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AN EXPLORATORY STUDY ON THE IMPACT OF TRUST ON DIFFERENT E-PAYMENT GATEWAYS: OCTOPUS CARD VS. CREDIT CARD

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Abstract

The study of trust of consumer on Business-to-Consumer (B2C) E-commerce is one of the key research interests of Information Systems (IS) researchers. In this research, we investigate the impact of trust on two different E-payment gateways, viz. online credit card payment system and the hypothetical online Octopus card (a stored-value smart card) payment system. Based on the model developed by Gefen et al. (2003) and McKnight et al. (2002a), we synthesize our own research model by incorporating disposition to trust, and trust and its antecedents with the Technology Acceptance Model (TAM). An online survey was conducted on the Government-to-Citizen (G2C) E-commerce portal of the Hong Kong Government and 2,481 usable responses were collected. The empirical result shows that consumers in Hong Kong are using different trust building processes to consider their adoption for E-payment gateways.

Keywords: Business-to-Consumer (B2C) E-commerce, Trust, Trust Building Processes, Technology Acceptance Model (TAM), Partial Least Square (PLS)

INTRODUCTION

The rapid development of the World Wide Web and the Internet technology in the past twenty years has dramatically changed the landscape of the operation of retail businesses. With the help of the latest Business-to-Consumer (B2C) E-commerce system, retailers can promote their products through the Internet, which can reach potential customers around the world with minimal cost. At the same time, retailers can obtain a lot of useful information about their current and potential customers through the B2C E-commerce system, which can collect data for E-vendors in building up their business intelligences.

Apart from providing an efficient platform for publicity and for collecting data in building up their business intelligences, one of the most important usages of B2C E-commerce system is for completing business transactions online. Many E-vendors, such as Amazon.com (<http://www.amazon.com>), do not have any brick-and-mortar shops. They earn most of their revenues via their online shopping Web sites. Thus, the level of adoption of E-commerce by customers is a key factor affecting the success or failure of e-Businesses. As a result, many Information Systems (IS) researchers are interested in exploring the factors affecting the user adoption on B2C E-commerce (for example, Bhattacharjee 2002; Cyd 2008; Gefen et al. 2003; Hsu & Wang 2008; Holsapple & Sasidharan 2005; Kim & Benbasat 2009-10; Kim et al. 2009; Kim & Prabhakar 2004; McKnight et al. 2002a; McKnight et al. 2002b; McKnight & Chervany, 2001-2002; Nicolaou & McKnight 2006; Pavlou & Gefen 2004; Tan & Sutherland 2004).

One key factor affecting the user adoption on B2C E-commerce is trust. McKnight et al. (1998) developed a model to explain how institutional-based trust (Shapiro 1987; Zucker 1986) could influence trust formation. In their model, there are three types of trust constructs, i.e. disposition to trust, institutional-based trust, and trust in Web vendors. Institutional-based trust includes two factors, viz. structural assurances and situational normality of the Web site. Later McKnight et al. (2002b) developed the Trust Building Model (TBM) to examine the relations between different trust constructs. They showed that structural assurances of the Web had direct impact on the trusting beliefs and trusting intentions. They also developed another model, i.e. the Web Trust Model (McKnight et al. 2002a) to investigate the relationship between disposition to trust, institution-based trust, trusting beliefs, and trusting intentions. They showed that disposition to trust had significant positive impacts on institution-based trust and trusting beliefs. Another important model, which explains the relationship between trust and B2C E-commerce, is developed by Gefen et al. (2003). In their model, they amalgamated the Technology Acceptance Model (TAM) with trust construct and its antecedents.

While the trust on the E-commerce system has a significant impact on the user adoption of E-commerce, the trust on the online payment gateways also has a significant impact on the success of E-commerce. Pavlou and Gefen (2004) used Amazon auction data to show that the perceived effectiveness of Escrow services and the trust in intermediary (such as Paypal) have significant positive impacts on the trust in the community of sellers by the buyers, which in turn has a significant positive impact on the transaction intentions of the buyers. Hu et al. (2004) also reported their study on the positive impact of the Escrow services on the closing price of electronic auctions.

This research addresses the following two issues related to adoption of the B2C E-commerce payment gateway:

- (1) We investigate the interaction between disposition to trust with other trust constructs by integrating the model developed by Gefen et al. (2003) with disposition to trust construct from McKnight et al. (2002a), and apply it to the analysis on E-payment gateway; and
- (2) We study the impact of the type of online payment gateways on the relationship between those trust-based antecedents. The online payment gateways that we investigated are credit card and Octopus card, a stored-value smart card commonly used in Hong Kong.

