INTI INTERNATIONAL UNIVERSITY

MASTER OF BUSINESS ADMINISTRATION

A STUDY OF MOBILE PAYMENTS: UNDERSTANDING THE DETERMINANTS OF CONSUMER ADOPTION.

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DECLARATION OF AUTHORSHIP

I hereby confirm that this work is my own. To the best of my knowledge and belief, it has not been previously submitted to any other university or institution of higher learning, nor does it contain material previously written or published by another author, except where otherwise indicated in the acknowledgements.

Brenda Mmbwanga.

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ABSTRACT

Advances in technology have resulted in innovative and efficient ways of making payments, one example being the emergence of electronic-based payment systems which are now possible through mobile devices such as mobile phones. Reports by various researchers show that the number of mobile phone subscriptions worldwide continues to grow rapidly. A surprising fact, however, is that there is a relatively low rate of adoption of mobile payments by consumers in Malaysia. This research attempts to understand the factors that influence consumers to make use of mobile payment services. The Theory of Reasoned Action is applied (TRA) and an investigation is carried out, testing the proposed hypotheses and model. SPSS 17 is used for analysis, where factor analysis, one-way ANOVA, Kruskal Wallis test, correlation, and regression methods are employed. Results show that consumer subjective norms and attitudes they have towards mobile payments both influence their intention to use mobile payments, subsequently influencing their decision to adopt mobile payments. The findings contribute to the understanding of mobile payments for the relevant industry players.

Key words: Mobile payments, Behavioral Intention, Mobile payments adoption.

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CHAPTER 1: INTRODUCTION

1. Chapter Overview

This Chapter gives a background to the research, describes its main focus, states the research problem, formulates questions to be investigated highlighting the key objectives, explains the significance and scope of the study, and finally notes the key assumptions and limitations associated with the research.

1.1. Background to Research

In a survey carried out by Edgar, Dunn & Company about the global trends in payment systems, it was found that there has been a shift in the payments landscape i.e. from non-electronic payment methods and traditional payment channels to new payment channels such as use of contactless and mobile devices. They argued that the new technologies are expected to have an impact of reduction in the use of non-electronic payment methods, especially in addressing the "un-carded and un-banked" payment markets (www.edgardunn.com).

Majority of the respondents in the survey felt that by the year 2014, the payment products/channels which will experience the greatest growth are contactless cards and mobile/remote payments (www.edgardunn.com). This seems to be in line with another report published by Juniper research, which states that the there are high potential markets coming up. They present advanced opportunities for the future, some of which include the use of NFC, transfer of funds using mobile devices and making purchases through the same. (www.juniperresearch.com).

Currently, the payment industry continues to experience changes and advancements in technology and transaction processes. The integration of payment systems and mobile devices is improving the way business transactions take place all over the world. The mobile technology industry is therefore growing fast. The use of mobile technology to carry out transactions continues to become more important with time.

I doubt this figure. It is on the high side!

Approximately 61% of people in the world have a mobile phone, according to an article published by banking technology (www.bankingtech.com). In an earlier report published by Thomas Reuters, the world's largest international multimedia news agency, subscriptions to mobile telephones had reached 3.3 billion by 2007 (www.reuters.com). This was argued to be approximately half (50%) of the global population. As technology in the field keeps changing, more companies are investing in mobile solutions, focusing on making banking and payments easier for their customers and stakeholders.

According to a Juniper research report, the mobile payments for digital and physical goods and person-to-person payments worldwide was expected to grow from US$170 billion in 2010 to the US$630 billion mark by 2014. About US$100 billion of that projection was expected to come from offline purchases (www.juniperresearch.com). This means that mobile payment services are considered as the next big thing in the payment industry. However, technology innovations can be useless if consumers do not value them and make use of them as ways to meet their needs better.

