

# **A Conceptual Framework on Mobile Commerce Acceptance and Usage Among Malaysian Consumers: The Influence of Location, Privacy, Trust and Purchasing Power**

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*Abstract:* - The aim of this conceptual paper is to investigate the mobile commerce acceptance among Malaysian consumers. With mobile commerce or m-commerce technology, consumers can use mobile phones, Personal Digital Assistant (PDA) and laptop computers to access the internet, send and receive messages and make transactions at any time from any places without having tied to a particular location. This new electronic marketing concept has broadened the scope of service and offer great experience to consumers. On the other hand, marketers are able to obtain numerous benefits related to customization of products and services based on the location of the consumer. However, with the abundance of access to information system and high frequency of exposure to mass media, consumers are now becoming more concerned about the fraudulent issues that appear in electronic marketing. Therefore, considerations must be given to the implications of privacy and trust in m-commerce, if utilization and mutual benefits is to be derived on a lasting basis between consumers and marketers. It is very important to examine the privacy and trust elements to understand the acceptance and use of m-commerce according to Malaysian context thus enrich the model of m-commerce acceptance and use behavior. This conceptual paper is also engrossed to examine the influence of purchasing power on behavioral intent and specifies an extension model for the acceptance and use of m-commerce. By reading this paper, readers will be able to obtain clearer picture about conducting future research in order to understand the behavior of Malaysian consumers related to location, privacy, trust and purchasing power.

*Key-Words:* - Mobile Commerce, Consumer acceptance, Privacy, Trust, Location, Purchasing power

## **1 Introduction**

The rapid development and application of electronic commerce and wireless technology in Malaysia has given birth to a new electronic marketing concept known as mobile commerce (m-commerce). There are various definitions describing m-commerce. However, in the simplest form, m-commerce is recognized as the use of wireless devices, like mobile phones and personal digital assistance (PDAs), to connect to the internet for the purpose of communicating or conducting business without location restriction.

Mesmerized by the introduction of m-commerce to the electronic marketing system, marketers and consumers are becoming attuned to growing issues regarding the ethical use of consumer's personal data, the protection of their privacy, and the serious effect that misuse could have on their ultimate decisions to use m-commerce. Trust, personal privacy and purchasing power are not new issues in the world of business. However, the rapid development and application of wireless technology is now bringing these issues to limelight (Bedford, 2005).

Therefore, it is very important to understand these issues according the context of Malaysia, which may become the driving force to the acceptance and use of m-commerce in future. A good platform is needed in order to provide a model of m-commerce acceptance and use behavior to assist Malaysian marketers to succeed in the marketplace.

## 2 Problem Statement

Exposure towards mass media and technology has created a trend where adults possess high technology mobile phones. To-date, most adult mobile phone users are technically sophisticated. They use computers and the Internet to purchase products, send and receive e-mail and play games on-line (McFarland 2002).

M-commerce is still in its introductory stage in Malaysia. This new technology offers freedom to consumers. However, sometimes freedom comes at a price too great to pay. Therefore, issues related to privacy, trust and purchasing power need to be carefully examined. Due that reason, understanding m-commerce acceptance and usage among Malaysian consumers' has become a very interesting topic to explore.

In order to derive an interesting conceptual framework, this research will be built upon the Unified Theory of Use and Acceptance of Technology (UTAUT) Model, developed by Venkatesh et al. (2003) combined with constructs created by Bedford (2005) to enrich the knowledge related to technology acceptance. Researchers also add another construct to be tested, that is consumers' Purchasing Power.

## 3 Research Objective

The main research objectives for this conceptual framework will be:

- to identify Malaysian consumers' beliefs concerning the effects of discovery, use, and redistribution of location information on personal privacy and trust (Bedford,2005),
- to determine the effects of information privacy sensitivity towards consumers' willingness to indulge in m-commerce,
- to determine the effect of consumers' purchasing power towards creating the intention to accept m-commerce, and
- to identify a suitable model to be used in determining consumers' acceptance and

willingness to use m-commerce that is suitable to Malaysian context.

## 4 Literature Review

A considerable amount of research has been conducted over the past twenty years in the area of trust, privacy and technology acceptance. Trust has become very crucial to ensure excellent relationships between marketers and consumers (Friedman et al 2000; McKnight et al 2001).