BACKGROUND AND RESEARCH MODEL

2.1 Research Model

Our research model synthesizes the model developed by Gefen et al. (2003) with disposition to trust developed by McKnight et al. (2002a). In particular, we propose disposition to trust, which includes benevolence, integrity, competence, and trusting stance, to have a significant impact on trust. Our research model is presented in Figure 1.

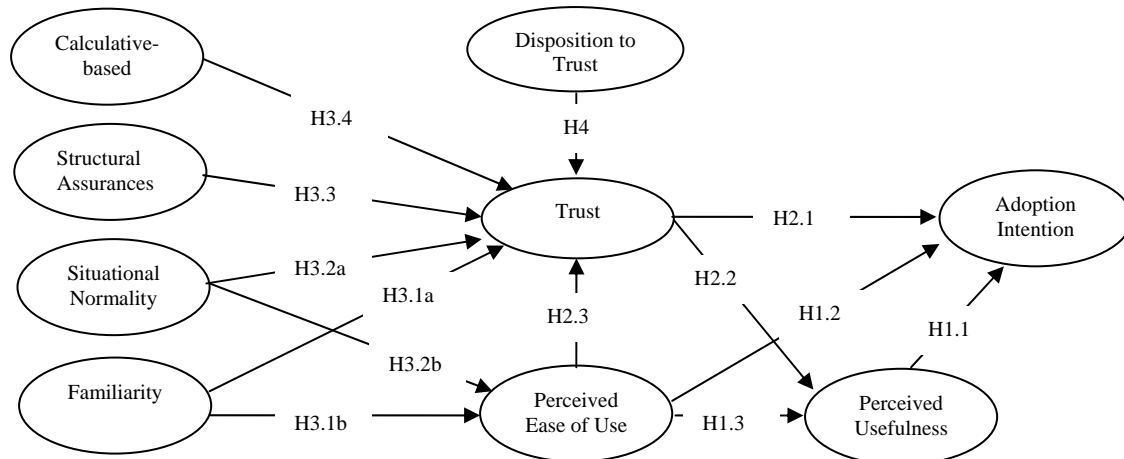


Figure 1. Research Model

In view of the large number of constructs involved in our model and the page limit imposed by the PACIS, we can only briefly discuss the relationships between our constructs in the research model in this section.

2.1.1 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) (Davis 1989; Davis et al. 1989; Venkatesh & Davis 2000; Venkatesh et al. 2003) is one of the most frequently used models in the IS literature. TAM has been extensively used for investigating the user adoption attitude to different types of management information systems (for example, Adams et al. 1992; Tan & Teo 2000; Thong 1999). The standard TAM has three constructs, i.e. two independent constructs viz. perceived usefulness (PU) and perceived ease of use (PEOU), and with adoption intention (AI) as the dependent construct. We develop the following three hypotheses related to the adoption of B2C E-commerce payment gateways as described by the TAM:

H1.1: PU positively affects AI of a B2C E-commerce payment gateway.

H1.2: PEOU positively affects AI of a B2C E-commerce payment gateway.

H1.3: PEOU positively affects PU of a B2C E-commerce payment gateway.

2.1.2 The role of Trust on B2C E-commerce

Many IS literatures have reported the impact of trust on B2C E-commerce. Cyd (2008) and Kim et al. (2009) both investigated the impact of trust on E-loyalty. While Cyd (2008) focused on the impact of culture on trust and E-loyalty, Kim et al. (2009) were interested in the relationships between trust, user satisfaction, and E-loyalty. Sia et al. (2009) also studied in the impact of culture on trust. They discovered that cultural background of subjects had significant impacts on the trust beliefs of consumers on B2C E-commerce websites, through portal affiliation and peer customer endorsement. They also showed that trust beliefs had significant impacts on customers' attitude and their intention to buy. Recently, Kim and Benbasat (2009-2010) also reported their findings concerning the impact of content, source and price on trust on B2C E-commerce.

Gefen et al. (2003) proposed trust on the E-vendor had positive impacts on adoption intention as well as on perceived usefulness. They also proposed that perceived ease of use would have a positive impact to trust. Based on Gefen et al. (2003), we develop the following hypotheses to describe the interactions between trust and the TAM constructs on the adoption of B2C E-commerce payment gateways:

H2.1: Trust positively affects AI of a B2C E-commerce payment gateway.

H2.2: Trust positively affects PU of a B2C E-commerce payment gateway.

H2.3: PEOU positively affects Trust in a B2C E-commerce payment gateway.

2.1.3 *The Role of Antecedents of Trust*

According to Gefen et al. (2003), there are four antecedents on trust, namely familiarity which is a knowledge-based trust antecedent, calculative-based trust antecedent, and two institution-based trust antecedents, i.e. situational normality and structural assurances. They are also included in our model.

