

**SMART ATM CARDHOLDERS' ATTITUDE AND USAGE LEVEL :  
A STUDY OF SUNGAI PETANI RESIDENTS**

**BY  
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**Specially dedicated to :**

***THE SUPREME SIVASAKTHY,  
My Most Adorable Wife, Ms. Premalatha  
My Loving Parents, Mr & Mrs Kumegan  
My In-Laws Mr & Mrs Ramachandiran***

**For all their love and Encouragement  
Which was the driving force that led me to  
Complete this paper successfully**

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## ABSTRACT

The purpose of the study is to investigate the awareness level of smart ATM card users about the multi function of the card and identify the attributes that influence the differences of attitude between the active and inactive smart ATM cardholders. Based on the literature review, the researcher has identified nine attributes that influence the attitude of active and inactive smart ATM card users. The attributes were perceived risk, relative advantage, quality of service, acceptance level, convenience, compatibility, efficiency, annual fees and marketing and promotion. Based on the research done by Chan (1997), the smart ATM card user classified as 'active' if used more than 10 times per month and 'inactive' user if used less than 10 times per month. A sample of 300 respondents was surveyed. The finding showed that the awareness level of multi functions card were low. Only 50.50% were aware that it can be used as E-debit card and 31.40% that it can be used as E-purse. The study found that all the attributes in the study have distinguished between active and inactive users. Based on the discriminant loading function, perceived risk, annual fees, convenience, and marketing and promotion were the important attributes that distinguishing active or inactive smart ATM cardholders. The study also validated that attitude influence the usage level as dictated by the Multi Attribute Attitude Model. Based on the result of the study, a few suggestions have been outlined to the relevant parties to induce the inactive user to be active user. The full utilization of the newly introduced smart ATM card are crucial for the financial institutions to capitalize their investment.

## ABSTRAK

Kajian ini bertujuan untuk mengenalpasti tahap kesedaran pengguna kad pintar ATM tentang fungsinya sebagai kad ATM, kad debit (E-debit) dan dompet elektronik (E-purse). Ia juga bertujuan mengenalpasti ciri-ciri yang membezakan di antara pengguna yang aktif dan tidak aktif. Berdasarkan ulasan karya, sembilan ciri-ciri telah dikenalpasti mempengaruhi gelagat (attitude) pengguna yang aktif dan tidak aktif. Ciri-ciri tersebut ialah risiko (perceived risk), kelebihan relatif (relative advantage), kualiti servis (quality of service), tahap penerimaan (acceptance level), kemudahan (convenience), keselesaan (compatibility), keefisyinan (efficiency), yuran (annual fees) dan promosi dan pemasaran (promotion and marketing). Berdasar kajian Chan (1997), pengguna dikategorikan sebagai aktif jika menggunakan kad lebih daripada 10 kali sebulan dan tidak aktif jika menggunakan kurang daripada 10 kali sebulan. Sebanyak 300 responden telah disoalselidik untuk kajian ini. Kajian mendapati tahap kesedaran tentang kepelbagaigunaan kad pintar ATM masih rendah. Lebih kurang 50.50% sedar ia boleh digunakan sebagai kad debit dan 30.40% sahaja sedar bahawa ia boleh digunakan sebagai dompet elektronik. Kajian mendapati semua ciri dalam kajian membezakan di antara pengguna aktif dan tidak aktif. Ciri risiko, yuran, kemudahan and promosi dan pemasaran mempunyai pengaruh penting dalam membezakan pengguna aktif dan tidak aktif. Beberapa cadangan telah ditunjukkan kepada pihak berkenaan untuk merangsangkan pengguna tidak aktif menjadi pengguna aktif. Penggunaan sepenuhnya kad pintar ATM amat penting bagi institusi kewangan untuk memaksimumkan pelaburannya.

## Chapter 1

### INTRODUCTION

#### 1.0 Background

Smart card technology has experienced tremendous growth on the global basis in the application of various sectors such as transportation, health, telecommunication, insurance, financial industry and etc. It has changed the way the world doing business and consumer make purchasers on a daily basis. Smart card has been designed to become the future method of payment and information storage system. It has been utilized excessively during the last couple of decades. It provides better security, intelligence, speed and convenience. Although a lot of companies continues to produce various smart applications and marketing plans to market the smart card (e.g. Plouffe, Vandenbosch & Hulland, 2000; Szmigin & Bourne, 1999; Worthington, 2000), the mass consumers acceptance are still yet to be achieved.