Numerous studies highlighted trust to be an important element in the acceptance and use of e-commerce (Gefen et al 2003). However, insofar this element has not been addressed as a major issue in the success of m-commerce (Deans 2002; Dogac et al 2002). Consumers' concern over the collection of personal data, the utilization of data and its ownership has created a situation where investigation is needed particularly on the privacy issues (Boncella 2001).

In some developed countries, privacy issues on the Internet and e-commerce have become a major concern that forced the government to impose law for privacy protection. A study by Sylvie et al. (2005) on consumer attitude towards online and mobile banking in China identifies security issues to be the most important factor that motivated Chinese consumer adoption.

In addition to the advantages of traditional e-commerce, the third generation of communication also has unique service characteristics and value added benefits. If these companies can understand the consumer's behaviour of using 3G services they can promote the quality of communication service along with obtaining lot of information about consumers (Green, R.B. et al. 2002). Analyzing the customer's behavior of using 3G services can improve the effective customer service and expand the market at the same time (Norhiah et al. 2001)

### 4.1 Privacy

From the perspective of information system, information privacy is very important to protect consumers from becoming a victim towards misuse of data, unauthorized access or modification of information by other parties (Abdul G.N. and Mohamed S.Z, 2008). To-date, marketers can easily obtain consumers' personal information through the use of online forms. Consumers are required to complete purchase transactions and their preferences. Even today, with technological advances available through m-commerce, marketers

can easily capture consumer's physical location. Nevertheless, the activity of data collection through the Internet and marketers' ability to access data for analysis has increased the possibility among them to abuse individual rights to privacy. While some action has been taken to regulate the use of location data in m-commerce (CTIA 2000), insofar there is no evidence of empirical research in this issue.

#### 4.2 Trust

It is a fact that technology evolves very fast and privacy issues become more prevalent when doing business on the internet. Parallel to that, the issue of trust between consumers and marketers becomes significantly more important (Gefen 2002). Today, the GPS technology available in m-commerce allows personalization based on user's specific location. It means that, the more customized the service offered by marketers, the more personal information the business has to collect about a consumer.

Consumers are concern over providing too much personal information. All these activities have created a situation of misused or unauthorized disclosure. Many researchers have considered security and privacy to be two major prerequisites for online trust (Kruck et al., 2002; Harris Interactive, 2002; Flavian and Guinaliu, 2006). In the meantime, controlling the personal information should become the top priority compared to disclosing the personal information to gain consumers' trust (Abdul and Mohamed 2008). Looking back at the purpose of this paper, a framework is essential for building consumer's trust in m-commerce (Grabner-Kraeuter 2002) according to Malaysian context.

#### 4.3 Purchasing Power

In m-commerce, while some research concerned about privacy issue associated with mobile communication (Duri et al 2002), the impact of consumers' purchasing power to use the technology has received very little attention. Only slight interest has been directed to determine the effect of cost on the use of technology, especially mobile technology (Phau and Teah 2009).

Lai et al. (2009) revealed that there were a huge different between men and women consumers pertaining to their perceptions on transaction cost while conducting on line purchase. Thus it is interesting to identify the relationship between purchasing power and m-commerce acceptance among consumers.

#### 4.4 Location

Location is another factor that is very interesting to be identified in order to understand its relationship with m-commerce acceptance (Bedford, 2005). This is due to the reason that only a nominal amount of study has been undertaken concerning the impact of the use of location technology on the use and acceptance of m-commerce even though it has been identified as a major issue on several planes (Tarasewich et al 2002). However, according to Xanthiids et al. (2007), location traceability can become one of the factors towards acceptance and usage of internet technologies

Based on the aforementioned literature, the researchers believe that the uses of Unified Theory of Use and Acceptance of Technology (UTAUT) Model, developed by Venkatesh et al. (2003) combined with constructs created by Bedford (2005) will be able to enrich the knowledge related to technology acceptance in Malaysia. As mentioned earlier, researchers will also add Purchasing Power as another construct to be tested.

### 5 Research Questions

In examining the use and the acceptance of m-commerce, four questions will be posed to help the researcher focus on the hypothesis and assist in the development of the methodology:

- to what degree is trust a factor in consumers decision to commit to use m-commerce?
- to what degree does consumers purchasing power influence them to use m-commerce?
- to what degree does the ability of mobile technology to discover consumers location affect their trust and use of m-commerce?
- to what degree does privacy policies affect the consumers trust and commitment to use m-commerce?

