A STUDY OF FACTORS INFLUENCING CONSUMER'S BEHAVIOR INTENTION TOWARD PERSONAL DIGITAL ASSISTANTS (PDAs) IN BANGKOK

By

PORNPIMOL THEPTAVEEPITAK

A Thesis submitted in partial fulfillment
of the requirements for the degree of

Master of Business Administration

Graduate School of Business
Assumption University
Bangkok, Thailand

November 2004

A STUDY OF FACTORS INFLUENCING CONSUMER'S BEHAVIOR INTENTION TOWARD PERSONAL DIGITAL ASSISTANTS (PDAs) IN BANGKOK

By

PORNPIMOL THEPTAVEEPITAK

A Thesis submitted in partial fulfillment
of the requirement for the degree of

Master of Business Administration

Examination Committee :

1.	Dr. Patricia Arttachariya	(Advisor)	.....
2.	Dr. Theerachote Pongtaveewould	(Member)	.....
3.	Dr. Jakarin Srimoon	(Member)	.....
4.	Dr. Chittipa Ngamkroeckjoti	(Member)	.....
5.	Assoc.Prof.Poonsak Sangsunt	(MOE Representative)	.....

Examined on : 16 November 2004
Approved for Graduation on :

Graduate School of Business
Assumption University
Bangkok, Thailand
November
2004

ACKNOWLEDGMENTS

This thesis could not have been completed without the help of many people. I would like to express my gratitude to all those who gave me their cooperation and support in completing this thesis. Without these people I couldn't have come this far.

First and foremost, I am deeply grateful to my thesis advisor, Dr. Patricia Arttachariya for her valuable suggestions, recommendations, patience, and encouragement that contributed to the accomplishment this thesis. My appreciation also goes to the committee members; Dr. Tang Zhimin, Dr. Somprot Sarakosas, and Dr. Jakarin Srimoon for their valuable suggestions and recommendations for improving my thesis.

My special thanks to all of my dear friends for their encouragement and assistance. Toon, Villy, Jeab, Pop, Nui and many others helped me in various ways during this thesis. My sincere thanks to all respondents who willingly answered my questionnaire.

Last but not least, I would like to dedicate this thesis to my family, I am very grateful for their never-ending love and support. I thank my father for his financial support and for always believing in me. To my mother, for moral support and the love that she has given to me. They have waited so long for this moment, I hope that their long wait has finally been rewarded.

ABSTRACT

Thailand is an emerging PDA market that shows a positive growth every year. This growth in PDAs is due to lower prices, increased functionality, multimedia and wireless capability. Because of the number of marketers offering newer models each year, the Thai market for PDAs has become increasingly competitive, with each PDA player attempting to gain a larger share of this lucrative market.

The purpose of this study was to find out the factors influencing consumer's behavior intention toward PDAs in Bangkok by focusing on demographics, attitudes and subjective norms. A sample survey was employed to collect data from 384 target respondents, with questionnaires distributed in three selected places, which were Panthip Plaza, IT Mall-Fortune and Seri Center.

In this study, ANOVA was used to test differences in the means of the behavioral intention variable broken down by demographic factors, which are age, occupation, education level and income level. The Pearson Correlation Coefficient was used to test relationship between attitude (perceived usefulness, perceived ease of use and compatibility) and subjective norms (social influences and secondary sources) with behavioral intention.

The results of this study show that all research hypotheses were significant. The study also found differences in behavioral intention toward PDAs when determined by demographics. The relationship between attitudes and subjective norms with behavioral intention toward PDAs showed a positive correlation.

From research findings, it can be concluded that the respondents most likely to purchase PDAs were those aged 20-37, with a high level of education and income. The most important factor to influence consumer behavior toward PDAs was

perceived usefulness. The findings of this study also showed that social influences and secondary sources have an impact on consumer's purchase intention of PDAs, however, social influences showed a stronger impact on purchase intention. The study concluded with recommendations and suggestions for further research.

CONTENTS

FIGURES

TABLES

CHAPTER 1

GENERALITIES OF THE STUDY

1.1 Introduction to study

Nowadays, Information Technology (IT) has become increasingly important in the daily lives of people and business. It provides people with more convenience and improves their lives in a world where time is money. Just as mobile phones, which is a tool of Information System (IS), computers help people save time to communicate. Information Technology has become the major facilitator of business activities in the world today, it helps businesses to have competitive advantage as reduced costs, improved decision-making, etc.

Laudon (2002) stated that the growth of the Internet, globalization of trade, and the rise of information economies, have recast the role of information systems in business management. To become competitive participants in markets, firms need powerful information systems. People not only use computers in homes or offices, but also need to manage their work outdoors. Therefore, technology, such as notebook and handheld devices as PDA (Personal Digital Assistance), were released into the market. Today, PDAs have emerged as the more readily accessible equivalent with personal computers (PC) and are easily tossed into one's purse, pocket or briefcase. Therefore, PDA are challenging notebooks as the portable technology of choice, with 70 percent of mobile workers using them regularly, compared to using notebooks (IDC, 2002).

In 1993, PDAs were first introduced by Apple Computer Inc., and called Newton. John Sculley, former chairman of Apple Computer Inc. at that time predicted PDAs would become ubiquitous tools that would hold telephone numbers, keep your calendar, store notes, plus send and receive data wirelessly. At that time, the Newton

was considered a failure. For the next three years, PDA sales dwindled, and were almost off the charts. Then, in March 1996, Palm Inc. delivered the industry's first truly compelling handheld computer, the PalmPilot. The Palm Pilot was a robust, yet small go-anywhere device, that helped people manage and organize their personal and professional lives by providing instant, anytime access to schedules, important phone numbers, to-do lists, and other key information. This new type of information management was met with tremendous acceptance. Mobile, busy people, embraced the small and powerful handheld Palm. Today, John Sculley's predictions have come true, the new PDAs continue to arrive from Palm, Psion/Symbian, IBM, Toshiba, iPAQ (HP and Compaq), Dell, Sony, and others.

PDA Market Perspective

Pen PDA *Keyboard PDA* *Smartphone (PDA-Phone)*

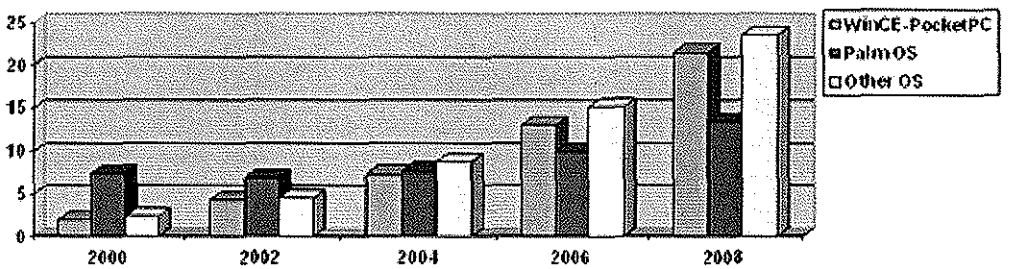
According to eTForecast (2003), the PDA market currently consists of pen-based PDA and keyboard-based PDA. Nearly all Palm-compatible PDAs are pen-based products along with Pocket PC PDAs. Keyboard-based PDA is mostly a niche market, which is used in vertical markets such as data collection and inventory control. However, the

keyboard-based PDAs are making inroads and are likely to increase the keyboard-based PDA segment. The latest PDA segment is the PDA-Phone or the combination of a cell phone. The pen PDA is currently the dominant product segment, but is losing market share to the other product categories. The keyboard PDA will increase in importance as email and web access proliferate. Even a small keyboard is useful for email and Internet access applications. The market outlook for PDA-Phones in Thailand, looks promising (eTForecast, 2003)

PDA Operation System

In terms of operation system of PDAs, there are two main players in the markets, which are Palm OS and Microsoft's Pocket PC. Although Palm OS has been the leading operating system, it will see much stiffer competition from Microsoft's Pocket PC. Dell, Fujitsu, iPAQ, NEC, Toshiba and several other leading PC vendors have introduced Pocket PC-based products that are now growing faster than the overall market. The other operating system category includes Linux, Symbian and proprietary operating systems.

