

# UNDERSTANDING CONTINUANCE INTENTION TO USE SELF-SERVICE TECHNOLOGIES OF MASS RAPID TRANSIT SYSTEMS IN THAILAND

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## ABSTRACT

*Within the worldwide transport service industry, Mass Rapid Transit applies technology to enhance operation and service's quality in various perspectives. To serve such principles and demands, self-service technology is implemented significantly. This mechanical function provides new progressive idea of giving service with incredible support of advancement without human association to user. Ticket vending machine, automated top-up machine, and self-service storage installed at Mass Rapid Transit station in Thailand will be reasonably selected as pilot self-administration innovations for this research. Therefore, this study tries to determine the influence of information system qualities, performance expectancy, and social-related factors on user satisfaction and continuance intention to use self-service technology. A conceptual evaluation model was developed mainly based on IS success model and other supportive models which are UTAUT and ECM. The users' perspective is studied by conducting of quantitative method with collecting the final sample of 400 questionnaires to ensure and strengthen the more reliability of the research study. All the study variables were measured in the form of 5-point Likert Scale and implement the data processing and analysis by SPSS and AMOS for Confirmatory Factor Analysis and Structural Equation Model analysis. The results revealed that system quality, service quality, social influence are positively and significantly influence on user satisfaction and performance expectancy is positively but insignificantly influence on user satisfaction. Whereas, information quality is negatively and insignificantly on user satisfaction. Furthermore, the study showed that social influence and user satisfaction are positively and significantly influence on continuance intention to use. The study highlights the importance on influence factors of user perception and creating a satisfactory feeling of involvement and acceptance by user to continuance use of self-service technology. Overall, the findings of this study suggest that service providers should understand the user's perception in dimensional aspects and the tendency of their demands on SST adoption. This would help service providers to formulate the practical strategic planning and implement such effective strategies in order to enhance the way to serve the user's needs, also improve on service productivity and efficiency to*

*create the sustainable future of organization service operation management especially in term of technology implementation.*

**Keywords:** Continuance Intention to Use, Expectation-Confirmation Model, IS Success Model, UTAUT, Self-Service Technologies.

## INTRODUCTION

Self-Service Technologies (SSTs) is extensively conducted in public transportation business. It can be defined as a technological interface that support customers to utilize a service independent from direct service participation (Reinders, 2007). Examples of these self-service technologies or technology-based self-services (TBSS) include on-site options such as ticket machine. Self-service kiosks have confirmed an advance innovation in making life more convenient for people in various circumstances. It also pays a vital part in reducing time and effort from many parts of our daily lives (Park, 2018). Particularly, when it is carried out, it can create immense transformation in improving the people's living standards for everyday comforts and how organizations arrange their business forms. There are advantages both increasing the standard of service, reducing labor costs, and delivering a new way of services to clients (Curran, 2005). In the public transport service, self-service technology, like kiosk ticketing machine, started out as simple pay-and-display machine. As technology has advanced, the producer develops and increases the machine's ability to provide a more sophisticated level of customer service. Moreover, the increase in labor costs has created the need to utilize delivery services in such a way to allow consumers to carry out services themselves (Grönroos, 1993). New developments in innovative technologies have changed the services industry enabling them to improve their operations, increase efficiency, and provide better functions to benefit the consumer as much as possible. Many service providers allow their customers to interact with the service without any type of human interaction. This means that consumers interact with self-service technology rather than employees to produce any kind of service outcomes (Parthasarathy, 1998). There is a rapid growth in the many companies switches towards new technologies to deal directly with customers rather than using human interaction. For this purpose, self-services technologies have been gaining popularity. For better customer services and long-term business success, self-service technologies have become vital to organizations. They will be the gateway and support the service business to reach a worldwide level. Even though, these innovations have changed the idea of user correspondence and administration, there is a restricted comprehension of what impacts clients' observation and selection of SSTs. Therefore, it is important to examine how users survey the qualities of the Self-Service Technology administration and how administration results are influenced (Niina, 2008). Therefore, this study will explore and provide useful information on how information system quality, performance expectancy, and social influence factors influence on user satisfaction and have a consequential effect on the intention to continue using the self-service technology of Mass Rapid Transit. This can guide service providers to consider developing and investing in a full self-service system to serve the customer with seamless digital service performance in state of

the art. Moreover, the examination result of this research will be a pilot study about alternative service technology that can be extended further study in other service industries.

## **Theoretical Background**

In this study, the researcher adopted well-known theories, IS success model, UTAUT, and ECM to establish the framework to explore the users' perception and their willingness to continue use of self-service technology of mass rapid transit in Thailand.