Familiarity is one of the factors affecting the success of B2C E-commerce. Bhattacharjee (2002) developed items for measuring trust, willingness to transact, and familiarity in an online firm. Based on his analysis using structural equation modeling on E-banking data, he observed that familiarity had significant impacts on trust and on the willingness to transact. Gefen et al. (2003) also proposed that if a consumer of B2C E-commerce was familiar with the trustworthiness of the E-vendor, the customer would have a higher level of trust on the E-vendor. They also suggested that familiarity, which was one of the aspects of experience, had a positive influence on perceived ease of use (Karahanna et al. 1999). Thus, we develop our two hypotheses on the role of familiarity in our model:

H3.1a: Familiarity with a trustworthy B2C E-commerce payment gateway positively affects the trust in that payment gateway.

H3.1b: Familiarity with a trustworthy B2C E-commerce payment gateway positively affects PEOU.

Situational normality and structural assurances are the two institutional-based trust antecedents in our model. Vance et al. (2008) analyzed the impact of institutional-based trust using situation normality and structural assurances as antecedents. They observed that institutional-based trust had a significant positive impact on the trusting beliefs in m-commerce portal. Kim and Prabhakar (2004) investigated into the trust issue on online banking with structural assurances as one of the constructs. They used multiple logistic regression analysis to show that structural assurances was one of the factors affecting the initial trust in electronic channel. Gefen et al. (2003) proposed these institutional-based trust antecedents to have significant positive impacts on trust. They proposed situation normality positively affected perceived ease of use based on the literatures (Anderson 1985; Simon & Gilmartin 1973). Here, we develop three hypotheses related to the impacts of institutional-based trust in our model.

H3.2a: Situation normality positively affects the trust in a B2C E-commerce payment gateway.

H3.2b: Situation normality positively affects PEOU of a B2C E-commerce payment gateway.

H3.3: Structural assurances positively affects the trust in a B2C E-commerce payment gateway.

Calculative-based trust antecedent also has a positive impact to the trust of a B2C E-commerce system (Gefen et al. 2003) as proposed by literatures (Doney et al. 1998; Shapiro et al. 1992). Thus, we have our last hypothesis describing the role of trust antecedents as follows.

H3.4: Calculative-based trust antecedent positively affects the trust in a B2C E-commerce payment gateway.

2.1.4 *Disposition to Trust*

While Gefen (2000) first examined the impact of disposition to trust on trust using a simple construct, McKnight et al. (2002a) examined the second order impact of disposition to trust to institution-based trust and trusting belief using four antecedents, i.e. benevolence, integrity, competence and trusting stance. In our study, we propose that disposition to trust will have a positive impact on the trust in a

B2C E-commerce payment gateway based on McKnight et al. (2002a)'s model. As a result, we have the following hypothesis.

H4: Disposition to trust of a B2C E-commerce payment gateway positively affects the trust in that payment gateway.

2.2 The Impact of the Payment Gateways

2.2.1 Introduction

Prior literatures support the impact of payment gateways on consumer behaviour in the context of electronic commerce. Ho and Ng (1994) discussed customers' perception on risk for different types of electronic payment systems including cash, credit card and electronic fund transfer at point-of-sale. Pavlou and Gefen (2004) compared the perceived effectiveness of credit card guarantees and Escrow services on trust and perceived risk in online marketplaces. They noted that perceived effectiveness of Escrow services had a significant impact on the trust of online sellers. To sum up, payment gateways are having an impact on the trust of E-commerce systems.

In this study, we explore the impact of two different payment gateways, i.e. the online credit card payment system, and a hypothetical online fund-transfer system using the Octopus card system, which is an RFID micro-payment smart card commonly used in Hong Kong. As an exploratory study, we investigate whether consumers will be affected differentially by those trust antecedents when they use different payment gateways to complete their B2C E-commerce transactions. Consumers normally use credit card for larger purchase and Octopus card for small to micro-payment. We thus expect trust to be more influential in the context of E-commerce for credit card payments than Octopus transactions.

H5: The impact of trust antecedents is more significant for online fund-transfer gateway provided by the online credit card payment system compared with the online Octopus card system.

As most readers may not be familiar with the operation of the Octopus card system, we provide the background of it in the next sub-section.

2.2.2 Octopus Card System¹

Octopus card is a stored-value smart card equipped with an RFID chip, which is designed for micro-payment. It was developed by the major public transportation operations in Hong Kong and its payment system was official launched in 1997. Octopus card users in Hong Kong are able to use their Octopus cards to settle micro-payments related to transportation, groceries, etc. through the Octopus Card system. Now, Octopus Hong Kong has exported their technology to overseas, including the Mainland China, the Netherlands, and Dubai of the United Arab Emirates.

Owners of Octopus card can opt to replenish their cards in convenient stores and supermarkets by cash, or through direct debit authorization through their bank accounts or credit card accounts. They can apply for personalized Octopus cards with their photos imprinted in their cards. Some apartments link up their security systems with the Octopus card system and allow their residents to use their personalized cards for authentication.