Figure 1.1: Worldwide PDA Sales in operating system



Source: eTForecast, 2003

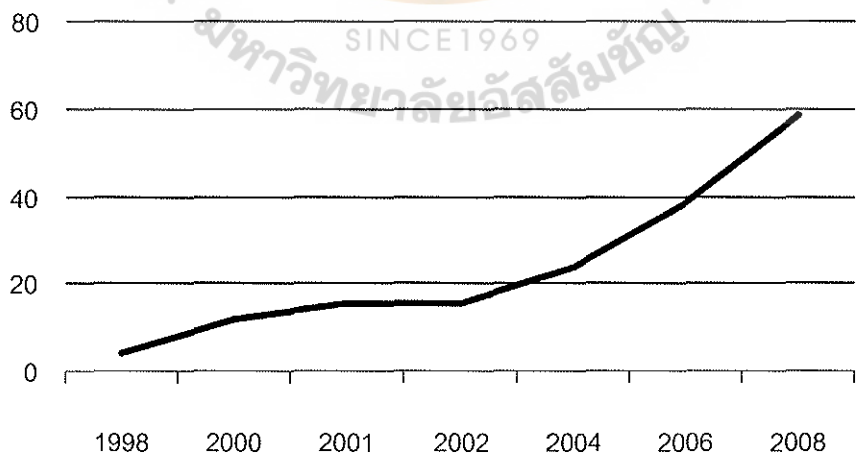
(Million of units)

eTForecast's (2003) worldwide trend of PDA sales by operating system is shown in figure1.1. Palm OS devices was the clear leader with 7.4 million units sold in 2000, which declined to 6.8 million devices worldwide in 2002. Palm OS PDAs will grow to over 13 million units in 2008. Cumulative sales of Palm OS devices will increase from 20 million units in 2001 to over 85 million devices by year-end 2008, (eTForecast, 2003)

PDA worldwide market

The PDAs worldwide market has been on a rapid growth path since the mid 1990s. After a growth slow down in 2001 and a growth pause in 2002, the growth has picked up in 2003 and continues. The current economic slump lowered the growth rate substantially in 2001 and 2002 and future growth is also expected to be lower than in the late 1990s.

Figure 1.2: Worldwide Sales of PDA Units



Source: eTForecast, 2003

(Millions of units)

Worldwide PDAs sales topped 15 million units in 2001 and saw little increase in 2002. PDAs sales are projected to top 58 million devices in 2008 for a compound annual growth rate of 24.5 percent. PDAs unit sales will grow from 11.7 percent of PC sales in 2002 to percent of PC sales in 2008. Worldwide PDAs revenue will grow from $4.3 billion in 2000 and $5.4 billion in 2002, to over $18 billion in 2008 (eTForecast, 2003).

Asia Pacific market

In the Asia Pacific market (excluding Japan), the two largest markets are China and Korea that were the most unique with significant numbers of local vendors and proprietary operating systems as Hi-Tech Wealth, Minren and Legend. In contrast, multinational vendors as Palm, IPaq, Sony, and Casio had a tendency to dominate the markets in Australia, Hong Kong, and Singapore. In Thailand's PDA market, there is also significant potential of multinational vendor competition.

According to Gartner (2003), the sales growth of Asia Pacific (not counting China) will hit 25 percent. Although the Asia Pacific market hit a bad patch in 2002, the region will continue to do well. The Asia-Pacific region saw the decline of the once dominant Palm OS relative to the more recent Microsoft's Pocket PC now powering devices from iPAQ, Dell and others. Palm OS's market share in Asia Pacific was 20 percent, less than half that of the 44 percent share held by Pocket PCs (Gartner, 2003).

The Thai Market

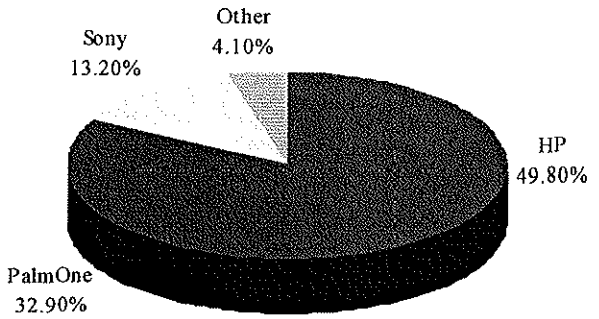
In the Thai market, Palm Inc. at that time (presently renamed as PalmOne Inc.) first introduced PDAs in the year 1999. According to Gartner (2003), Thailand is an

emerging market that still holds promise with continued growth even during difficult times in other countries in Asia Pacific.

In Thailand, PDA volumes indicated around not less than 100,000 units. In the past of 2-3 years, PDA growth was not less than 5 percent (Bangkokbiznews, 2003). The revenue of PDA market has average increases of 15-20 percent and it is expected that PDA market will show a growth of 60-100 percent that is maximum at 110,000 units. This market is worth around 1,238 million baht (Bangkokbiznews, 2003). The factors spurring growth are PDA devices such as Palm and Pocket PC have reduced their retail price to a minimum of 7,000 Baht and consumers tend to use PDAs for personal use rather than only business uses. The segments of PDA are consumer market 60 percent and business market 40 percent and female consumers have shown a 30 percent increase from 20 percent in year 2002. In the Thai market, the vendors and manufacturers uses "push strategy" to persuade customers to buy the product.

According to IDC's (2004) report in second quarter, Hewlett-Packard has gained the number one market share in Thailand's PDA market with 49.8 percent. The key success factors of Hewlett-Packard are complete range of products, which fits with customer's need, and strong distribution channels. Whereas PalmOne Inc. that was the previous market share leader in PDAs has gained 32.9 percent. The number three player in the market was Sony under brand of Clie which gained only 13.2 percent (IDC, 2004).

Figure 1.3: Thai PDA market share in Q2, 2004



Source: PDA OS Market Share, IDC (2004)

But Sony announced that it will sell no more PDAs outside Japan after it failed in the U.S market. Therefore, PDAs in Thai market have only two main players which compete against each other. But Hewlett-Packard is the only brand that operates under Pocket PC OS of Microsoft.

All of the information presented above shows that PDA is a product that has achieved positive growth. Therefore, this study is focused on consumer's behavior intention towards PDAs. Thai marketers need to know the attitude of consumers, that is, their behavioral tendencies toward the product. In order to purchase, the marketer also has to know which social groups or other sources can influence consumers' behavior intention toward PDAs.

1.2 Statement of the problem

There is increasing competition in the PDA market in Thailand. The PDA market growth is due to lower prices, improving operating system, increased functionality, and wireless and multimedia capability. According to BusinessThai (2004), Thai

consumers have begun to understand the benefits of PDAs, especially university students. Thus, each brand attempts to use various marketing strategies in order to stimulate its sales. The age group chosen was 20-55 years old because it was felt that the people in this group possessed adequate knowledge of PDA's and also were major users of technology product. This is particularly evident between PalmOne Inc. and Hewlett-Packard, the two major players in the Thai market. In summary, marketers should understand consumer's behavior toward PDAs product, which is related with attitude and subjective norm. The purpose of this study was to investigate consumer's behavior intention toward PDAs in the Bangkok metropolis. Thus, the research question was formulated as follows:

"What socio-psychological factors influence consumer's behavior intention toward PDAs in Bangkok?"