In the report published by Edgar, Dunn & Company, it was further highlighted that there exist clear differences among geographic regions with regard to the current and future importance of payment channels and systems. As a result of the differences, sometimes the rate of adoption or the form of the new technologies adopted by consumers usually varies (e.g. mobile or NFC). It is therefore important to conduct studies in the different regions to have a better understanding of adoption of the new technologies by consumers in those regions.

A report published in Mobile Payments Asia (2010) argued that mobile payments are expected to grow rapidly, owing to the fact that some of the early adopters in Southeast Asia markets were successful (www.mobilepaymentsasia.com). With specific reference to Malaysia, the m-payment market has developed quickly, and emerging services have received government support (KPMG International, 2007). For example, Maxis and Maybank provide simple m-payment options for

subscribers. Some of the services include payment of bills like utilities, fund transfers, account balance enquiries. They can be used to reload Maxis accounts or download Maxis content (KPMG International, 2007). Sometimes they pay for things such as movie tickets by consumers.

In recent years, companies from many different sectors have adopted m-payments. For example, the transport industry was one of the first, with the 'touch-and-pay' solutions (KPMG International, 2007). In general, industries most directly involved with the uptake of m-payments include the banking, telecommunications, transportation, retail, and media industries.

1.2. Research Focus

This research focuses on analysis of adoption factors that encourage mobile payment adoption. It proposes an adoption model and explores the relationships between various variables in the model. According to Zheng & Chen (2003), mobile payment was defined as "any transaction with a monetary value that is conducted via a mobile telecommunications network". This means that consumers can use their mobile phones/devices to make payments for goods and services they purchase.

Despite the existence of such technologically advanced payment solutions however, mobile payments still face obstacles. In Malaysia for example, although the emerging service has been given support by the government, uptake of mobile payments in the market has been limited (KPMG International, 2007). Important issues associated with mobile payment adoption have been argued by some researchers to include usability issues, technology issues and demographics (Chen & Yang, 2006).

As highlighted by Mobile Payments Asia (2009), mobile payments in Southeast Asia have so far seen success and tremendous growth is expected. This was further backed up by KPMG's report on mobile payments in Asia (KPMG International, 2007). It would therefore be interesting to find out more about

adoption of mobile payments in Malaysia with regard to the reports and projections. This is done with the hope that dissertation findings may provide useful recommendations for all industry players.

1.3. Problem Statement

Mobile technology is known and has become popular all over the world today. This has led to the emergence of mobile payments as an alternative form of payment for goods and services. Mobile payments generally allow for payments in a variety of situations. Some include paying for digital content such as music, ringtones and games.

Others include paying for bills and invoices or for flight tickets, movies, concerts, transportation fares (buses, trains and taxis), and parking fees. Some retail outlets allow their customers to make payments using their mobile phones. Examples include Starbucks and McDonalds, which recently adopted the use of mobile payments in some of their outlets in the United States and United Kingdom (www.juniperresearch.com).

Just like in internet banking, mobile payments are argued to improve the way consumers make payments. Internet banking has been well adopted by consumers in the recent past. Given the fact that mobile phones are ubiquitous (www.reuters.com), it would be expected that using the same mobile phones to make payments would not be very difficult for consumers to accept, and would be adopted at a much higher rate than internet banking was adopted by consumers.

Although such technologically advanced solutions exist, mobile payments are astonishingly not one of the commonly used payment methods by consumers. In a report published by Frost & Sullivan Industry Analysts, Malaysia's mobile payment market until recently remained limited to bill payments (www.marketresearchworld.net). In a projection done by Mobile Payments World, majority of respondents agreed that mobile devices, being fast, convenient and secure, would become the preferred channel of payment for consumers from all

markets (Mobile Payments World, 2009). From the same study, it was found that the younger generation (aged between 18 and 30) is the most receptive to alternate payment products (65%), and that consumer security concerns was the key hurdle that needs to be overcome with regard to mobile devices.

Given the fact that mobile payment services still have to compete with other payment services such as cash, cheques, credit and debit cards e.t.c, the future of mobile payments remains questionable if consumers don't adopt the mobile payment services. Despite the predictions of success by Frost & Sullivan, Juniper Research, and other market researchers, the current mobile payments adoption rate remains low in Malaysia (www.marketresearchworld.net).