Companies especially financial institution has been investing millions of dollars in the new technology system with the expectation that it will contribute to the overall profitability and market share. However, the return will be less or operating in loss, if the consumers do not accept or fully utilize its capacity (Al-Gahtani & King, 1999). So, the understanding of consumers acceptance and use of new technology such as smart card and its impact on the performances are prerequisites in obtaining returns' from this investments (Lucas & Spitler, 1999).

One of the major player in the smart card industry is Proton World. It was founded in July 1998 by a group of major players such as American Express, Banksys SA, ERG Ltd and Interpay Nederland BV. Proton World has issued more than thirty million cards and they are accepted in more than 240,000 terminals in Europe. About

85 million transactions has been performed using smart card (Hautain, 1999). Although the study have been done on smart card (e.g. Plouffe, Vandenbosch & Hulland, 2000; Szmigin & Bourne, 1999; Worthington, 2000), but they are very limited research was done on the acceptance of smart card in the financial institution (e.g. Puri, 1997). In Malaysia, the usage of smart card in financial institution were officially launched on 8<sup>th</sup> May 2003 by Dr. Zeti Akhtar Aziz, Governor of Central Bank of Malaysia.

### **1.1 History of Smart ATM Card**

The first plastic card was issued by Diners Club in 1950 as a charge card. In 1960 the Bank of America introduced the first credit card known as BankAmericard and currently known as VISA. Interbank introduced another credit card known as Mastercard. In the early stage of the introduction of the cards, it is only capable of storing embossed identification items only such as names, codes and numbers (Berta & Mann, 2000).

The first card with magnetic stripes were introduced by International Air Transportation Association in the early 1970's. It is capable of storing 210 bit/inch of information or equivalent to 80 alphanumeric. In 1971, the American Bankers' Association introduced the coded magnetic stripe cards. In 1972, Lloyds Bank introduced the first online transaction system where a plastic card with magnetic stripe was used for the verification of customers' account and the card holder. After each transaction, the machine will return the card to the customer as what is currently practiced.

Today, the magnetic stripes are divided into three regions. Region one is capable of storing read only information, region two is capable of storing 40 digits of information and region three is capable of read-writeable of 107 digits.

Later, the optical cards were introduced where it is capable of storing more data. This optical card is quite expensive compared to magnetic stripe cards. The optical cards have higher level of precision and information density with the capability to read and write optically. It is mostly used in the medical industry where the patient's medical report and X-rays are stored in the optical card.

The next step on the evolution of the cards were the introduction of the chip based card. It is a card based on the application of microelectronic circuits. In 1971, a scientist at Intel Corp, California, Ted Hoff has succeeded in assembling a computer on a small piece of silicon. The chip was smaller than a finger tip which is capable of replacing room size electronic brain in the computer era about 25 years ago.

A smart card is a credit card sized plastic card which is embedded with an integrated circuit (IC) chip. It enables to store, send information and perform independent processing. It is capable to hold more 80 times more data than magnetic stripe card. In general, there are two basic kind of smart card. An "intelligent" smart card which has central processing unit which can actually stores and secures information and do certain decisions, as required by the card issuers. It has capability to read and write. So, new information can be added and processed. Smart ATM card is categorized under the "intelligent" smart card because it has the ability to read and write. For example, on the smart ATM card, we can preload the card and use it as electronic purse or the card can be use as electronic debit card. The second type is a memory type card. It is capable to store information only such as value. For example, pay phone, vending transaction and retail transaction cards.

## **1.2 Development Of Smart ATM Card In Malaysia**

According to Abdul Wahid Abu, founder and managing director of Modular Corp Sdn Bhd, one of the key player in implementation smart ATM card in Malaysia, Bank Islam is the first bank in the world to replace their customers saving book with smart card way in 1991. (The Star, 2004) .

However, on 1998, Malaysian Electronic Payment System Bhd (MEPS), a payment consortium owned by local financial institutions has initiated the smart ATM card project. The smart ATM card also known as Payment Multi Purpose Card (PMPC card) or Bankcard. It is a single smart card with multiple payment applications. The card was first introduced in the Commonwealth Games (SUKOM) 1998 as electronic purse (e-purse). E-purse application is a prepaid purse where the card is loaded with monetary value and the utilized monetary value are deducted directly from the card. Later in September 1999, under the name of MEPS Cash, the card was commercially piloted in the Bangsar area. The pilot project was carried out to assess the technicalities of MEPS Cash and introduce to consumers the mode of cashless payment system to do small valued purchases. Upon the success of this project, it was introduced in closed community in Multimedia University and University Putra Malaysia in year 2000.

