

Risk Perception of the E-Payment Systems: A Young Adult Perspective

AW YOKE CHENG¹, NOOR RAIHAN AB HAMID², and EAW HOOI CHENG³.

Faculty of Business and Management^{1,3},

Asia Pacific University College of Technology and Innovation,

Bukit Jalil, Kuala Lumpur,

MALAYSIA.

Faculty of Business Administration²,

University of Tun Abdul Razak,

Petaling Jaya, Selangor,

MALAYSIA.

ycaw@ucti.edu.my¹, raihan@pintar.unirazak.edu.my², natalie.eaw@ucti.edu.my³;

<http://www.ucti.edu.my>^{1,3}, <http://fba.unirazak.edu.my>².

Abstract: - This paper introduces the current trend towards the use of Electronic-Payment (E-Payment) in Malaysia as an alternative to cash and their risk perceptions. It aims to gain more insights into reasons on why young adults are adopting as well as not adopting E-Payment and their perception of risks on E-Payment as compared to cash. College students from private universities in a metropolitan city in Malaysia were chosen as respondents for this study. The findings show the different risk perceptions are significant among cash and E-Payment but less significant in terms of volume of purchase. We discuss the implications of the findings to service providers and policy makers and offer some recommendations to improve the e-payment service quality. Finally, the limitations of study and the future directions of research are discussed.

Key-Words: - Electronic commerce, electronic payment systems, perceived risks, cash, cards.

1 Introduction

Despite the importance of cash as the preferred mode of payment, based on the Financial Stability and Payment Report issued by the Central Bank of Malaysia – Bank Negara Malaysia (BNM) [1], the use of payment cards as a form Electronic Payment (E-payment) in Malaysia has recorded a marginal increase of 4.5% in year 2009 as compared to 11.7% in year 2008.

In Malaysia, E-Payment is widely used as a form of cashless payment to settle financial transactions. These include credit cards, debit cards, Touch 'n Go, e-cheques, e-wallet, payment via Automated-Teller machines (ATMs) and contactless payments such as Maxis FastTap. E-payment confers various benefits both to consumers as well as businesses [2]. From a consumers' point of view, e-payment provides convenience and time savings. On the other hand, merchants' or service providers' would benefit from faster payment and better tracking of accounts.

Despite the increase usage of E-Payment by the consumers in general, the use of E-Payment among young adults is relatively low. As this group of consumers is deemed to be the heavy users of e-payment system in the near future due to their technology literacy level, studies to understand young adult behavior towards e-payment system merit further investigation. One of the ways to encourage wider usage of E-Payment

is to understand the perception of risks by the users, in turn the understanding will assist service providers and policy makers to offer better services and introduce policies to mitigate risks and exposures to risks.

Hence, this study aims to achieve the following objectives:-

1. To discover whether there is any difference in relative importance ranking in the risk dimensions among cash and E-Payment;
2. To explore whether the level of perceived risks differ among cash and E-Payment; and
3. To examine whether large amount purchases and small amount purchases pose different level of perceived risks.

2 Literature Review

At a general level, as users interact with a new technology, they will learn the usefulness as well as the risks associated with the technology. Technology Acceptance Model (TAM) proposes that an increase in perceived usefulness leads to a greater intention to use [3]. This study extends this proposition to infer that perceived risk influences the intention to use the e-payment system. While there are other factors affecting consumers' adoption of technology, perceived risk is an impediment to the adoption of e-payment system [4] [5].

In brief, perceived risk may influence the attitude and behaviour of consumers towards the e-payment services [6] [7].

Perceived risk is defined as an assessment of uncertainties or lack of knowledge about the distribution of potential outcomes [8] and the uncontrollability of outcome attainment [9]. In the case of using the e-payment services, it is possible that consumers may perceive disclosing their credit card information as risky, and they have no control over this [10]. Chellappa and Pavlou [11] describe information security as the subjective probability with which consumers believe that their personal information will not be viewed, stored or manipulated during transit or storage by inappropriate parties, in a manner consistent with their expectations.

Indeed, uncertainties about how their financial information is treated by service providers and/or merchants will increase perceived risk associated with electronic transactions. This study adapts the notion proposed by Theory of Reasoned Action (TRA) [12] [13] and TAM [14] [15] and suggests that the higher the perceived risk (perception) the lower the risk tolerance (attitude) and the less likely the intention to use (behaviour). Extending TRA and TAM suggestions, it seems plausible to suggest that the higher the perceived risk, the less likely consumers could possibly be satisfied, loyal and retained. That is, unless firms provide reliable and superior quality of service, firms may have difficulties in satisfying consumers, more so in gaining their loyalty and retaining them. Given the likelihood that perceived risk is associated with transactional information [16] this study measures consumers' perceived risk by their behaviour towards these transactional activities.

