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Usage Behavior among Paywave Card Users in Kuala Lumpur

Raja Zahrul Azha Raja Zaharudin, Umi Kartini Rashid, Juzaimi Nasuredin,

Noor Aslinda Abu Seman

Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia.

Corresponding E-mail: kartini@uthm.edu.my

Abstract:
PayWave cards are used to make contactless payment be faster. However, the issues on data theft has been questioned by the bank's union. This study has been developed to identify the level of usage of payWave cards among consumers in Kuala Lumpur, as well as identifying the relationship between data security and data privacy towards the usage behavior of the payWave cards. A total of 204 data were collected through questionnaires and Statistical Package for Social Science (SPSS) had been used to analyze the data. The level of usage of payWave cards among consumers in Kuala Lumpur was found moderate. Meanwhile, there was a significant relationship between the data security and privacy and the usage behavior towards payWave cards. The findings of this study enhance the knowledge regarding payWave cards and provide practical contributions to the banking institutions and policy makers in increasing the use of payWave cards among consumers.

Keywords: *PayWave, data security, privacy, usage behavior*

1.0 INTRODUCTION

Smart cards are a type of plastic card in which embedded computer chips store and transact data between users. This data is associated with either the value or information or both stored and processed in the card chip. Card data is operated through the reader terminal which is part of the computing system. Enhanced system on smart cards is now being used in several major applications, including healthcare, banking, entertainment and transportation. PayWave cards are one of those types of smart cards. Its unique function allows payment or transaction to be made without touching and faster. PayWave is available on credit, debit and prepaid cards, and can be activated on a mobile phone or sticker or phone on an active NFC (Near Field Communication) terminal.

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Currently, the e-payment industry focuses on e-transfer based on the emulation card and there are many successful executions (Hun, 2008; Tang, 2009; Izhar, 2011). However, according to statistics released by the Single Euro Payments Area (SEPA) (2013), the number of fraud, loss or theft of payWave cards has seen an increase from 2008 to 2013 in countries like Australia, Europah, Canada and the United States. The above scenario clearly shows that although the implementation of payWave cards has been successful, however, the behavior of the users on this card is still at a low level due to the weakness of the existing system. Referring to the New Straits Time (2017) press report, there is no fraudulent report from the use of this payWave visa-free contact card. Additionally, the fact that payWave-based payload cards are also hacked is also incorrect (Bank Negara Malaysia, 2017) after numerous you tube videos on you tube on digital pocket screens. Furthermore, highly educated customers are also more likely to increase the speed in payment processes than those who are less educated (Fiedler et al., 2012).

However, the National Union of Bank Employees (NUBE) has stated that no guarantee has been provided by the National Bank or other banks that ATM card and payWave visa are protected from data theft (Ashraf, 2016). Based on the Daily Express (2016), as millions of ATM and credit card users in Malaysia are advised to switch to their bank card on payWave cards, the union representing the bank's employees has questioned the vulnerability of the payWave system in the event of data theft. According to NUBE again, there is a device that can read the information stored in the new card magnet. These things have led to some doubt among payWave card users. Accordingly, based on the above arguments, it is necessary to conduct a more thorough study to identify the level of use of payWave cards among consumers, as well as to identify the relationship between data security and data privacy with the behavior of the use of payWave cards in Kuala Lumpur. This study will attempt to examine the level of the usage of payWave cards among consumers in Kuala Lumpur. This study also try to examine the relationship between data security, data privacy and behavior towards the usage of payWave cards. The study will then discuss the literature review and proposed model of the study. At the end, this study will provide the results and discussion, and finally provide a conclusion.

2.0 LITERATURE REVIEW

2.1 PayWave Card

PayWave cards are unique and revolutionary cards that can be used to make fastest contactless payment. This includes buying stuff online with a computer or using a smartphone to buy something in the store. PayWave is available on credit, debit and prepaid cards, and can be activated on mobile or sticker. This technology allows users to pay by simply scanning cards or phones on an active NFC (Near Field Communication) terminal.

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Volume 05 Issue 20
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2.3 Behavior

Behavior is a variety of actions and attitudes done by individuals, organisms, systems, or artificial entities based on themselves or their surroundings, including other systems or organisms and the physical environment (Minton & Khale, 2014). It is also a system or organizational response to various stimuli or inputs, whether internal or external, conscious or subconscious, decisive or secretive, and voluntary or voluntary (Minton & Khale, 2014).

