FROM PHYSICAL TO DIGITAL: INVESTIGATING CONSUMER BEHAVIOUR OF SWITCHING TO MOBILE WALLET

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Abstract: Even though the digital payment methods are taking the intention of scholars nowadays as new trend to investigate it, there are still few studies that examine the consumer switching decision from the traditional way to digital way while performing the payments. Besides, the monetary market has some substitution effects; as users care about security, ease to use and the wide acceptance for the payment method they are using.

The main aim of this research is to investigate the witching attitude and intention from the traditional payment by using the bank notes, debit or credit card or what called physical wallet to digital one by using mobile apps for doing payments. In total, 140 surveys were emailed to UNIKL business school's staff, 98 questionnaires were returned fully answered and able to use. The results showed that perceived usefulness and perceived ease of use are effective factors into consumer attitude towards switching. Moreover, the relation between the attitude and the intention is significant while the perceived risk pull down the level of this effect.

Keywords: mobile digital wallet; TAM; consumer behavior; perceived usefulness; perceived ease of use; perceived risk

Introduction

In serving the latest century generation' needs the innovative ideas providers are rapidly widening their own market share in competition with traditional ones, by furnishing irresistible platforms which can satisfy the subscribers' needs under highly secure environment. The fast adopting of new technologies became the most competitive factor among goods and services providers in aim to serve the rapidly improving customers' expectations, which are derived by wide orientation towards technology leading environment(Liu et al., 2015).

For last decade the mobile phones have been reported to be the highest influencer into human lives in compare to other technologies (Jack and Suri, 2011). Furthermore, the mankind daily activities has been switched from traditional world to virtual one by relying on those hand-held devices, which made big transformation caused by the rapidly adoption of mobile phone (Thakur and Srivastava, 2014).

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As stated in the global attitude survey directed by PEW research center, 65% of adults in Malaysia reported owing a smartphone, which is considered high comparing to the average of smartphone users in Asia-pacific countries which reported as 37% in general (Poushter and Stewart, 2016). With the high percentage of smartphone users in Malaysia the concept of adopting the digital wallet became the main concern of the researchers who are studying the consumers' behavior in purpose to build the most suitable platform which can satisfy most of adopters' needs.

In this paper we claim that the perspective of ''attitude towards use'' and ''intention to use'' are no more applicable when talking about decision making to switch from physical to digital, consequently the stance of ''attitude towards switching'' and ''intention towards switching'' are more able to demonstrate the switching effect between physical and digital market(Featherman and Fuller, 2003; Lee, 2009; Lin, 2006; Porter and Donthu, 2006). Furthermore, this concern comes due to the effect of switching in decreasing the users' acceptance level of the conventional payment market. Additionally, this paper used an integrated model contains the technology acceptance model in collaboration with perceived risk to comprehend the consumers' attitude and intention towards switching from physical to digital while performing their payments.

Literature Review

Digital wallet and customers' acceptance
Few years back the idea of digital wallet has been initiated, starting with switching from using bank notes to accepting debit and credit cards, followed by forming EMVCo as a secure payment method rely on smart payment cards with membership of six organizations namely American Express, Discover, JCB, MasterCard, UnionPay and Visa (EMVCo, n.d.). Using EMV required to provide point-of-sale (POS) machine at the shops to read the encrypted information which has been saved in the "ship and pin" cards. By mid of 2012 over 1.55 billion EMV cards and 21.6 million (POS) have been launched worldwide (Shaw, 2014). Afterward, with invention of Near Field Communications (NFC) the process of making payment became easier if the card and the processing terminal are near to each other (pay wave) but this option kept just for less risky transactions with limited small amounts(Cavoukian, 2012).

This technology has been later added to mobile phones where the user can securely save all the financial information in digital wallet which can be used later 'to commence, verify and confirm an exchange of financial value in return for goods and services' (Rajan, 2011). Moreover, using the mobile phone to process transactions has been reported to be more secure based on customers' point of view, with 2004 US respondents concluded that z generation (born from approximately 1996 to 2015) are smarter with money. Correspondingly, while 63% of z generation are concerned about privacy and security when paying with credit

or debit card online, but only 54% of them have same concern when using a mobile payment app (Villa, 2017).

