Pertanika J. Soc. Sci. & Hum. 24 (3): 1121 - 1137 (2016)

PERTANIKA JOURNALS

SOCIAL SCIENCES & HUMANITIES

Journal homepage: http://www.pertanika.upm.edu.my/

Online Shopping Preference and M-Payment Acceptance: A Case Study among Klang Valley Online Shoppers

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ABSTRACT

The main purpose of this paper is to determine mobile device ownership and online shopping preferences among shoppers in the Klang Valley, Selangor, Malaysia. Additionally, it seeks to investigate the awareness and acceptance of Near Field Communication (NFC) Technology as a preferred payment platform or method among online shoppers. This quantitative research is carried out via survey questionnaire on a sample size of 200 respondents who have shopped online with majority residing in the Klang Valley. The findings indicate online shoppers still prefer to conduct their online shopping transactions using a desktop Personal Computer. Respondents, regardless of race and academic qualifications, use the English language medium when shopping online and majority prefer to shop at an individual e-commerce website rather than a single website comprising many e-commerce websites such as deals.bigsale.com.my. Awareness on NFC technology for payment solutions is still at the infancy stage among many online shoppers in Malaysia with a low acceptance level mainly due to security concerns. This finding has implications on the communications strategies of mobile network operators, banks, Android and Apple-device manufacturers, online retailers and other key players in the telecommunications and technology industry. The latter need to play an active role in educating the public about NFC-enabled payment devices and convincing online shoppers on the security features of such mobile payment devices. In other words, more than just touting the benefits of NFC and explaining the technology, the communications strategy of all relevant players must focus on persuading and convincing their target audience on the security features for diffusion and adoption of the technology online shoppers in Malaysia.

ARTICLE INFO

Article history:
Received: 25 June 2015
Accepted: 28 September 2015

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ISSN: 0128-7702

Keywords: Online shopping preference, M-payment, Near Field Communications (NFC)

INTRODUCTION

Many businesses offer online shopping experience in addition to their brick and mortar outlets in response to consumers' increasing demand for convenience and time-saving practicalities in today's digital world. Indeed, statistics show exponential growth for online businesses. Globally, internet retail sales increased from about USD$105 billion in 2004 to approximately USD$248 billion in 2009 (Euromonitor, 2010).

Two main factors for the rapid growth in e-commerce in Malaysia are cheaper and faster Internet access and technological advances in payment systems. The number of Internet users in Malaysia has increased from 2 million in March 2002 (Nua, 2003) to approximately 16 million in 2010 (World Bank Report 2012). The implementation of wireless application protocol (WAP) services has enabled many Malaysians to directly access the Internet via their mobile phones prompting the Prime Minister, Najib Razak to name them the 'upwardly mobile'. It was reported that expenditures on smart phones and tablets rose from $32.7 million in 2010 to $151.2 million in 2011 in Malaysia (The Star Online, October 25, 2011).

Closer to home, Malaysia's payment provider has revealed that m-commerce spending in Malaysia has increased 370% from RM101 million (US$31.7 million) to RM467 million (US$146.6 million) compared with e-commerce which only grew 9%, from RM1.8 billion in 2010 to RM1.97 billion in 2011. "If you're a merchant and do not have an online presence [specifically a mobile-optimised website], you're losing out because mobile is the new device connection between the buyer and seller," says Elias Ghanem, managing director of PayPal Southeast Asia and India. (Yapp, 2012)

At the same time, payment systems have evolved over the years from traditional payment through cash and cheque payment to online payment via credit and debit cards to M-payment through mobile devices including wireless handsets, personal digital assistants, radio frequency devices, laptops and more recently, Near Field Communication-based devices (Dewan & Chen, 2005). Near Field Communication (NFC) is a short range, high frequency, low bandwidth and wireless communication technology between two NFC-enabled devices. Currently, most mobile phone manufacturers have integrated NFC technology into their mobile phone product, thus making them into potential payment platforms.

However, are Malaysians aware of this new mode of payment system and if they are, are they ready to adopt such a payment system?

There is a dearth of academic research on the preferences of online shoppers and their awareness and acceptance of Near Field Communication (NFC) technology as a payment platform; yet, this is a major issue as swift changes are being made in the

online business landscape. The present study fills this gap and provides valuable insight to policy makers, telecommunications service providers, financial institutions and retailers on online consumer preferences and perceptions as end-users a - these are the important factors for m-commerce to succeed.