According to Kendal et. al (2006) adoption of information technology is important for the growth of a country's economy. Mobile payments are one such technology innovation. Advantages associated with the use of mobile payments include flexibility, being able to make payments from anywhere at any time, avoiding long queues hence ensuring convenience and speedy transactions e.t.c.

In the same way, various factors usually influence the success of a new payment service. Making use of the Technology Acceptance Model (TAM), past researchers have argued that factors such as convenience, security, mobility, cost, trust, speed of transaction e.t.c. influence the use of mobile payment services (Chen & Adams, 2005; Cheong et. al, 2004; Dahlberg et. al, 2003). From a behavioral point of view, Ajzen and Fishbein (1991) argued that attitudes towards a specific behavior and subjective norms influence consumers' intention to use and actual usage of an innovation.

This study seeks to highlight the behavioral factors such as consumer attitudes that determine consumer adoption of mobile payment services. Past researchers have placed a lot more focus on technological factors that influence adoption of mobile payments than they have placed on the behavioral factors.

Due to the knowledge gap with regard to research conducted on mobile payments in that respect, the key purpose of this research is to therefore give insights regarding the determinants of consumer adoption of mobile payment services, specifically from a 'socio-human' or behavioral point of view.

1.4. Research Questions

Many organizations and industries try to achieve their organizational goals by coming up with strategies that will make them efficiently and effectively carry out their business operations while at the same time satisfying their customers' needs in the best way possible. One such strategy could be the implementation of mobile payment systems by merchants. It provides more convenient and useful payment options to consumers leading to increased customer satisfaction levels.

Hence, this study intends to explore the determinants of consumer adoption of mobile payment services. Specifically, the research will investigate possible behavioral determinants in an attempt to answer the following questions:

1. What is the role of demographic factors such as gender, income, and age in influencing consumer adoption of mobile payment services?
2. Do behavioural and social factors have a role to play in influencing consumer adoption of mobile payment services?
3. Is there any difference between consumer attitudes and consumer subjective norms in influencing mobile payment adoption?

1.5. Research Objectives

The general objective of the study is to understand the determinants of consumer adoption of mobile payment services. To address the objective, the study investigates how demographic factors and behavior-oriented determinants may influence customers to make use of mobile payment. Specifically, it is aimed at meeting the following objectives:

1. To establish whether demographic factors such as gender, income and age have a role in influencing consumer adoption of mobile payment services.

2. To determine whether behavioural and social factors play a role in influencing consumer adoption of mobile payment services.

3. To determine whether there exists a difference between consumer attitudes and subjective norms in influencing consumer adoption of mobile payment.

1.6. Significance of Study

This study is significant to various players in the mobile payments industry. Firstly, in an effort to provide better services to customers, it is important for business organizations to understand the actions they engage in and the implications of those actions for their consumers and the company as a whole. With globalization comes rapid advancements in technology and changes in trends. What used to be generally convenient and acceptable to consumers five years ago may not necessarily be convenient and acceptable now.

The emergence of mobile payments as an alternative form of payment creates a new opportunity for some companies, while at the same time posing threats to other companies. For those companies that are directly involved in the mobile payments industry, the expansion and growth of their business relies upon the successful adoption of mobile payment services by consumers. Therefore, this study will provide an understanding to mobile payment services and the behavior-oriented factors that influence adoption. This information could be used by marketing agencies that promote mobile payment services to ensure workable goals and strategies are formulated hence successfully tapping their target market.