2.4 Security

Safety is the level of resistance to, or protection against harm. It applies to any exposed or valuable assets such as people, residences, communities, goods, countries or organizations. According to The Australian (2013), computer security, also known as cyber security or IT, is the security used for computing devices such as computers and smartphones, as well as computer networks such as private and public networks, including the entire Internet. This field covers five components namely hardware, software, data, people, and procedures that use digital equipment, information and services protected from unwanted or unauthorized access, undesirable changes or destruction. This is increasingly important due to increased reliance on computer systems in most societies.

2.5 Privacy

Privacy is the ability of an individual or group to exclude themselves, or information about themselves, and therefore self-expression. The limitations and content that are considered personal also vary between cultures and individuals, but share the same theme. When something is personal to someone, it usually means something special or sensitive to them. The privacy domain is partly overlapping (confidentiality), which may include appropriate usage concepts, as well as information protection. Privacy can also be the body's integrity (Herring, 2016).

2.6 Basic Theory

'Theory of Reasoned Action' (TRA) is an ideal model for studying the determinants of consumer behavior as it predicts and confuses behavior across multiple domains (Azjen & Fishbein, 1980). This model also provides a difference between beliefs, attitudes, subjective norms, intentions, and behaviors that are of major concern in the relationship between variables. Figure 1 represents the theory.

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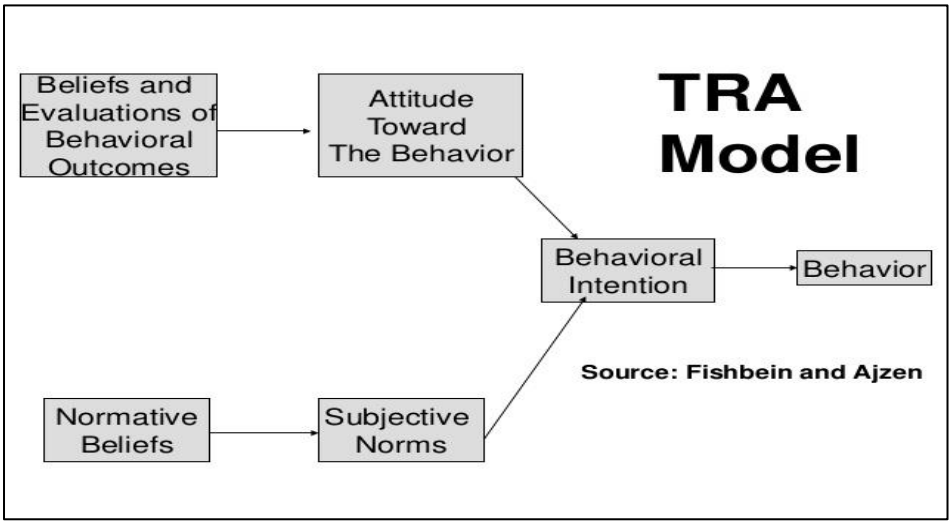

Figure 1. *Theory of Reasoned Action* (TRA)
Source: Ajzen dan Fishbein (1980)

2.7 Conceptual Framework of Study and Hypotheses

Figure 2 illustrates the conceptual framework of the study. Data security and privacy are independent variables while the behavior of the use of payWave cards is a dependent variable.

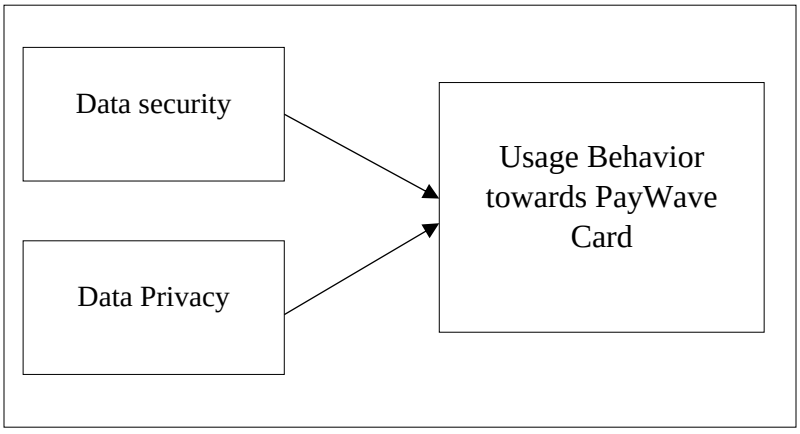

Figure 2. Conceptual Framework of Study

Based on the discussion of the literature and theories above, it is possible to build a hypothesis that gives tentative answers to the research questions described in the previous chapter which is also developed based on the background of the study and the problem statement as follows:

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H1: There is a significant relationship between data security and behavior against the use of payWave cards.
H2: There is a significant relationship between data privacy and behavior against the use of payWave cards.

