SATISFACTION WITH APPLICATIONS FUELS THE GROWTH OF MOBILE WALLET USE IN THAILAND

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ABSTRACT

In this research, we study factors such as consumer attitudes and personal innovativeness in order to understand the effect of loyalty on satisfaction with mobile wallet applications in Thailand. We developed a research model, based upon previous research, where we propose and examine four constructs. In general, consumer attitudes and personal innovativeness loaded strongly on both loyalty and satisfaction with the Thai consumers sampled. We found strong support for all of the hypothesized relationships, albeit some at different strength levels. It was found that consumer attitudes are an extremely strong factor that increases loyalty and improves satisfaction with mobile wallet applications in Thailand. We also found a very strong impact of satisfaction on loyalty with Thai consumers. This study helps to understand how specific factors influence consumer satisfaction with mobile wallet apps, and what drives consumers' decisions to be loyal and satisfied customers.

Contribution/Originality: This study contributes in the existing literature of consumer behavior, particularly consumer satisfaction model. This study uses new estimation methodology of survey construct with snowball sampling approach. This study originates new formula for predicting Thai consumers' satisfaction in mobile wallet usage. This study is one of the very few studies which have investigated in factors influencing the satisfaction with mobile wallets apps. The paper's primary contribution is finding that consumer attitudes has a significant influence on Thai consumer loyalty and increase satisfaction.

1. INTRODUCTION

This study is part of a series of mobile wallet cross-cultural research in Asia and Southeast Asia. We have noticed significant cultural differences when analyzing the importance of certain variables influencing consumer satisfaction with mobile wallet apps. For example, it was found that ease of use was not important, while personal innovativeness was highly significant in Japan (Amoroso and Ackaradejruangsri, 2016). In the Philippines, personal innovativeness was found to be somewhat important, however consumer attitudes were overall the most important factor (Amoroso and Lim, 2016).

So how important is personal innovativeness in other cultures, like Thailand? In this paper, our intention is to analyze the factors that contribute to the overall satisfaction of the Thai consumer using mobile wallet applications (apps). Mobile traffic is Southeast Asia is the second highest in Thailand next to Singapore (Su, 2018). However,

Thailand has the lowest conversion in Southeast Asia, where the percentage of website visits turn into a product purchase (Su, 2018). So there is a wide disparity between traffic and online purchasing – a gap where mobile wallet applications are now taking hold in Thailand.

Derived from prior research, we designed the survey for this study, pretested the survey items, and conducted reliability and validity tests. Data was collected using the snowball sampling technique accessing the respondent's social media. In addition, we applied reliability testing, correlation and regression analysis to analyze the relationships. As a result of expanding the existing consumer satisfaction model, this study presents a theoretical model to benefit both the academic and management communities.

From a technology perspective, this study helps to understand how specific factors influence consumers' satisfaction with mobile wallet apps, and what drives consumers' decisions to be loyal and satisfied customers. Our model serves as an important step toward subsequent predictive modeling of Thai consumers' satisfaction. The value of our study suggests the importance of a new construct, such as personal innovativeness in understanding consumer satisfaction.

2. BACKGROUND

The research model for this study is based on our prior research examining consumer satisfaction with mobile wallet applications (Amoroso and Ackaradejruangsri, 2016). Our research model employs four constructs: personal innovativeness, consumer attitudes, loyalty, and satisfaction.

Rogers et al. (1995) defined innovativeness as the degree to which an individual adopted a product before others did. However, the conceptual framework of consumer innovativeness has received little consensus in the literature. Kim Jin et al. (2013) presented two dimensions of consumer innovativeness: product-specific innovativeness, where consumer innovativeness varied from one product category to another, and life innovativeness, the innate predisposition of innovativeness from a socio-psychological perspective, including cognitive and sensory traits. Chen (2008) also found that personal innovativeness directly impacted a consumer's satisfaction with self-service technologies and as well their satisfaction with the applications, which in turn, improves satisfaction. Zhang et al. (2013) found a direct relationship between personal innovativeness and consumer attitudes.

Consumer attitudes are defined as a consumer's evaluation of the desirability of using a product. The attitude construct involves individuals' positive or negative feelings about performing the target behavior. Bhatt (2014) define consumer attitudes as a composite of a consumer's (1) beliefs about, (2) feelings about, and (3) behavioral intentions toward some object – within the context of marketing, usually a brand or retail store. With respect to attitude, Amoroso and Lim (2014) and Hill and Troshani (2009) found that consumer innovativeness and image or self-efficacy are significant in understanding consumer attitudes. Dessart et al. (2016) found the extension of consumer attitudes as consumer engagement where the consumer has an effective approach toward the product or service, such as enthusiasm and enjoyment

Lin et al. (2015) defined loyalty as the consumer generating dependence and goodwill to a product or service, culminating in satisfaction. Cyr et al. (2006) found that loyalty is an indicator of continuance intention and an important construct in the context of online financial transactions. Shih (2011) and Amoroso and Ogawa (2013) found relationships between attitude and loyalty and between satisfaction and loyalty. Loyalty was also found to be a key to online retailers to enhance satisfaction and increase repeated use intention for online consumers (Amoroso and Ogawa, 2013) and for mobile app satisfaction (Amoroso and Lim, 2016).