Secondly, the information in this study could be useful to students and educational institutions. Once learners have a better understanding of mobile payments, they can venture into the professional world with innovative and effective strategies about how to solve existing problems or improve current successful processes. One such problem is security, which has been argued to be a key hurdle facing consumers with regard to adoption of mobile payments. The study could therefore

help learners who are the future decision makers and leaders of organizations to have a better understanding of mobile payment services. By highlighting the determinants of consumer adoption of mobile payments, the different market players will gain insights on the findings, which will enable them to develop workable and effective strategies that ensure success of mobile payments. Apart from being future leaders, they make up a large portion of the current consumers of mobile payment services. An understanding of the factors influencing adoption could therefore boost confidence of consumers in the mobile payment services, hence increasing adoption rates.

In conclusion, it is expected that available information will be supported using findings established in the study about the determining factors of consumer adoption of mobile payment services. They will allow those in charge of making decisions in organizations to make use of action plans and strategies that improve relations among their consumers in market.

1.7. Scope of Study

This research makes use of both primary and secondary data. In investigating about this research topic, the issues discussed include the concepts of mobile payments, theory of reasoned action, and behavioral determinants of adoption. The location of study being Malaysia allows for gathering of adequate data.

Contact with the target respondents of the study is conducted through distribution of questionnaires in public places (shopping malls/retail outlets). Other information presented in the research includes information from available articles on books and journals. Resources from the internet are also used.

1.8. Key Assumptions

It is assumed that target interviewees will be willing to provide unbiased information that they will be required to give. The research is based in Kuala Lumpur and Petaling Jaya, urban areas where respondents are assumed to have the high

mobile phone subscription rates. This is important for the research and provides information necessary for achieving the mentioned research objectives.

It is also assumed that being mobile phone users, respondents will understand the basic functionalities of mobile phones and mobile payment services hence they will be in a position to provide the necessary feedback.

Finally, since the research does not solely rely on primary data, it is assumed that the secondary data used is accurate and up to date. This is important for conducting further analysis and interpretation. It will also provide a somewhat current and accurate representation of consumer thoughts and attitudes with regard to mobile payment adoption in the Malaysian market.

1.9. Key Limitations

One major limitation of this study is that the findings may not be extensive therefore they may not be a true representation of the entire Malaysian market in relation to the usage of mobile payment services. This is because due to time constraints, research in other areas of the country is restricted. The study approach involves cross-sectional method of data collection, a one shot study in the earlier mentioned areas. However, given the sample size, the findings are likely to be reliable hence acceptable.

Another limitation is that Malaysia being a multicultural country, different languages are used by different groups of respondents. Hence the data collection process ends up being quite a difficult and involving experience.

1.10. Structure of the Research

To have a better understanding of the research, it is important for the reader to have an idea of how it is structured. This paper is organized into five chapters, the first of which has been provided above consisting of the introduction, background to the research, problem statement and research objectives.

The subsequent literature review in chapter two provides an assessment of literature with regard to overview of mobile payments, some of the existing adoption models, operational definitions of variables for this study, and a research framework for further investigation.

Chapter three describes the research approach and design, the sampling approach used to reach the target respondents, techniques used to collect and perform an analysis on data, and presentation of the same data in the following chapter.

In chapter four, a step by step representation of analysis is made, highlighting the research questions and results from analyzed information. The outcomes of the investigations conducted are arranged depending on the variables highlighted in chapter two.

Finally, chapter five presents a discussion of analysis and findings, summarizing views from various authors. It aims to resolve issues highlighted in the previous chapters. With the reference to the conceptual framework and results of the analysis, the chapter tries to meet the research's key goals and aims, identifying a way forward. A conclusion is made and recommendations are given.

CHAPTER 2: LITERATURE REVIEW

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2.   Chapter Overview

This chapter looks at literature from various authors in relation to mobile payment adoption by consumers. It gives an overview of mobile payments to enable the reader to have a better understanding, then it goes ahead to explore mobile payment trends both globally and in Malaysia. Technology adoption models are also discussed in the chapter, with the goal of coming up with a mobile payments adoption model for further investigation purposes. Finally, operational definitions of variables used in the study are provided and a subsequent conceptual research framework is explained.