The mobile wallet has been categorized into four different types based on the ability to reload, linkage with the bank and the option of cash withdrawal (Wadhera et al., 2017). (Table 1).

The acceptance of mobile digital wallet has many steps yet to go further, and a lot of obstacles to overcome, such as the need to develop a generalized mobile digital wallet ecosystem includes the main players and required capabilities, this matter has been discussed by Cole et al., (2009) and came out with illustrating elements of a mobile digital wallet ecosystem. Furthermore, there is a need to figure out the factors affecting the adoption behaviour towards mobile digital wallet, based on systematic literature review of 21 papers studied consumers' behaviour towards adopting digital payments which has been published at 2017, found that technology acceptance model (TAM) and its extension is the most used technology adoption theory (used in 14 papers out of 21 under investigation) followed by Unified Theory of Acceptance and Use of Technology (UTAUT) and other theories like Diffusions of Innovations Theory (DOI) (Rathore, 2016).

Table 1. Mobile digitalwalletcategories

Category	Specification			Example
	Re-loadable	linked to a bank	cashwithdraw	
Semiclosedwallets	✓	×	×	Paytm
Semi-open wallets	×	✓	×	Airtelmoney
Open wallets	✓	✓	✓	M-pesa
Closedwallets	×	×	×	Giftvouchers

Few studies have been considered the consumers' point of view by conducting research to figure out the factors affecting their attitude and intention to use. As example, in his study to understand the consumer acceptance of mobile wallet at 2009, Shin has been defined the mobile wallet as "a form of payment that enables users to conduct payment electronically via use of a mobile device, replacing the physical wallet so that payment transactions can be completed at a merchant's location". Furthermore, by using UTAUT his research's result confirmed the importance role of classical TAM constructs (perceived usefulness and ease of use) and also explored new significant effect of perceived security and trust into users' attitudes and intentions (Shin, 2009). Additionally, at 2013, Shaw in his study about adoption of the mobile wallet among Canadian business school's students, using the TAM found that factors positively affecting users' intention are perceived usefulness, Trust and Informal learning. Nevertheless perceived ease of use found to not have positivise influence into the intention to use mobile wallet based on this study settings (Shaw, 2014). While many underpinning theories have been applied

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to study humans' behaviour toward technology using, this paper applied the most common theory TAM to investigate the factors affecting customers' intention to switch from physical wallet to digital wallet.

Technology acceptance model

This model has been hypothesized by Davis (1989), which proposed two constructs as primary elements in creating attitudes and behaviours toward IT adoption named as perceived usefulness and perceived ease of use. Later TAM has been widely implemented and validated by researchers in many empirical papers as a model can explain the significant factors affecting technology usage. (Ariffin et al., 2017; Kim et al., 2017).

The usage of TAM has been varied among researchers, some of them implemented it in settings of social media usage by exploring the importance of additional key variables and managed to create a revised edition of TAM for social media (Rauniar et al., 2014), while others used it to study the players acceptance of social network games (Park et al., 2014), adoption of mobile cloud service (Park and Kim, 2014) and huge number of researches have been adopted TAM for e-learning acceptance (Abdullah and Ward, 2016; Chang et al., 2017; Ratna and Mehra, 2015; Tarhini et al., 2017).

Furthermore, TAM reserved huge concern among online payment acceptance researchers whom have been implemented it during their studies in aim to understand the human behaviour toward using this technology (Martens et al., 2017; Ooi and Tan, 2016; Ramos-de-Luna et al., 2016) . Even though the previous researches which have been used TAM, have completely proved the constructs affect peoples' intentions towards using online payment but majority concerned about using and intention to use, while this research focusing on switching behaviour from the physical type of wallet including the usage of debit and credit card to the digital type of wallet.