### **Information System Success Model (IS Success Model)**

IS Success Model was firstly proposed by DeLone and McLean in 1992 and has been continuing developed to the latest version in 2003. This theory has been widely accepted and used as an important guideline in evaluating the quality of information system in various perspectives. In other words, the DeLone and McLean's IS success model was considered as a model for reference in information system research (Rai, 2002). DeLone and McLean (1992) stated that the success of an information system could be measured at three different levels which are (1) Technical level pertained to the evaluation of accuracy and system efficiency, (2) Meaning level associated with the measurement of intention to convey the meaning of information, and (3) Effectiveness level related to the assessment level of information impact on users. DeLone and McLean (2002) also emphasized that system usage variables can measure the success of an information system because if the user's system is used and shows that the system has enough value to use; therefore, it is considered the success of the information system. The newly updated of information system success framework in 2003 was divided the quality into 3 dimensions: Information quality, System quality, and Service quality, which each variable would be separated from the measurement because each variable will affect the use and satisfaction of users. Also, the use and user satisfaction are very closely related; that is, in the process, sense usage will lead to satisfaction. In a causal sense, a positive experience leads to increased use, which generally leads to increase satisfaction. Intention to use, user experience, and user satisfaction can be directed to the Net benefits, which is one of the variables in the information system success model loop with reference to DeLone and McLean model (DeLone & McLean, 2003).

### **Unified Theory of Acceptance and Use of Technology**

The UTAUT was proposed by Venkatesh et al. (2003) as an integrated framework of eight related technology acceptance theories or models. This theory has been adopted in many researches as one of the most inclusive models to explain technology usage which included constructs that capture the most meaningful cognitive, social and environmental driver of technology adoption (Bagozzi, 2007). Furthermore, UTAUT enriches the understanding of technology acceptance by debating the moderating impact of age, gender, experience, and voluntariness (Venkatesh, 2012). Importantly, UTAUT was the first model to be able to explain

70 % of the variance in behavioral intention. This compares to the approximately 40% variance the former models are able to explain (Venkatesh, 2003). Additionally, UTAUT has been broadly employed by many scholars to understand the adoption of different types of technologies from both the perspective of organizations and individuals within different cultural contexts-this strengthens the generalizability of UTAUT (Al-Gahtani, 2007; Venkatesh, 2012). UTAUT is composed of 3 main factors affecting user's behavioral intention-Performance Expectancy, Effort Expectancy, and Social Influence-and another main factor affecting use behavior and facilitating conditions. From literature review, Venkatesh et al (2016); Williams et al (2015); Akbar (2013) reported that, in the context of acceptance of information technology, UTAUT is a very popular model that can explain acceptance behavior of users well. Moreover, it can explain and predict newer technology acceptance behavior in various contexts (Tan, 2013; Mensah, 2019; Kurfal et al, 2017).

### **Expectation-Confirmation Model (ECM)**

ECM was developed in 2001 based on the structure of Expectation Confirmatory Theory (ECT) which widely used in marketing, concerned about consumer behavior, and also adopted in the field of Management Information System since the 1980's (Chiu, 2012). This model explained where consumers have some prior expectations before carrying out the purchase process, and subsequently, the perceived performance happens. If the perceived performance is as same as the expectation, it will lead the confirmation state. The satisfaction happens when the expectation meets the confirmation, and it will drive the repurchase intention (Shih, 2010). ECM is proposed by Bhattacharjee which following IS continuance context. Bhattacharjee (2001b) insisted that IS user's continuance decisions are similar to consumers' readoption decisions because both are influenced by the initial user experience of the IS or, and such decisions are intimately involved with user satisfaction. Therefore, the continuance intention to use can be understood that the intention of the user to continue using the information system. Previously, ECM has been widely adopted by numerous researchers to study and verify the users' continuance intentions in IS context. For example, Susanto adapted the structure of ECM to explore the determinants of continuance intention to use smartphone banking services using the main measurement items of Bhattacharjee (Susanto, 2016). In addition, Li and Shang studied the interrelationship influences citizen's reuse intention regarding e-government by analyzing 1,650 citizen users who had prior experience with e-government service (Li, 2020).

### **Research Model and Conceptual Framework**

#### **Information quality**

Information quality is one of the significant factors in the success of an information system model. It is defined as the quality of the attribute of information and also comprehended as the value of information for a particular use (DeLone & McLean, 1992). This factor has been widely studied for a decade both in emerging and developed countries to examine the

relationship of information quality with others. The research of Garcia and Effken in 2013, they studied the development and evaluation of information system success model related to the medical context. The research reveals that the attributes of information quality, which are completeness, accuracy, and format has a positive impact on user satisfaction with using the medical information system (Garcia, 2013).

### **System quality**

System quality can be described as the technical quality of the information system itself. It can be measured in various indexes, for instance, ease of use, flexibility, responsiveness, functionality, and others (DeLone & McLean, 2003). This quality factor is at the top level of evaluating the success of the information system since the system quality should be highly reliable and fast interaction with the user's command (Rai, 2002). When the self-service technology is filtered to a certain user's expectation and finally perceived its quality, they will feel confident in use. Supportively, the study of Wang and Chao related to system quality, user satisfaction, and benefits that users gain from mobile network services. The results revealed that the quality of the system of 3.5G mobile phone network has a positive impact on user satisfaction and then lead to the user benefits. High quality of the system but simplicity will increase the user contentment since the system will be more amicable and effective in its use (Wang, 2011).