2.1. Overview of Mobile Payments

Mobile payments are changing the way people do business, and the way consumers carry out their day-to-day activities. According to Zheng & Chen (2003), mobile payment was defined as "any transaction with a monetary value that is conducted through a telecommunication network."

Pousttchi (2004) defined it as "the type of payment transaction processing in the course of which the payer employs mobile communication techniques in conjunction with mobile devices for initiation, authorization or realization of payment."

Another definition provided by Accenture stated that mobile payments (m-payments) refer to "making payments using mobile devices including wireless handsets (e.g. cell phones), personal digital assistants (PDA), radio frequency (RF) devices, and near field communication (NFC) based devices" (Accenture, 2008).

This type of payment is usually expected to provide convenience, increased speed, and usefulness required by consumers in the current rapidly evolving global market. Ultimately, the goal is to meet the consumers' needs efficiently and effectively in order to maintain a competitive edge.

For the purpose of this study, mobile payment (m-payment) is defined as a monetary transaction that involves the use of a mobile device, particularly a mobile phone. Accenture's high performance business research highlighted that there are two principal types of m-payments: remote and proximity (Accenture, 2008).

They stated that remote payments enable people to perform transactions with one another or with other businesses located in different places. Remote person-to-person payments include social money and international transfer of funds. Remote person-to-business payments involve paying for goods using a "mobile web-enabled retailer" (Accenture, 2008).

In proximity payments, consumers use a mobile handset to pay for purchases at the point of sale. They usually make the payments by passing or waving the mobile phone over a "reader,'" It scans the mobile device/phone, provides authorization, and completes the transaction using the account or payment information available in a chip in the handset. Therefore, based on the same report, the four modes which are generally used in mobile payments include the following:

- **Sms Based Transaction** – It is the easiest but least secure method, and is based on sending a sms to perform or complete a transaction.
- **Direct Mobile Billing** - In this method the user's mobile account is charged for the payment made. It is a more secure form of billing than the sms method as it is qualified by two way authentications.
- **Mobile web payments (WAP)** - It uses a web page or additional software on the user's mobile to make the payments. This method is comparatively more secure than the previously mentioned methods and works better.
- **Near Field Communication** - It is the most advanced kind of payment service, and is currently in inception phase in many countries.

Due to the omnipresent availability of mobile phones and devices, mobile payments (m-payments) continue to have a promising future. They have the potential to serve the unbanked communities, hence overcoming things such as financial access problems in developing markets.

However, even though mobile payments have a promising future, rapid adoption of the services by consumers cannot take place if their needs are not investigated and met as required. For example, security of the mobile payment services seems to be a major point of concern to consumers.

Based on Accenture's extensive work in developing a comprehensive mobile payment framework used by many global organizations, seven key features of a compelling mobile payments experience for consumers were established as follows (Accenture, 2008):

- Intuitive: It is similar to existing payment methods, which means consumers can quickly learn to make use of it.
- Any time, any place: It provides real-time transactions capability.
- Convenient: It is universally accepted all over the world by businesses.
- Fast: It enables customers to evade long queues in retail outlets where they end up wasting time. They are able to pay with no queues and usually result in unattended point-of-sale machines.
- Controlled: The payments process is started by the consumer.
- Pay with confidence: The process is usually secure, and is perceived to be efficient. The consumer has a sense of trust in it.
- Richness of information: It makes it possible for consumers to get real-time balances and manage their spending within the limits of the money they have available for use.

2.2. Global Mobile Payment Trends

There have been researches and media reports in the past with regard to global mobile payment trends. The latest trends seem to focus on the adoption of NFC payment services by various countries. Various predictions have been made regarding the diffusion of mobile payment services in different regions.

According to Hamblen (2009), mobile payment growth was forecasted to be highest for the Asia pacific region and Japan, followed by Europe, Middle East and Africa, Latin America, then the US. Since then there have been various other forecasts.

For example, according to a Juniper research report, the mobile payments for digital and physical goods and person-to-person payments worldwide was expected to grow from US$170 billion in 2010 to the US$630 billion mark by 2014 (www.juniperresearch.com).