Mobile digital wallet acceptance in Malaysia

Beginning of 2017 was the time when has been declared Widley that the Malaysian market is going toward mobile payment. With high smartphone penetration' rate reported among Malaysian 59.20% at 2016 "Fig. 1,"(Statista, n.d.), also at 2014 Malaysia has been occupied the third position after Hong Kong and Singapore with 80% smartphone ownership comparing to non-smartphone mobile users. KB Ng Visa Country Manager for Malaysia said that "We are seeing double-digit month-on-month growth in contactless payments and remain positive that the introduction of mobile payments such as Samsung Pay and MaybankPay will continue to fuel this growth," (Webmaster, n.d.)
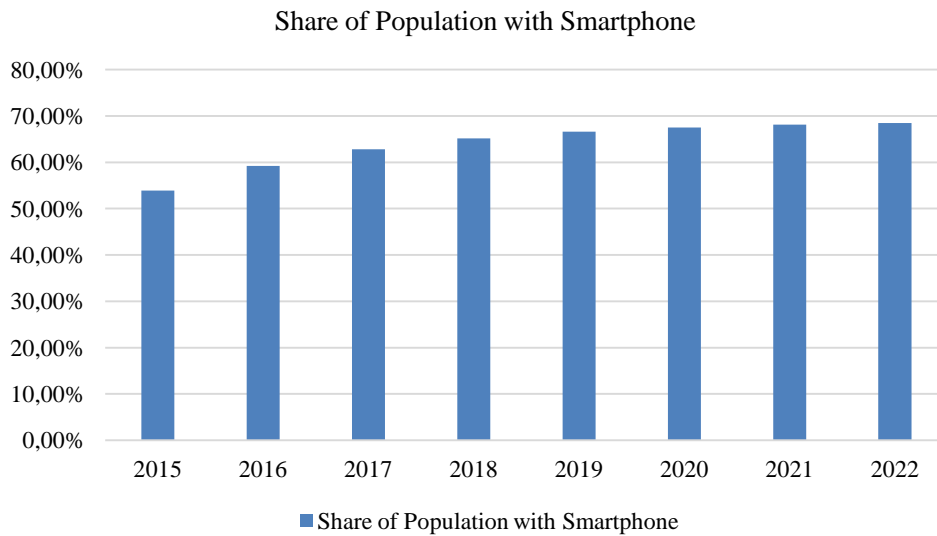
Figure 1. Smartphone users in Malaysia as share of the population from 2015 to 2022

Mobile payment adoption among Malaysian became the main topic to be mentioned during the speech of most financial decision makers in the country while most of them found that "the outlook for mobile payment in the country looked promising" as stated by Mandeep Singh the head of global liquidity and cash management at HSBC bank Malaysia Bhd. Furthermore, he added that "If you want to expand your market, it has to be via electronic payment (e-payment) or the adoption of mobile commerce," (Wadhera et al., 2017).

Additionally, the released forecasting statistics about Mobile POS Payments in Malaysia at 2018 including all Mobile wallet point-of-sale payments processed with any kind of personal smart devices, reported that transaction value is expected to show an annual growth rate (CAGR 2018-2022) of 41.4 % resulting in the total amount of US$1,141m in 2022 (Table 2) (Statista, 2017).

The above-mentioned statistics show that Malaysian market now rapidly moving towards adopting the mobile digital wallet, and now it's the right time to study the factors affecting into the adoption decision in aim to figure out the key advantage factors to maintain it and the weak points to improve it.

Table2. Mobile POS Payments statistics, Malaysia

Indicator	Value	Year
Transaction Value in the "Mobile POS Payments"	US$285m	2018
The average transaction value per user in the "Mobile POS Payments" segment	US$184.54	2018
The number of users In the "Mobile POS Payments" segment	2.9m	2022

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Switching attitude and intention from physical to digital wallet

While investigating the acceptance and adoption of digital wallet most of the researchers ignored the side effects of switching to digital wallet onto the physical wallet using or the traditional payment way market. The offered framework by TAM is basic in case of mobile wallet because it was not yet initiated at that time, and to a certain level, it replaces the traditional wallet, as well. This replacing effect raises the matter of switching instead of just using, while using technology refers to operating the technology to accomplish a certain mission (Autzen, 2007), switching goes further in front to propensity or aim to convert or move from one technique to another. Therefore, there is a need to understand the users' attitude and intention to switch between the two markets and adopt the new one.