3.0 METHODOLOGY

This study uses quantitative methods and data collected through a questionnaire where the forms were distributed to the respondents to identify the level of use of payWave cards among consumers in Kuala Lumpur and the relationship between data security and privacy with the behavior of the use of payWave cards. Respondents consisted of users in the Kuala Lumpur area and questionnaires were distributed at the shopping centers around the city. The study area was chosen because Kuala Lumpur was the capital and largest city in Malaysia with a population of 1.73 million in the census of 2017 (Department of Statistics Malaysia, 2017). The target population is the population of Kuala Lumpur City which amounts to1.73 based on reports from the Department of National Statistics (2017). In order to determine the size of the sample, the researcher referred to the sample size determination table which was provided amounting to 1.73 people, the sample size by Krejcie and Morgan (1970) where for the required population was 384 people. A total of 204 data were collected through a questionnaire distributed through handouts and used in statistical analysis using Statistical Package for Social Science (SPSS). The data were analyzed using Statistical Package for Social Science (SPSS) version 21 for descriptive analysis and inference analysis. Descriptive analysis is performed to analyze and describe the characteristics of the sample (Sekaran & Bougie, 2009). The study was analyzed based on the data and information obtained from the questionnaires distributed to all respondents. As an example, it can be used to illustrate the sample used in the analysis based on respondent's demographic information, as well as no exception, descriptive analysis also measures variables with frequency and percentages such as frequency, percentage, mean and standard deviation. While the correlation analysis was used to see the relationship between the independent variables and the dependent variables of the study (Sekaran & Bougie, 2009).

The questionnaire is divided into two main sections, part A and B. Part A begins with the respondent's demographic information while Section B is the questions related to dependent variables and independent variables. Likert (1932) proposes the addition of related items in the Likert scale. Among the advantages of this scale is that it is easy to manage and use, items that are easily answered by respondents and more convincing data collection. The questionnaires used in this study were Likert 5 points (1 = very disagree, 2 = disagree, 3 = uncertain, 4 = agree, 5 = strongly agree).

4.0 DATA ANALYSIS AND RESEARCH FINDINGS

Table 1 below presents the mean analysis and standard deviation for each element in the safety of the payWave card data submitted to the respondents through a questionnaire. The results showed that the overall mean score was 3.77 which was considered as high level. Respondents responded to the highest number four questions, "Data security is important in the use of payWave systems" with average score of 4.43, while the number two question "I'm not worried about the safety in payWave system" is the lowest with the score an average of 3.33.

Table 1. Mean analysis for data security

No	Items	Mean score	Standard deviation	Level
1	I believe the technology used by the paywave system.	3.78	0.777	High
2	I'm not worried about security in the paywave system.	3.33	1.169	Medium
3	The paywave system is reliable.	3.69	0.920	Medium
4	Data security is important in the use of a paywave system.	4.43	0.695	High
5	In general, the paywave system is safe	3.63	0.930	Medium
	Total	3.77	0.898	High

The results in the Table 2 below show the overall mean score of 3.63 which is considered to be at moderate level. Respondents responded simply to data privacy-related questions with average score values between 3.57 and 3.69.

Table 2. Mean analysis for data privacy

No	Items	Mean score	Standard deviation	Level
1	I believe that my information is well controlled.	3.69	0.982	Medium
2	I believe the ability of the paywave system to protect my privacy.	3.57	0.998	Medium
	Total	3.63	0.990	Medium

Table 3 shows the average score of the use of payWave cards that were submitted to the respondents through a questionnaire. The results showed that the overall mean score of 3.68 was considered to be high. Respondents responded to the highest number two questions: "I intend to start or continue the payWave system" with an average score of 3.78, while the number three question "I will always use the payWave system in the future" is the lowest with average score of 3.57.