That is, perceived risky activity includes any transaction using the ATM cards, debit cards and online payment facilities such as the Internet-based auto-debit, Paypal and so forth. Due to relatively low participation rate in e-payment, therefore it seems reasonable at the point of time this study was conducted, to assess the consumers' perception of the level of risk associated with various e-payment methods as listed above.

Meanwhile, in Malaysia, the Internet, which is one of the most popular channels involving e-payment, is fast becoming popular among Malaysians and this is obvious with the rise in the percentage of users, that is, from 17 percent in the year 2001 to 57 percent in the year 2008, with usage levels increasing annually [17]. A report by Malaysian Science and Technology Information Centre on the Internet population for the year 2008 shows that Internet users comprised mainly those who have received tertiary education and more in the science stream, professionals or those at management levels, above average household income

level, youths and those who live in an urban locality [18].

Students at the Tertiary level are pursuing their study in the institutions of higher learning offering courses leading to the awards of matriculation certificate, diploma, first degree and postgraduate degree qualifications. The duration of study for a bachelor degree programme is 3 years and the programmes of study at this level are provided by both the public and private education sectors and attracting many international students [19].

The tertiary students are great prospects to the merchants as they will soon enter the job market as executives, knowledge and skilled workers with promising and stable income, thus having better purchasing power [20]. Therefore, studies to better understand these young adult behaviour; their perception and expectation of services; perceived risk and risk tolerance levels are mandatory so as to assist the service providers to effectively plan the design of products and services as well as better improve the quality of services, in turn leading to higher consumers' acceptance rate.

In previous studies concerning identifying consumer's perceived risks, many have argued that the following types of risk are involved in consumers' decisions: physical, performance, psychological, financial, and time-loss [21] [22] [23] [24]. The same dimensions of risks are chosen in their research in relation to age, perceived risks and satisfaction in consumers' decision making [25].

The respective five selected risk perceptions adapted from Ho et al., [26] are summarized as shown in Table 1 below:-

Table 1: Brief description of the risk perceptions

Risks	Brief description
Physical risk	The risk of loss of cash or card or possible injury to the user. For example, hurt or injured if one is robbed.
Performance risk	The risk that a mode of payment is not acceptable or incurs extra charges for using it as a mode of payment.
Psychological risk	The risk that the use of that mode of payment will affect the self-image of the user or the perceived image of the user from others point of view.
Time-loss risk	The risk that the use of that mode of payment will take more time than another mode of payment.
Financial risk	The risk that the use of that mode of payment will cause financial loss. Situations in which it is not refundable or the transaction is not reversible.

3 Research Method and Design

The research instrument for this study was survey questionnaire and the measurement scale used in this study was adapted from a study on the Electronic Fund Transfer of Point-of-Sale (EFTPoS) by Ho et al. [27].

Using a convenience sampling, self-administered questionnaires were distributed to 400 respondents in December 2009. These respondents were drawn from students pursuing their tertiary education in the private higher educational institutions (PHEIs). The respondents were undergoing their study programmes at these institutions either on conventional learning or on distance learning in Klang Valley, a metropolitan area in Malaysia which is highly populated with Internet users and technology savvy populace.

The questionnaire consisted of 3 parts. The first part is to collect general information about the usage of ATM and other payment cards. The second part is concerned with the risks perception associated with the use of cash which consists of two sub-sections namely small purchase and large purchase. The third part is related to the risk perception associated with the use of E-payment. The questionnaires also described each key term used i.e. ATM cards, e-Debit, and E-payment. For small amount of purchases, respondents are asked to respond to *purchase of clothes* where the transaction amount is not more than MYR 100 as a given situation. Similarly, *purchase of a handphone* with the amount of MYR 1 000 is chosen as a given situation for large amount of purchases.

In this study, the participations by the tertiary students were voluntary. In the context of data collection, each respondent was cordially invited by the researchers to participate in the survey. Upon obtaining respondent's consent, he/she was asked to personally complete the questionnaire. Eventually, 400 participants offered their views and participated in the survey. Out of the 400 participants responded to the questionnaire, 64 responses were discarded due to incomplete data leaving only 336 questionnaires were found usable for analysis. The statistical programme namely IBM SPSS Statistics 19.0 was used for the data analysis. The results of descriptive analysis are summarized in Table 2.

