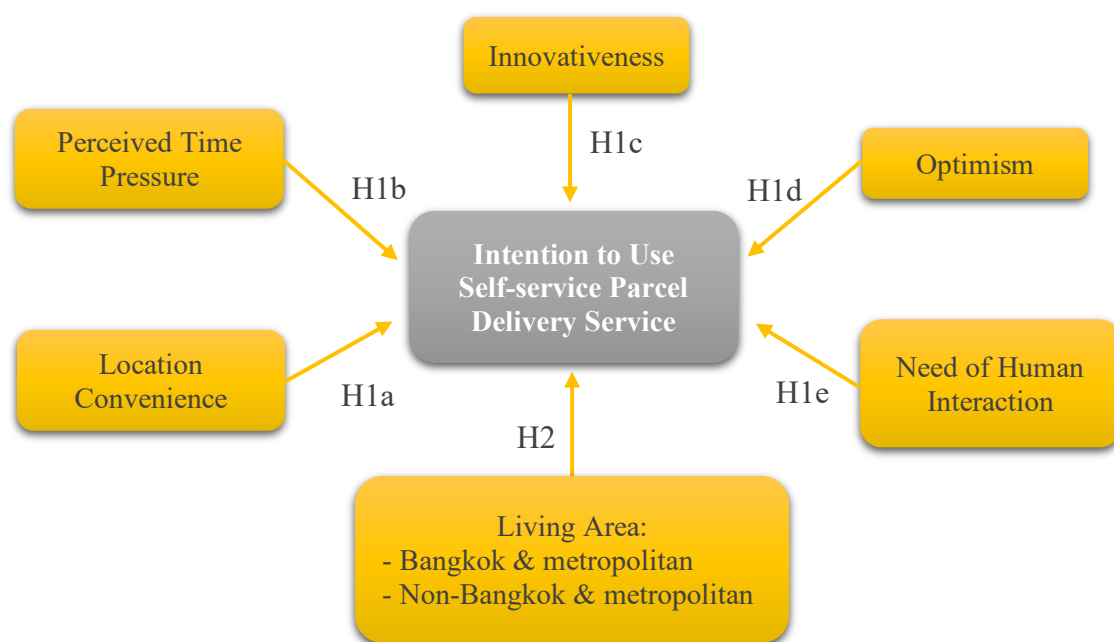
Optimism is mentioned as a positive attitude towards technology and a belief that help to improve management control, flexibility and efficiency in people's life (Parasuraman, 2000). Optimism is also considered as an individual factor that shows the level of people's expectation for the future (Carver, 2010). Optimism is considered as a powerful driver of technology readiness and it has a strong relationship with the use of self-service technology (Lu, Cao, Wang, & Yang, 2011). Eliaz and Ran (2008) commented that the scope of optimism directly affects a consumer's buying intention. Optimism is a central component of the four personality traits used to measure people's readiness in using new self-service technologies (Parasuraman, 2000).

### 3. RESEARCH FRAMEWORK AND METHODOLOGY

#### 3.1) Conceptual Framework

The conceptual framework of this study (Figure 1) is adopted from the theoretical framework of the study on Consumer's intention to use Self-service Parcel Delivery Service in online retailing (Yuangao et al., 2018). The results of the adopted research indicated that the location convenience, innovativeness, optimism and need of human interaction significantly and positively influence consumer's intention to use Self-service Parcel Delivery Service. However, perceived time pressure does not have a significant correlation with a consumer's intention to use Self-service Parcel Delivery Service.

**Figure 1**  
Conceptual Framework



#### 3.2) Hypotheses

H1: Location Convenience (LOC), Perceived Time Pressure (PTP), Innovativeness (INO), Optimism (OPT) and Need of Human Interaction (NHI) have significant influence on intention to use Self-service Parcel Delivery Service (INT).

H2: There is a significant different in mean between people who live in Bangkok-metropolitans and Non-Bangkok-metropolitans toward intention to use Self-service Parcel Delivery Service (INT).

#### 3.3) Research Methodology

The quantitative analysis approach with non-probability method was used through a survey method in the form of an online questionnaire. The questionnaire had three parts, namely: screening question, Likert scale and demographic data. To measure the hypotheses, the Five-Point Likert scale was used, with a range of, 5 as 'Strongly Agree' and 1 as 'Strongly Disagree'. Case studies, news, research paper, preference books and journals related to the subject were used as secondary data. Multiple Linear Regression (MLR) was employed for

data analysis to investigate the impact, relationship, and difference between dependent and independent variables according to the defined conceptual framework. In addition, Independent Sample T-Test was employed to determine the mean difference between Bangkok-metropolitan and Non-Bangkok-metropolitan people's intention to use Self-service Parcel Delivery Service. Descriptive analysis was also applied to explore the overall information by using mean, standard deviation, and variance.