In order to enhance the value to the consumers, in October 2001, the domestic banks has introduced electronic debit (e-debit) service in the card. With this service, the cardholders can purchase goods and services using the PMPC card at the point of sales of the participating retailers and the money is deducted directly from the saving or current account of the cardholders by online.

According to Dr. Zeti Akhtar Aziz (2003), Governor of Central Bank of Malaysia, the use of cash and cheque will continue to be important although the volume of cheque processed shows declining trend. More consumers are realizing the convenience and flexibility of the electronic banking to do their day to day transactions and the number of ATM transactions and card payments shows increasing trend. She also emphasized all the financial institution should continuously educate and familiarise consumers with the use of electronic banking system.

### **1.3 Problem Statement**

Although the smart ATM card was introduced in the developed country such as France, Denmark and USA in early of 1990's, but it is relatively new technology in Malaysia. Although it was commercially tested in 1998, but it was officially launched in May 2003. All the twelve local financial institution has issued smart ATM card to their customers. According to En Hatta, managing director of MEPS, there are 12 million MEPS ATM card user in Malaysia and about 3.5 million has changed to this new smart ATM card. (The Star, 2003, June 03). All the banks has been investing million of dollar upgraded their ATM system. For example BumiputraCommerce Bank Bhd has spend about RM40 million for card replacement, system development and upgrading of ATM ([www.bcb.com.my](http://www.bcb.com.my)). Effective from 01<sup>st</sup> October 2003, all the MEPS based ATM magnetic stripe card were disabled. Only smart ATM card only can be used to access the ATM system. Although banks has been investing millions of dollar to upgrade the system, but it was not very clear whether the investments will generate sufficient return. The banks do not know how well this smart ATM being accepted in the market. Banks also do not know what are the consumers' perceptions of the newly introduced smart ATM card. The banks also do

not know clearly what are the factors distinguishes between active and inactive smart ATM card users. Although there are a lot of research are done on the smart card especially in the developed countries such as France, Denmark and USA (e.g. Abrazzhevich, 2001; Berta & Mann, 2000; Hayashi, Sullivan & Weiner,2003; Joseph M., Mclure & Joseph, B., 1999; Plouffe, Vandenbosch, Hulland, 2000; Szmigin & Bourne, 1999) but there are very limited research was done on the smart ATM card especially in Malaysia (e.g. Guru, Vaithilingam, Ismail & Prasad,2000).

#### **1.4 Research Objectives**

The broad objectives of this study are to study the characteristics, awareness level and identify the distinguishing factors between active and inactive smart ATM card user.

Based on the broad objectives, the researcher has identified a few specific objectives. The specific objectives of this study are :

- i) to examine the relationship between smart ATM cardholders attitudes and their usage level in order to identify distinguishing factors between active and inactive smart ATM card user.
- ii) to identify the overall attitude of consumers towards the newly introduced smart ATM cards
- iii) to examine whether attitude can be used to discriminate between active and inactive smart ATM card users.
- iv) to assess how likely the consumer accept or reject this innovative product. by assessing individuals' perception and preferences.



## **1.5 Research Questions**

The research questions to be addressed are :

- i) Do smart ATM cardholders know that their card be used as ATM card to do transactions, as E-debit card and as E-purse card?
- ii) What are the attributes that distinguishes between the active and inactive smart ATM card users?
- iii) What is the consumers' perception toward the newly introduced smart ATM card
- iv) Can attitude be used to discriminate between active and inactive smart ATM card users?
- v) What are the perceived importance and cognitive evaluation of the smart ATM card user about the newly introduced smart ATM card?

## **1.6 Definition of Key Terms**

Smart card – is a credit card sized plastic card embedded with an integrated circuit chip.

PMPC - Payment Multi Purpose Card which are issued by Malaysian banks. It is also known as Bank card or smart ATM card for financial transaction.

GMPC - Government Multi Purpose Card which are issued by Federal government. Replacing national identity card, driving licence, passport information, national health card and E-purse

E-purse - allow you to load money into card from ATM machine and do payment at the point of sales at retail. Known as Bankcard

E-debit - allow you to make payment for the purchases at participating outlets and the money is deducted directly from the saving accounts.

### **1.7 Significance of the study**

The findings of this study are important to financial institution in planning their marketing mix to maximize the utilization of smart ATM card as one of their main marketing tools. By identifying the important attributes that influence the usage of smart ATM card in Sungai Petani, it is hoped that the findings will assist the market researcher to develop and promote new marketing strategy effectively.