In the current study, researchers first aim to determine mobile device ownership among online shoppers. Second, researchers are determined to understand online shoppers' preferences when shopping online. Third, researchers aimed to investigate the awareness and acceptance of NFC Technology as a payment platform among online shoppers

LITERATURE REVIEW

According to Board, T. (2011), Ipsos OTX MediaCT had conducted a survey on behalf of PayPal in August, 2011 among the Americans aged 18 and above who own smart phones and/or tablet PCs, and who otherwise have completed or attempted a purchase via mobile device, or intend to in the future. The sample size for the survey was 1,283 respondents.

The study revealed that smart phone and tablet (dual) owners have above average spending on mobile phones namely, 63% among dual owners versus 29% smart phone owners. Owners with larger screen device tend to be more enticed by mobile shopping activity compared with those who have smaller screen devices. However, there is scarcity of academic studies of dual owners looking at their profiles and habits since tablet usage is still in its infancy stage. (Board, 2011)

Punj (2011) found demographical characteristics such as income, education and generational age play an important role in influencing online shopping behaviour.

Corselli (2015) mentioned that media device adoption nevertheless is on the rise. However, it is interesting to note that desktop and laptop computers are still the most owned devices by online shoppers in the United States of America. There was a split in preferred device among the age group. Online shoppers aged below 40 generally prefer shopping via smart phones and those who aged between 40 and 65 opt for tablet, followed by desktop. Those aged above 65 prefer shopping online using the desktops while laptops are preferred by shoppers aged below 65. When it comes to online shopping, 61% of the respondents prefer mobile web browsers to mobile apps.

William (2014) found out that many business owners are not in favour of having their e-commerce websites translated into their native language believing that this is an investment with very little returns. Many of them prefer to use English to reach out to their clients or prospects. However, interestingly, the finding in this study reveals that approximately 70% of all Internet users do not speak English as their first language; for instance, the Internet users hail from non-English speaking countries such as France, Germany, Japan, Korea and China. It was found that almost 75% of Internet users prefer to purchase a product or service if the information pertaining to the latter

is presented in their native language. It is evidently critical to translate a website into foreign languages since it can significantly increase revenue in foreign markets. It can also help to minimise language barriers in international transactions. Hence, there is a need for translation and localisation among online shoppers.

According to Gordon (2007), Yahoo! and OMD discovered nearly three-quarters of the people surveyed use trusted, familiar websites when purchasing online.

Based on the recent MasterCard Online Shopping Survey carried out by Digital News Asia (2013), the present questionnaire survey aims to measure consumers' propensity to shop online. Findings revealed that the online shoppers in Asia Pacific region have shifted from the desktop to smart phone generally. The chart below sums up the survey. Indonesians top the region with 54.5% of the total respondents using their smart phones to shop in the last three months followed by China at 54.1% and Thailand with 51%.

However, only 25% of the respondents had the lowest awareness on Near Field Communication technology although many of them shop heavily using mobile devices. Interestingly, 70.3% of the respondents who are aware or slightly familiar with NFC technology would likely try and adopt it in the first year of its introduction. Respondents across Asia Pacific prefer buying their products locally instead of a foreign website due to security issues. They were afraid of scams. (Digital News Asia, 2013).

According to Omnisecure (2014) in Timetric report, e-commerce and m-payments act as a catalyst for the Malaysian cards and payment industry.

Propensity for Online Shopping			
Country	2011-2012 Trend	2012	2011
China	↑	102	98
New Zealand	↔	87	86
Australia	↔	85	85
Singapore	↑	84	75
Thailand	↓	80	88
Japan	↔	80	81
Taiwan	↔	80	80
South Korea	↓	82	92
Hong Kong	↑	79	70
India	↓	78	81
Indonesia	↔	78	76
Vietnam	↔	73	74
Malaysia	↓	71	79
Philippines	↑	71	64

Figure 1. MasterCard Online Shopping Survey (Source: Digital News Asia, 2013)

To-date, the average Malaysian owned 1.6 mobile phones in 2014 and is expected to rise to 1.8 by 2018. Hence, m-commerce has great potential to be developed due to the proliferation of mobile devices and rising consumer demand for convenient payments. Although the term M-payment is still very new to many Malaysians, yet it is nevertheless expanding rapidly. The overall m-payment value in Malaysia is forecasted to increase from RM1.8 billion (US$572.8 million) in 2013 to rm7.1 billion (US$2.3 billion) by 2018.