The same report further stated that the three promising markets that will bring major advances and openings include NFC, transfer of money using mobile phones and devices, and use of the same to buy goods and services.

Asian countries like Vietnam, Hong Kong, and Thailand seemed to lead in mobile payment adoption rate. Other countries are also rapidly catching up. In Thailand, banks started offering m-payment services since as early as 2000. They had close to 6 million mobile payment subscribers by mid 2000 (Dholakia et al, 2006).

According to a report published by Innopay (2010), there is a wave of interest in mobile payments. Many live applications are being launched around the world. The technology that has recently received the most press is the NFC, with companies like McDonald's and Starbucks introducing the m-payment services (i.e. NFC) in their outlets. The report goes on to argue that from the perspective of the end consumer, "the mobile phone has achieved share of wallet." Generally, consumers are becoming increasingly comfortable with the mobile phone fulfilling more than one function.

A report published in Mobile Payments Asia (2010) argued that mobile payments are expected to grow tremendously given the fact that early adopters in Southeast Asia saw early signs of success (www.mobilepaymentsasia.com). This makes it interesting to study the Malaysian market with regard to the claims.

2.3. Malaysia's Mobile Payment Trends

A country's payment and settlement schemes usually become more interconnected with global payment infrastructures as the nation's financial sector becomes more open. The more it is in line with global trends, the more it can adopt the new advancements.

Malaysia's payments industry keeps rapidly advancing. The country has had an increase in economic and financial openness in recent years. Currently, the government's usage of e-payment schemes has increased compared to earlier years. The m-payment market has developed quickly, and emerging services have

received government support (KPMG International, 2007). For example, Maxis and Maybank provide simple m-payment solutions for their consumers.

Although such successful initiatives exist, a similar report published by KPMG International highlights a rather interesting fact about the Malaysian market with regard to consumer adoption of m-payments. The report identified the key patterns of adoption that could be seen in the Asia Pacific region, classifying them into four main groups. According to the findings, Malaysia, Thailand and Vietnam were grouped together among the "mid-markets" which was the lowest among the groups in terms of mobile payment adoption in the Asia Pacific region (KPMG International, 2007).

This group falls between the extremes of the other leading groups (The leaders, the mobile tigers, and the giants). The mid-markets were argued to have strong adoption in a few areas such as top-up and gaming, but less extensive adoption in more traditional areas of m-payment. This perhaps explains the surprisingly low rate of some mobile payment services.

This contradicts Herzberg's argument that mobile payments are being accepted in many countries (2003). The study aims to provide further insights into such claims, highlighting the possible relationships that exist between determinants and consumer adoption of mobile payment services.

2.4. Evaluating Adoption Models

In trying to understand how consumers behave with regard to acceptance and adoption of various technology solutions, researchers have advanced and used certain common adoption models. It is therefore important to understand some of the relevant models in an effort to develop a conceptual model of study.

2.4.1. Innovation Diffusion Theory

This theory was advanced by Everett Rogers (1995). He classified adopters of technology into key groups namely innovators, early adopters, early majority, late majority, and laggards (Rogers, 1995). He then continued to highlight five major

variables which are argued to influence a person's enthusiasm and about adopting technological innovations. The variables include the following:

- **Relative advantage**: this refers to level at which technology advancement is viewed to be an improvement of what is currently available.
- **Compatibility**: this refers to how much the new technology blends in with the daily activities, practices and acts of the adopter.
- **Complexity**: this refers to how complicated an innovation seems to be to a potential adopter.
- **Observability**: this refers to the extent to which the outcomes or consequences of the adoption can be noted by others.
- **Trialability**: this means to the extent to which a technology advancement is tested before its adoption.