1.3 Research Objectives

This research focused on the factors influencing consumer's behavior intention toward PDAs. The researcher conducted this study based on three main objectives as follows:

1. To study the differences in consumer's purchase intention toward Personal Digital Assistants (PDAs) when determined by demographic factors.
2. To study the relationship between attitude factors and consumer's purchase intention toward Personal Digital Assistants.
3. To study the relationship between subjective norms and consumer's behavior intention toward Personal Digital Assistants.

1.4 Scope of the Research

The purpose of this research was to find out the factors that influence behavior

intention toward PDAs in Bangkok by studying demographics, attitudes, and subjective norms. This study employed a survey method by distributing questionnaires to collect information. The population of this study was persons who are aged 20-55 years, who have never purchased a PDA before, and living in Bangkok area.

1.5 Limitations of the Research

1. According in the above mentioned, the spatial area of this research was limited only to the Bangkok area. Therefore, it cannot be generalized to respondents in other areas of Thailand.
2. There are many socio-psychological factors influencing consumer's behavioral intention but this research focuses on only three main factors, which are demographics, attitudes, and subjective norms. The 4Ps were not included in this study.
3. Perceived Behavior Control (PBC) variable from Decomposed Theory of Planned Behavior (DTPB, Taylor and Todd, 1995) was omitted in this research framework. Taylor and Todd (1995) suggested that the addition of a predictor such as PBC in the DTPB model *did not* increase the variance accounted for in behavior in any substantial way. The PBC also is *less likely* to be related to behavior intention (Shih and Fang, 2004, Lau et al 2001 and Ajzen and Medden, 1986).

1.6 Significance of the study

The results of this research will provide benefits to marketers, manufacturers, vendors and people who are involved in the PDA industry. The results will represent the relevant factors that influence consumer's behavior intention toward PDAs in Bangkok area. Therefore, people who are involved in PDA industry will better

understand the attitudes of consumers in terms of benefits and barriers of customers in their purchase of PDAs. The findings can help marketers to learn the consumers' attitude and can assist the company to fit product with consumer's needs. Schiffman and Kanuk (2004) argued that it is easier to develop a product to fit with customer's attitude rather than trying to change people's attitudes that invites a far higher cost. Because attitude is difficult to change, to understand consumer attitude toward behavior intention on PDAs can also help marketers predict sales and evaluate the future growth of PDAs. However, attitudes are developed from personal experience and learning, as well as from information of friends, salespeople and news media. Therefore, this research identified which social groups and secondary sources influence consumers. This will help the industry in setting marketing strategy to reach consumers and influence them to purchase. Therefore, people who better understand consumer's behavioral intention will have a strong competitive advantage in the market. This research also identified which demographics factors influence consumer's behavior intention. By knowing demographic factors, marketing managers can then use them to formulate appropriate segmentation strategies.

1.7 Definition of Terms

Attitude

Attitude is a person's enduring favorable or unfavorable evaluations, emotional feeling, and action tendencies toward some object or idea. (Kotler, 2000)

Demographic

Demographic variables refer to a broad spectrum of personal characteristics including

intellectual abilities, domain-specific knowledge, sex, age, experience, education, professional orientation, and organizational level (Agarwal, 2000).

Information Technology

Information Technology (IT) is a term that encompasses all forms of technology used to create, store, exchange, and use information in its various forms (business data, voice conversations, still images, motion pictures, multimedia presentations, and other forms, including those not yet conceived). It's a convenient term for including both telephony and computer technology in the same word. It is the technology that is driving what has often been called "the information revolution" (TechTarget, 2003)

Microsoft's Pocket PC

According to TeachTarget (2003), Pocket PC is version of the Windows operating system designed for handheld devices from Microsoft. In 2000, Microsoft introduced the Pocket PC platform, which includes a combination of Windows CE Version 3.0, an enhanced user interface, Pocket Office applications (Internet Explorer, Word and Excel), handwriting recognition, an e-book reader, wireless Internet and longer battery life.

Operation System

The system software that manages and controls the activities of the computer. (Laudon, 2002)

Palm OS

According to TechTarget (2003), Palm OS is the computer operating system that

provides a software platform for the Palm series of handheld personal digital assistants (PDAs) made by PalmOne Inc.

Personal Digital Assistant (PDA)

According to TechTarget (2003), Personal Digital Assistant (PDA) is a term for any small mobile hand-held device that provides computing and information storage and retrieval capabilities for personal or business use, often for keeping schedule calendars and address book information handy. Most PDAs have a small keyboard. Some PDAs have an electronically sensitive pad on which handwriting can be received. The term handheld is a synonym.

Smartphone (PDA-Phone)

According to Wikipedia (2004), smartphone is generally considered any handheld device that integrates personal information management and mobile phone capabilities in the same device. Often, this includes adding phone functions to already capable PDAs or putting "smart" capabilities, such as PDA functions, into a mobile phone.

Social psychology

Social psychology deals with people's social interactions, relationships, social perception, and attitudes. Social psychologists believe we can better understand minds and behavior if we know something about how people function in groups. (Santrock, 2000)

Subjective Norms

Subjective norms refer to the perceived social pressure to perform or not to perform

the behavior (Ajzen, 1991).

CHAPTER 2

REVIEW OF RELATED LITERATURE AND STUDIES

Introduction of Literature Review

In this chapter, all of relevant theories and concepts are included, which are related to the independent and dependent variables of this study. In section 2.1, the researcher describes theories related to this study which are, Theory of Reasoned Action (TRA; Ajzen and Fishbein, 1980), Theory of Planned Behavior (TPB; Ajzen, 1991), Technology Acceptance Model (TAM; Davis, 1989), Diffusion of Innovations (DIT; Rogers, 1995) and Decomposed Theory of Planned Behavior (DTMP; Taylor and Todd 1995). In section 2.2, the researcher focuses on definition and features of independent (attitude, subjective norm and demographic) and dependent variables (behavioral intention). In section 2.3, previous studies, which focused on relationship between attitudes, subjective norms with behavioral intentions are reviewed.

2.1 Theories related

The Decomposed Theory of Planned Behavior (DTPB; Taylor and Todd, 1995) was chosen to be the guiding framework of this study. In this section, the researcher reviews the major theoretical roots of DTPB model. These theories include the Theory of Reasoned Action (TRA; Ajzen and Fishbein, 1980), Theory of Planned Behavior (TPB; Ajzen, 1991), Diffusion of Innovations (DIT; Rogers, 1995) and Technology Acceptance Model (TAM; Davis, 1989).

Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA; Ajzen and Fishbein, 1980) is one of the most fundamental theories in psychology that has been widely used to predict behavior. The TRA asserts that attitude toward buying and subjective norms are the antecedents of performed behavior. Attitude towards behavior is predicted by salient beliefs about a behavior, weighted by the subject's estimation of the likelihood that behavior will result in a given outcome. Subjective norm is predicted by *normative beliefs* (Nb) about what relevant other people (salient referents) would advise, weighted by the subject's *motivation to comply* (mc) with the advice of those people (Ajzen and Fishbein, 1980). In addition, the TRA is different from the traditional attitude theories in that it introduces normative influences into the overall model and a casual relationship between the two antecedents and intention (Ha, 1998).