Given that this study focuses on online shoppers' preferences and its m-payment acceptance, it is most appropriate to consider the "Diffusion of Innovation" theory. This study seeks to investigate adoption of technology in M-Payment using Near Filed Communication (NFC) among online shoppers. The theory is particularly relevant because a number of studies have focused on the acceptance, adoption and usage behaviour of consumers (e.g. Rogers, 2003; Fishbein & Ajzen, 2010).

Rogers (2003) defines diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system". The constituent elements of adopting an innovation in this theory are innovation, communication, a social system, and time. Rogers also illustrates five stages of innovation adoption and categorises the adopters into five groups: innovators, early adopters, early majority, late majority, and laggards. He posits that attitude is a crucial factor for acceptance of any innovation. Numerous researchers have since used Roger's theory to investigate perceptions and decision making in various areas of innovation adoption.

Guided by the explanations in the above theory, this study applies the Enhanced Adoption Process Model, as discussed in Schiffman & Kanuk (2007), to investigate whether the adoption factors and diffusion of m-commerce in Malaysia are dependent on the current experience of online shoppers in terms of their familiarity with the type of devices they use, languages, websites and their online shopping frequency and habitual practices. (Refer to Figure 2 and Figure 3)

The theory would also be used to study online shoppers' acceptance of Near Field Communication as a new technology for online shopping through an understanding of the existing key adoption determinants of online shoppers.

THEORETICAL FRAMEWORK

In Figure 3, in addition to studying the online shopping preferences among online shoppers in Klang Valley, particularly on the types of devices they use, the websites they browse and the language they prefer to use when shopping online ; this research also aims to investigate the level of awareness and acceptance among online shoppers, particularly in Klang Valley on m-commerce and their behavioural intent for the acceptance and use of Near Field Communication (NFC) payment initiatives in m-commerce.

RESEARCH FRAMEWORK

The following hypotheses have been developed based on past studies of Board, T. (2011), Corselli, A. (2015), William, S. (2014), Gordon, K.T. (2007), Digital News Asia (2013) and Omnisecure (2014). These are the hypotheses outlined in this study.

H1. There is a correlation between the choice of devices used by online shoppers and the reasons given.

H2. Language usage plays a significant role among online shoppers.