Considering the above-mentioned matter and to enable determining of the switching behaviour, this study aims to investigate customers' behavioural intention to switch by applying the technology acceptance model with minor modification of transforming ''attitude towards use'' and ''behaviour towards use'' to ''attitude towards switch'' and ''behavioural intention to switch''.

Furthermore, this study also considered the moderating role of the perceived risk into relation between attitude towards switch and behavioural intention to switch. The first time when the perceived risk has been considered goes to 1960 when Bauer argued that risk is involved into consumer behaviour due to the lack of certainty to expect the risk during the consequences of product usage, while some of it tend to be disagreeable(Bauer, 1960). Additionally, perceived risk can be declared in different forms during the process of using/adoption decision, inconvenience and or/ worry (Dowling and Staelin, 1994) dispute stimulated by the customer (Bettman, 1973) doubtful feeling (Engel et al., 1986). The moderating role of perceived risk into different relations related to adoption has been significantly approved by previous researches (Casidy and Wymer, 2016; Featherman and Fuller, 2003) and the aim of this study is to confirm this role in the relation between attitude to switch and intention to switch.

Based on above mentioned literature this research proposed the followinghypothesis to test:

H1: Perceived usefulness have a positive effect on the attitude towards switching to mobile wallet.

H2: Perceived ease of use have a positive effect on the attitude towards switching to mobile wallet.

H3a: Attitude towards switching to mobile wallet mediate the relation between Perceived usefulness and behavioral intention to switch.

H3b: Attitude towards switching to mobile wallet mediate the relation between Perceived ease of use and behavioral intention to switch.

H4: perceived risk moderates the relation between Attitude towards switching to mobile wallet and intention to switch.

Methodology

Conceptual framework
The "Fig. 2," demonstrates the proposed model based on TAM with adding perceived risk as it's argued to have moderating role on the relation between attitude and intention to switch to mobile wallet.

Measurement
The questioner which has been used in this study included adopted items from previous TAM literature, with 5 - point Likert scale ranging from (1) strongly disagree to (5) strongly agree. First section of the questioner included information about demographic profile of the respondents such as, gender; age; education attainment and the frequency of using digital wallet. Moreover, while the study conducted on staff of Universiti Kuala Lumpur, business school a question about the staff category whether academic or service staff has been added. Second section of the questioner included the factors measurement of the five constructs used in this study. The table 3 including all the items used with reference.
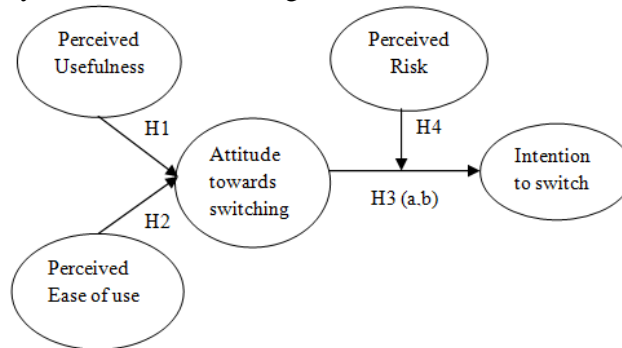
Figure 2. Conceptual framework

Table 3. Items used in the study

Constructs	Items	Reference
Perceived usefulness	PU1: Using digital wallet would improve my performance in conducting payments	(Davis, 1989; Lee et al., 2011; Moon and Kim, 2001; Venkatesh and Davis, 2000)
	PU2: Using digital wallet would increase my productivity	
	PU3: Using digital wallet would enhance my payment effectiveness	
	PU4: I would find digital wallet useful	
	PU5: Digital wallet gives me greater control over payment activities	
Perceived ease of use	PEU1: It is easy for me to learn how to utilize the digital wallet	(Davis, 1989; Lee et al., 2011; Suh and Han, 2002; Venkatesh
	PEU2: I find it easy to get digital wallet do what I want to do	
	PEU3: It is easy to remember how to use digital wallet	
	PEU4: My interaction with the digital wallet apps is	