### **Service quality**

Service quality can be conceptualized as the perceptive understanding of user needs in accordance with the service delivery. People agree that service quality depends on the level of actual service performance that meets users' needs and expectations (Grönroos, 1993). According to the study of Iqbal and his team, they researched to examine how self-service technology impacts customer satisfaction, loyalty, and Behavioral Intentions in the service sector of Pakistan. The data of 238 self-service technology users was collected through the online survey and then the model was tested by SEM via LISREL program. The results showed a positive and significant relationship between technology-based service in terms of service quality, loyalty, and behavioral Intentions directly and indirectly via customer satisfaction. In conclusion, these results provide insights for the service sector of Pakistan to consider investing in the new technology in order to enhance the consumer experience, satisfaction, loyalty, and Intentions (Iqbal, 2018). Even though humans interact directly with machines without any support by the servicer, service quality has to be considered regarding system service convenience, time-saving, and service feature availability as well. Confirmation is portrayed as the point of view assessment of user on the distinction in the experience of desire and real use (Zeithaml, 1993). In this manner, in the post-selection setting, Bhattacherrjee (2001b) clarified that clients' desire develops with the expanded involvement, and post appropriation desire will be found on the genuine user experience. User will be fulfilled when self-administration technology meets expectations and assist them in their activities in various aspects

(Bharracherjee, 2001b). Particularly, when the gap between service perception and service performance is completely filled, it will lead to higher service quality and therefore reach higher user satisfaction (Parasuraman, 1985).

## Satisfaction

User satisfaction can be conceptualized as a measure of how satisfied users are with the information system. The satisfaction of users is in the influence on the recipient level, which evaluates the users' decision of system (DeLone & McLean, 1992). It is an assessment of how it meets or beyond user expectations. For example, Masri and her team adopted the user satisfaction as one of the factors that used to evaluate the quality of information system in e-travel service and the result show that Information system quality has a positive relationship with customer satisfaction. Therefore, the following research hypothesis was formulated:

*Hypotheses 1: Information Quality has a positive influence on User Satisfaction*

*Hypotheses 2: System Quality has a positive influence on User Satisfaction*

*Hypotheses 3: Service Quality has a positive influence on User Satisfaction*

## Performance Expectancy

Performance Expectancy is a metric of personal belief toward system usage whether it will help achieve a specified goal (Venkatesh et al, 2003). In self-service technology context, it can be defined in term of the benefits and utilities that can be expected from using SST, such as increased efficiency and effectiveness, and appropriateness of spatial and temporal demands. Binde (2013) brought UTAUT into investigation of factors affecting in using mobile internet and found that performance expectancy, effort expectancy, and facilitating conditions are factors that strongly affected to Behavioral intention in using it. It can be summarized that Internet users realize the benefits and options of mobile Internet, and then they reuse such service. Then, the following hypothesis was established:

*Hypotheses 4: Performance Expectancy has a positive influence on User Satisfaction*

## Social Influence

Social influences are conceptualized generally in term of how people change their beliefs, revises their opinions, or adapts their behavior to meet the demand of social environment and social interactions with others. Both human relations or external stimulation can impact it. Supportively, Venkatesh et al. (2003) determined a social influence in the study of UTAUT model as social influence can be counted as a potential determinant of individuals' information system use intention. By his review, social Influence can be presented in three constructs: subjective norm, social factors, and Image (Venkatesh, 2003). This model has been widely used to examine intention to use new technology (Venkatesh et al, 2012). For instance, Bouwman et al. (2007) used social influence to investigate factors affecting the recognition of the benefits of

technology such as online transaction. The result reveal that the consumers gain society that plays an important role in stimulating an awareness, in particular the new generation of consumers who want to be accepted by society such as, friends and people around. Therefore, social influence plays a role in technology acceptance and online transactions, where credibility is the priority element, then with service users providing is very important for choosing an online service that can build comfort, convenience, trust, and safe in use (Bouwman, 2007).

### Continuance Intention to Use

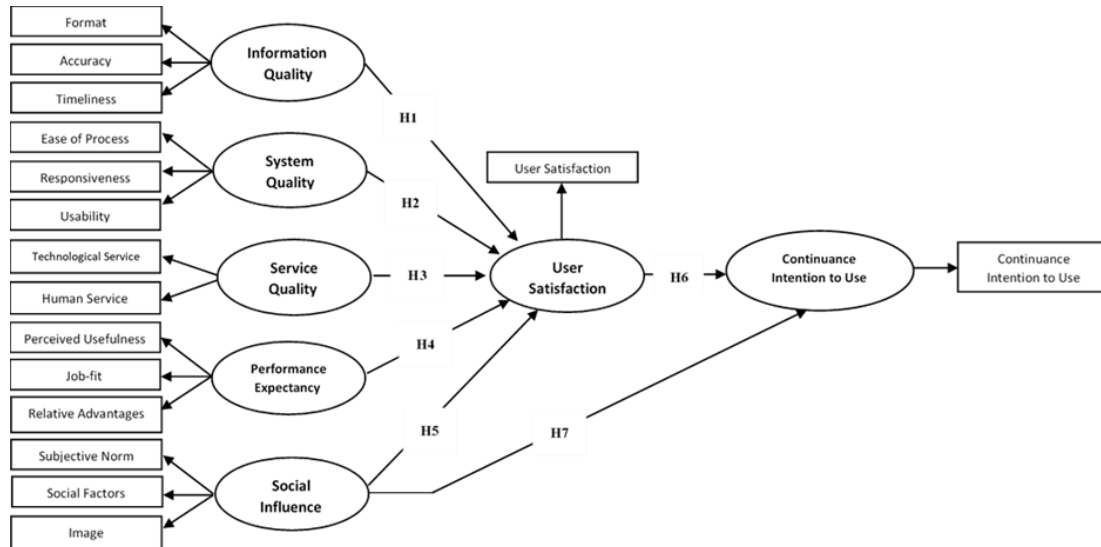
Continuance intention to use (CI) can be seen as the net benefit of the success of information (Bharracherjee, 2001b). When the users perceive that SST supports them in various situations with excellent quality and thus, they satisfy their initial experience, it can lead to continuance intention to use and also its relationship with user satisfaction. For example, the research conducted by Phalawang in 2018, the research studies factors influencing continuance intention to use mobile banking based on IS Success Model, which are information quality, system quality, and service quality, and satisfaction, and other factors, namely corporate image, security, and customer loyalty. The study aims to determine the determinants that impact the continuance intention to use of M-banking. The data was collected from 200 participants who have experience in using mobile banking. The results expose that Continuance intention to use is affected by the satisfaction of users, which are influenced by corporate image, information quality, and security, respectively. This study finally implies entrepreneurs and M-banking developer to realize the important factors which should be applied to improve M-banking for customer usage experience and continuance (Phalawang, 2018). Therefore, the illustrated relationships are hypothesized as shown below:

Hypotheses 5: Social Influence has a positive influence on User Satisfaction

Hypotheses 6: User satisfaction has a positive influence on continuance intention to use.

Hypotheses 7: Social Influence has a direct positive influence on Continuance Intention to Use

From the above literature review; therefore, the hypotheses framework was diagram as in Figure 1.



**FIGURE 1**  
**HYPOTHESES FRAMEWORK**  
**RESEARCH METHODOLOGY**

### Sample and Data Collection Method

The target population for this study were passengers who have experience on using self-service technology at Mass Rapid Transit station in Thailand. Since the passenger of MRT is infinite population, the researcher implemented three sampling method to filter into target respondents which are quota sampling, cluster sampling, and convenience sampling. Therefore, the sample size was allocated proportionally. This study was a quantitative study by using the questionnaire as main instrument. Sample size in this study was 400 people calculating by 20 times of each observed variables in accordance with the SEM's criterion. The questionnaires were completely distributed and collected at selected mass rapid transit stations.

### Instrument Development

The main instrument, questionnaire, was developed by conducting some of the measurement scale proposed by other researchers (Bailey & Pearson, 1983; Gable et al, 2008; Doll et al, 2004; Lin & Hsieh, 2006; Davis, 1989; Thompson et al, 1991; Venkatesh et al, 2003; Ajzen, 1991; Rai et al, 2002) and then adjusted to match with the context of this study. The measurement scale used in the questionnaire was based on the five points of the Likert Scale, which each question was given point from 1 to 5. All questions in questionnaire were reviewed and evaluated by one expert who are top management of State Railway of Thailand and two professors who have abundant knowledge in term of Information system and technology in order



to ensure the content validity using the index of item-objective congruence (IOC). 34 out of 37 items were passed the criteria more than 0.5 and the remaining 3 items were adjusted based on professor's comments and then reassessed to achieve more than 0.5 for every 37 items. The questionnaire was done the reliability testing before releasing to target respondents. Cronbach's Alpha Coefficient was used to indicated reliability, the acceptance criteria should be higher than 0.7 ( $\alpha > 0.7$ ).

### Evaluation of the Research Model

To evaluate the model, the analysis started with checking the reliability of questionnaire by using Cronbach's Alpha Coefficient, then inspecting the content validity of the questionnaire's items by IOC, and finally checking the measurement model. The researcher conducted two-step approach which are Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM) as proposed by Anderson and Gerbing (1988) for this research project. The Confirmatory Factor Analysis (CFA) is run as the first priority to check whether the data fit a hypothesized measurement model or not. Afterwards, the structural equation model is implemented to perform on model testing.

### Statistical Analysis and Results

The analysis results measurement model of factors involving continuance intention to use self-service technology of mass rapid transit system in Thailand were statistical significance at 0.05. The summary of result from CFA are displayed in Table 1. There are seven latent variables and twenty observed variables. Information quality (IQ) included three observed variables which are format, accuracy, and timeliness. System quality (SQ) contained three observed variables which are ease of process, responsiveness, and usability. Service quality consisted of two observed variables which are technological service and human service. Performance expectancy included three observed variables which are perceived usefulness, job-fit, and relative advantages. Social influence comprised three observed variables which are subjective norm, social factors, and image. User satisfaction contained three observed variable which are user satisfaction1, user satisfaction2, and user staisfaction3. And continuance intention to use included three observed variables which are continuance intention to use1, continuance intention to use2, and continuance intention to use1.