The understanding of consumers' attitude is very crucial and important for the financial institutions because this new smart ATM card can be used as one of their marketing tools in attracting new customers and retaining existing customers in order to build a strong customer base. The understanding of consumers very important because issuing of smart ATM card and installation of ATM is very costly. According to Carl Bradbury, vice president of Commerce Bank (2000), the cost of magnetic stripe card is about 25 cents to 40 cents only, but the cost of smart card is about \$1.75 to \$4 each. The new smart ATM is an investment of the future.

With the squeezing of interest rate due to competitiveness of the financial industry, most of the financial institutions' profit margin has dropped significantly. From the insight information of this study, it could help the financial institutions to segment their target market, retain their customers and strengthen the relationship while capitalizing the new technology towards the profitability of the company.

## **1.8 Summary and Organization of Chapters**

The study is organized into five chapters. Chapter one introduces the subject matter, define the problem statements, research objective, research questions, key terms and the significance of the study. Chapter two highlights the literature reviews on the subject matters, introduces the theoretical framework and hypotheses based on the previous studies. Chapter three presents the methodology on how the study was conducted. In chapter four, the results of various statistical analysis are presented. Finally, the fifth chapter concludes the study with discussion on significant findings and highlights the limitations and implication of the study with recommendation for future studies in this field.

## **Chapter 2**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter presents the researchers concern about the attitude and the usage of smart card. Section 2.1 discusses about attitude. Section 2.2 is literature review about attitude and smart card. Section 2.3 is about research framework and section 2.4 is theoretical framework. Section 2.5 is hypothesis.

#### **2.1 Attitude**

According to Hawkins, Best and Coney (1995), attitude is an enduring organization of motivational, emotional, perceptual and cognitive processes with respect to some aspect of our environment.

Perreault and McCarthy (1996) defines attitude as person's point of view toward something such as products, advertisement, salesperson, firm or an idea. The research of attitudes are very important for marketers because it affect the selection process, learning and eventually the buying decisions. Attitude also closely relates the preferences or intention to buy of the customers.

Boon and Kurtz (1992) defines attitudes as a person's enduring favorable or unfavorable evaluations, emotional feelings, or pro or con action tendencies toward some object or data. Attitudes are formed over the time through the individual experience and group contacts.

Hawkins. Best and Coney (1995) and Boon and Kurtz (1992) divided attitude into 3 components namely, as cognitive, affective and behavioral components. The cognitive components refer to the individual's information, knowledge and belief

about a concept or objects. The affective components refer more to the feelings or emotional reactions to an objects and behavioral components refers to the tendencies to act or respond in a certain manner.

Littlejohn (2002) defined attitude as an accumulation of information about an object, person, situation or experience. It is a predisposition to act in a positive or negative manner towards certain objects. Attitude is formed from the information that we obtained about someone or something and we form the opinion or predisposition about. Katz and Stotland (1959) summarized attitude as a tendency or disposition to evaluate an object or the symbol of that object in a certain way. Rosenberg (1956) explained that attitude is a relatively stable affective response to an object

Zanna, Olson and Fazio (1980) explained that individual attitude's are formed by the evaluation of an object which are associated in one's memory with representation of that object.. The previously formed attitudes influence the behaviour if these attitudes are from the memory. According to them, attitudes that are based on the important past behaviour are more important predictive of future behaviour than attitudes based merely on the memories of thoughts and feelings.

In summary, attitudes can be defined as the way we think, feel and act towards some aspect of our environment. Attitude influence and reflects the lifestyle of an individuals pursue.

## **2.2 Attitudes and Smart ATM Card Usage**

Almost all the research on the smart cards are done in the overseas card (e.g. Plouffe, Vandenbosch, Hulland, 2000; Szmigin & Bourne, 1999; Joseph, Mclure & Joseph, 1999; Berta & Mann, 2000; Abrazzhevich, 2001; Hayashi, Sullivan & Weiner, 2003). There are very limited resources or researches are done locally on this

issue (e.g Guru, Vaithilingam, Ismail & Prasad,2000) . Base on my finding, most of the smart card researches are centered on the profiles of the users and exploration study of the smart cards especially credit cards in financial institutions. There are very limited study was done on the behavioral research on analyzing the smart ATM card user and the usage level.

As mentioned by Marr and Prendergast (1993) and Plouffe, Vandenbosch and Hulland (2000), that the pure convenience and novelty is not the key elements that ensure the viability and acceptance of the new technology. The multi function of smart card which reduces the number of cards carried and simplification was a most important element to ensure the take off of smart card in the financial institution.

Plouffe, Vandenbosch and Hulland (2000) also found that 30 to 35% of the participating consumers prefers ATM card or smart card as their preferred payment mode for small transactions. They also found that younger consumers ( i.e. 29 years of age or younger) were more likely to adopt new technology.