H3. Website familiarity is important in online shopping

H4. There is a correlation between the age group and online shopping preferences

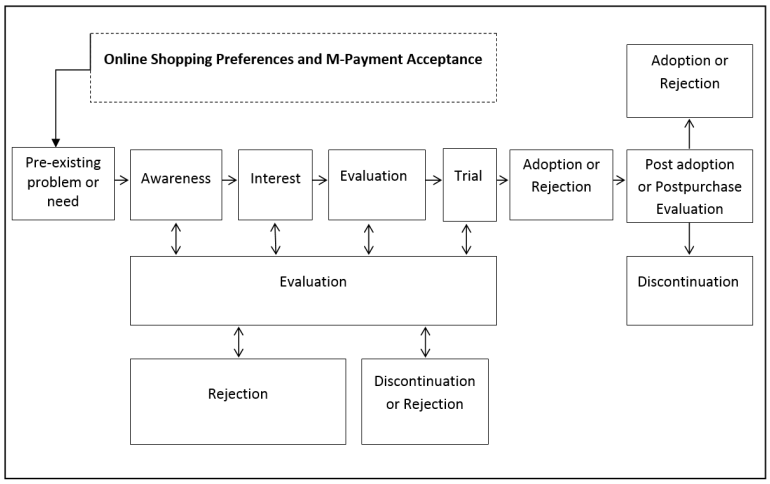

Figure 2. An Enhanced Adoption Process Model

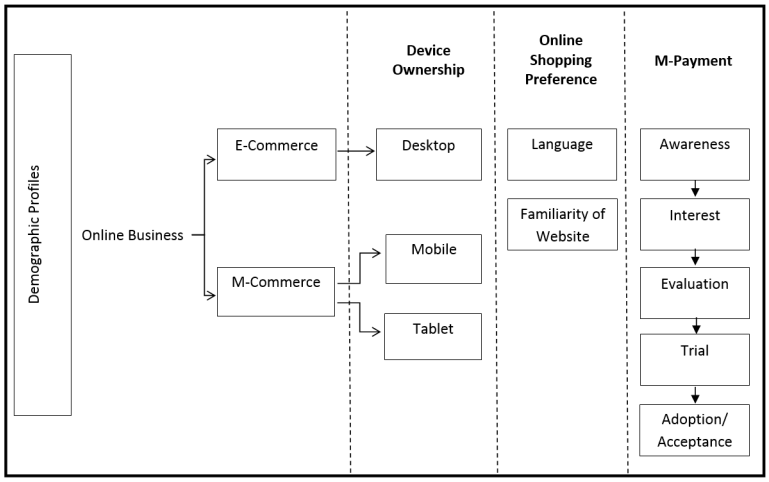

Figure 3. Online Shopping Preferences and M-Payment Acceptance

H5. There is a correlation between races towards unfamiliar websites
H6. Education level reacts differently towards online shopping
H7. There is a correlation between the awareness and acceptance of NFC
H8. There is a correlation between the education level and the trust upon NFC.

RESEARCH METHODOLOGY

Sampling method

This research is based on a quantitative study. A total of 200 sets of questionnaires have been distributed to the respondents aged 21 and above based on convenience sampling. The criteria for selecting respondents have been outlined. They must be working and have had some online shopping experience in order to participate in this survey. Most of the respondents reside in Klang Valley.

Some questionnaires were distributed to the working people in Klang Valley with the permission from their employers while for the rest, the researchers met up with them after office hours to participate in this short survey. Incomplete questionnaires were eliminated from this survey and replaced with new respondents until 200 sample size of the study is achieved.

Questionnaire Design

Although this is not a replication study, each section of the questionnaire has been designed based on some references of the past studies. All questions were asked in a closed-ended format. The questionnaire has been segmented into three main sections in order to achieve its research objectives.

Section A focused on "Respondent's Profile" which contained questions related to demographical profiles such as gender, age, marital status, income among others. Respondents were also asked whether he or she owns a smart phone and/or tablet. According to Board (2011) and Corselli (2015), media device ownership affects the preference of online shopping, especially among age group. Punj (2011) also mentioned that demographical characteristics played an essential role in enhancing the effects of online shopping behaviour.

Section B asked questions on respondents' preferences towards online shopping. In this section, respondents were also asked if language and familiarity of the website play an important role in online shopping. This corresponds to the study done by William (2014) and Gordon (2007) where their findings supported the importance of both language and website familiarity in online shopping.

In the last section, questions were asked to investigate the awareness and acceptance of Near Field Communication (NFC) Technology as a payment platform among online shoppers. Researchers refer to the studies carried out by Digital News Asia (2013) and Omnisecure (2014) when preparing questions for this section.

Upon completing the data collection, data was analysed using S*tatistical Package for Social Sciences* (SPSS) version 20.0. The findings were based on Cross Tabulation analysis, Chi-Square correlation test and also ANOVA test.

Reliability test

Reliability of data obtained was tested using Cronbach's Alpha which gives a reading of 0.905. This indicates that data has an excellent internal consistency overall.

FINDINGS AND ANALYSIS

From the demographical profiles, 200 respondents were selected to answer survey questionnaires where 119 of them are female and 93% of the respondents were aged between 21-40 years old. The researchers interviewed 63.5% Chinese, 24% Malays and 6.5% Indians. It is noted that 82.5% of the total respondents have obtained at least an Advance Diploma/Bachelor degree while 84% of them are currently working for others and 63.5% of them earn a salary between RM2000-5000 per month.

Based on the Enhanced Adoption Process Model discussed in Figure 2, majority of online shoppers have adopted the new technology based on their positive experience surfing online. They will continue to evaluate the process from awareness to the trial stage and during these stages; the users can either reject/discontinue or adopt the technology, products or services. Hence, a successful online shopping experience is heavily influenced by a few determining factors such as internet users' media preference and familiarity with the type of devices they use.