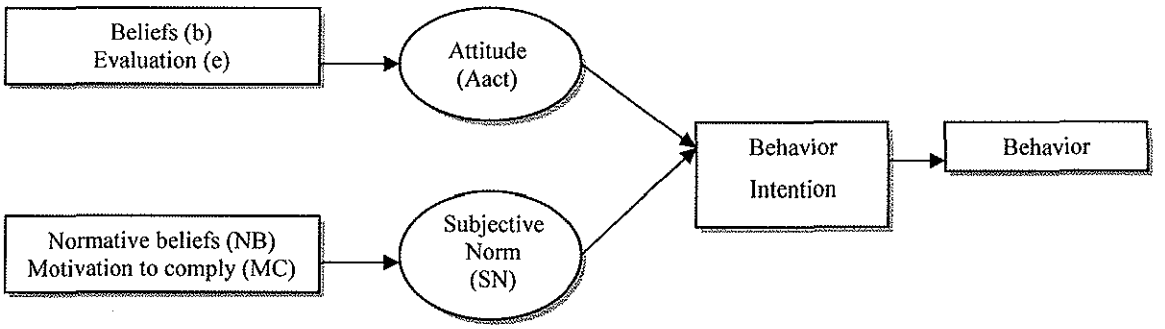
TRA is represented symbolically as follows:

$$B \equiv BI = (A_{act})w_1 + (SN)w_2$$

Where;

B	=	Behavior
I	=	Intention to perform behavior
Aact	=	the person's attitude towards the behavior
SN	=	the influence of the person's Subjective Norms

Figure 2.1: Theory of Reasoned Action



Source: Ajzen, I. and Fishbein, M. (1980), Understanding Attitudes and Predicting Social Behavior.

However, this original TRA theory was inadequate and had several limitations. Solomon (1999) mentioned the obstacles to predicting behavior as follows:

- The model was developed to deal with actual behavior (e.g., taking a diet pill), not with the outcomes of behavior that are instead assessed in some studies (e.g., losing weight)
- Some outcomes are beyond the consumer's control, such as when the purchase requires the cooperation of other people.
- The basic assumption that behavior is intentional may be invalid in a variety of cases, including impulsive acts, sudden changes in one's situation, novelty seeking or even simple repeat buying.
- Measures of attitude often do not really correspond to the behavior they are supposed to predict, either in terms of the attitude object or when the act will occur. One common problem is a difference in the level of abstraction employed.
- The longer the time interval between behavioral intent and behavior, the less likely

the behavior might occur.

- Attitudes formed by direct, personal experience with an attitude object are stronger and more predictive of behavior than those formed indirectly such as through advertising.

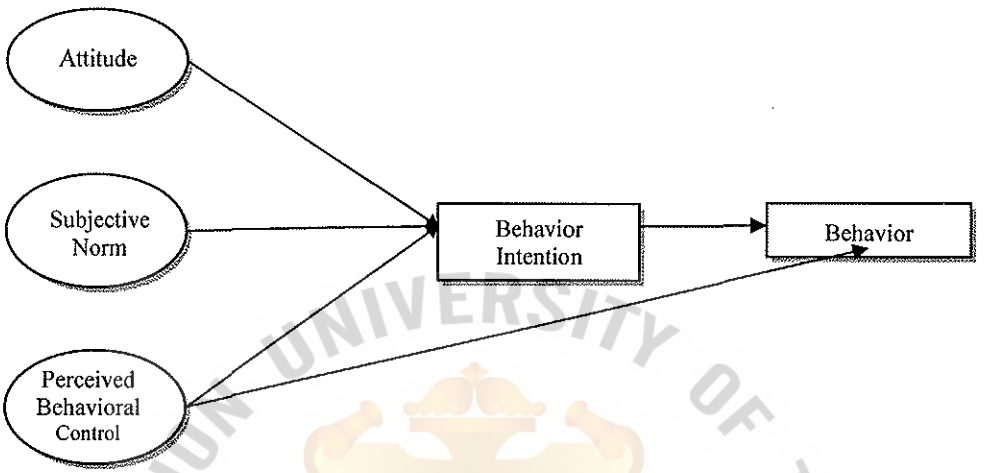
In addition, TRA is not suited to applications in organizational buyer behavior because of the multiplicity of influencing factors that influence such behavior (Johnston and Lewin, 1996). However, Thompson and Panayiotopoulos (1999), suggested that TRA is applicable in a small businesses context where the decision maker has responsibility independent of the beliefs, expectations of other people or responsibility for a specific purchasing decision. And TRA model is not suited to applications involving low involvement behavior, which are likely to be based on few weakly held and possibly unstable views (Thompson and Panayiotopoulos, 1999).

Theory of Planned Behavior

The Theory of Planned Behavior (TPB; Ajzen 1991) is an extension of the TRA made necessary by the original model's limitation in dealing with behavior over which people have incomplete volitional control (Ajzen, 1991). The TPB postulates three conceptually independent determinants of intention. The first two antecedents are attitude *(A)* and subjective norm *(SN)* as the researcher mentioned earlier in TRA. The third antecedent of intention is the degree of perceived behavioral control *(PBC),* which plays an important part in the TPB. In fact, the major difference between TPB and TRA is the additional of third antecedent of intention, perceived behavioral control, which refers to the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and

obstacles (Ajzen, 1991). In addition, Taylor and Todd (1995) stated that perceived behavioral control reflects perceptions of internal and external constraints on behavior.

Figure 2.2: Theory of Planned Behavior



Source: Ajzen (1991), Theory of Planned Behavior, Organizational Behavior and Human Decision Processes, p.182.

More formally, behavior is a weighted function of intention and perceived behavioral control; and intuition is the weighted sum of the attitude, subjective norm and perceived behavioral control components (Taylor and Todd, 1995). Thus, TPB is represented symbolically as follows:

$$B = w_1BI + w_2PBC$$

$$BI = w_3A + w_4SN + w_5PBC$$

Stated more formally, attitude *(A)* is equated with the attitudinal belied (b_i) that performing a behavior will lead to a particular outcome, weighted by an evaluation of the desirability of that outcome (e_i), that is

$$A = \sum b_i e_i$$

Subjective norm is formed as the individual's normative believe (nb_j) concerning a particular referent is weighted by the motivation to comply with that referent (mc_j), that is,

$$SN = \sum nb_j mc_j$$

According to Ajzen (1991), perceived behavioral control reflects beliefs regarding access to the resources and opportunities need to perform a behavior, or alternatively, to the internal and external factors that may impede performance of the behavior. Taylor and Todd (1995) argued that perceived behavioral control encompasses two components. The first component is "facilitating condition", which reflects the availability of resources needed to engage in a behavior, such as time, money or other specialized resources. The second component "self-efficacy" that is, an individual's self-confidence in his/her ability to perform a behavior. Perceived behavioral control is formed as the sum of the control belief (cb_k) weighted by the perceived facilitation (pf_k) of the control belief in either inhibiting or facilitating the behavior, this is,

$$\text{PBC} = \sum cb_k pf_k$$

Ajzen (1991) stated that when behaviors pose no serious problem of control, they can be predicted from intentions with considerable accuracy. However, Taylor and Todd (1995) suggested that TPB have two limitations as follows:

- Firstly, in the TPB, the belied structures are combined into uni-dimensional constructs. Such monolithic belief sets may not be consistently related to attitude, subjective norm, or perceived behavioral control.
- Secondly, the belief sets, especially those relating to attitude, are idiosyncratic to

the empirical setting, making it difficult to operationalize the TPB. This is in contrast to TAM which proposes a belief set, consisting of usefulness and ease of use, that is consistent and generalizable across different settings.