### 6 Research Hypothesis

As can be seen in **Appendix 1.0**, the UTAUT model by Venkatesh et al. (2003) focuses on Performance Expectancy (PE), Effort Expectancy (EE), and Social Influence (SI). According to Venkatesh et al. (2003), among all, Performance Expectancy (PE) was the strongest predictor of behavioral intention. Performance Expectancy (PE) gives the direction to consumers to choose and buy products online. Due to that, Performance Expectancy (PE) is portrayed as encompassing a positive relationship towards consumers' behavioral intention.

**H1 :** *Performance expectancy will have a significant positive effect on customer intention to use m-commerce for the purchase of products and services,*

Effort Expectancy (EE) highlights the extent of effort to use the system (Venkatesh et al. 2003). Venkatesh et al. (2003) posits that, the easier the system can be used, the more consumers will accept it. This is very interesting since the screen for most mobile technology devices is relatively small. Browsing the Internet will become somewhat difficult. Therefore, focusing on the easier browsing and transactions will improve consumers' behavioral intention to use m-commerce.

**H2 :** *Effort expectancy (ease of use) will have a significant positive effect on customer intention for the purchase of products and services,*

In their research, Venkatesh et al. (2003) also noticed that consumers' intention to choose a particular technology are influenced by the opinions of individuals considered important to them. In simplest form, it denotes that, consumers will use m-commerce when their friends and family. Therefore, Social Influence (SI) is expecting to have a positive effect towards consumers' behavioral intention to use m-commerce.

**H3 :** *Social influence will have a significant positive effect on customer intention for the purchase of products and services,*

A good number of guidance and "menu" in web interface can be seen today. It is nothing but to assist the consumers to obtain information very fast as needed. Facilitating Conditions (FC) will have a significant contribution towards crafting consumers' beliefs about the reliability of m-commerce (Venkatesh et al. 2003). Due to that, the hypothesis will be as follow:

**H4 :** *Facilitating conditions will have a significant positive effect on customer intention for the purchase of products and services,*

Trust has been identified as very important to establish a continuous relationship between consumers and marketers (Chen et al. 2008; Flavian and Guanliu, 2006; Gefen, 2003). Trust is also the key determinant for the success of m-commerce (Roca et al. 2009). Therefore, trust is also viewed as having a significant influence on consumers'

behavioral intention.

**H5 :** *Trust will have a significant positive effect on customer intention for the purchase of products and services,*

In conjunction with trust, marketers are also anticipated to keep the personal privacy of their consumers. Marketers should not reveal the personal information without consent from consumers (Roca et al. 2009). Such opportunistic manner and unethical practice will lead to losing of trust towards marketers (Tarasewich et al. 2002). This paper, therefore, bring to light the importance of m-commerce marketers to adopt an ethical practice when they decided to disclose the location information about their consumers as proposed by Bedford, 2005).

**H6 :** *Marketers that are perceived as treating personal information in an opportunistic manner will negatively affect customer trust,*

Consumers are really anxious about their personal information will be channeled to the third parties which, in turn sending them an unsolicited message (Elovici et al. 2005; Crouch 2001). Consumers need some reassurance that their privacy will be protected (Bedford, 2005). In line with those statements, the researchers address the same issue to testify whether the unauthorized disclosure of consumers' location will affect their trust towards m-commerce.

**H7 :** *Unauthorized disclosure of customer location data to third parties will negatively affect trust of m-commerce,*

Marketers always imagine being able to send messages promoting their products and services as the prospective consumers walk in front of their outlet. However, due to the widespread of SPAM, consumers might think that the messages are also SPAM (Chen et al. 2008). Sometimes, consumers may have an opinion that those messages as too much of irritation to them. The way marketers use location data to deliver numerous messages also create an issue of how much consumers are willing to tolerate for such customized services (Bedford, 2005). For this reason, the next hypothesis highlights the issue.

**H8 :** *The use of unsolicited e-mail and advertising based on customer location will negatively affect trust of m-commerce,*

When consumers and marketers have the same common values, customer relationship is developed (Morgan et al. 1994). Shared values can be achieved through policies that establish protections for personal information and define the rights of consumers.