Table 2: Summary of Respondent Profiles
(Sample Size = 336)

Respondents Characteristics	Sub-Profile	Percentage
Gender	Male	40.8
	Female	59.2
Age	Less than 20	48.2
	20 to 30	45.5
	31 to 40	3.3
	41 to 50	2.7

	51 and above	0.3
Level of education currently pursuing	Matriculation	39.6
	Diploma	5.7
	Bachelor's Degree	50.0
	Postgraduate	4.2
	Others	0.6
Programme of Study	Business	61.3
	Arts	20.5
	Engineering and Technology	10.1
	Sciences	2.7
	Others	5.4

Table 2 shows that majority of the participants were female (59.2 percent), age less than 20 years old (40.8 percent). Half of the respondents were pursuing bachelor's degree (50 percent) and more than half were enrolled in business-related programmes (61.3 percent) which is within the norms in accordance to the statistics published by the Ministry of Higher Education [28].

The scales used for this study were fairly reliable measures of variables under study as evident in the alpha values ranging between 0.6 and 0.7 [29]. The reliability of the measurement scales are shown in Table 3 below:-

Table 3: Cronbach's Alpha for the measures used in the questionnaires

Measures	Items	Cronbach's Alpha
Risk Perceptions using Cash	10	0.63
Risk Perceptions using E-Payment	10	0.68

4 Findings

4.1 Risk dimensions among cash and E-Payment

Since the relative ranking of small amount purchases and large amount purchase are similar, mean scores of small and large amount of purchases were used to compare the relative importance of the risk dimensions among cash and E-Payment.

The results of the mean scores are shown in Table 4 and Figure 1 respectively:-

Table 4: Risk Dimensions against the Cash and E-Payment

Risk dimensions	Physical Risk	Performance Risk	Psychological Risk	Time Loss Risk	Financial Risk
Mean scores for cash	3.63	4.94	3.87	3.69	3.79
Mean scores for E-Payment	4.17	3.57	3.54	3.91	3.42

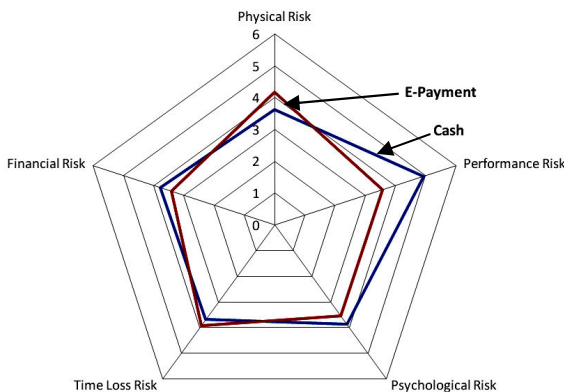


Fig. 1: A spidergram of the risk dimensions against the Cash and E-Payment

The results can be summarised as follows (> stands for relatively higher than):

- Cash: Performance Risk > Psychological Risk > Financial Risk > Time Loss Risk > Physical Risk;
 - E-Payment: Physical Risk > Time Loss Risk > Performance Risk > Psychological Risk > Financial Risk
- Overall, the following observations can be made:
- Cash has the lowest physical risk while E-payment has the highest physical risk;
 - Time loss risk and psychological risk contrast to each other in both Cash and E-Payment; and
 - The relative importance ranking of the five risk perceptions are different among cash and E-Payment.

4.2 Comparison of Each Risk Perceptions among Cash and E-Payment

Paired sample T-tests is used when two sets of observations relate to the same respondents [30]. To confirm that the respondents have significant differences in their perceived risks for cash and E-Payment,

matched paired samples T-tests were conducted on 95% confidence interval of the differences and the result is summarised in Table 5.

Table 5: Differences of Perceived Risks against Cash and E-Payment

Small Amount of Purchases					
Pair	Risk Perceptions	Mean		T-value	Sig. (2-tailed)
		Cash	E-Payment		
1	Physical	3.71	3.57	1.84	0.066
2	Performance	5.06	3.53	15.12	0.000 *
3	Psychological	3.84	3.46	4.43	0.000 *
4	Time-loss	3.64	3.89	-2.88	0.004 *
5	Financial	3.74	3.36	3.79	0.000 *
Large Amount of Purchases					
Pair	Risk Perceptions	Mean		T-value	Sig. (2-tailed)
		Cash	E-Payment		
6	Physical	3.55	4.12	-5.65	0.000 *
7	Performance	4.82	3.61	13.37	0.000 *
8	Psychological	3.91	3.63	1.99	0.048 *
9	Time-loss	3.76	3.93	-2.17	0.031 *
10	Financial	3.89	3.47	4.18	0.000 *
* The difference was significant at the 0.05 level, with most at the 0.001 level.					

The result has shown that there are significant differences in almost all the perceived risks between cash and E-Payment.

4.3 Impact of the Amount of Purchases

Next, an analysis was conducted to compare the perceived risks between small and large amount of purchases by the cash and E-Payment methods. The results are tabulated in Table 6.