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Constructs	Items	Reference
	understandable	and Davis, 2000)
	PEU5: I find digital wallet useful for my payment activities	
Attitude towards switching to mobile wallet	BA1: In my opinion, it is desirable to switch from physical to digital wallet	(Davis, 1989; Lee et al., 2011; Moon and Kim, 2001; Venkatesh and Davis, 2000)
	BA 2: I think it is good for me to switch from physical to digital wallet	
	BA 3: In my view, switching from physical to digital wallet is a wise idea	
	BA 4: I feel that switching from physical to digital wallet is pleasant	
Perceived risk	PR1: There may be leaked information when using digital wallet	(Nguyen and Huynh, 2018)
	PR2: There may be caused error in the process of payment by digital wallet	
	PR3: There may be caused fraud or lost money when using digital wallet	
	PR4: There may be accessed into unauthorized personal data by hackers	
	PR5: Digital wallet transactions may not be secure	
Intention to switch to mobile wallet	BI1: I would switch from physical to digital wallet for my payment needs	(Davis, 1989; Lee et al., 2011; Moon and Kim, 2001; Venkatesh and Davis, 2000)
	BI2: Switching to digital wallet while handling my payments is something I would do	
	BI3: I can see myself switching from physical to digital wallet to handle my payments	
	BI4: I expect to switch from physical to digital wallet to handle my payments in the future	
	BI5: I will strongly recommend others to use digital wallet	

Sampling
Random sampling survey method has been conducted among the staff of business school in Univerisiti Kuala Lumpur to collect the data. Online questioner has been used to ease the process of responses collection.

Data analysis and results
Respondents characteristics: The demographic profile of the respondents was analyzed by the descriptive analysis. Most of the respondents were from the academic staff, and ages fell into range (31 – 40). Furthermore, most of the respondents were female, and most of them use the mobile digital wallet 4-5 times per month.

Construct validity: Using the partial least squares structural equation modeling PLS-SEM, the construct validity has been proved. Three steps of validation have been conducted namely content validity, convergent Validity and discriminant Validity.

Measuring the content validity means that all items are measuring the core concept of the construct it has been used for (Hair et al., 2017). With factor loading higher than 0.7 (Hair et al., 1998) range (0.734 to 0.982) all items showed significant representing to the variable it's measuring. Moreover all items show higher factor loading for their respective construct comparing to others.

Three measurements have been used for convergent validity confirmation, first factor loading higher than 0.7 (Hair et al., 2017), composite reliability higher than 0.7 additionally construct's AVE is larger than 0.5 (Chin, 1998). The results show that the convergent validity in confirmed.

For the third part of construct validity called discriminant validity, the square root of Average Variance Extracted (AVE) has been used and results show all measure are more related to their own construct than other ones.

Based on the results of the previous mentioned analysis we can conclude that construct validity was established in this study.

Testing mediating effect: The recommended method to measure the mediating effect called bootstrapping (Hair et al., 2016) has been used in this study, the result shows that (T value is 5.728 > 1.96) which means Behavioral intention play a role of mediator. Additionally based on the results of P value can conclude that it plays full mediator role for both relations (perceived usefulness $\rightarrow$ intention) and (perceived ease of use $\rightarrow$ intention).

Testing moderating effect: To calculate the potential moderation effects of perceived risk, it was necessary to create the individual interaction of these factor, which is represented in Smart PLS terminology as BA*PR. While the paths are significant, P value has been calculated (β=-0.95, t=2.047, p<0.05) and the result shows that perceived risk plays a significant pull moderator role in the relation between behavioral attitude and behavioral intention to switch of the mobile wallet.