Consumer satisfaction is the sense that consumption provides outcomes against a standard of pleasure versus displeasure and is considered a vital construct that affects consumer purchasing behavior and loyalty to products and brands. Ho and Wu (2011) found that personal innovativeness moderated consumer satisfaction and e-store loyalty. Amoroso and Lim (2014) found a relationship between consumer satisfaction and both loyalty and repurchase intention, dividing loyalty into the components of behavioral loyalty and attitudinal loyalty. They found

that attitudinal components had a strong impact on loyalty. Ho and Wu (2011) found a statistically significant relationship between consumer satisfaction and loyalty toward using online products and services over alternatives. Most of the newer studies found the relationship between consumer satisfaction and loyalty (Lin *et al.*, 2015). Anderson and Swaminathan (2011) found a direct relationship between consumer satisfaction and loyalty.

Based upon existing studies, we propose the following hypotheses to test:

- H1a: Consumer attitudes are strongly related to consumer loyalty with using certain mobile wallet applications

- H1b: Consumer attitudes are strongly related to consumer satisfaction with using certain mobile wallet applications

- H2a: Personal innovativeness is strongly related to consumer loyalty with using certain mobile wallet applications

- H2b: Personal innovativeness is strongly related to consumer satisfaction with using certain mobile wallet applications

- H3: Consumer satisfaction is strongly related to consumer loyalty with using certain mobile wallet applications

3. METHOD

We operationalized the theoretical constructs for mobile wallet apps by using validated items from prior research (Amoroso and Ackaradejruangsri, 2017; Amoroso *et al.*, 2017). A survey instrument was developed to measure consumer satisfaction of mobile wallet apps by Thai consumers. We ensured content validity of the scales by having the items selected represent the construct about which generalizations were to be made. We then selected two to three scales for the measurement of each of the constructs, keeping the wording similar to the original studies. The typical item asked respondents to indicate a degree of agreement on a five-point Likert scale. After creating the item pools for each construct, we reevaluated these items to eliminate those that appeared redundant or ambiguous, which might load on more than one factor in subsequent analyses.

The snowball sampling approach was used to collect data where respondents posted the survey link on their social media accounts asking potential respondents to complete the survey. Kosinski *et al.* (2015) states that the positive feedback loop leads to self-sustaining studies with rapid growth in sample size. Based upon the pre-test, reliability and validity results, the survey items were modified to adjust to the Thai language and culture. The electronic survey link was posted on different social media. At the end of the data collection period, 507 respondents answered the survey. The data collection resulted in a greater age variance among the respondents. Cases with biased responses and missing responses were eliminated, yielding a final sample of 461 Thai responses, a 90.9% completion or usability rate.

The gender breakdown showed 24.9% men and 75.1% women. Looking at age, a large group of the respondents came the age group ranging from 21-25 with 42%, with 19% coming from 18-20 years and 26-30 years old respectively. Respondents were asked about their telecom carrier and it was found that the largest telco provider in Thailand by consumers in our study was reported to be AIS with 39%, followed by DTAC with 38% and TRUE with 31%. The percentage of prepaid consumers was 81%, where prepaid is typical of consumers in Asian countries. We noted that there was a total usage of 120% of telecom providers in Thailand, indicating that some consumers in our study had more than one SIM-card or mobile phone and were subscribed to more than one telecom provider.

At the beginning of the survey, consumers were asked to indicate which mobile wallet apps they used most frequently. Most of the consumers in our study were heavy users of mobile Internet apps at 94%, text messaging at 88% and email at 82%. Looking at mobile wallet apps, conducting banking transactions at 55% was the most frequently used app, including checking balances and transferring money within their accounts. Loading apps, including music, games, and load was equally important at 55% with Thai consumers. Almost as important was the

frequency of using the mobile device to shop online and the use of their mobile wallet for payment at 54%. Many Thai consumers also transferred money to others via their mobile device at 50%.

4. ANALYSIS

We established construct validity and reliability by Cronbach alpha and confirmatory factor analysis. All measurement scales showed relatively high Cronbach alphas at $\alpha \geq 0.70$ for all the measures from 0.823 to 0.921. This pattern of high scale reliability is consistent with prior research dealing with similar constructs. Discriminant validity requires that the square root of the AVE should be greater than correlation between two constructs. After comparing the AVE with each correlation scores, we found that with all constructs, the AVE was greater than the correlations between the constructs, indicating that all the constructs share more variances with their indicators than with other constructs.