Innovation Diffusion Theory (IDT)

Innovation Diffusion Theory (IDT; Rogers, 1983, 1995) has its roots in sociology and has been used since the 1960's to study a variety of innovations, ranging from agricultural tools to organizational innovation (Venkatesh et al, 2003). Rogers (1995) summarizes the main theories of innovations into three main influences: 1) Perceived characteristics of the innovation, 2) Characteristics of the individual, and 3) Communication networks. Within information systems, Moore and Benbasat (1991) adapted the perceived characteristics of innovations presented in IDT and refined a set of constructs. In this study, the researcher focused only on perceived characteristics of innovation, which plays an important part in the DTPB model.

Perceived Characteristics of Innovation

- *Relative Advantages* as the *"degree to which an innovation is perceived as being better than the idea it supersedes"* (Rogers, 1995, p. 212). The advantages may be viewed in terms of profitability, speed, social prestige, effectiveness, or any of many other potential positive outcomes (Lewis and Orton, 2000).
- *Ease of Use*, defined as the opposite of complexity as the *"degree to which an innovation is perceived as relatively difficult to understand and use"* (Rogers, 1995, p. 242).
- *Comparability* is the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopter (Rogers, 1995).

A compatible idea or process will fit more closely with a consumer's life situation, requiring less adjustment (Lewis and Orton, 2000).

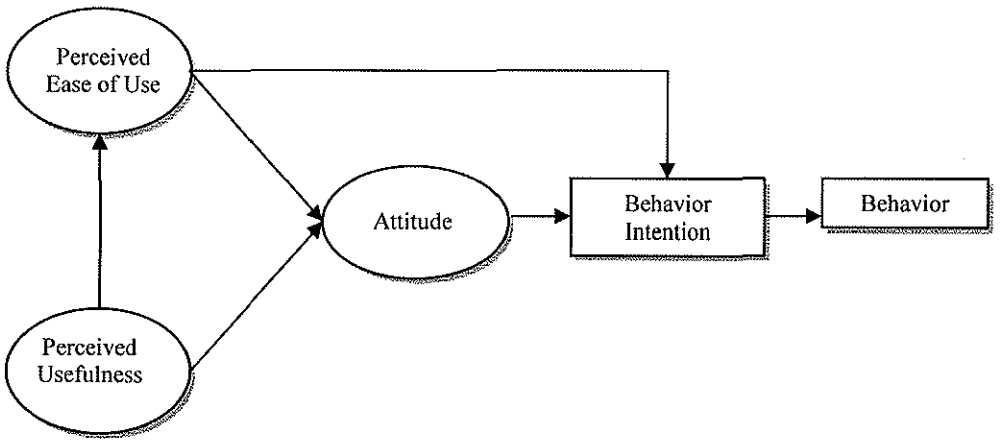
- *Image* as *"the degree to which use of an innovation is perceived to enhance one's image or status in one's social system."* (Moore and Benbasat, 1991, p195). Agarwal (2000) stated that image captures the perception that using an innovation will contribute to enhancing the social status of a potential adopter.
- *Voluntariness of Use* as *"the degree to which use of the innovation is perceived as being voluntary, or of free will"* (Moore and Benbasat, 1991, p.195)
- *Results Demonstrability* as *"the tangibility of the results of using the innovation, including their observability and communicability"* (Moore and Benbasat, 1991, p.203).
- *Visibility* as *"the actual visibility of the personal work stations (PWS)."* (Moore and Benbasat, 1991, p203).

In terms of overlap with other models, relative advantage and ease of use in IDT are similar to perceived usefulness and perceived ease of use from TAM and DTPB, and its compatibility is similar to the construct with the same name used in DTPB (Venkatesh and Brown, 2001). Agarwal (2000) mentioned only three constructs of IDT, relative advantage, complexity and compatibility are consistently related to innovation adoption.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM; Davis, 1989) was an adaptation of the TRA which specific two beliefs, perceived usefulness and perceived ease of use as determinants of attitude toward behavioral intentions.

Figure 2.3: Technology Acceptance Model



Source: Taylor, S. and Todd, P. (1995), Understanding Information Technology Usage: A Test of Competing Models, Information System Research 6:2, p.146

In TAM, usage behavior *(B)* is modeled as a direct function of behavior intention *(BI)*. *BI* is, in turn, a weighted function of attitude towards usage *(A)*, which reflects feelings which are favorable or unfavorable towards using the technology, and perceived usefulness *(U)*, which reflects the belief that using the technology will enhance performance. Attitude is determined jointly by perceived usefulness and perceived ease of use *(E)*. Finally, ease of use is modeled as a direct determinant of perceived usefulness (Davis, 1989).

TAM is represented symbolically as follows:

$$B \equiv BI = w_1 A + w_2 U,$$

$$A = w_3 U + w_4 E,$$

$$U = w_5 E.$$

TAM can be considered a special case of TRA, with only two beliefs comprising attitude and no role for subjective norm. TAM departs from TRA in one significant way. The direct path from perceived usefulness to intention violates the TRA model which claims that attitude completely mediates the relationship between these types of beliefs and intention (Taylor and Todd, 1995).

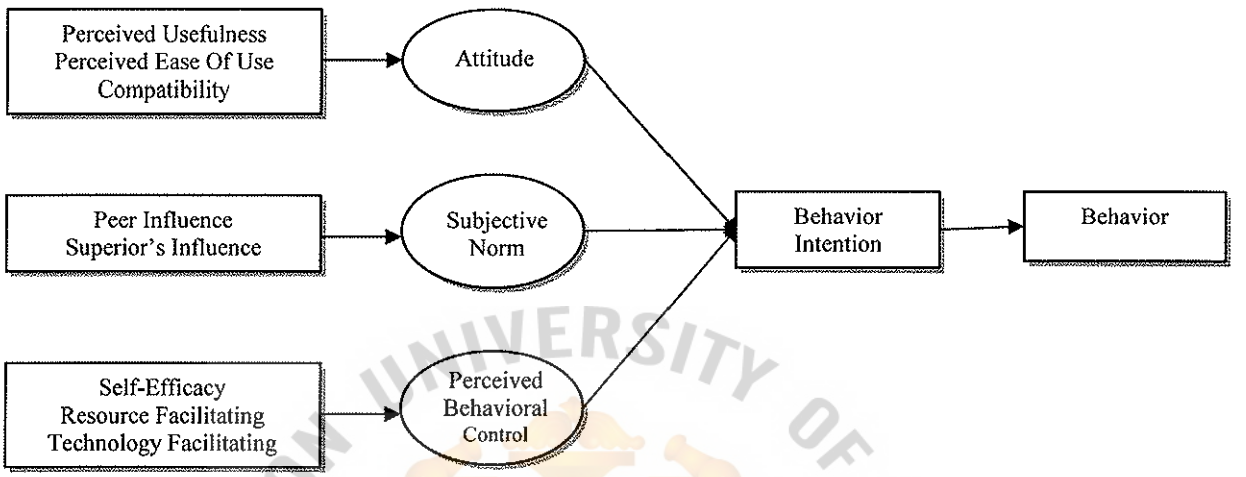
In addition, Lu et al (2003) suggested that generality of TAM has failed to supply more meaningful information on user's opinions about a specific system. There is the need for TAM to incorporate additional factors or integrate with other information technology models for improvement of its specificity and explanatory utility. Thus, decomposed TPB was introduced. This model draws upon constructs from the innovation characteristics' literature and more completely explores the dimensions of subjective norm and perceived behavioral control by decomposing them into specific belief dimensions. Taylor and Todd (1995) suggested the DTPB has advantages similar to TAM in that it identifies specific salient beliefs that may influence usage. Because it incorporates additional factors, such as the influence of significant others, perceived ability and control that are not present in TAM, but have been shown to be important determinants of behavior it provide a more complete understanding of usage behavior.