RESEARCH METHODOLOGY

To study the impact of trust on the two different E-payment gateways through credit card and Octopus card, we conducted an online survey with the help of the Octopus system provider. The survey instrument is adapted from Gefen et al. (2003) and McKnight et al. (2002a). All questions in the survey were measured on a 7-point Likert scale.

¹ The information presented in this section are mainly come from the corporate website of Octopus, <http://www.octopus.com.hk>

The survey was conducted on the Government-to-citizen (G2C) E-government portal of Hong Kong Government. All the 160,000 subscribers of the G2C E-government portal were invited to participate in this survey, which was roughly around 2% of the population of Hong Kong. The only prerequisite for participating in the survey was the participants should have an Octopus card. Incentives, including a small amount of cash prizes, were provided to the participants through a lucky draw. During the four-week period of data collection, we collected 2,481 usable responses through the online survey, of which 1,269 (or 51.1%) were female. The average age of our sample was 28.8 years old.

When doing the survey, the Octopus Hong Kong was considering of producing an online version. A personal card reader would be provided and attached to the consumer's computer through a USB port. The consumer paid by putting the Octopus card onto the personal reader, following exactly the same procedure of using the card offline. The online merchant would then process the information sent from the consumer side reader and complete the Octopus transactions just like the physical one. An online video demonstrating the process was shown to survey respondents to help them understanding this possibility and answering the related questions.

RESULTS

4.1 PLS Analyses

We use partial least square (PLS) technique for our structural equation modelling (SEM) analysis. As suggested by Gefen et al. (2000) and Chin et al. (2003), PLS is a better SEM tool compared with LISREL for exploratory study. The SEM tool used was SmartPLS Version 2.0 (Ringle et al. 2005).

4.2 Instrument Validity and Reliability

The loading of the two sets of measurement items on their latent constructs and their composite reliability are reported in Appendix A. The *t*-values of items for both sets of data are significant, which show that convergent validity is achieved in our survey instrument. For the test of discriminant validity, we note that items are having loading higher than 0.7 on their associated factors (Nunnally 1978). However, some items also have a relatively high loading on other factors. Thus, we check whether the square root of each latent construct's Average Variance Extracted (AVE) is larger than the correlation of the construct concerned with other constructs. The bolded figures in the respective correlation matrices are the square root of each latent construct's AVEs. As these numbers are larger than the correlations of the construct concerned with other constructs, discriminant validity is achieved.

	AI	CB	PBT	FAM	PEOU	PU	SN	SA	KBT
Adoption Intention (AI)	0.948								
Calculated-based (CB)	0.285	0.872							
Disposition to Trust (PBT)	0.284	0.441	0.879						
Familiarity (FAM)	0.318	0.371	0.728	0.954					
Perceived Ease of Use (PEOU)	0.301	0.185	0.219	0.232	0.953				
Perceived Usefulness (PU)	0.521	0.097	0.162	0.198	0.501	0.951			
Situation Normality (SN)	0.297	0.379	0.628	0.633	0.205	0.238	0.970		
Structural Assurances (SA)	0.349	0.434	0.723	0.802	0.228	0.201	0.649	0.943	
Trust (KBT)	0.337	0.475	0.725	0.748	0.238	0.195	0.637	0.774	0.916

Table 1. Correlation Matrix of the Construct – Octopus Card System

	AI	CB	PBT	FAM	PEOU	PU	SN	SA	KBT
Adoption Intention (AI)	0.962								
Calculated-based (CB)	0.273	0.874							
Disposition to Trust (PBT)	0.340	0.454	0.879						
Familiarity (FAM)	0.374	0.379	0.747	0.951					
Perceived Ease of Use (PEOU)	0.347	0.085	0.230	0.248	0.963				
Perceived Usefulness (PU)	0.458	0.136	0.202	0.252	0.612	0.956			
Situation Normality (SN)	0.306	0.393	0.614	0.646	0.233	0.263	0.966		
Structural Assurances (SA)	0.379	0.425	0.726	0.805	0.243	0.247	0.640	0.947	
Trust (KBT)	0.384	0.470	0.745	0.762	0.256	0.255	0.622	0.794	0.927

Table 2. Correlation Matrix of the Construct – Credit Card System

4.3 Results

The PLS result of both payment systems are reported at Figures 2 and 3. The *t*-values reported are calculated using bootstrapping technique with 100 cases and 3,000 samplings. For both cases, the $R^2(\text{adj})$ values for trust are ranged from 69.5% to 71.8% which are very good. Our model also explains close to 30% of the adoption intention.