Ownership of a Smart phone or Tablet

It is interesting to note that there is a significance correlation between the number of smart phones and the number of tablets owned by the respondents [x^2 (6, N = 200) = 20.221, $p < 0.05$]. Table 1 shows that those who do not own a smart phone, usually possess a tablet. However, for those who have at least one smart phone, they would most unlikely have a tablet; especially for those who possess 3 smart phones.

According to Board, T. (2011), dual owners have indicated a higher spending on the average due to their mobile purchasing activities. From the finding above, we see that there is still room for m-commerce to grow here, especially on encouraging the "dual ownership" of media devices for online shoppers in Klang Valley. Majority of the respondents in this study prefer having either a smart phone or a tablet.

Device Preference When Shopping Online

Even though all the respondents owned at least a smart phone or a tablet, it is interesting to note from Table 2 that 145 or 72.5% of the respondents prefer to shop online using desktop.

Interestingly, as mentioned in hypothesis 1 earlier, there is indeed significant correlation between devices used by online shoppers and reasons given [x^2 (4, N = 200) = 147.041, $p < 0.05$].

Respondents generally feel more secure shopping using their desktop Personal Computer (PC) / laptop whereby they are able to print out their purchase vouchers when shopping. Besides feeling secure, according to Corselli, A. (2015), shopping online using desktop/laptop over mobile devices could also be due to the preference

for the web browser instead of mobile apps. Although 93% of respondents are aged between 21 and 40, yet we find respondents in this study still prefer desktop/laptop over mobile devices.

Those who shopped online find it more convenient using their smart phone or tablet since they are able to print screen all their purchases.

Does Language of the Website Matter When Shopping Online?

English is the preferred language by respondents when shopping online, regardless of race and academic qualification.

It is interesting to note that there is a significant correlation between race and language used in the shopping websites [x^2 (3, N = 200) = 11.775, $p < 0.05$]. It can be clearly seen from Table 3 that majority of the Malay and Indian shoppers will still shop online although it is not their preferred language. However, majority of the Chinese respondents said they will only shop if the website uses their preferred language. The reasons cited by the respondents for not shopping online if it is not their preferred language is that they 'feel uncomfortable' (47.7%); followed by 'cannot understand well' (31.8%) and 'insecure feeling' (16.8%).

Table 1
Ownership of Smart phone or Tablet

			No._of_Tab			Total
			0	1	2	
No. of_Smart phones	0	Count	0	7	0	7
		% with No. of Tab	0.0%	10.3%	0.0%	3.5%
	1	Count	99	53	2	154
		% with No. of Tab	77.3%	77.9%	50.0%	77.0%
	2	Count	25	8	2	35
		% with No. of Tab	19.5%	11.8%	50.0%	17.5%
	3	Count	4	0	0	4
		% with No. of Tab	3.1%	0.0%	0.0%	2.0%
Total		Count	128	68	4	200
		% with No. of Tab	100.0%	100.0%	100.0%	100.0%

Table 2
Device Preference When Shopping Online

		Why do you have such preference?			Total
		Secure: Able to print vouchers	Convenient: able to print screen	others	
Prefer to shop via which device?	Desktop Personal Computer (PC) / laptop	128	7	10	145
	Smart phones	1	29	1	31
	Tablet	1	19	4	24
Total		130	55	15	200

According to William, S. (2014), translating the web's e-commerce content back to native language will encourage business owners to secure better revenue. At the same time, looking into the language needs will also allow shoppers to feel secure, thus, granting them a better online shopping experience. Translation and localisation are indeed essential if business owners plan to penetrate the foreign markets who know only their native language.

Online Shopping Preference in terms of Websites

Majority or 80% of online shoppers in this study revealed they prefer to shop at individual e-commerce website (for example, Groupon, Ensogo (formerly known as Living Social), Mydeal, Myimart, etc) rather than a single website comprising many e-commerce websites (for example, deals.bigsales.com.my)

Table 4 shows that shoppers would only shop in the websites that they are familiar with. However, it is interesting to know if there is a significant correlation between races and whether they would usually shop at the websites they are familiar with [x^2 (3, N = 200) = 17.380, $p < 0.05$]. Compared with other races, more than half of the Malay online shoppers will not only shop at the websites they are familiar with, they will also shop at unfamiliar websites as long as the deal is attractive.

From this finding, we see that security remains a top concern. Majority of the respondents in this study prefer shopping at the websites which they trust and are familiar with and this outweighs the deal packages offered.