Decomposed Theory of Planned Behavior (DTPB)

The Decomposed Theory of Planned Behavior (DTPB), developed by Taylor and Todd (1995), was derived from the TPB and TAM. TPB has been successfully applied to predict intention and behavior in a wide variety of behavior (Venkatesh and Brown, 2001). TAM is the most frequently cited information technology acceptance model and is considered to be a powerful and parsimonious model in predicting users'

intention (Lee and Ho, 2002).

Figure 2.4: Decomposed Theory of Planned Behavior



Source: Taylor, S. and Todd, P. (1995), Understanding Information Technology Usage: A Test of Competing Models, Information System Research 6:2, p.146

DTPB uses attitude toward behavior, subjective norm and perceived behavioral control from TPB and attempts to decompose the underlying belief structure that determine eight constructs. Agarwal (2000) suggested that DTPB provided increased explanatory power for intentions as compared with TPB. A study done by Taylor and Todd (1995) mentioned that *"the DTPB model provides better diagnostic value than the original TPB model...We believe that there is value added as a result of the decomposition, in terms of increased explanatory power and a better, more precise, understanding of the antecedents of behavior"* (Taylor and Todd, 1995, p.169).

Decomposing Attitudinal Belief Structure

Taylor and Todd (1995) who developed DTPB model argued that TRA and TPB did not explain usage intentions as well as TAM. The measures of ease of use

and usefulness in TAM were based on well-developed, refined and validated measures. In contrast, the belief measures used for TRA and TPB were based on salient belief elicitation measures which develops a scale idiosyncratic to a specific setting. Under such conditions, measures of beliefs may be less than ideal. The belief structure may reflect a variety of underlying dimensions, which obscure its relationship to attitude. Thus, Taylor and Todd (1995), suggest that a set of attitudinal belief dimensions can be derived from the perceived characteristics of an innovation (from IDT; Rogers 1995) and constructs from TAM (Davis, 1989).

According to DTPB of Taylor and Todd (1995) attitude, the key independent variable, is determined by *Perceived Usefulness, Perceived Ease of Use* and *Compatibility*. Taylor and Todd (1995) developed the first two constructs, *Perceived Usefulness* and *Perceived Ease of Use* from TAM and *Compatibility* from IDT. Indeed, the usefulness and ease of use measures proposed in TAM also are in part with five perceived characteristics of diffusion of innovation (Rogers, 1995), three of which are *Relative Advantage, Complexity and Compatibility*. Relative advantage has been found to be analogous to perceived usefulness while complexity is similar (in an opposite direction) to perceived ease of use.

- *Perceived Usefulness* is defined as the individual's perception that using the new technology will enhance or improve her/his performance (Davis, 1989). Applying this definition to this study, perceived usefulness refers to consumer's perception that using a PDA as a tool enhances their performance. The importance of perceived usefulness as a determinant of attitude and strongly significant influenced intentions has been highlighted in prior research (e.g., Davis 1989; Taylor and Todd 1995; Venkatesh et al, 2003)

- *Perceived Ease of Use* is defined as the individual's perception that using the new technology will be free of effort. Effort is a finite resource that a person may allocate to the various activities for which he/she is responsible (Davis, 1989). Applying this definition to this study, perceived ease of use measures the degree to which a consumer's perception that using a PDA would require minimum of effort or ease of use.

In addition, Davis (1989) mentioned that usefulness had a significantly greater correlation with usage behavior than ease of use. However, Monsuwé et al (2004) described that usefulness is linked with ease of use to determine consumer's attitude toward behavior. According to TAM, "*usefulness is influenced by ease of use, because the easier a technology is to use, the more useful it can be...the easier and more effortless a technology is, the more likely consumers intend to use this technology*" (Monsuwé et al, 2004, p107-108). Lu et al (2003), suggested that perceived usefulness and perceived ease of use are distinct but related constructs, as improvements in perceived ease of use may contribute to improved performance/perceived usefulness.

- *Compatibility* – the degree to which the innovation fits with the potential adopter's existing values, previous experience and current needs (Rogers, 1995). In this study, compatibility measures the degree a PDA is perceived as being consistent with the existing values, needs and past experiences of consumers. In addition, Lee and Ho (2002) claimed that compatibility is consistent with the current emphasis on personal management or pace matched with lifestyle.

Decomposed Normative Belief Structure

According to DTMP, the value of subjective norms is categorized into two constructs, which are Peer and Superior influences (Taylor and Todd, 1995). For this study, the research adapted subjective norm constructs of DTMP from peer and superior influence into relevant referent groups that are friends and family. Because this research is not aimed at studying organization setting but targets individual settings, it is expected that consumer's behavior intention would be influenced by social influences, which are friends, colleagues and family. The study by Lu et al (2003) suggested that social influences were equivalent to subjective norm and defined as other people's opinion, superior influence, and peer influence. According to Venkatesh and Brown (2001), social influence is the extent to which members of a social network influence one another's behavior.

Moreover, prior research has identified secondary sources of information, such as television, newspaper as influential in adopting of technology and one kind of subjective norm (Venkatesh and Brown 2001). Thus, the researcher would expect that consumer's behavior intention would be influenced by secondary sources or message conveyed via the mass media such as television, newspaper and magazines.

Decomposed Control Belief Structure

The decomposition of control beliefs follows directly from the first construct, self-efficacy is related to perceived ability. The facilitating conditions construct provides two dimensions for control beliefs; one relating to resource factors such as time and money and the other relating to technology compatibility issues that may constrain usage. In addition, a study done by Chiou (1998) stated that perceived behavioral control reflects a person's self-confidence in the ability to form behavioral

intention. For example, when a person has high level of self-confidence in evaluating a product purchasing decision, perceived behavioral control will not be a major issue influencing his/her intention. On the other hand, when a person has a low level of self-confidence, perceived behavioral control will become a salient factor in affecting his/her behavioral intention.

In comparing three models (TAM, TPB and DTPB), a study done by Taylor and Todd (1995) showed that TAM explains 52 percent of the variance in behavioral intention, TPB explains 57 percent, and DTPB 60 percent of the variance in intention. This indicates that the additional of subjective norm and perceived behavioral control and the decomposition of beliefs provide some additional insight into behavioral intention. It is reasonable to conclude that all three models (TAM, TPB and DTPB) provide similar prediction of behavior, it appears that the DTMP provides a more complete understanding of intention than does TAM and TPB. But to use DTPB, it is important to examine the trade-off between moderate increase in explanatory power for behavior intention and understanding of relevant phenomenon against the increased complexity of DTPB.

2.2 Definition and Features of Main variables

This section elaborates on the review of literature related to Attitude, Subjective Norm and Demographics, which are key Independent variables, and Behavioral Intention, a key Dependent variable of this study.

2.2.1 Attitude

Attitude represents a summary evaluation which a psychological object

captures in such attribute dimensions such as good-bad, harmful-beneficial, pleasant-unpleasant, and likeable-dislikable (Ajzen, 2001). Solomon (1999) stated that attitude is focused on the perceived consequences of a purchase. Knowing how someone feels about buying or using an object, seems to be more valid than merely knowing the consumer's evaluation of the object itself. Kotler (2000) described an attitude as a person's enduring favorable or unfavorable evaluations, emotional feeling, and action tendencies toward some object or idea. Page and Luding (2003) suggested that attitude is the psychological tendency of a person to respond, or behave, in a consistently positive or negative manner with respect to a stimulus as a result of their attitude toward the stimulus. Attitude toward behavior is recognized as a person's positive or negative evaluation of a relevant behavior and is composed of a person's salient beliefs regarding the perceived outcomes of performing a behavior (Shim et al, 2001).