This theory generally assumes that successful diffusion of a technology is influenced by technology characteristics and not social influences.
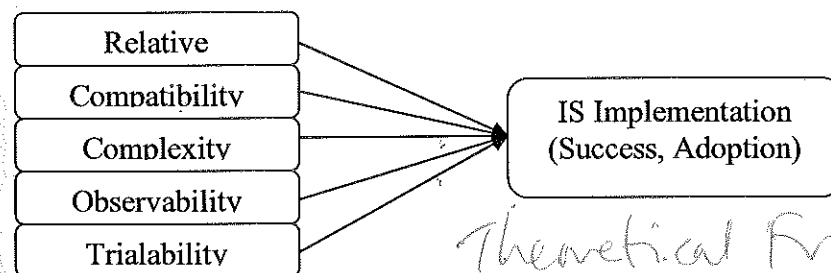

Fig 1: Diffusion Innovation Theory (Source: Rogers, 1995)

2.4.2. Technology Acceptance Model

In studying user acceptance and use of technology, the Technology Acceptance Model (TAM) has been widely used by various researchers. It was advanced by Davis (1989). The model is an information systems theory that models how users come to accept or adopt a technology.

It argues that users develop a positive attitude towards technology when they view it to be useful and easy to use. 'Perceived Usefulness' and 'Perceived Ease of Use' form the main drivers of technology adoption by users. 'Intention to use' is included

in the model since it serves as a mediator of the actual adoption of technology (Davis, 1989).

Various studies have been done by researchers who made use of the TAM. With regard to mobile payments, investigations included the use of TAM to study m-payment adoption and its determinants, the key factors associated with success, and barriers. (Zmijewska, 2005; Cheong et al, 2004)

Although the TAM has been widely used, just like the IDT, its main focus is on the technological factors involved in influencing technology adoption by users. The model not only focuses on organizational adoption of technology, but also fails to consider social and economic factors that may have an impact on adoption. Therefore it may not be applicable for more social oriented studies.
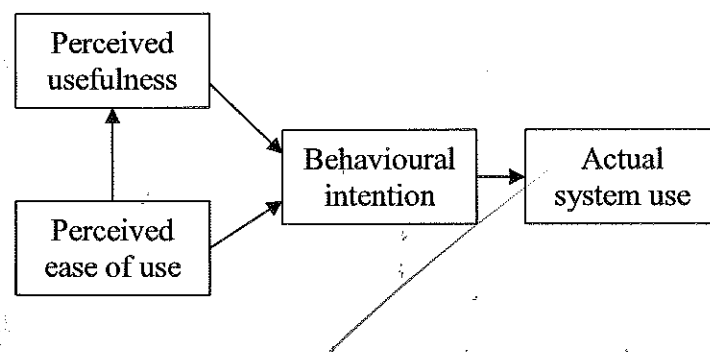

Fig 2: Technology Acceptance Model (Source: Davis, 1989)

2.4.3. Theory of Reasoned Action

This theory was proposed by Fishbein and Ajzen (1975). The central idea of this model is "behavioral intention". It argues that the best predictor of a technology's adoption is the "intention" to adopt (Lam & Hsu, 2004). It further argues that a consumer's decision to accept or use a technology involves making a mindful decision that can be understood and foretold by his/her behavior.

It aims to further understand how attitudes and beliefs are related to the intentions of people to carry out certain acts. Perhaps this would be a more suitable model for

application in this research, particularly because Malaysia is a culturally diverse and rich country. The main determinants for intention are explained to be 'attitude towards act or behavior' and 'subjective norm'.

Attitude is explained to be "the individual's behavior, whether positive or negative feelings, about forming an act". Subjective norm is explained to be "individual perception and motivation" (Lam & Hsu, 2004). Usually, the perception with regard to subjective norm is influenced by 'relevant others'. Relevant others could include family members, friends, and colleagues. A person's attitude is usually told by the opinions he/she has about results associated with the behavior, and evaluating those consequences. In the same way, a person's subjective norm is determined by normative beliefs and the willingness to follow suit.

Various researchers and authors claim that the TRA has a good record of foretelling or foreseeing almost all human behavior (Ajzen & Fishbein, 1980). It is assumed that since people are sane beings, they make organized use of accessible information, making considerations of consequences of their dealings before deciding which action to take.