### 3.3) Population and samples

Online questionnaires were distributed to 424 respondents living in Thailand and have online shopping experience. The respondents were selected by convenience sampling technique, judgement sampling technique and quota sampling technique. These sampling techniques were employed for the data collection by randomly sending the questionnaires online from the list in researcher's contact on each platform such as Facebook, E-mail, etc. Each respondent was then requested to forward the questionnaires to whom they know. Moreover, researcher asked 52% of respondents who live in Bangkok and metropolitan and another 48% for other provinces in Thailand.

### 3.4) Reliability Test

To test the reliability and validity of the questionnaire, a pilot test was conducted by distributing 30 questionnaires to 30 different respondents regardless of being a target customer or not. Cronbach's Alpha Coefficient is also used to determine if the questionnaire is reliable. The questions are valid if the Cronbach value is greater than 0.6 (Cronbach, 1951).

**Table 1**  
Reliability Statistics

Variable	Cronbach's Alpha	No. of Items
Intention to use (INT)	.810	3
Location convenience (LOC)	.913	3
Perceived time pressure (PTP)	.751	2
Innovativeness (INO)	.823	3
Optimism (OPT)	.628	3
Need of human interaction (NHI)	.629	2

The result in the Table 1 illustrates that the Cronbach's Alpha of each variable is greater than 0.6, which means that the questionnaire has achieved the standard of the reliability requirement and is acceptable.

## 4. RESULT AND DISCUSSION

### 4.1) Demographic Profile Summary

Table 2 shows the demographic profile summary data of all 400 respondents in the study. 50.7% of the respondents live in Bangkok-metropolitan while 49.3% live in other provinces. Sampling was done using quota sampling technique. Females comprise 71.3% and 28.7% were male. Most of the respondents were aged between 26-40 years old and graduated with a bachelor's degree (60%) and 28.2% obtained a master's degree. In addition, the major of the respondents were officer workers (45.4%) followed by students (20.4%). A quarter of respondents have a monthly income in the range of <15,000 Baht (26.4%).

**Table 2**  
Demographic Profile

Demographic Data (N=400)		Frequency	Percent
Living Area	Bangkok & metropolitans	203	50.7
	Non-Bangkok & metropolitans	197	49.3
Gender	Male	115	28.7
	Female	285	71.3
Age	18-25 years old	88	22
	26-40 years old	241	60.2
	41-55 years old	54	13.5
	56-65 years old	13	3.3
	Over 65 years old	4	1.0
Income	<15,000 BHT	106	26.4
	15,001-25,000 BHT	66	16.5
	25,001-35,000 BHT	75	18.8
	35,001-45,000 BHT	58	14.5
	45,001-55,000 BHT	41	10.3
	>55,001 BHT	54	13.5
Education	Lower than high school	16	4.0
	High school	31	7.8
	Bachelor's degree	240	60.0
	Master's degree	113	28.2
Occupation	Unemployed	13	3.3
	Freelance	49	12.3
	Student	82	20.4
	Office worker	182	45.4
	Special occupation	27	6.8
	Business owner	47	11.8

#### 4.2) Pearson's Correlation

Table 3 shows the Pearson's Correlation Matrix for the hypotheses 1 (H1). The data shows that all variables have positive correlation with among each other, with p-value less than 0.05. The pair of variables that showed the strongest relationship were Innovativeness (INO) with Optimism (OPT) at 0.568 correlation.

**Table 3**  
Pearson's Correlation Matrix

Variable	Mean	SD	INT	LOC	PTP	INO	OPT	NHI
INT	3.8450	.73945	1.000					
LOC	4.1842	.72180	.521*	1.000				
PTP	3.9700	.74194	.438*	.363*	1.000			
INO	3.7908	.66990	.414*	.318*	.125*	1.000		
OPT	4.1767	.55888	.366*	.474*	.253*	.568*	1.000	
NHI	3.8663	.69926	.355*	.275*	.322*	.282*	.514*	1.000

Note: \* represents the correlation which is significant at 0.05 level (1-tailed).