Table 3. Mean analysis for usage behavior

No	Items	Mean score	Standard deviation	Level
1	Maybe I will use or continue to use the paywave system.	3.67	1.202	Medium
2	I intend to start or continue the paywave system.	3.78	1.111	High
3	I will always use a paywave system in the future.	3.57	1.017	Medium
4	I would recommend to others to use a paywave system.	3.71	1.018	High
	Total	3.68	1.087	Medium

Correlation of Variables

Spearman's correlation test is a non-parametric measure used for abnormal data such as in this study to identify the relationship between two variables. This test was conducted to measure and identify the strength of the relationship between safety and the behavior of the use of payWave cards and the relationship between privacy and the behavior of the use of payWave cards. It is determined by "Guilford's Rule of Thumb", where this method can identify the degree of strength and weakness of the correlation (Guilford, 1956). Table 4 shows the strength of the relationship according to Guilford (1956).

Table 4. The strength of the relationship

Correlation Coefficient Value, r	Correlation of Strength
$r < 0.20$	Very weak
$0.20 < r < 0.40$	Weak
$0.40 < r < 0.70$	Medium
$0.70 < r < 0.90$	Strong
$0.90 < r$	Very strong

Source: Guilford (1956)

In indicating the relationship between data security and behavior against use of paywave card, Table 5 shows Spearman's correlation test results. Correlation coefficient value for data security is 0.664 ** and value is significant at $p < 0.01$ with $p = 0.00$. This shows that there is a significant relationship between data security and behavior against the use of payWave cards. This value also shows that there is a simple relationship between the two variables.

Table 5. Correlation analysis between data security and usage behavior

			Usage behavior	Data security
Spearman's rho	Usage behavior	Correlation coefficient	1.000	.664**
		Sig. (2-tailed)	-	.000
		N	204	204
	Data security	Correlation coefficient	.664**	1.000
		Sig. (2-tailed)	.000	-
		N	204	204

**Correlation is significant at the 0.01 level (2-tailed)

Table 6 shows Spearman's correlation test results to examine the relationship between data privacy and behavior to the use of payWave cards. Correlation coefficient value for data privacy is 0.760 ** and significant value is at p <0.01 with p value = 0.00. This shows that there is a significant relationship between data privacy and behavior against the use of payWave cards. This value indicates a strong relationship because the correlation coefficient value is 0.760 ** between the two variables.

Table 6. Correlation analysis between data privacy and usage behavior

			Usage behavior	Data privacy
Spearman's rho	Usage behavior	Correlation coefficient	1.000	.760**
		Sig. (2-tailed)	-	.000
		N	204	204
	Data privacy	Correlation coefficient	.760**	1.000
		Sig. (2-tailed)	.000	-
		N	204	204

5.0 DISCUSSION

The result of the data analysis conducted in the previous section is discussed and answers the research objectives developed for this study. The first objective of this study was to identify the level of use of payWave cards among consumers in Kuala Lumpur. The results of the descriptive study show that the behavior towards the use of payWave cards among consumers in Kuala Lumpur is on a medium scale where the average value of the mean value of the security dimension is 3.77 which is at high level, the privacy dimension is 3.63 which is at moderate level and dimension of behavior is 3.68 being at moderate level. Besides, in identifying the relationship between data security and behavior to paywave card users, the results of the correlation test in

Table 4.6 support this hypothesis ($p < 0.01$, $r = 0.664$) by showing significant relationship between data security and behavioral use of payWave cards. Meanwhile, in identifying the Relationship Between Data Privacy and Behavior Against PayWave Use, the correlation test results in Table 4.7 support this hypothesis ($p < 0.01$, $r = 0.760$). by proving that there is a relationship between the privacy of data and the behavior of the use of payWave cards.

6.0 LIMITATION OF THE STUDY

Align with previous studies, this study is also not exempt from encountering various constraints which make it difficult for this study to be made. First of all, the decision to translate research instruments into Bahasa Melayu has attracted greater participation from the Malays and less for the Chinese, Indians and others. This may be because the Chinese, Indians and others are less fluent in Malay. In addition, due to time and financial constraints, studies are only conducted in Kuala Lumpur and neglected rural areas. There are some suggestions for future research based on the limitations of this study. First of all, future studies may wish to consider preparing research instruments in Chinese, Indian and English as Malaysia is a multi-racial country. Furthermore, the use of longitudinal surveys is expected to be a solution to the abandonment of data in rural areas.

7.0 CONCLUSION

Overall, this study has successfully answered all study objectives, as well as supplying empirical evidence about the relationship between data security, data privacy and behavior towards the use of payWave cards in Kuala Lumpur. Finally, it is hoped that more follow-up studies will be implemented to enhance the confidence of consumers and banking institutions on the importance of data security and data privacy against payWave card usage behavior.

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