Table 6: Differences of Perceived Risks against small and large amount of purchases

Cash					
Pair	Risk Perceptions	Mean		T-value	Sig. (2-tailed)
		Small Amount	Large Amount		
1	Physical	3.71	3.55	1.72	0.086
2	Performance	5.06	4.82	3.29	0.001*
3	Psychological	3.84	3.91	-0.88	0.378
4	Time-loss	3.64	3.74	-1.28	0.201
5	Financial	3.74	3.85	-1.28	0.203
E-Payment					
Pair	Risk Perceptions	Mean		T-value	Sig. (2-tailed)
		Small Amount	Large Amount		
6	Physical	4.22	4.12	1.22	0.222
7	Performance	3.57	3.61	-1.20	0.230
8	Psychological	3.46	3.62	-1.17	0.241
9	Time-loss	3.36	3.92	-6.39	0.000*
10	Financial	3.36	3.47	-1.46	0.145

* The difference was significant at the 0.05 level.

Generally, performance risk is lower with larger amount of purchases in cash payments while time-loss risk is lower for small amount of purchases in E-Payment. However, the differences between other perceived risks are negligible.

Below are the findings of this study which fulfill the research objectives as shown in Table 7:-

Table 7: Summary of the findings

Statements	Results
There are differences in relative importance ranking in the risk dimensions among cash and E-Payment	Supported
The level of perceived risks are different among cash and E-Payment	Supported
The amount of purchases has influence on the perceived risks	Not supported

5 Discussion

From the findings, we have seen that there are significant differences among the tertiary students' in relation to perceived risks of modes of payment i.e. cash and E-Payment. However, the young adult consumers are indifferent in perceived risks associated with amount of purchases. In an online and technology-based self-service environment, the degree of perceived risk is associated with perceived security as well reliability of a

firm when a consumer performs transaction via the electronic channel, for example, a Web site. When a consumer is engaged in a higher degree of perceived risk activity, perceived security and reliability tend to be the most critical factors a consumer would consider in his/her judgment of service quality. Hence, it is plausible to infer that perceived risk plays a moderating role in consumer satisfaction, that is the higher the perceived risk the higher consumer expectation of security practices and service reliability, which in turn would affect satisfaction. Ensuring these features available on a firm's site would increase the likelihood of ultimately gaining consumer loyalty and retention. These features were parallel to Akinci et al.'s study in relation to the most important criteria in consumers' selection of online banks [31].

In Malaysia, the BNM has established a wholly owned subsidiary wholly-owned subsidiary in October 2008 namely the Malaysian Electronic Clearing Corporation Sdn. Bhd or "MyClear" in short. Its main objective is to provide an efficient and reliable infrastructure for e-payments, interbank payment, settlement and securities services to businesses and the public in general [32].

According to a report issued by BNM [33], lack of awareness on the availability of e-payment facilities, security concerns and preference for cash are reasons for not using e-payment. Cash is perceived to be cheap, safe, convenient and fast. Education is also vital to create the awareness about the benefits of using E-Payment especially among the young generation [34].

For the private corporations, there are various initiatives taken to promote the use of E-Payment among the tertiary students who are also the young generation. One of the initiatives targeted to tertiary students which is the young generation, the cooperation between EON Bank Group and Golden Screen Cinema in promoting their EON-GSC credit cards [35].

In promoting safe and efficient payment systems particularly for E-Payment, the BNM has accords great importance in ensuring that the major retail payment systems process payments in a timely and secure manner. Emphasis was placed on ensuring the availability of adequate internal controls and risk management practices as well as assessing contingency planning preparedness [36]. With such safety and security efforts taken by the BNM, it could lead towards reducing the tertiary students' phobia and risk perceptions against the use of E-Payment as their mode of payments.

6 Conclusion

It is important to note that this study has several limitations. Firstly, due to time constraints this study only focused on the Tertiary Students in a metropolitan setting in Malaysia. Further studies should be carried out to gauge young adult perception towards e-payment from various parts of Malaysia, that is from urban and rural areas. Secondly, our study assessed consumers' opinion on the use of cash and selected e-payment methods which were deemed popular among young adult. Our study had excluded other e-payment methods such as credit cards, stored value cards and e-wallet. Since these methods may pose different risks, hence research to understand perceived risks of other e-payment methods is worthwhile.

Nevertheless, as both consumers and service providers can benefit from e-payment system leading to increased national competitiveness in the long run more in depth studies to examine the dimensions of consumers' satisfaction towards e-payment services should be emphasized. The successful implementation of e-payment system depends on how the risk dimensions perceived by consumers as well as sellers are properly managed, in turn would improve the market confidence in the systems.

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