Research Discussion

While the current movements heading towards adopting the mobile digital wallet, this study figured out two critical factors affecting the intention to switch from the traditional way of payment to the digital one by using mobile phone. Both perceived usefulness and perceived ease of use found to be significant factors to create attitude toward switching to mobile digital wallet. Furthermore, this attitude has a significant role to generate intention to switch, while this role is affected negatively by the perceived risk associated with the switching decision to this new method of payment.

This study approved that TAM is applicable to investigate the customers switching behavior, also this study found perceived usefulness and perceived ease of use are significantly and positively effect the customer attitude which is compatible with results of previous researches(Diatmika et al., 2016; Elkaseh er al., 2016; Saadé and Bahli, 2005).

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Also this study approved the moderator role of perceived risk into the relation between attitude and intention which also compatible with the previous researches (Casidy and Wymer, 2016; Martins et al., 2014).

Conclusion and Further Research

Enhancing the usefulness and the ease of use can boost the attitude making process to switch from physical wallet to digital wallet, and this attitude able to be converted to intention to switch but under negative effect of the risk which should be minimized to improve the efficiency or switching decision making process.

In other words, the results of this study give a guidance to the managers who are looking forward to increase the market share of their financial products (mobile wallets) that they have to concentrate more onto increasing the usefulness comes with using their mobile wallet and make it user friendly, while this simplicity should be associated with high level of security to insure attracting wider range of customers. Due to the limitations of this study, further studies are able to be conducted by increasing the sample size and adding some variables related to the traditional payment method market effects into the proposed model.

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OD FIZYCZNEGO DO CYFROWEGO: BADANIE ZACHOWANIA KONSUMENCKIEGO PRZESTAWIANIA SIĘ NA PORTFEL MOBILNY

Streszczenie: Mimo, że metody płatności cyfrowych są obecnie przedmiotem badań naukowych jako nowy trend, wciąż niewiele jest badań, które analizowałyby zmianę decyzji konsumenta z tradycyjnego sposobu na cyfrowy w trakcie dokonywania płatności. Poza tym na rynku pieniężnym występują pewne efekty substytucyjne; ponieważ użytkownicy dbają o bezpieczeństwo, łatwość obsługi i szeroką akceptację dla używanej metody płatności. Głównym celem tych badań jest zbadanie zamiany i zamiaru od tradycyjnej płatności za pomocą banknotów, kart debetowych lub kredytowych, co nazywamy portfelem fizycznym, do portfela cyfrowego za pomocą płatniczych aplikacji mobilnych. Ogółem wysłano pocztą elektroniczną do pracowników UNIKL 140e-maile z ankietami, zwrócono 98 pełnych odpowiedzi, które można byłowykorzystać w badaniach. Wyniki pokazały, że postrzegana użyteczność i postrzegana łatwość użycia są czynnikami efektywnymi w nastawieniu konsumentów do zmiany. Ponadto relacja między postawą a intencją jest znacząca, a postrzegane ryzyko obniża poziom tego efektu.
Słowa kluczowe: mobilny portfel cyfrowy; TAM; zachowania konsumentów; postrzegana przydatność; postrzegana łatwość użycia; postrzegane ryzyko.

从物理到数字：调查移动钱包的消费者行为

摘要：虽然数字支付方法正在将当今学者的意图作为研究的新趋势，但在进行支付时，仍然很少有研究将消费者转换决策从传统方式转变为数字方式。另外，货币市场有一些替代效应，因为用户关心安全性，易于使用和广泛接受他们正在使用的付款方式。这项研究的主要目的是通过使用银行纸币，借记卡或信用卡或者通过使用移动应用程序进行支付来将传统付款方式称为实体钱包来实现传统付款的转换态度和意图。总共有140份调查通过电子邮件发送给UNIKL商学院的工作人员，98份问卷得到了充分回答并可以使用。结果表明，感知有用性和感知易用性是消费者转换态度的有效因素。此外，态度和意图之间的关系是显着的，而感知风险降低了这种效应的水平。
关键词：移动数字钱包; TAM;消费者行为;感知有用性;感知易用性;感知风险。