Variables		Factor Loadings	R2	AVE	Cronbach's Alpha
Latent Variables	Observed Variables				
Information Quality	FOR	0.791	0.626	0.665	0.89

	ACC	0.766	0.587		
	TIME	0.885	0.783		
System Quality	EASE	0.722	0.522	0.675	0.911
	RESP	0.907	0.823		
	USA	0.825	0.68		
Service Quality	TECH	0.838	0.702	0.523	0.869
	HUMAN	0.586	0.344		
Performance Expectancy	PU	0.6	0.359	0.502	0.805
	JF	0.939	0.881		
	RA	0.517	0.267		
Social Influence	SN	0.649	0.422		
	SF	0.658	0.432	0.566	0.899
	IMAGE	0.816	0.666		
User Satisfaction	US1	0.749	0.562		
	US2	0.887	0.788	0.653	0.843
	US3	0.78	0.609		
Continuance Intention to Use	CI1	0.827	0.684		
	CI2	0.987	0.975	0.784	0.866
	CI3	0.833	0.693		
	*P<0.05				

Five factors - information quality, system quality, service quality, performance expectancy, social influence directly and positively influenced on user satisfaction. Two factors – user satisfaction and social influence directly and positively influenced on continuance intention to use. Table 2 presents Direct Effect, Indirect Effect, Total Effect by structural equation model of factors affecting continuance intention to use self-service technology of mass rapid transit.

TABLE 2 THE CONCLUSION OF DIRECT EFFECT, INDIRECT EFFECT, TOTAL EFFECT BY STRUCTURAL EQUATION MODEL OF FACTORS AFFECTING CONTINUANCE INTENTION TO USE							
Dependent		Independent Variables					
Variables	Effect	IQ	SYQ	SEQ	PE	SI	US
US	DE	-0.029	0.265*	0.190*	0.026	0.694*	
	IE	-	-	-	-	-	
	TE	-0.029	0.265*	0.190*	0.026	0.694*	
	R <sup>2</sup>	0.589					
CI	DE	-	-	-	-	0.116*	0.810*

	IE	-0.023	0.215*	0.154*	0.021	0.562*	-
	TE	-0.023	0.215*	0.154*	0.021	0.678*	0.810*
	R <sup>2</sup>	0.539					
X2/df = 2.73, GFI = 0.951, AGFI = 0.942, CFI = 0.947, RMSEA = 0.045, RMR = 0.039							
*P<0.05							

Apart from the causal relationship testing result as shown in the table above, all seven formulated hypotheses were tested by AMOS Model Analysis Technique. This hypothetical testing was done by comparing t-statistic with t-table value of 1.95 (significance at 0.05). The results of hypothesis testing are presented in the table 3. Five hypotheses were accepted (H2, H3, H5, H6, and H7), whereas two were rejected (H1 and H4).

Hypothesis Testing	Result	Accept/Reject
	Effect	
H1: Information Quality (IQ) à User Satisfaction (US)	DE = -0.029	Reject
H2: System Quality (SYQ) à User Satisfaction (US)	DE = 0.265*	Accept
H3: Service Quality (SEQ) à User Satisfaction (US)	DE = 0.190*	Accept
H4: Performance Expectancy (PE) à User Satisfaction (US)	DE = 0.026	Reject
H5: Social Influence (SI) à User Satisfaction (US)	DE = 0.694*	Accept
H6: Social Influence (SI) à Continuance Intention to Use (CI)	DE = 0.116*	Accept
H7: User Satisfaction (US) à Continuance Intention to Use (CI)	DE = 0.810*	Accept
*P<0.05		

## DISCUSSION AND CONCLUSION

The conceptual framework of this research was proposed based on the theories, articles, and reports. Afterwards, the hypothetical testing was done and the results are presented in above section. By this section, the acceptance and rejection of each hypothesis is discussed and explained below.

The information quality in term of display and output of self-service technology at mass rapid transit has direct effect but in negative and insignificant effect. Our finding indicates that if the information is not easily interpretable, difficult to understand, or inconsistent, users may

avoid using the information and look for other ways to receive this information. The importance of information quality, we argue that if users perceive the format or presentation of information as a threat, this will lower the benefits of the information for organizations and organizations should redesign the format of the information (DeLone & McLean, 2003). However, when users perceive the usability of information and support to their task or processing activity, their satisfaction with the Information system would occur and they will recognize their information's benefit. This finding is following the study of Garcia and Effken (2013). The study's results reveal that the attributes of information quality, which are completeness, accuracy, and format has a positive impact on user satisfaction with using the medical information system. In line with this paper that identifies and analyzes different dimensions of information quality to better guide organizations or service providers in improving and increasing the quality level of information provided to enhance user satisfaction and to avoid the manifestation of workarounds (Petter, 2012). Therefore, by this result it implies that the information quality factors and information quality itself are not associated with each other and are not related to user satisfaction, in other word, for respondent who used self-service technology at mass rapid transit, information quality variable owned by self-service technology is not an important variable for creating user satisfaction.