**Table 4**  
Multiple Linear Regression (MLR) and result of H1

Hypothesis	Variables	$\beta$	Sig.	VIF
H1a	LOC	0.344	.000	1.414
H1b	PTP	0.254	.000	1.230
H1c	INO	0.289	.000	1.487
H1d	OPT	-0.102	.063	2.067
H1e	NHI	0.149	.001	1.437
R Square		0.426		
Adjusted R Square		0.419		

Table 4 shows the value of  $R^2$  at 0.426 and implies that all independent variables which are Location Convenience (LOC), Perceived Time Pressure (PTP), Innovativeness (INO), Optimism (OPT) and Need of Human Interaction (NHI) could explain 42.6% of the variation in Intention to use Self-service Parcel Delivery Service (INT), ( $R^2 = .426$ ,  $F(5,394) = 58.439$ ,  $p < .000$ ). The P-values of the independent variables, LOC, PTP, INO and NHI are less than 0.05 which confirm that the hypotheses namely H1a, H1b, H1c and H1e are supported. However, the P-value of the independent variable, OPT is higher than 0.05. Therefore, H1d is not supported. Consequently, LOC, PTP, INO and NHI have statistically significant positive influence on INT excluding OPT. Moreover, the result shows that LOC has highest value of Standardized Coefficient at 0.344. This implies that the location convenience of Automated Postal Machine is the most influential factor for users toward Intention to Use Self-service Parcel Delivery Service. The multicollinearity problem was also examined by verifying the Variance Inflation Factors (VIFs) and found no critical issues with all VIFs values less than 5.0. The reason that optimism (OPT) does not positively affect the purchase intention used to be documented in a previous research about unrealistic optimism. In such case, the higher level of optimism may not lead to higher purchase intention (Pornpitakpan & Green, 2006)

#### 4.3) Independent Sample T-Test

The independent sample t-test was applied to determine the significant mean difference between people who live in Bangkok-metropolitan area and Non-Bangkok-metropolitan area toward intention to use Self-service Parcel Delivery Service (INT) (Hypothesis 2)



**Table 5**  
Group Statistics and Independent Samples T-Test for H2

**Group Statistics**

Living area		N	Mean	Std. Deviation	Std. Error Mean
INT	Bangkok & metropolitans	203	3.8243	.83072	.05831
	Non-Bangkok & metropolitans	197	3.8663	.63323	.04512

**Independent Sample Test**

		Levene's Test		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
INT	Equal variances assumed	4.938	.027	-.568	398	.570	-.04203	.07402
	Equal variances not assumed			-.570	377.013	<b>.569</b>	-.04203	.07372

The result as shown in Table 5 represents the mean of Intention to Use Self-service Parcel Delivery Service (INT) with 3.8243 on Bangkok & metropolitan and 3.8663 on Non-Bangkok & metropolitan. The result also illustrates that the hypothesis namely H2 is not supported with the condition;  $t(377.013) = -0.570$ ,  $p = 0.569$ . The p-value exceeds 0.05, and therefore, there is no significant mean difference between people who live in Bangkok & metropolitan area and Non-Bangkok & metropolitan area toward intention to use Self-service Parcel Delivery Service.

## 5. CONCLUSION, LIMITATION, AND RECOMMENDATIONS

### 5.1) Discussion and Conclusion

This research was conducted as an empirical study to explore the factors influencing Intention to Use Self-service Parcel Delivery Service in the era of fast-growing e-commerce in Thailand. This research was based on resource matching theory, consumer coproduction theory and technology readiness, as shown in the conceptual framework. This study also determined the mean difference between people who live in Bangkok & metropolitan area and Non-Bangkok & metropolitan area toward the intention to use Self-service Parcel Delivery Service. The results obtained from Pearson's Correlation, Multiple Linear Regression, and Independent Sample T-Test were utilized to prove the hypotheses of the study.

Out of 424 respondents, 400 respondents were qualified as samples in this study. The relationship among all variables was examined by applying Pearson's correlation and results show that Intention to Use Self-service Parcel Delivery Service has positive relationship with Location Convenience, Perceived Time Pressure, Innovativeness and Need of Human Interaction. Furthermore, Innovativeness is the most influential factor toward Intention to Use Self-service Parcel Delivery Service, followed by Location Convenience. Therefore, the

service provider should develop these two components to provide quality service strategies in the era of fast-growing e-commerce in Thailand.

The independent sample t-test demonstrates no significant difference between in the Intention to Use Self-service Parcel Delivery Service between people who live in Bangkok & metropolitan area and Non-Bangkok & metropolitan area. Therefore, service providers can apply mass service strategies for both groups of people and develop the same marketing strategies for Thailand.