Surprisingly, lower income people in Canada (i.e. less \$20,000 per year) have higher intention to adopt the smart card for retail purchases. It suggests that Smart ATM card is most appealing retail payment mode for modest income consumers. They also found that consumers value the benefit of smart ATM card when it is broadly accepted at a variety merchants, retailers and service providers. Some of the merchants refuse to carry required point of sales equipments for smart card unless the transactions are reaching reasonable volume. Their research indicates that consumer and merchants are the critical groups for the success of smart card based retail payment.

According to Roboff and Charles (1998), some of the issues raised in the adoption of smart card are privacy, security of personal information and money itself.

For example, some consumers are concern about the “electronic paper trails” created by the electronic payment systems and it would be expose the consumers’ financial affairs. Cespedes and Smith (1993) and Pearce (1997) indicates that the purchases and the tendencies that are electronically captured by the smart card system would be sold to the database marketing companies which intent to promote their products or services to the particular market segment. Plouffe, Vandenbosch and Hulland (2000) mentioned that many consumers perceived smart card payment systems as a potentially subversive and intrusive of their lives. They perceive the risk is high and not secured.

Berta and Mann (2000) mentioned that the security is one of the most important factors to consider in storing of data in smart card. The smart card should be physically tamper resistant and the data should be logically integrated and authenticated. Therefore, they suggested that the card programming should be done using a platform-independent with high level programming language to reduce the risk. According to them, currently people are carrying four to five magnetic stripe based cards in their wallet. So, by the introduction of smart ATM card, which can run multiple application on a single card would ease the day to day life of the users. The implementation of smart ATM card as electronic purse will be very interesting and safer for the customers.

Hauntain (1999) mentioned that Proton based smart card were well accepted by the customers and merchants in the European countries such as Austria, Belgium, Netherlands, Sweden and Switzerland. In Belgium more than 5.7 million Proton card user performed more than 3.9 million transaction per month. The card is used to do small value purchases and has overtaken the use of debit card. In a survey done in 1998, found that 81.7% of cardholders and 73.6 % of the merchants found proton card

is easier to use than cash. About 91.4% of cardholders and 87.6 % of merchants also found that smart card transactions are faster than cash transaction. She mentioned that the fast transaction speed is a critical factor in success of smart card. According to her, smart card has developed rapidly but the deployment of payment terminals and availability of a standard multiple application operating system is very slow thus limiting the potential growth of this industry. She also mentioned that cardholders who are traveling internationally demanded for the convenience abroad and at home. So, a common international standard for electronic purse, a uniform card terminal interface and common clearing and settlement system between scheme operator are required to support the success of smart card.

According to Gerald (1996), the electronic purses can be used to reduce the cost of small value transactions. Although the implementation of this new innovation has been slow because of high start up cost and uncertainty regarding the acceptability of smart card by the consumers, but the soundness of the system has been interesting issues among the central bank and other financial regulatory bodies. The reports concluded that over the next few years, the use of smart card technology for single purpose prepaid cards and for debit and credit cards are likely to be widespread in Canada. The changes in the consumers habits and payment infrastructure of financial institution and retailers are crucial factors for the success of electronic purse.

Abrazhevich (2001) conducted a survey on the users attitude towards the electronic payment systems. The survey shows that applicability (ability to pay with a payment system at multiple and diverse point of sale), traceability (ability to trace sources of income), convertibility (ability to convert money to and from a system to another system), ease to use (usability), trust, security and reliability are perceived as important characteristics that influence the acceptance of new technology such as



smart card and debit cards and credit card in the electronic payment systems. Most of the publications emphasize that anonymity (protecting customers identity) and efficiency (ability of payment system to service small payments) as important requirement in the electronic payment system, but his survey shows that consumers perceived it as less important. He concluded that the user attitudes are dependent on the contexts of use for payment applications. For example, in certain applications anonymity is less important than other factors such as debit cards payment and some may be opposite. He suggested that the new payment system should be designed according to the applications and needs of customers and not driven by the technology only because the final success of the systems are determined by the end users.

In the report of “Smart Card Technology in the Asia Pacific Rim”, Toshio Utsunomiya , chairman of the Japan IC Card System Application Promotion Council (JICSAP) describes Japan’s IC card system as less progressive compare with western countries. This is due to the well establishment of the magnetic stripe cards and polyethylene terephthalate card. Japanese society is still a cash based society and they need some time to be a cashless society. In the same report, Thomas Fuller of Card Technology mentioned that introduction of smart card in Taiwan in early of 1990s is a failure because of its ‘smartness’ and lack of marketing. Willie Fung of Mastercard International explained that the people do not know how to use the functions of the card and very limited merchants have the infrastructure to accept the smart card as the failure of the card. However, David Carse, JP Deputy Chief Executive for the Hong Kong Monetary Authority mentioned that smart card as the future of banking. It is an important means in extending self service concepts to the customers through new electronic delivery channels.