The system quality has significant direct effects on user satisfaction on adopting self-service technology at Mass Rapid Transit system in Thailand at 0.05 statistical significance. As stated by Seddon (1997), the user will use information systems only when they perceive that the system is useful. In some cases, the lack of users does not mean that the system is inefficient or poor quality. Inactivity can occur as a result of users who not being involved in information systems or technology; therefore, usage variables cannot be measured as clearly as measuring the benefits obtained from the use of information systems. This study's finding is similar and in line with the study of Seddon and Keaw (1994), where system quality has a positive and significant effect toward satisfaction of interface-based system users (Seddon, 1994). The result of this study is also by Daheeb and his team's research (2016) that system quality in terms of usability, efficiency, and reliability was positively related to user satisfaction (Dreheeb, 2016). In addition, it is in line with the research of Kumala (2015) who his study focuses on the impact of system quality on user satisfaction, which has been a recognition of the bank employees' preference in quality of using the system from BRINETS web-based systems. The research stated that system quality partially influences on user satisfaction by various dimensions, namely, trustfulness, responsiveness, usability, usefulness, ease of access, etc. The higher the system quality used, user satisfaction will increase, whereas if system quality low, then user satisfaction will decrease. In this study focus on the system quality of technology-based self-service, from the finding result can imply that when users adopt self-service technology for various purpose, the main concerned goes to system quality rather than other quality because they interact with it by themselves and expect support from the system use. They care about the easy of the process they can confront while using the system. The rapid response of the system after commanding their order via provided functions and adaptable of the system to meet various user needs changing. If the system quality meets the user's expectation and their needs at the required time, the users surely

preference that quality and happy to use it. However, if a program or database from a self-service system is overload, it might lead to customer's dissatisfaction and make them stop using it with finding other choices to support their needs, such as human service support (Kulama, 2015). Based on the result in this study, the system quality of self-service technology has a direct, positive, and significant effect. Thus, higher system quality of self-service technology of Mass Rapid Transit would cause higher customer satisfaction to use it on a regular basis. Since it is a significant effect, the system quality variable seems to be one of the important predictors that need to determine by the service provider to enhance the system to meet the customer's contentment in adopting the self-service technology.

The service quality has significant direct effect on user satisfaction on adopting self-service technology at 0.05 statistical significance level. Service quality refers to the conscious understanding of customer needs in accordance with service delivery. People agree that service quality depends on the level of actual service performance in meeting user's needs and expectations (Grönroos, 1993). This result is in accord with the theory stated by Zeithaml et al. (1990) that customer satisfaction is customer perception from the service experience provided. In line with Lyu and Lim's research about the relationship between service quality and revisit intention concerning self-service retail technology, the result reveals that service quality has a positive impact to customer satisfaction and also confirms the relationship between the service quality and intentions to revisit the self-service retails (Lyu, 2019). In line with the study of Spiros, Sergios, and Vlasis (2010), who found that there is positive and significant in the relationship between SSTs service quality and customer satisfaction (Gounaris, 2010). Likewise, the study of Bitner (1992) who concentrate on the impact of physical surrounding through a framework of satisfaction which can explain that service quality can be measured through the contentment of client (Bitner, 1992). Based on this finding and the above explanation, it brought the means that higher quality of service of self-service technology offered at Mass rapid Transit would create higher user satisfaction to use of self-service technology. In line with the result of many researchers who stated that the high quality of SSTs service quality leads to a higher level of customer satisfaction (Ganguli, 2011; Johnson, 2008; Yen, 2005). Since it is a significant effect, the service quality variable is one of the important variables that need to consider by the service provider to meet the customer's satisfaction in adopting self-service technology.

The performance expectancy has a positive insignificant direct effect on user satisfaction on adopting such technology at 0.05 statistical significance level. This was because performance expectancy referred to the benefits and utilities that can be expected from using self-service technology, in this context means this technology will support on saving time while promoting convenience when the user used Mass Rapid Transit. The result was consistent with Xiaomeng (2015), who studied the effect of performance expectancy on the decision to use the mobile payment of Chinese customers in Bangkok. The research results revealed that performance expectancy did not affect the decision to the used mobile amount of Chinese customers in Bangkok (Xiaomeng, 2018). The study of Yu and Chen (2012) is also in accord with this study results that there are no significant dissimilarities in the influence of performance expectancy on user adoption and satisfaction in terms of age and gender (Yu, 2012). Nevertheless, it did not go

along with the previous study by Brown et al. (2016). They found that performance expectancy was the extent to which using a mobile payment that would provide benefit to users and led to performance gains. Due to this result's study, performance expectancy has a direct effect but insignificant influence. Thus, it implies that performance expectancy determinants are virtually not associated. In other words, for a respondent who used self-service technology at Mass Rapid Transit, performance expectancy variables owned by self-service technology is not an essential variable for making user satisfaction.