Some companies are really concerned as to the use and disclosure of personal information to ensure the privacy protection between consumers and the company. But, there are also companies who make the disclosure of information as part of their business. With current internet issues, some m-commerce providers create a written policy to protect consumers' privacy to encourage them to participate in the trust relationship (Bedford, 2005). A well-defined privacy will positively affect trust among consumers to participate in m-commerce (Chen et al. 2008). Therefore, the researchers attend to understand the relationship of having privacy policy and m-commerce participation by using the hypothesis created by Bedford (2005) as follows:

**H9 :** *Business policies and government regulations that protect privacy of location will positively affect trust of m-commerce,*

There are several factors found to have effect on trust related to the acceptance and usage of m-commerce. Factors such as gender, age and experience were among the relevant factors found to act as moderating factors in many technology acceptance models (Bedford, 2005; Rodgers et al. 2003; Jarvenpaa et al. 1999). Due to that, Bedford (2005) hypothesized those three factors as follows:

**H10 :** *The influence of trust on behavioral intention will be moderated by gender, age and experience.*

Consumers may vary in the degree of trust to use m-commerce with regards to gender issue. Female consumers have found to be less trusting of shopping on the Internet (Rodgers et al. 2003). They also prefer personal contact involved in shopping in traditional stores. Abu Shanab and Pearson (2007) found that male consumers had stronger effect in the case of performance expectancy whereas female consumers had stronger effect in the case of social influence and effort expectancy. Therefore, to understand the effect between male and female consumers, another hypothesis is developed as follows:

**H10A :** *The effect will be more positive for females,*

In line with the extensive exposure to high technology devices and technical knowledge, younger consumers were found to be more willing to accept a new technology (Venkatesh et al. 2003). Usually younger consumers may view the risks involved with m-commerce as less important. Due to that, this group of consumers has a higher level of trust to participate in m-commerce.

According to Abu Shanab and Pearson (2007), found that the effect was stronger for older consumers in the case of performance expectancy and stronger for younger consumers in the case of performance expectancy, and stronger for younger consumers in the case of performance expectancy.

**H10B :** *The effect will be more positive for older individuals,*

Previous research indicated that consumers who have more experience participating in e-commerce will perceive a higher level of risk and will be less likely to trust a new website (Flavian and Guinaliu, 2006; Elovici et al. 2005; Laforet and Li, 2005). They will become more sensitive with matters pertaining to personal information and privacy as compared to those who only have less experience and new to e-commerce transactions. The next hypothesis will testify the effect of experienced users on the acceptance and usage of m-commerce.

**H10C :** *The effect will be more positive for more experienced technology users.*

Undeniably, trust in m-commerce is constantly growing in all parts of the world. It is not an easy task to gain trust from consumers. Many literatures highlight that, to obtain consumers' trust, marketers should put into action a good combination of commitment, communication and satisfaction (Flavian and Guinaliu, 2006). Those are the three basic pillars supporting the relationship marketing theory.

In simplest form, trust is a set of beliefs held by a consumer as to certain characteristics of the marketers. Where m-commerce is concerned, individuals are very sensitive with obtaining, distribution or the non-authorized use of personal information done by marketers. M-commerce technology growing capacity for information processing, plus its complexity, have made trust and consumers' sensitivity an increasingly important issue.

**H11 :** *Individuals with a high sensitivity*

*to privacy will require a higher degree of trust to participate in m-commerce.*

In Malaysia, consumers are very sensitive with cost and price changes. This is due to the reason that their purchasing power is different based on diverse economical background. In other country like Singapore, purchasing power and high transaction has become among the reasons that prevent consumers from participating in m-commerce (Carlsson et al. 2006). Pagani (2004) also stated that economical factor was among the main determinants of 3G service adoption. Therefore, the final hypothesis in this conceptual paper will attest the influence of purchasing power towards the consumers' intention to participate in m-commerce.

**H12 :** *Purchasing power will have a significant positive effect on customer intention to participate in m-commerce.*

## 7 Significance of the Research

This research continues the tradition of contributing to the stream of research in e-marketing. It also provides guidelines to Malaysian marketers upon using m-commerce as a strategy to gain competitive advantage. Apart from that, this study is able to test the robustness of UTAUT Model pertaining to cross cultural analysis.

In Malaysia, research in this area is still at the infancy stage. This is not surprising since the technology itself, is still in early evolutionary stage. To the marketers, understanding the degree of the influence of trust on the acceptance and the use of m-commerce is essential to its success and business longevity. M-commerce customers are varying in age, experience level, gender and culture. Their requirements for trust vary as well. Understanding these variations in the degree of trust will help marketers with the assistance of IS specialist to develop location-based applications that support customers trust level, provide them with better customized products while collecting essential data.