Rugimbana (1995) found that people's perception of automated teller machines are powerful predictors of automated teller machine rather than demographic variables. Users of automated teller machine perceived it as convenient, easy to use and compatible with their life style. Rugimabana (1995) concluded that perceived attributes such as convenience, ease to use and compatibility as the crucial factors in increasing user of automated teller machine.

Leblanc (1990) has analysed the perceptions of the users and non users of automated serviced and found that the main reason for using automated teller machine was accessibility. The user group perceived automated teller machine to improve quality of service, reduce cost, less risk, fast and easy to use. Moutinho and Brownlie (1989) also found that the customers satisfaction are directly related to the location and accessibility of automated teller machines. In another buying behaviour study, McKechnie (1992) cited that convenience and ease of performing transaction as two of the major factors influencing the selection of bank.

In the 1994 Smart Card Forum study centers found that 23% of the consumer indicates this smart card concept as excellent, 22% as good and 15% as poor. The consumers reacted favorably and positive towards the smart card. Consumers ranked perceived advantage such as usefulness for carrying emergency information like health record, and carrying fewer card as the driving force to use smart card. The survey also found that the consumers' perceived the ability of the card to store, manage, and consolidate information, portability and accessibility as the unique differentiator.

Allen and Barr (1997) mentioned that the introduction of smart ATM card is meaningless if the number of merchants who accept the card is less. Over 50% of consumers shows interest in using stored value cards for the express lane at

supermarket, gas stations, convenience store, pay phones, parking lots, fast food outlets and vending machines. About one in five consumers would like to use a card only to do all the potential card services. However, some of the consumers sees this “everything card” as confusing and risky because if they lose the card, they will lose everything. In a research in 1994 done by Smart Card Forum found that three out of four consumers under age 65 do not feel comfortable to use the card, due to their safeguards, security and privacy. They are less concern of easiness and convenient to use. The survey also found that software, hardware, process development, training, marketing and customer service are some of the factors that influence the acceptance of smart card.

Plouffe, Vandebosch and Hulland (2000) and Lim (2001) found that heavy advertising and promotion influence the usage level of the cards. Lim (2001) research shows that bank advertisement is highly significant and relatively important in determining the credit card usage level.

Based on the literature review, most of the studies has been mentioning perceived risk, relative advantage, quality of service, wide acceptance, convenience, compatibility, efficiency, low annual fees and heavy promotion and marketing as important attributes in developing attitudes and influence the usage level. As most of the studies have been done in the overseas using the mentioned attributes, the researcher will be using the mentioned attributes in the local context.

### **2.3 Research Framework**

The objective of the study is to investigate the consumers’ attitude between active and inactive smart ATM cardholders. The adoption of technologies has been

an important area of research in marketing for many years (e.g. Ostlund,1974; Rogers,1976).

In traditional consumer research, cognitive foundation are used to explain consumers' attitude. The Fazio model proposes that an individual's attitude are formed by the evaluation of an object associated in one's memory with representation of that object. He also believe that previously formed attitude influence behavoiur if the these attitudes are from the memory. So, this model is crucial for the "purchase-repurchase" process of studies.

Another theory discusses about attitude is Theory of Reasoned Action. It was developed by Ajzen and Fishbein (1980). It distinguishes attitudes from beliefs, and stresses belief as the critical factor in attitude formation. They also stated that beliefs of an attitude object make up the cognitive portion of an attitude. It is more concerned with the prediction of behaviour intentions rather than traditional overt behaviour. The Theory of Reasoned Action explains the ability of attitudes to predict behaviour, with social pressure as main factor in bringing the consumer to form an attitude toward purchasing.