The social influence has a significant direct effect on user satisfaction on adopting self-service technology installed at Mass Rapid Transit in Thailand at 0.05 statistical significance level. Moreover, the result of hypothesis testing shown that the social influence has a significant direct effect on continuance intention to use self-service technology available at Mass Rapid Transit in Thailand at 0.05 statistical significance level. The desire of those who want to be valuable when compared to others is accepted by people who live together in each society. The interaction is created among people in society. When considering social factors and images in the context of the use of technology, it also means that technology users are accepted and appreciated by people around you, friends, relatives, and others in the social network that is a member exists as a result of using technology. People try to imitate each other to adopt an innovative technology if they perceive that doing this will not make them different from others and can be seen as a part of such society (Lin, 2010). In line with Bouwman et al. (2007), they stated the recognition of the benefits of technology. The consumers gain society that plays an important role in stimulating an awareness, in particular the new generation of consumers who want to be accepted by society such as, friends and people around. Therefore, both social factors and images play a role in technology acceptance and online transactions, where credibility is the priority element, then with service users providing is very important for choosing an online service that can build comfort, convenience, trust, and safe in use (Bouwman, 2007). This is consistent with Taylor and Todd (1995) because the users as a new generation have experience in using technology more than other groups of users. Therefore, the motivation that makes people want to use technology to facilitate various fields because they think that technology can benefit them (Taylor, 1995). The findings of this study are also in agreement with Nasco et al. (2008) and Kelman (2006) about the impact of social influence on adoption in terms of attitude. The result revealed that social influence has strong direct effect on people's attitudes toward adopting a high technology product. This means that people are more willing to use a new product even if they are not personally favorable toward it, as long as it is desirable to an important reference group (Nasco, 2008). Since it is a significant both direct and indirect effect, the social influence variable is regarded as a considerable predictor that needs to recognize by the service provider to reach the customer's satisfaction and then influence them in reusing of self-service technology in the future.

The user satisfaction has a positive and significant direct effect on continuance intention to use self-service technology at Mass Rapid Transit, which high causal relationship at 0.810 at 0.05 statistical significance level. With this number, it is shown that there is an immensely strong relationship between these two factors. In line with the research by Hong Thong Chasalow and

Dhillon (2011), who studied acceptance in the modern information systems of the user, the adoption of the participants was depended on satisfaction factors in user and perception in benefits, also the demand to use higher information systems. It found that various factors caused user acceptance. The two individuals are associated with technology verification and require users to continue their needs to be used (Hong, 2011). Similarly, Lu and Su (2009) studied factors that impact the interest in the use of online sales websites by phone concerning the fun of use factors, benefits, and value consistency. Experience and demand are factors that are associated with the interest in using internet sales websites on mobile phones (Lu, 2009). This result is a rhyme with Hong Thong Chasalow and Dhillon (2011) about the recognition in the modern information system of users. In line with the study result of Hidayat-ur-Rehman and his friends related to the analysis of consumers' continuance intention towards online shopping. The result reveals that satisfaction and confirmation of user's expectations play an important role in continue using of online shopping (Rehman, 2016). When concentrating on this study results, the significant effects of satisfaction was validated and strongly supported by many previous types of research, for example, the research of Bhattacharjee (2001a) explained that when the overall satisfaction of users with smartphone banking increases, they will tend to reuse the system and the research of Balasubramanian (2003) intensifies that higher satisfaction may conduct the user to repeat their utilization in the future, in other words, may lead to user loyalty. In the context of self-service technology adoption, users can evaluate their satisfaction once they experience an actual service. If overall facilities support users in relevance with their expectations, it indeed leads to their satisfaction. More than that, it can influence on a repeat of using, also willing to use new self-service technology in the future instead of other means (Balasubramanian, 2003). Based on the above results, it could be said that higher user's overall preference would bring higher willingness on the intention to continue the use of self-service technology provided at Mass Rapid Transit in Thailand. Since it performs in a strong relationship and significant direct effect, thus user satisfaction has become an important variable to determine in improving user intention to proceed of use.

## **CONTRIBUTIONS AND RECOMMENDATION FOR FUTURE RESEARCH**

### **Theoretical and Managerial Contributions and Recommendation for Future Research**

This study concentrates on the influence of the Information system quality, user's expectation, and external factors on user satisfaction and continuance intention to use self-service technology. The analysis results, thus, reveal that most determinants have a strongly positive influence in accord with the proposed hypothesis. This study proved the user's positive perception of the use and willingness to continue use of such technology. This can imply the quality of the provided self-innovated system. By this study's results, it made significant contributions by extending current theoretical and empirical knowledge on self-service technology in the transportation service area and further suggestion to other industries and providing managerial contributions.

In terms of theoretical contributions, it can be clarified in many topics. Firstly, although the theories used in this study were not new, they were combined in ways that have not been done previously. The integration of IS success model and some factors from ECM and UTAUT were formed to be the main conceptual framework of this research. This proposed model is the focal construct investigated multi-dimensions of factors relevant to user's perception, decision, and willingness to continue the use of this technology such as information system quality in term of information, system, and service, the expectation of SST's performance, and the external social factors that affect continuing use of such system. Since this study was designed to concentrate on self-service technology of Mass rapid Transit area, the perspective of a user who has experience of using the SST and their decision on a continuance to use such a system in this area was individually examined. This research not only significantly provides the knowledge implication about the various aspects of quality of the system itself but also the social-related variables that drive the user's continued use of self-service technology of mass rapid transit. Apart from the human interaction of service, the use of technology-based service allows the user to face the different service climate, which influences their self-service technology continuance intention. Secondly, this study examined the direct effect of the social-related variable on both user satisfaction and continuance intention to use self-service technology. Although the relationship of this variable has been investigated among few researchers in term of the influence of people's attitude and decision on adopting of new technology and product (Nasco, 2008; Kelman, 2006), there was a lack of research exactly on MRT's user who adopted self-service technology. However, through the results of the structural equation model, this study insists that social influence has a significant direct effect on both user satisfaction and continuance intention to use self-service technology among MRT's users. Thirdly, this study results reveal that partial predictors such as system quality, service quality, and social influence impact on user satisfaction and continuance intention to use of self-service technology lead to the statement proposed by DeLone & McLean (2003) about the success of information system usage. They explained that user satisfaction is a measure of how satisfied users are with information systems and is an important factor in measuring the success of information system. Once the user perceives the contentment of using it, it can lead to net benefits. This empirical research intensifies that not only the system itself but also external factors are determinants of continuance intention to use the self-service technology of Mass Rapid Transit.