Online Shopping Preference (Convenience)

Figure 4 shows a significance difference between different age groups of the respondents on the convenience factor. Majority of respondents from the 41- 50 year-old age group indicate convenience as an important in their decision to shop online (4.5000). This is followed by respondents

Table 3
Does Language of the Website Matter When Shopping Online?

			Will you shop online if it does not use the language you prefer?		Total
			Yes	No	
Race	Malay	Count	31	17	48
		% with Race	64.6%	35.4%	100.0%
	Chinese	Count	51	76	127
		% with Race	40.2%	59.8%	100.0%
	Indian	Count	8	5	13
		% with Race	61.5%	38.5%	100.0%
	Others	Count	3	9	12
		% with Race	25.0%	75.0%	100.0%
Total		Count	93	107	200
		% with Race	46.5%	53.5%	100.0%

from the 31-40 year-old age group (4.3478), followed by 51-60 year-old age group (4.2500) and lastly the 21-30 year-old age group (3.9829).

Online Shopping Preference (Unfamiliar websites)

The ANOVA in Table 5 shows that race has a varying impact on respondents' decision to use unknown resellers or having little knowledge of retailers' background; that might discourage them to shop online.

Figure 5 shows that when it comes to unknown resellers or retailers' background, more Chinese respondents compared with Malay and Indian respondents are hesitant to shop online. The average rating for Chinese respondents on this is 4.1181 but for Malay and Indian respondents is only 3.6458 and 3.6154 respectively.

Shoppers Preference vs. Academic Qualification

The ANOVA in Table 6 shows academic qualification has varying impact on the effect of better deals/discount offered for online purchases. Figure 6 shows that majority of the respondents who possess Postgraduate

Table 4
Types of Websites Preferred

			Race				Total
			Malay	Chinese	Indian	Others	
Only shop at website that you are familiar with.	Yes	Count	23	100	10	10	143
		% with Race	47.9%	78.7%	76.9%	83.3%	71.5%
	No	Count	25	27	3	2	57
		% with Race	52.1%	21.3%	23.1%	16.7%	28.5%
Total		Count	48	127	13	12	200
		% with Race	100.0%	100.0%	100.0%	100.0%	100.0%

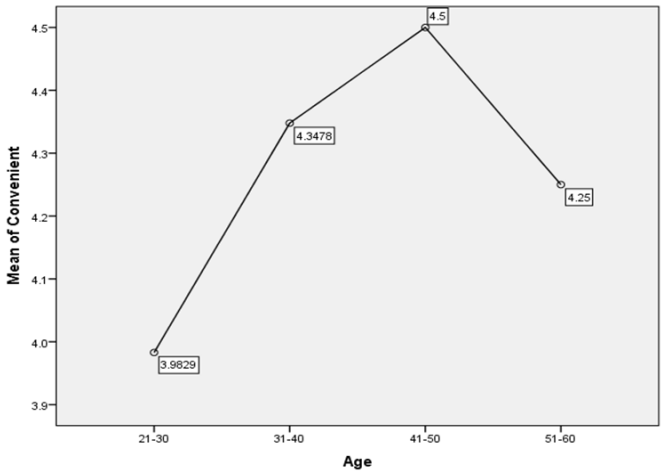

Figure 4. Mean of Convenient According to Age Group

degree agree that better deals/discounts offered for online purchases encourage them to shop online (4.1833). It is then followed by those who possess Advance Diploma/Bachelor Degree (4.1714), SPM/ Diploma (4.0000) and STPM/A-Level/ Pre-U (3.3333).

Awareness and Perceptions on Near Field Communications (NFC)

Only 16% of the respondents have heard of Near Field Communications (NFC). This could be attributed to the unwillingness of respondents to try out the new payment technology. It is interesting to find out that only 1% of the total respondents have made their payment using NFC. The respondents can be categorised as laggard users in term of adopting new payment alternatives. This fits the Enhanced Diffusion of Innovation theory which explains that majority of people are reluctant to adopt new technology and will only do so after the innovators and early adopters have forged the way ahead (Straubhaar et al., 2010). A total of 16% of the respondents have heard of NFC but have not made any payment via NFC. Table 7 indicates very clearly that when given a choice, the majority of the respondents would not choose to pay using