In this research, the researcher would like to investigate consumers' attitude between active and inactive smart ATM cardholders. Although there are many measurement device and model in the field of marketing, but the researcher has chosen Multi Attribute Attitude Model (MAA Model) to do this research. The model which is proposed by Fishbein (1963) is not only able to measure the attitude but also able to explain the theory of formation and changes of attitudes. MAA theory states that an individual's attitude toward brands or products are formed through the consolidation of varying amounts, depend on the strength of the individual's belief or feelings associated with the brand or product attributes. According to Wilkie and

Pessemier (1973), the original summative attitude models were proposed by Rosenberg (1956) and Fishbein (1963) were based on the expectancy value model. It is a simpler form to understand consumers' attitude. As mentioned earlier, the researcher has used multi attribute attitude (MAA) models because it enables researcher to examine the relationship between the consumer's product knowledge and consumers' attitude towards the products attributes. As advocated by Wilkie and Pessemier (1973), Bettmen, Capon and Lutz(1975) and Wilson, Mathews and Harvey (1975), Fishbein defines attitude based on the multi attribute attitude model as :

$$A_j = \sum W_{ij} E_i$$

where

- a) Attitude ( $A_j$ ) – MAA model identified that important characteristics of an attitude towards a object (smart ATM card) is by considering all the attributes (attribute 1, attribute 2, attribute 3, .....attribute n) when forming their overall attitude towards an object.
- b) Importance weight ( $W_{ij}$ ) – refers to relative importance of an attribute to consumers.
- c) Belief ( $E_i$ )– refers to consumers' cognitive evaluation of specific attribute towards an object (smart ATM card)

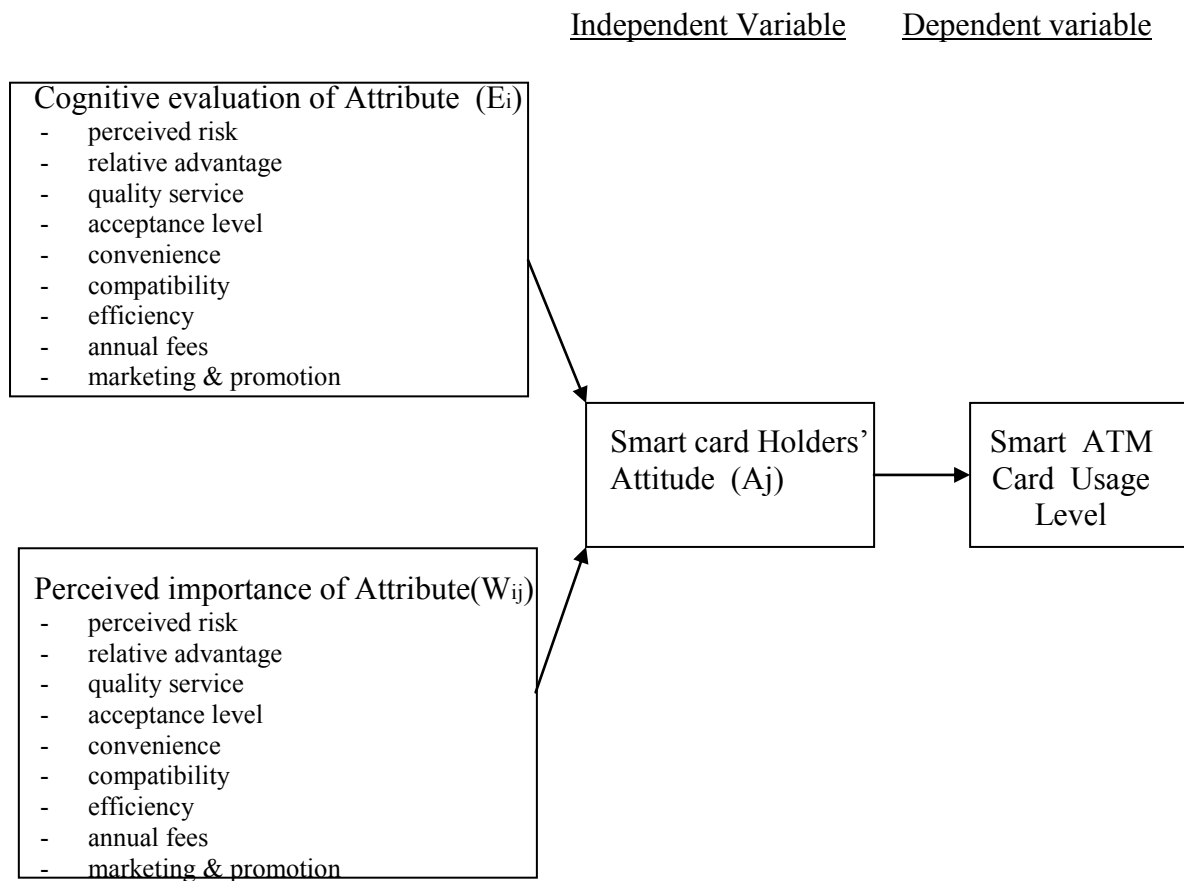
Labay and Kinnear (1981) also found that individual perceptions of an innovation provides better prediction of adoption behavior than demographic variables.