## 8 Scope of the Research

The scope of this research will be the students at various universities in Malaysia. This is due to the reason that university students were found to have a high penetration rates for mobile phone usage due to high quality telecommunication infrastructure (McFarland et al 2002). Another reason is both

graduate and undergraduate business student populations from Malaysian universities represented diversity in gender, age and culture, and they were deemed likely to have experience with mobile commerce.

University students also will be able to provide a wide cross section of experience with m-commerce in terms of diversity in age and sex as well as a wide cross section of race and culture. Therefore, these groups are suitable to become the respondents for this research.

## 9 Research Methodology

As mentioned earlier, this research will be built upon the Unified Theory of Use and Acceptance of Technology (UTAUT) Model, developed by Venkatesh et al. (2003), combined with the extension model created by Bedford (2005). The researchers have decided to use this extension model because UTAUT model alone does not address technologies such as m-commerce that represent a relationship and commitment between marketers and consumers.

Therefore, by expanding from e-commerce acceptance model which incorporates trust as a determinant of intention use into the technology acceptance model, an extensive research model developed through this research will depict the influence of trust as a determinant of behavioral intention (Bedford, 2005).

**Appendix 1.0** indicates the proposed research model in this study. The dashed rectangle indicating the items added to the UTAUT model (Bedford, 2005). According to Bedford (2005) four factors are predicted directly affect trust in m-commerce: the perception that a business does not behave opportunistically in the use of consumers location and personal information (ethical behavior); the perception that the business creates and follows its policy concerning the use of location data (privacy policy); the perception that the business uses an opt-in approach to obtain consumers permission prior to any disclosure of location data to third parties including partnering organizations and government agencies (disclosure); and, the perception that the business will not send unsolicited ads and messages (unsolicited messages). In addition to that consumers' perception about their purchasing power which relates to economical reason also included as additional construct.

### 9.1 The Sampling Design

The researcher plans to have respondents from

postgraduate and undergraduate students from various major universities in Malaysia to respond to the questionnaires. As mentioned earlier, this is due to the reason that university students were found to have a high penetration rates for mobile phone usage due to high quality telecommunication infrastructure (McFarland et al 2002). University students also represent diversity in gender, age and culture whilst deemed likely to have experience with mobile commerce (Bedford, 2005).

## 9.2 Data Collection

The questionnaire will be given to the students to be completed by them in approximately 20 minutes and will be collected anonymously within the stipulated time. Prior to that, all questions will have to undergo the pretest exercise to identify problems with individual questions as proposed by Bedford (2005). Pretest is very important to ensure that all questions can be understood by the prospective respondents and suitable within the context of Malaysia. All questions will have Malay language translations to achieve full cooperation from respondents.

## 9.3 Survey Instrument

The researcher plans to design questionnaire that consist of elements addressing four areas: Privacy sensitivity, as identified by Smith et al (1996); trust and m-commerce technology acceptance, (Gefen et al 2003, Venkatesh et al 2003 and Bedford 2005). Demographic profile comprises of age, gender and experience are used to identify moderating factors (Venkatesh et al 2003). The effect of purchasing power is also added to discover the behavioral intention among Malaysian consumers (Phau and Teah 2009).

## 9.4 Data Analysis

Analysis of the data from the questionnaire will be performed with the use of Structural Equation Model (SEM) using Linear Structural Relations (LISREL). SEM provides a more rigorous analysis of the data than simple factor analysis, regression analysis, or multivariate analysis of variance (Gefen et al 2000) specifically when the data is multidimensional (Hair 1998). SEM also provides tests for statistical conclusion validity (Gefen et al 2000) and parsimony (Hair 1998). In addition LISREL provides multi-sample analysis for testing differences between groups (Joreskog et al 1993).

## 10 Conclusion

With the concept and direction as mentioned in this paper, the researchers believe that a comprehensive m-commerce acceptance and usage model can be developed according to the Malaysian context. Undeniably, with international mobile technology converging and advancing at a greater pace, m-commerce is projected to continue its growth. In Malaysia, there are still a limited number of marketers using this new electronic marketing method. Therefore, the potential of this medium is very well untapped and able to receive greater attention if it is well tailored and communicated as indicated by developed countries. This conceptual paper is able to provide an initial platform for future research to understand Malaysian consumers' behavior hence better craft the mobile commerce marketing.