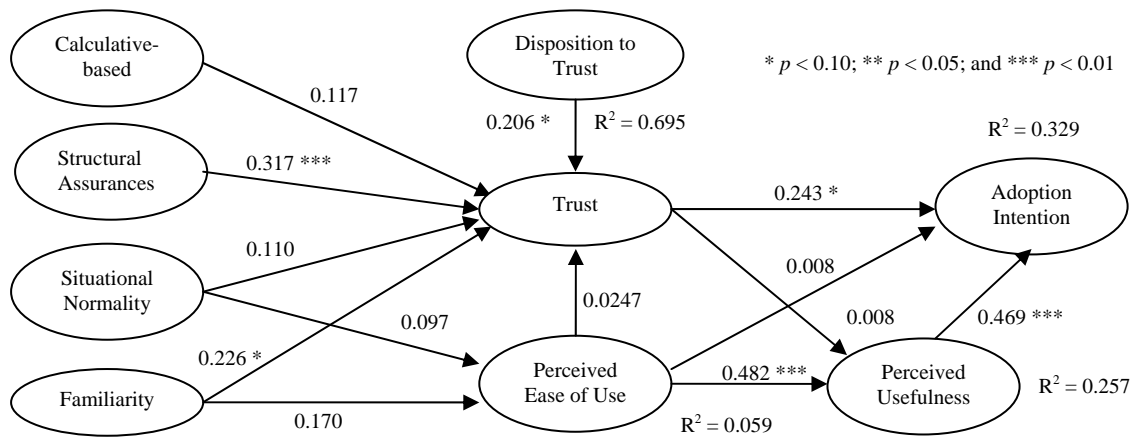


Figure 2. Smart PLS Solution for Online Octopus Card Payment System

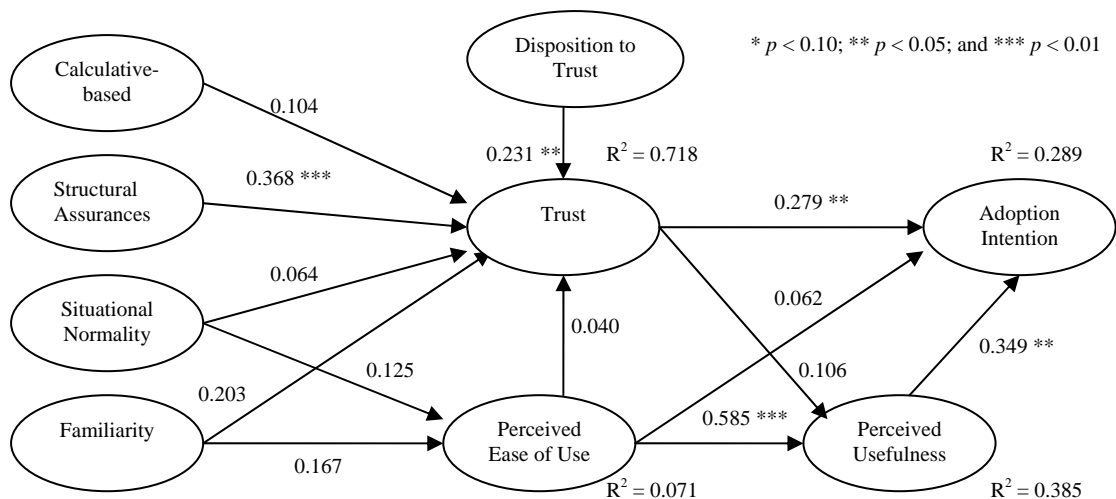


Figure 3. Smart PLS Solution for Online Credit Card Payment System

For the adoption of the online Octopus card system, our result shows that perceived usefulness is the most significant factor ($p < 0.01$) affecting the adoption process while trust only has a marginal

impact ($p < 0.1$). Structural assurances ($p < 0.01$) is the single significant factor affecting trust whereas disposition to trust and familiarity (both $p < 0.1$) are having marginal impacts. As usual, perceived ease of use is the major factor affecting perceived usefulness as observed in many TAM studies.

For the adoption of online credit card system, we notice that both trust and perceived usefulness are significant factors (both $p < 0.05$) affecting adoption intention. However, only structural assurances and disposition to trust ($p < 0.01$ and $p < 0.05$ respectively) are the antecedents of trust. To sum up, the trust building processes for these two payment systems are different and customers consider more trust antecedents on the adoption of the online credit card payment system. Thus, Hypothesis 5 is supported. Table 3 below summarizes the result of this study.