Table 5
ANOVA Table of RACE

ANOVA					
RACE					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.779	3	3.926	4.178	.007
Within Groups	184.201	196	.940		
Total	195.980	199			

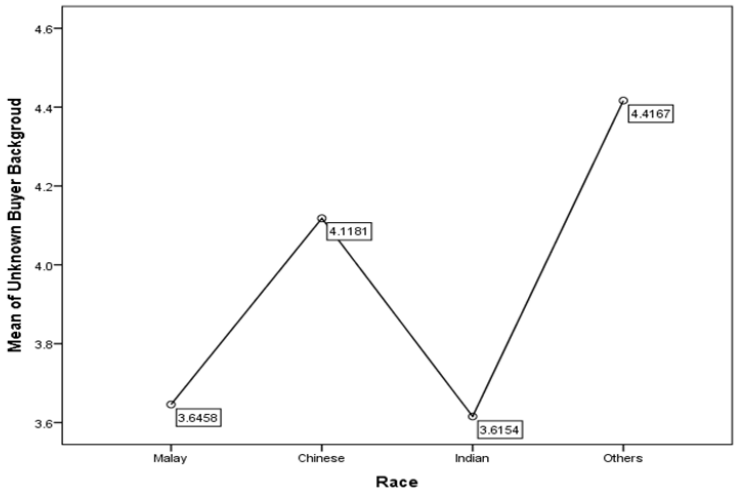

Figure 5. Mean of Unknown Buyer Back Group According to Race

NFC regardless of the gender.

Chi-Square test indicates a significance correlation between the choices of paying using NFC with it reasons [x^2 (4, N = 200) = 115.039, $p < 0.05$. Convenience is the main factor which attracts people to pay using NFC. However, security issue is the main drawback for those who are reluctant to pay using NFC. The level of awareness of NFC among respondents in a survey on Mastercard usage carried out by Digital News Asia (2013) is also low, about 25%, and this is because NFC has not been introduced aggressively by the business operators and telecommunication companies.

The ANOVA in Table 8 shows that respondents with different education levels would have different degrees of agreement on security issues when considering payment platforms using NFC. Figure 4.4 shows that majority of the respondents with Advance Diploma/Bachelor Degree agree security is an issue when considering using NFC (4.1429). This is followed by respondents with Post-Graduate Degree (4.0333), SMP/ Diploma (3.5600) and lastly STPM/A-Level/Pre-U (3.5000).

Table 6
ANOVA Table of Education Level

ANOVA

EDUCATION LEVEL

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.222	4	1.306	1.654	.162
Within Groups	153.898	195	.789		
Total	159.120	199			

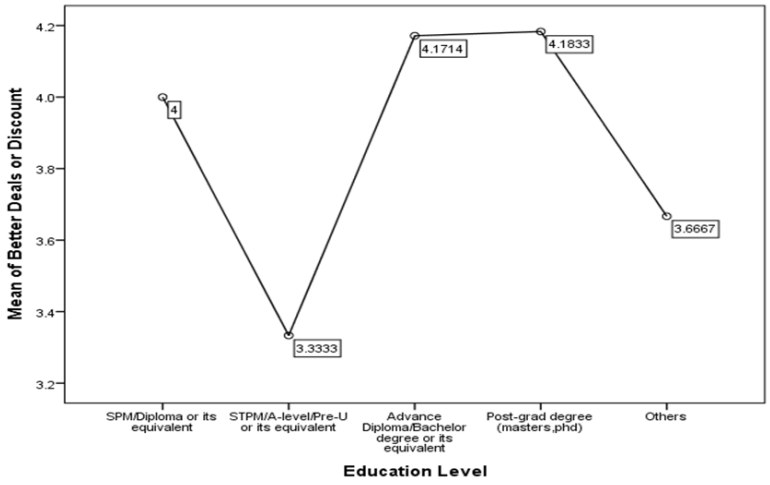

Figure 6. Mean of Better Deals or Discount According to Education Level

Table 7
Awareness and Acceptance of NFC Technology as Payment Platform

			Reasons for saying so…					Total
			Convenient	Control expenses	Insecure	Limited Infrastructure	Others	
Would you choose to pay using NFC?	Yes	Count	44	11	7	1	5	68
		% of Would you choose to pay using NFC?	22.0%	5.5%	3.5%	0.5%	2.5%	34.0%
	No	Count	2	13	83	21	13	132
		% of Would you choose to pay using NFC?	1.0%	6.5%	41.5%	10.5%	6.5%	66.0%
Total		Count	46	24	90	22	18	200
		% of Would you choose to pay using NFC?	23.0%	12.0%	45.0%	11.0 %	9.0%	100.0%