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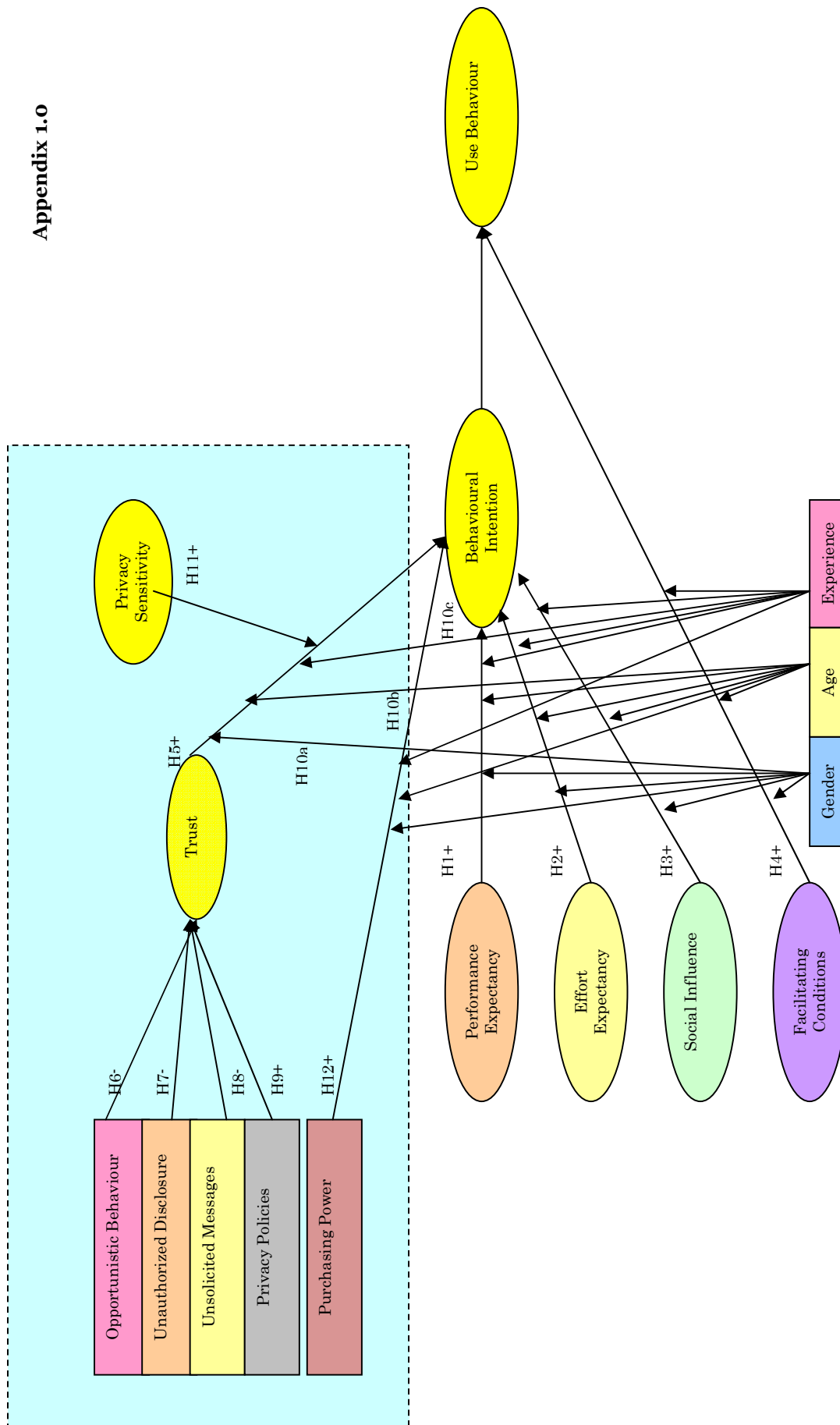
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Appendix 1.0



**Source:**

Adapted from Venkatesh, V., Morris, M.G., Davis, G.B., and Davis, F.D. (2003), "User Acceptance of Information Technology: Toward a Unified View" & Bedford, D.W. (2005), Empirical Investigation of the Acceptance and Intended Use of Mobile Commerce: Location, Personal Privacy and Trust,

**Figure 1.0:** Proposed Research Model