In one study investigating internet banking in Malaysia, findings showed that attitude and subjective norm both had positive significant effects on intention to use internet banking (Md-Nor & Pearson, 2008). Since internet banking has various similarities to mobile payments, an application of TRA to mobile payments adoption is perhaps a justified move.

Another report that could justify the use of TRA with regard to mobile payments is a report published by Goldfinch (2005). It stated that the take-up of mobile payments for goods and services is likely to differ from region to region, depending on the country's infrastructure and prevailing culture. This means that the focus on social factors that impact adoption would be highly applicable.
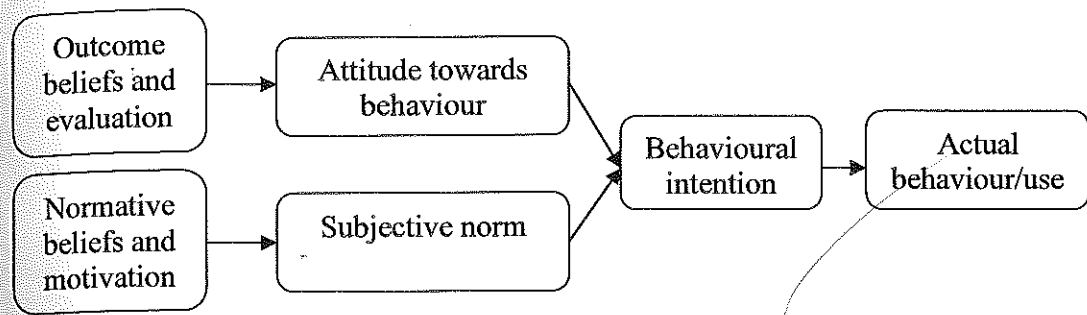
Fig 3: Theory of Reasoned Action (Source: Fishbein & Ajzen, 1975)

2.4.4. Theory of Planned Behavior

This theory is an extension of the TRA. It explains actions in situations where people lack complete control over their behavior. The theory was proposed by Ajzen (1991). He introduced variables i.e. control beliefs and perceived behavioral control. They can be used as additional variables to investigate whether a user's use of a service depends on their available resources or not.
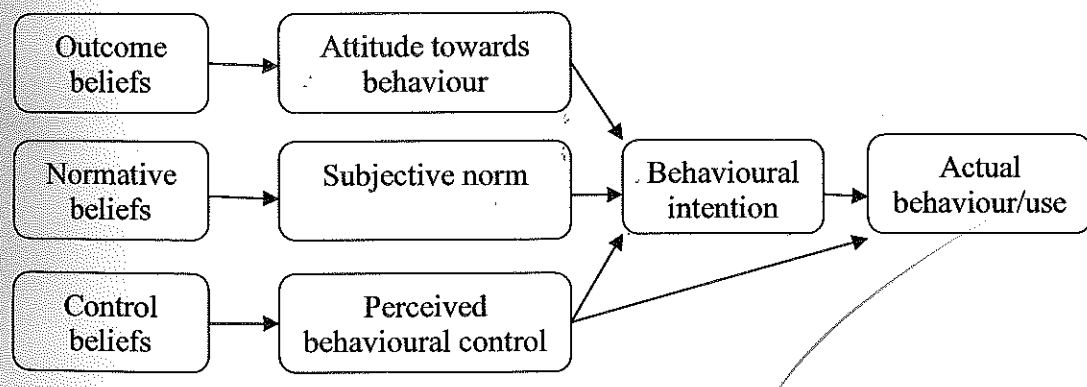

Fig 4: Theory of Planned Behavior (Source: Ajzen, 1991)

2.5. Modeling Mobile Payments Adoption

Although many other adoption models exist, this study mentions only those that were found to be the most relevant to the research. Although the TAM has been widely used by various researchers to investigate adoption of different technologies, its major limitation is that it fails to provide insights into the possible social factors that influence adoption.