Table 8
ANOVA Table of Education Level

ANOVA

EDUCATION LEVEL

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.550	4	2.887	2.740	.030
Within Groups	204.450	194	1.054		
Total	216.000	198			

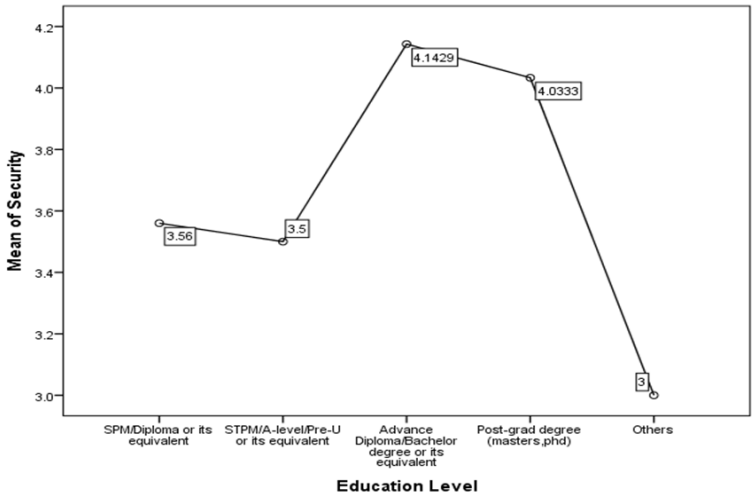

Figure 7. Mean of Security According to Education Level

CONCLUSION

The results of this study augurs well for the telecommunications industry in Malaysia as the penetration rate of smart phones and tablets among online shoppers is high with all respondents owning at least one smart phone or a tablet. Yet, majority of the respondents still prefer to conduct their online shopping transactions using desktop Personal Computers (PCs)/laptop.

Retailers would also want to take note that respondents, regardless of race and academic qualification, prefer the English language when shopping online. Majority of respondents from the age group of 41-50 year-old indicate convenience as the main factor that encourages them to shop online while 80% of the respondents prefer to shop at individual e-commerce websites (for example Groupon, Living Social, Mydeal and Myimart among others) rather than a single website comprising many e-commerce websites (such as deals.bigsales.com.my) due to familiarity with the particular websites. More specifically, Chinese respondents prefer shopping at familiar websites compared with the Malay and Indian respondents.

Based on the study's findings, awareness of Near Field Communications (NFC) technology for payment solutions is still at the infancy stage among online shoppers in Malaysia. In addition, the acceptance level of respondents is very low as they are very sceptical about security related to making payments via NFC-enabled mobile devices.

IMPLICATIONS OF THE STUDY

It is clear that the findings have implications for all players involved, from mobile network operators, banks, Android and Apple-device manufacturers and online retailers to key players in the telecommunications and technology industry. They must ensure their communications strategy focus on addressing the security concerns of online shoppers before m-commerce can take off in a big way. In other words, publicity and marketing activities would not suffice. Instead, these players would have to play an active role in educating the public on the security features available in NFC-enabled payment devices and in convincing online shoppers that it is secure to perform payment via mobile payment devices. It is only when the communications strategy of all relevant players focus on persuading and convincing their target audience on the reliability of security features, that acceptance and adoption of the NFC payment system will take place among online shoppers.

LIMITATION AND RECOMMENDATION OF THE RESEARCH

The main limitation of this study is the unavailability of sampling frame. It is difficult to obtain a full list of online shoppers in the country. If the sampling frame is available, probability sampling such as Simple Random Sampling (SRS) or Stratified Sampling could be employed to get a better representation of the online shoppers over the country.

It is interesting for the business owners to find out product preference by online shoppers. This research may be extended to investigate whether online shoppers prefer to buy local or international products in Malaysia so that the business owners can extend their market reach more efficiently.

Future research could also focus on online retailers to see if they are ready to promote and improve on the m-payment infrastructure in Malaysia since there is a great potential for m-commerce to grow here.

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