Furthermore, the demographic profile also presented that gender and education positively affect the Intention to Use Self-service Parcel Delivery Service. Females (71.3% of respondent) are more inclined to use the services than males. Related study shows that female tends to get higher income from higher education, moreover, they have more frequent shopping and consumption behavior than males (iResearch, 2017; Aparna et.al., 2017). The education levels of the users indicate that those with bachelor's degree comprise 60% of the respondents) and higher (28.2% of respondents). Their familiarity with e-commerce and technologies may be a reason that they would use Self-service Parcel Delivery Service. Therefore, service provider may use this data in their marketing plan.

In conclusion, location convenience has the most influence to Intention to Use Self-service Parcel Delivery Service. Moreover, the innovativeness and perceived time pressure of users also have high influence to Intention to Use Self-service Parcel Delivery Service. In addition, people who live in Bangkok & metropolitan area and Non-Bangkok & metropolitan area have no difference in their Intention to Use Self-service Parcel Delivery Service.

## **5.2) Theoretical Contribution**

This study applied the theory of the resource matching, consumer coproduction and technology readiness from Consumer's Intention to Use Self-service Parcel Delivery Service in online retailing. The findings indicated that the previous studies focused only on the factors that have influence on Intention to Use Self-service Parcel Delivery Service rather than the effective key success factors of Self-service Parcel Delivery Service. In order to fulfill this point, this study focused on the impact of factors toward to Intention to Use Self-service Parcel Delivery Service that could be considered as key success factors.

Furthermore, with the era of fast-growing e-commerce in Thailand, this study presented Intention to Use Self-service Parcel Delivery Service by defining the area considered in this study. The result indicates that there is no significant mean difference between people who live in Bangkok & metropolitan area and Non-Bangkok & metropolitan area toward Intention to Use Self-service Parcel Delivery Service.

## **5.3) Implication and Recommendation**

According to the results, delivery service providers should place the Automated Postal Machine at convenient locations for users such as along main routes or near residential area or workplaces. Moreover, delivery service providers should target innovative users such as generation X and Y are familiar with the use of technology to make their life more convenient. (Pornpimol, 2017). In addition, the results show that most users are concerned about perceived time pressure, then delivery service providers should provide 24 hours service so that users can get their parcels anytime and reduce the negative effect from time pressure. Furthermore, delivery service providers should prepare online service assistant call center at

the Automated Postal Machine to provide suggestion in order to create the trust among users to respond to the need for human interaction .

On the other hand, delivery service providers provide many substitute services of Automated Postal Machine. An example is the company CP ALL that has offered send-receive parcel service at all 10,500 branches of 7-11 convenience stores in Thailand (Chalongsak, 2018). With so many service providers competing in the delivery service industry, delivery service providers who could offer Automated Postal Machine may add value to Self-service Parcel Delivery Service by offering other services in Automated Postal Machine and provide users a one-stop service for various services such as financial payment service for people who would like to make payment when they already get products, bills payment, parcel storage, send-received parcel, etc. These are possible market and product development strategies. Finally, delivery service providers should make sure that the Automated Postal Machine is easy to use . Difficulty in use may cause possible customers to ignore using it.

Delivery service providers should use mass media channels and social media to create brand and service awareness toward target customers.

#### 5.4) Limitation and Future Research Directions

This research focuses on the respondents who live in Thailand. Other countries also have differences in culture, environment, infrastructure, education, geographic and so on. The future studies could enhance the generalizability of the findings by examining respondents from other countries who may have a different lifestyle and shopping behavior. In addition, future studies may consider the factors that create the customer satisfaction as well as customer loyalty as key success factors.

This study proposes marketing strategies for intention to use Self-service Parcel Delivery Service. The difficulty of using new technology may affect the attitude of users toward intention to use (Daamen, Lans and Midden, 1990), the suitable location for each area, promotion, branding and also customer relationship management.

The results of hypothesis testing show that location convenience, innovativeness, perceived time pressure and need of human interaction has significant influence on Intention to Use Self-service Parcel Delivery Service. Future study may focus on effective mass strategies to match these factors. In addition, the other factors which may affect the intention to use should be considered in order to better understand consumer behavior toward Intention to Use Self-service Parcel Delivery Service. The two factors of discomfort and insecurity towards readiness to use new technologies as suggested by Parasuraman (2000) were not considered in this research . It is suggested that these two factors to be investigated in the future research, together with the price of using service .

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