Hypothesis	Octopus Card	Credit Card
H1.1: PU → AI	Supported	Supported
H1.2: PEOU → AI	Not supported	Not supported
H1.3: PEOU → PU	Supported	Supported
H2.1: KBT → AI	<i>Marginally Supported</i>	Supported
H2.2: KBT → PU	Not supported	Not supported
H2.3: PEOU → KBT	Not supported	Not supported
H3.1a: FAM → KBT	<i>Marginally Supported</i>	Not supported
H3.1b: FAM → PEOU	Not supported	Not supported
H3.2a: SN → KBT	Not supported	Not supported
H3.2b: SN → PEOU	Not supported	Not supported
H3.3 SA → KBT	Supported	Supported
H3.4: CB → KBT	Not supported	Not supported
H4: PBT → KBT	<i>Marginally Supported</i>	Supported
H5: Online credit card payments considers more trust antecedents	Supported	
Note: Supported means $p < 0.05$ and marginally supported means $p < 0.1$.		

Table 3. Summary of Results

DISCUSSION

5.1 Implication of this Study

In this study, we develop our model by synthesizing the model developed by Gefen et al. (2003) with the disposition to trust construct with four antecedents developed by McKnight et al. (2002a). We propose disposition to trust to have a positive significant impact to trust in our model as set out in Hypothesis 4. Our empirical data show that this relationship is observable in the adoption of the online credit card payment system, and marginally observable in the online Octopus card system. There are two possible explanations for the insignificant result (i.e. $0.1 > p > 0.05$). First, it is likely that the effect size for the said relationship is small for Octopus card system. Thus, even though we have used the bootstrapping method in our data analysis, we still cannot observe the significant result. The other possible reason, which we are more inclined to believe, is due to the different trust building processes between these two online payment systems. Octopus card system has been used by most of the Hong Kong citizens for over ten years. During that period, there were very few fault cases related to Octopus card system. Thus, they already have a strong perception that the Octopus card system is having a high level of benevolence, integrity, competence and trusting stance and will not consider these factors on the trust building processes on using this system for online payment.

Based on the same reason, as our subjects are very familiar with the operation of the Octopus card system and have a high confidence on the system, they may be too confident and boil down the whole decision processes issue into a simple technology acceptance issue. As a result, we only observe trust has a significant impact on the adoption intention for the model. This also explains why familiarity has a marginal impact on the formation of trust on the Octopus card system

Unlike the result obtained by Gefen et al. (2003), which they reported that most paths were significant, only one trust antecedent, i.e. structural assurances, has a significant impact on the trust building processes in these two online payment gateways. We suggest online payment gateway designers and operators should put more attention on providing “safety nets” like guarantees in specific context (Gefen et al. 2003) to strengthen structural assurances of their online payment gateways.

5.2 Limitations and Future Research

There are limitations in this study. First, prior literatures, for example, Csukás et al. (2008), Cyd (2008), Vance et al. (2008) and Sia et al. (2009) have shown that culture would have a significant impact on the trusting beliefs of B2C E-commerce Web sites. Therefore, we anticipate the culture of Hong Kong would have a significant impact on our result. To investigate into the cultural impact issue, we plan to conduct a series of similar experiments in other countries in the near future.

Second, we consider disposition to trust as a single construct in our data analysis, which is different from McKnight et al. (2002a) who further broke down the construct into four antecedents, i.e. benevolence, integrity, competence and trusting stance. To further investigate the impact of each of these disposition to trust antecedents, we will conduct further analysis in this aspect in our future study. We may need to employ hierarchical regression to see incremental effects of constructs.

For future research directions, we plan to extend our current study to the trust building processes for direct payment to E-vendor online. In our current study, we only examine the use of credit card online payment without considering the impact of branding. In our follow-up study, we shall examine the impact of the brand name of the E-vendor on the adoption of E-payment gateway.

Another extension of this study will be on the impact of risk on the adoption of E-payment gateways. We shall investigate how the risk profiles of the consumers interact with the trust building processes. As mentioned before, Octopus card users have three types of method to replenish their Octopus cards, viz. by uploading the money via cash, via direct debt authorization using bank account, or via direct debt authorization using credit card. We conjuncture the replenishment method used by each category of customers is related to their risk attitude. Thus, we would further investigate the impact of risk on the adoption of E-payment gateways following this initial work.

To sum up, we shall extend our investigation on the impact of risk and culture, as well as trust on various online payment gateways. The results of these future projects will have both theoretical (model building) and managerial (payment gateway building) implication to the IS community.

References

- Adams, D. A., Nelson, R. R. and Todd, P. A. (1992). Perceived usefulness, ease of use and usage of information technology: A replication. *MIS Quarterly*, 16 (2), 227-247.
- Anderson J. R. (1985). *Cognitive Psychology and its Applications*. N.Y.: W. H. Freeman and Company.
- Bhattacharjee, A. (2002). Individual trust in online firms: Scale development and initial test. *Journal of Management Information Systems*, 19(1), 211-241.
- Chin, W. W., Marcolin, B. L. and Newsted, P. R. (2003). A partial least squares latent variable modelling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research*, 14(2), 189-217.
- Csukás, C, Fracalanza, P., Kovács, T. and Willinger, M. (2008). The determinants of trusting and reciprocal evidence from an Intercultural experiment. *Journal of Economic Development*, 33(1), 71-95.
- Cyd, D. (2008). Modeling Web site design across cultures: Relationships to trust, satisfaction, and e-loyalty. *Journal of Management Information Systems*, 24(4), 47-72.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Davis, F. D., Bagozzi, R. P. and Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982-1003.