Table 1 demonstrates multiple regression analyses to further verify the relationship between the studied factors and the proposed constructs on mobile wallet utilization. All analyses were conducted using SPSS 25. Regarding the regression on loyalty, the multiple linear regression equation is as follows:

$$Loy_{j,} = \beta_0 + \beta_1 Att_{j,} + \beta_2 PI_{jt} + \beta_3 Sat_j + \varepsilon_t$$

where:

- *Loy_j: Loyalty with using certain mobile wallet applications*
- *Att_j: Consumer attitudes with using certain mobile wallet applications*
- *PI_j: Personal innovativeness with using certain mobile wallet applications*
- *Sat_j: Consumer satisfaction with using certain mobile wallet applications*

The coefficient of determinant or adjusted R^2 for loyalty is 0.447, which implies there is an acceptable variance at 44.7% of the factors that could be explained by a linear relationship with the loyalty toward using mobile wallet apps. Both All of the factors, consumer attitudes, personal innovativeness, and satisfaction proved to have significant effects on overall loyalty with Thai consumers, with reasonable coefficients at 0.631, and 0.236, and 0.341 respectively, with p<0.000. Henceforth, we can conclude that consumer attitudes are significantly correlated with loyalty and personal innovativeness is significantly correlated to loyalty. Additionally, the greater the satisfaction level with mobile wallet applications, Thai consumers were more loyal.

Table-1. Regression Analyses

Regression Model Statistics		Loyalty Model	Satisfaction Model
F- Statistic		186.882	236.650
Significant F-change		0.000	0.000
Adjusted R^2		0.447	0.608
Consumer attitudes			
	β coefficient	0.631	0.354
	p-value	0.000	0.000
Personal innovativeness			
	β coefficient	0.236	0.174
	p-value	0.000	0.000
Satisfaction			
	β coefficient	0.341	
	p-value	0.000	

Regarding the regression on satisfaction, the multiple linear regression equation is as follows:

$$Sat_{j,} = \beta_0 + \beta_1 Att_{j,} + \beta_2 PI_{jt,} + \varepsilon_t$$

where:

- *Sat_{ji}: Consumer satisfaction with using certain mobile wallet applications*
- *Att_{ji}: Brand commitment with using certain mobile wallet applications*
- *PI_{ji}: Personal innovativeness with using certain mobile wallet applications*

The adjusted R^2 for satisfaction is 0.608, implying there is substantial variance at 60.8% with the factors that could be explained by a linear relationship with satisfaction by Thai consumers when using mobile wallet apps. Both of the constructs prove to have significant effects on overall consumer satisfaction with mobile wallet apps, with statistically significant coefficients at .354, and .174, respectively, with a $p<0.000$ for attitude and personal innovativeness constructs. As a result, we can conclude that consumer attitudes are significantly correlated to satisfaction and personal innovativeness is significantly correlated to satisfaction (although to a lesser extent). Examining the size of the t-value related to the coefficients, consumer attitudes had a larger coefficient than personal innovativeness and therefore accounts for more of the variance explained in the research model.

5. DISCUSSION

We developed a model to explain the factors influencing the loyalty and satisfaction of Thai mobile wallet consumers. We found strong support for all of the hypothesized relationships, albeit some at different strength levels. We found significant relationships between consumer attitudes and loyalty, and consumer attitudes and satisfaction. Thai consumers have a high level of self-efficacy when it comes to attitude towards repurchase and continuance intention using mobile wallet apps. With a strong personal innovativeness, Thai consumers show substantial positive attitudes towards both loyalty and satisfaction. Thai consumers are also found to be relatively satisfied and have positive intention to continue to use mobile wallet apps, as evident in our survey. Our findings showed several insights, supporting existing theories. Supporting the studies by Lu *et al.* (2005); Chen (2008) and Trivedi and Kumar (2014) personal innovativeness has substantial effects at different levels on consumer attitudes, which, in turn, influence consumer satisfaction.

The overall model provides value in that the constructs and their relationships were analyzed at the same time, rather than in smaller models in different studies. There are significant relationships found between consumer attitudes, personal innovativeness, and loyalty with mobile wallet apps satisfaction. Consumer attitudes is the important factors that drives Thai consumer satisfaction and increases loyalty of mobile wallet apps usage in Thailand. Personal innovativeness proved to show significant relationships with consumer attitudes, consumer satisfaction, and loyalty, but nevertheless Thai consumers in this study were not substantially strong in personal innovativeness, since consumer attitudes proved to be the major factor driving the Thai consumers loyalty and satisfaction. These are some of the areas that we plan to study in the future.

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