Moreover, there are various managerial contributions refers from this research for for both government and private sector in the context of self-service technology implementation. First, the service providers should deeply determine how users respond to the attributes of installed self-service technology such as information, system, and service quality toward the willingness to continue the use of such technology. This can help service providers to evaluate the effectiveness of the system continuously and predict the response of users to consider the further investment of this technology in the future. Second, the service providers could use this study results to support an organization to improve and increase the service level to reach the highest of user's needs. This suggestion was supported as proposed by Berry et al. (1990) that management should consider improving problem-resolution as a way to challenge user



perceptions, especially those that the company does not recognize (Berry, 1990). Particularly, when an organization establishes or revise the goal and strategic plan to create mechanisms that could attract more user to adopt self-service technology and maintain their loyalty to use it. Third, the service providers should understand the user's perception and the tendency of their demands on SST adoption since implementing of self-service technology is not only popular in transport service but also overall of service industry due to saving labor cost as the organization does not need to hire many employees for their operation service. The more the organization reduces operation costs, the more organization gain higher profits. Although numerous service organization is still wondering that implementing self-service technology might have negative effects on user service perceptions, the result of this study revealed a positive influence of technological service of self-service technology on user satisfaction. For example, convenient operation hours and personalized features are interactive services that enhance user satisfaction and service fealty, respectively. Forth, to make the user on continuance use of self-service technology and induce more people to use this system, the service providers with the support of design and machine specialists should understand user's different characteristics and knowledge of the user in technology-based self-service circumstances to evaluate better and develop the more efficient function to suit with all user type. Users who are very acquainted with and knowledgeable on how to complete their service via self-service technology may use it well and fluent without any support from the servicer. On the other hand, users who have limited knowledge of self-service technology may need help from servicers to use such technology. Concerning the level of user knowledge and skill in adopting self-service technology, the service provider could implement proper strategies. Moreover, an additional special interactive service, namely, speaking user guide or shortcut instruction, should be considered to support specific groups which are younger children, elderly people, and disable users. The most important is service provider should make the self-service technology easier to use for everyone, for example, machine designer and programmer should design and develop user-friendly interface technology by using of QR code scanning or RFID technology which is accessible with single step throughout self-service technology can be another solution for promoting perceived ease of process. It is not only influence user adoption experience and satisfaction but also determines their continuance intention. Fifth, apart from the self-service technology's quality attributes and user's performance expectation, social-related factors should be highlighted by the service provider. The service organization should observe the behavior of the user in term of social imitation to establish the strategies to increase the use of self-service technology, for example, user tries to use self-service technology first time because they saw their beloved actor/actress use it and students may use this technology because of their friends motivate them to use. These results already proved that social influence, namely, subjective norm, social factors, and the image has a causal relationship with user satisfaction and continuance intention towards self-service technology adoption. Finally, the service providers should promote and stimulate all factors, which will lead to the acceptance of self-service technology and continuance use of such technology as well as creating a trust to maintain service and user loyalty. The user could share

their opinions about the quality of the provided self-service technology. Then the service providers pay more attention to such improvement continuously.

However, this research also has some limitations that should be mentioned. Firstly, this study measured the user's satisfaction and continuance intention to use self-service technology based on a single industry context by evaluating some positive aspects. However, the user's perception has different levels in the different context of the industry because the technology-based self-service have different functions to serve the user in a different industry context. Therefore, it would be better if the SST usage's opinion level will be collected from the participants who have experience in using of SST in other industries. Secondly, since this research applied the only quantitative method to obtain the opinion level of SST's user; however, to understand deeply about the user's perception, the qualitative should be implemented in the future. The researcher has the opportunity to interview and gain a deeper understanding as well as further reinforcing the current results. Thirdly, since the present study only adopts some factors from IS theories such as IS success model, ECM, and UTAUT, future research can be done by studying other approaches by applying other theories or other factors from the same theories involving user acceptance of technology, customer adoption behavior, and customer preferences in this area of service encounter to enrich our understanding of the issues facing the service industry in Thailand. Moreover, further research could also explore how SST usage influences consumer loyalty and, ultimately, revenue and profitability. Despite the increase in SSTs that firms are offering, scholars are just beginning to learn about how the absence of human interaction affects the bond between consumers and firms (Selnes, 2001). It is important to understand the long-term implications of shifting customers away from interpersonal interactions, which are traditionally viewed as important elements for establishing trust and loyalty in service contexts. Finally, additional research could extend the study of coproduction beyond SSTs to other contexts. This rich area of inquiry would benefit from studies in multiple contexts to determine what relevant antecedents increase consumer readiness and the differential influence of role clarity, motivation, and ability on trial in other high-customer-participation settings.

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