- Doney, P. M., Cannon, J. P. and Mullen M. R. (1998). Understanding the influence of national culture on the development of trust. *Academy of Management Review*, 23(3), 601-620.
- Gefen D. (2000). E-commerce: the role of familiarity and trust. *Omega*, 28(6), 725-737.
- Gefen D., Karahanna E. and Straub D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, 27(1), 51-90.
- Gefen, D., Straub, D. and Boudreau, M.-C. (2000). Structural equation modelling and regression: Guidelines for research practice. *Communications of the Association for Information Systems*, 4, Article 7.
- Ho, S. S. M. and Ng, V. T. F. (1994). Customers' risk perceptions of electronic payment systems. *International Journal of Bank Marketing*, 12(8), 26-38.
- Holsapple, C. W. and Sasidharan, S. (2005). The dynamics of trust in B2C e-commerce: A research model and agenda. *Information Systems and E-Business Management*, 3(4), 377-403.
- Hsu, L.-C. and Wang, C.-H. (2008). A study of e-trust in online auctions. *Journal of Electronic Commerce Research*, 9(4), 310-321.
- Hu, X., Lin, Z., Whinston, A. B. and Zhang, H. (2004). Hope of hype: On the viability of Escrow services as trusted third parties in online auction environments. *Information Systems Research*, 15(3), 236-249.
- Karahanna, E., Straub, D. W. and Chervany, N. L. (1999). Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly*, 23(2), 183-213.
- Kim, D. and Benbasat, I. (2009-10). Trust-assuring arguments in B2C e-commerce: Impact of content, source, and price on trust. *Journal of Management Information Systems*, 26(3), 175-206.
- Kim, D. J., Ferrin, D. L. and Rao, H. R. (2009). Trust and satisfaction, two stepping stones for successful e-Commerce relationships: A longitudinal exploration. *Information Systems Research*, 20(2), 237-257.
- Kim, K. K. and Prabhakar, B. (2004). Initial trust and the adoption of B2C e-Commerce: The case of Internet banking. *Database for Advances in Information Systems*, 25(2), 50-64.
- McKnight, D. H. and Chervany, N. L. (2001-2002). What trust means in E-commerce customer relationships: An interdisciplinary conceptual typology. *International Journal of Electronic Commerce*, 6(2), 35-59.
- McKnight D. H., Choudhury, V. and Kacmar, C. J. (2002a). Developing and validating trust measures for e-Commerce: An integrative typology. *Information Systems Research*, 13(3), 334-359.
- McKnight D. H., Choudhury, V. and Kacmar, C. J. (2002b). The impact of initial consumer trust on intentions to transact with a Web site: A trust building model. *Journal of Strategic Information Systems*, 11(3-4), 297-323.
- McKnight, D. H., Cummings, L. L. and Chervany, N. L. (1998). Initial trust formation in new organizational relationships. *Academy of Management Review*, 23(3), 473-490.
- Nicolaou, A. I. and McKnight, D. H. (2006). Perceived information quality in data exchanges: Effects of risk, trust, and intention to use. *Information Systems Research*, 17(4), 332-351.
- Nunnally, J. C. (1978). *Psychometric Theory* (2nd edition). New York: McGraw-Hill.
- Pavlou, P. A. and Gefen, D. (2004). Building effective online marketplaces with institutional-based trust. *Information Systems Research*, 15(1), 37-59.
- Ringle, C.M., Wende, S. and Will, A. (2005) SmartPLS 2.0 (beta), www.smartpls.de
- Sia, K. S., Lim, K. H., Leung, K., Lee, M. K. O. and Huang, W. W. (2009). Web strategies to promote Internet shopping: Is cultural-customization needed? *MIS Quarterly*, 33(3), 419-512.
- Shapiro, D. L., Sheppard, B. H. and Cheraskin, L. (1992). Business on a handshake. *Negotiation Journal* (3), 365-377.
- Shapiro, S. P. (1987). The social control of impersonal trust. *American Journal of Sociology*, 93(3), 623-658.
- Simon, H. A. and Gilmarin, K. (1973). A simulation of memory for chess positions. *Cognitive Psychology*, 5, 29-46.
- Tan, F. B. and Sutherland P. (2004). Online consumer trust: A multi-dimensional model. *Journal of Electronic Commerce in Organizations*, 2(3), 40-58.
- Tan, M. and Teo S. H. (2000). Factors influencing the adoption of Internet banking. *Journal of the Association for Information Systems*, 1, Article 5.