As such, MAA model helps to identify customer's attitude by asking them to express their feelings towards certain product. MAA model allows researcher to

investigate the way customer feels on a certain product and how they change their feelings toward the products.

## 2.4 Theoretical Framework

Based on the above mentioned literature review and multi attribute attitude model, the researcher has developed the following theoretical framework :-



*Figure 1 : Theoretical Framework : Adopted from Multi Attribute Attitude Model*

Source : Wilkie, W.L and Pessemier, E. A. (1973), Issues in Marketing's Use of Multi Attribute Attitude Models, Journal of Marketing Research, Vol X, November, pp.428-41

Based on the MAA model, smart ATM cardholders' attitude can be obtained by multiplying cardholders' perceived importance of the attribute and cognitive evaluation of the attributes.

$$\text{Attitude} = \text{Perceived Importance of the attribute} \times \text{Cognitive evaluation of the attributes}$$

## 2.5 Hypothesis

In this study, the researcher has proposed the following hypotheses for the research :

H1 : Cognitive evaluation and perceived importance will have positive influence on the smart ATM card usage level

H1a : Low perceive risk will have positive influence on the smart ATM card usage level

H1b : Relative advantage will have positive influence on the smart ATM card usage level

H1c : Quality of service will have positive influence on the smart ATM card usage level

H1d : Wide acceptance will have positive influence on the smart ATM card usage level

H1e : Convenience will have positive influence on the smart ATM card usage level

H1f : Compatibility will have positive influence on the smart ATM card usage level

H1g : Efficiency will have positive influence on the smart ATM card usage level

H1h : Low annual fees will have positive influence on the smart ATM card usage level

H1i : Heavy promotion and marketing will have positive influence on the smart ATM card usage level

H2 : There are significant differences in the perceived importance ( $W_{ij}$ ) between active and inactive of smart ATM cardholders.

H2a : There are significant differences in the perceived importance ( $W_{ij}$ ) between active and inactive of smart ATM cardholders in terms of perceived risk.

H2b : There are significant differences in the perceived importance ( $W_{ij}$ ) between active and inactive of smart ATM cardholders in terms of relative advantage.

H2c : There are significant differences in the perceived importance ( $W_{ij}$ ) between active and inactive of smart ATM cardholders in terms of quality of service.

H2d : There are significant differences in the perceived importance ( $W_{ij}$ ) between active and inactive of smart ATM cardholders in terms of wide acceptance level.

H2e : There are significant differences in the perceived importance ( $W_{ij}$ ) between active and inactive of smart ATM cardholders in terms of convenience.

H2f : There are significant differences in the perceived importance ( $W_{ij}$ ) between active and inactive of smart ATM cardholders in terms of compatibility.

H2g : There are significant differences in the perceived importance ( $W_{ij}$ ) between active and inactive of smart ATM cardholders in terms of efficiency.



H2h : There are significant differences in the perceived importance ( $W_{ij}$ ) between active and inactive of smart ATM cardholders in terms of low annual fees.

H2i : There are significant differences in the perceived importance ( $W_{ij}$ ) between active and inactive of smart ATM cardholders in terms of heavy promotion and marketing.

H3 : There are significant differences in cognitive evaluation ( $E_i$ ) between active and inactive of smart ATM cardholders.

H3a : There are significant differences in cognitive evaluation ( $E_i$ ) between active and inactive of smart ATM cardholders in terms of perceived risk.

H3b : There are significant differences in cognitive evaluation ( $E_i$ ) between active and inactive of smart ATM cardholders in terms of relative advantage.

H3c : There are significant differences in cognitive evaluation ( $E_i$ ) between active and inactive of smart ATM cardholders in terms of quality of service.

H3d : There are significant differences in cognitive evaluation ( $E_i$ ) between active and inactive of smart ATM cardholders in terms of wide acceptance level.

H3e : There are significant differences in cognitive evaluation ( $E_i$ ) between active and inactive of smart ATM cardholders in terms of convenience.

- H3f : There are significant differences in cognitive evaluation (Ei) between active and inactive of smart ATM cardholders in terms of compatibility.
- H3g : There are significant differences in cognitive evaluation (Ei) between active and inactive of smart ATM cardholders in terms of efficiency.
- H3h : There are significant differences in cognitive evaluation (Ei) between active and inactive of smart ATM cardholders in terms of low annual fees
- H3i : There are significant differences in cognitive evaluation (Ei) between active and inactive of smart ATM cardholders in terms of heavy promotion and marketing .