According to Ajzen (2001), people can simultaneously hold two different attitudes toward a given object in the same context, one attitude implicit or habitual, the other explicit. Motivation and capacity are assumed to be required to retrieve the explicit attitude in favor of the implicit evaluative response. In addition, Wilson et. al (2000) suggested, when attitudes change, the new attitude *overrides* but may not *replace* the old attitude.

Four Characteristics of Attitude

Etzel et al (2001) stated that attitudes have four common characteristics which are learned, consistency, responsive and stable.

- Attitudes are *learned.* They are formed as a result of direct experience with a product or an idea, indirect experience, information acquired from others, including the mass-media and interactions with social groups (Etzel et al 2001). As

Hanna and Wozniak (2001) stated *"we are not born with attitudes; we develop them as we experience or learn about thing surrounding us." (p.175).*

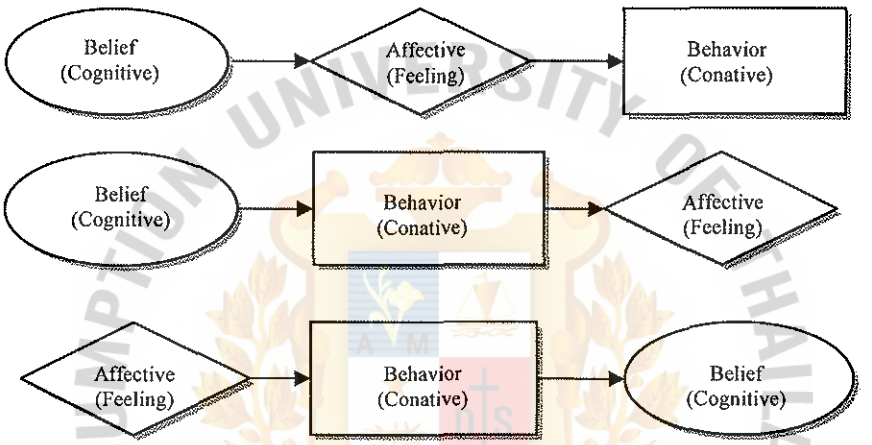
- Attitudes have an *object.* The object can be general or specific, it can be abstract or concrete such as people, products, services, brand situations, companies, issues, and places (Etzel et al, 2001; Hanna and Wozniak, 2001).
- Attitudes are *responsive*. Attitudes are either favorable or unfavorable toward the object (Etzel et al, 2001).
- Attitudes are characterized as *stable* or *consistent*. This means that attitudes usually endure, and the longer they are held, the more resistant to change they become (Etzel et al, 2001). As Hanna and Wozniak (2001) stated that attitudes could be changed over a period of time, but this process is usually slow.

Attitude and Behavioral Intention

Attitude has long been identified as a cause of intention. In consumer research, attitude is the construct that receives the most attention and is used most widely for predicting consumer's likelihood to adopt a new technology (Lu et al, 2003). According to Fishbein and Ajzen (1975), intention has often been viewed as the "conative component of attitude", and it has usually been assumed that this conative component is related to the attitude's affective component. This conceptualization has led to the assumption of a strong relation between attitudes and intentions. In addition, *"predicting behavior from attitudes is likely to be more reliable: when the person's attitude are strong, when the person is very aware of his or her attitudes and rehearses, and the practices them, and when attitudes are specifically relevant to the behavior."* (Santrock, 1998, p.557). To explain relationship between attitude and behavior intention, Lindgren and Shimp (1996) claimed that the hierarchy-of-effects

model best explains the relationship between customer attitudes and intention to purchase. Solomon (1999; 208) argued that *"Attitude researchers have developed the concept of a hierarchy of effects in order to explain their relative impact of the three components. Each hierarchy specifies that a fixed sequence of steps occurs en route an attitude."* Three different hierarchies-of-effects are illustrated in figure 2.5.

Figure 2.5: Three Hierarchies of Effect.



Source: Solomon, M. (1999), Consumer Behavior (4th ed.), Prentice Hall, p.209

1. Learning Hierarchy

A consumer approaches a product decision as a problem solving process. First, he or she forms beliefs about a product by accumulating knowledge and then forms a feeling about the product (affect). Finally, the consumer engages in a relevant behavior such as buying product. The standard learning hierarchy assumes that a consumer is highly involved in making purchase decision. The person is motivated to seek out a lot of information, carefully weigh alternatives, and come to a thoughtful decision (Solomon, 1999). This sequence called "learn-feel-do" is appropriate when consumers have high involvement with a product category with high product differentiation

(Kotler, 2000). Mittal et al (1999) suggested that learning hierarchy can also called be "rational" hierarchy.

2. Low-Involvement Hierarchy

In this sequence, the consumer does not initially endow a strong preference for one brand over another, but instead acts on the basis of limited knowledge and then forms an evaluation only after the product had been purchase or used. The attitude is likely to occur through the behavioral learning in which the consumer's choice is reinforced by their good or bad experience with the product after purchase (Solomon, 1999). Mittal et al (1999) said that it was a matter of a relative low importance in a person's life, that a person can take or leave. With these, people don't want to take time to think, or people neither feel strongly positive or negative about them.

3. Experiential Hierarchy

In this sequence, the consumer acts on the basis of their emotional reaction. This perspective highlights the idea that attitudes can be strongly influenced by intangible product attributes, such as package design and by consumer's reactions towards accompanying stimuli such as advertising, brand names, and the nature of the setting, in which the experience occurs (Solomon, 1999). Mittal et al (1999) mentioned that this sequence is called emotional hierarchy, that is, to feel first, then act, and think last. Based on person's emotions, attraction, or repulsion toward certain brands or people or things – a person embraces or avoids them, buys them, and uses them. Finally, through experience, people learn more about them.

2.2.2 Subjective Norm

Subjective Norm *(SN)* is a function of normative beliefs, which represents a person's perception of whether significant referents approve or disapprove of a behavior (Shim et al 2001). Trafimow and Finlay (2001) described subjective norms as people's opinion about what most others who are important to them think they should do. As stated by Solomon (1999) subjective norm *"...the effects of what we believe other people think we should do"* (p.223). According to Taylor and Todd (1995; 149), subjective norm *"...reflects perceptions that significant referents desire the individual to perform or not perform a behavior"*

Reference Groups

"A person's reference groups consist of all the groups that have a direct (face-to-face) or indirect influence on the person's attitude or behavior" (Kotler, 2000, p.163). Hawkins et al (2001) mentioned that the reference groups are groups whose presumed perspectives or values are being used by an individual as the basis for his or her current behavior. Moreover, a reference group is *"...an actual or imaginary of an individual or groups conceived by having significant relevance upon an individual's evaluations, aspirations or behavior"* (Solomon, 1999, p.337). Prior research studies have identified two competing influences on the relationship between reference group and behavior: conformity and dissension. The former concerns approval and the avoidance of criticism and rejection by others In other words, people try to conform to a subjective norm (Karjaluoto et al, 2002). Taylor (1991) argued that most people try to surround themselves with people and things that are consistent with their own identities.

In addition, Agarwal (2000) suggested that the closer a referent source of

influence is to the potential user of technology, the more salient the influence. Factors such as co-worker behavior has been found to be more influential than supervisor behavior in determining technology use. Kotler (2000) mentioned that family members constitute the most influential primary reference group. Even if the buyer no longer interacts very much with his or her parents, their influence on the buyer's behavior can be significant. However, consumers in different countries may have different sources of social pressure. Chiou (1998) described consumers in different countries as having different sources of social pressure. For example, the most important reference group for Chinese may be the family and the extended family, while for Japanese, it may also include their colleagues.