- Thong, Y. L. (1999). An integrated model of information systems adoption in small businesses. *Journal of Management Information Systems*, 15(4), 187-214.
- Vance, A., Elie-Dit-Cosaque, C. and Straub, D.W. (2008). Examining Trust in Information Technology Artifacts: The Effects of System Quality and Culture. *Journal of Management Information Systems*, 24(2), 73-100.
- Venkatesh, V. and Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186-204.
- Venkatesh, V., Morris, M. G., Davis, G. B. and Davis F. D. (2003). User acceptance of information technology: Towards a unified view. *MIS Quarterly*, 27(3), 425-478.
- Zucker, L. G. (1986). Production of trust: Institutional sources of economic structure. 1840-1920. In Staw B.M. and Cummings L. L. (Eds.). *Research in Organizational Behavior*, Vol. 6. Greenwich, CT:JAI Press, 53-111.

Appendix A: Standardized Items Loading

Item		Octopus Card		Credit Card	
		Loading	Composite Reliability	Loading	Composite Reliability
Constructs from Technology Acceptance Model (TAM)					
	Adoption Intention (AI)				
AI1	I would use the following online payment methods in the future.	0.958	0.947	0.963	0.961
AI2	Assuming that I have access to the following online payment methods, I intent to use it.	0.937		0.961	
	Perceived Ease of Use (PEOU)				
PEOU1	Learning how to use the following online payment methods is easy.	0.952	0.951	0.961	0.962
PEOU2	The following online payment method is clear and easy to use.	0.953		0.965	
	Perceived Usefulness (PU)				
PU1	Using the following payment method will increase the efficiency of online payment.	0.946	0.950	0.957	0.955
PU2	Using the following payment method for online payment is fast.	0.956		0.956	
Constructs related to Trust and its Antecedents					
	Trust (KB)				
KB1	Based on my experience with each the following companies in the past, I know the company is honest.	0.922	0.963	0.930	0.968
KB2	Based on my experience with each of the following companies in the past, I know the company cares about customers.	0.884		0.925	
KB3	Based on my experience with each of the following companies in the past, I know it is not opportunistic.	0.912		0.901	
KB4	Based on my experience with each of the following companies in the past, I know it is predictable.	0.950		0.958	
KB5	Based on my experience with each of the following companies in the past, I know it knows its market.	0.910		0.919	
	Calculative-based Trust Antecedents (CB)				
CB1	The following companies have nothing to gain by being dishonest in their interactions with me.	0.798	0.905	0.791	0.906
CB2	The following companies have nothing to gain by not caring about me.	0.906		0.913	
CB3	The following companies have nothing to gain by not being knowledgeable when helping me.	0.907		0.911	
	Familiarity (FAM)				

FAM1	I am familiar with the following companies through TV, magazines, newspapers, internet, and/or other media.	0.952	0.953		0.950
FAM2	I am familiar with the following companies through their services.	0.956			
Structural Assurances (SA)					
SA1	Because there is existing regulation to protect me, I feel safe conducting business online with the following companies.	0.915	0.960	0.917	0.963
SA2	I feel safe conducting online shopping with the following companies because of its size.	0.957		0.965	
SA3	I feel safe conducting business online with the following companies because of its statements of guarantees.	0.956		0.958	
Situational Normality (SN)					
SN1	The steps required to make online payments using the following payment method similar to that for offline payments using the same payment methods.	0.970	0.970	0.965	0.965
SN2	The nature of the interaction with the online vendors using the following payment method is similar to that for offline vendors using the same payment methods.	0.971		0.966	
Disposition To Trust					
PBT1	In general, people really do care about well-being of others	0.874	0.963	0.875	0.974
PBT2	The typical person is sincerely concerned about the problems of others.	0.886		0.887	
PBT3	Most of the time, people care enough to try to be helpful, rather than just looking out for themselves.	0.883		0.884	
PBT4	In general, most folks keep their promises.	0.908		0.909	
PBT5	I think people generally try to back up their words with their actions.	0.899		0.900	
PBT6	Most people are honest in their dealings with others.	0.920		0.921	
PBT7	I believe that most professional people do a very good job at their work.	0.890		0.889	
PBT8	Most professionals are very knowledgeable in their chosen field	0.885		0.883	
PBT9	A large majority of professional people are competent in their area of expertise.	0.891		0.890	
PBT10	I usually trust people until they give me a reason not to trust them.	0.833		0.832	
PBT11	My typical approach is to trust new acquaintances until they prove I should not trust them.	0.790		0.789	
Note: The t-values of all the items are having significant <i>t</i> -values, with the corresponding <i>p</i> -values < 0.01.					