Type of social influence

Klobas and Clyde (2001) stated that social influences included the effect of family and friend, employees, professional, colleagues and the media. Davis et al (1989) described that in some cases, people might use a system to comply with other's mandates rather than their own feelings and beliefs. Venkatesh and Davis (2000) expanded social influences to include subjective norm and image as well. Image is derived from the research on diffusion of innovations (Rogers, 1989). There are three types of social influence, including informational, normative and identification types.

1. Information Influence

"Informational influence involves accepting information obtained from others as evidence about reality" (Wood, 2000, p539). The information influence occurred when an individual uses the behavior and opinions of reference group members a potentially useful bits of information. This influence is based on either the similarity of

the group's members to the individual or the expertise of the influencing group member (Hawkins et al, 2001). Mittal et al (1999) mentioned that informational influence occurred when a consumer sought and accepted behaviors from someone else because of the latter's expertise on the performance characteristics of the product or service being bought.

2. Normative Influence

"Normative influence, which involves conformity with the positive expectations of "another" who could be "another person, a group, or one's self" (Wood, 2000, p.540). Hawkins et al (2001) stated that normative influence, sometimes referred to as a utilitarian influence, occurs when an individual fulfills group expectations to gain a direct reward or to avoid a sanction. Mittal et al (1999) mentioned that the normative influence occurs when a consumer lets his or her decision be influenced by his or her desire in order to conform with the expectations of someone else. This influence stems from the reference group's power to reward or sanction the consumption behavior of others.

3. Identification Influence

The identification influence was also called value-expressive influence, which occurred when individuals have internalized the group's values and norms. These then guided the individuals' behaviors without any thought of reference group sanctions or rewards. The individual has accepted the group's values as his or her own. The individual behaves in a manner consistent with their groups because the individual's values and the group's values are the same (Hawkins et al, 2001).

Mittal et al (1999) mentioned that the identification influence occurred when a

consumer bought something; it is because such goods helped him or her to be similar to a referent. Everybody has some role model that he or she aspires to be similar to and identifies with; the consumer then emulates to the extent possible the lifestyle of people he or she admires, buying products associated with, used by or endorsed by these admired people. Cultural heroes such as entertainment, sports, or political celebrities inspire and serve as reference groups for multitudes of consumers especially in their more impressionable adolescent years.

Subjective norm and Behavioral Intention

Venkatesh and Morris (2000) suggested that the direct effect of the subjective norm on intention is strong in the early stages of new behavior and tends to wear off over time. However, Chiou (1998) mentioned that the strength of social influences are different in different cultural environments such as subjective norms was a significant predictor for behavioral intention in Korea, while attitude was found that to overshadow the influence of subjective norm in the United States. Agarwal (2000) stated that subjective norms exhibited considerably more influence on intentions than did attitudes, when presumably users had better information. In addition, a study on the effects of mood by Armitage et al (1999) suggested that subjective norms influenced intentions in a positive mood condition, whereas attitude influenced intentions in a negative mood.

2.2.3 Demographics

Consumer demographics are the external influence factors that include the consumer's gender, age, occupation, education, income, interest, and living area, etc. Demographic is one of major variable used to segment consumer markets. Kotler

(2000) argued that demographic variables are the most popular bases for distinguishing customer groups. One reason is that consumer wants, preferences, and usage rates are often associated with demographic variables. Solomon (1999) mentioned that demographic studies are of great interest to marketers, because the data can be used to locate and predict the size of markets for many products, ranging from home mortgages to brooms. Karjaluoto et al (2002) found that individual differences in consumer behavior are associated with the acceptance of new information technology. In this study, the researcher focused on only four key demographic characteristics, which are age, occupation, education level, and income level.

Age

"Consumers of different age groups obviously have very different needs and wants" (Solomon, 1999, p. 10). Lu et al (2003) stated that gaining a better understanding of age differences is important, particularly as it relates to user acceptance and usage of information technologies. Morris and Venkatesh (2000) suggested that age has a direct effect on usefulness perceptions both the short term and long term. Early adopters of new products are commonly thought to be young in most technology markets. According to Teo (2001), older workers are more likely to experience technostress compared to younger workers. Moreover, Karjaluoto et al (2002) argued that age and the acceptance of new technologies have a strong relationship, in that, older consumers are found to have problems with new technologies and demonstrate negative attitudes to change.

Occupation

"Occupation also influences a person's consumption pattern. A blue-collar

worker will buy work clothes, work shoes, and lunchboxes. A company president will buy expensive suits, air travel, country club membership and large sailboat." (Kotler, 2000, pp.167-168). Karjaluoto et al (2002) found that occupation and household income were significant variables. Morris and Venkatesh (2000) stated that older individuals are over-represented in categories of higher occupational position, higher income, and higher educational qualifications.

Education

Teo (2001) suggested that higher education level is likely to have a positive relationship with technology usage. Karjaluoto et al (2002) mentioned that the highly-educated, wealthy segment, represents a profitable and less risky customer base for several reasons. Most importantly, they deal with larger sums of money and have more purchasing power in buying products and services.

Income

Solomon (1999) suggested that *"The distribution of wealth is of great interest to marketers, because it determines which groups have the greatest buying power and market potential (p.11).* Lu et al (2003) stated that income and social economic status have long been recognized to have strong effect on technology adoption and diffusion. For example, a European survey in 2002 found that adult decision makers with a personal annual income of $77,240 are rapidly embracing new technology, with 28 percent using a PDA. In addition, Etzel et al (2001) suggested that education has significant impact on income. For example, a high school diploma is worth only about $600,000 in additional income over a lifetime, however, a college degree is worth $1.5 million.

2.2.4. Behavioral Intention

According to TPB and DTMP, behavioral intention serves as the mediator between consumer's attitude toward product, subjective norm and their actual purchase behavior. Behavioral intention represents motivational components of a behavior, that is the degree of conscious effort that a person will exert in order to perform a behavior (Shim et al, 2001). Ajzen and Fishbein (1980) described that behavior intention is a probability, as rated by the subject, that a person would perform the behavior. For this study, behavioral intention can be classified as consumer's purchase intention toward PDA. Thus, the consumer's intention to purchase the product (PDA) was used as the dependent variable in this study.

Intention and Behavior

Ajzen (1999) stated that intentions are indications of how hard people are willing to try, of how much of an effort they are planning to exert in order to perform the behavior. As a general rule, the stronger the intention to engage in a behavior, the more likely should be its performance. Davis et al (1989) also stated that behavioral intention was a good indicator of actual future use even though it can change with time. Intention is the most proximal influence on behavior and mediates the effect of other determinants on behavior. Typically, intention predicts behavior quite well unless there are constraints beyond the individual's control that completely overshadow intention (Venkatesh and Brown, 2001). Much prior researches suggested that intention is a fairly good predictor of actual behavior (Davis et al 1989; Taylor and Todd 1995; Venkatesh et al 2000)

2.3 Previous Empirical Researches

The four empirical research studies mainly focus on attitudes and subjective norms with behavioral intentions in the IT industry. The results of previous empirical research has found that attitudes and subjective norms were significant with behavioral intentions.

Table 2.1 Four Empirical Researches

Author	Year	Title	Source
Lee and Ho	2002	A retail investor's perspective on the acceptance of internet stock trading.	IEEE Computer Society (HICSS'03)
Shim et al	2001	An online pre-purchase intentions model: The role of intention to search.	Journal of Retailing Volume 77
Taylor and Todd	1995	Understanding information technology usage: A test of competing models	Information Systems Research Volume 6 Number 2
Venkatesh and Brown	2001	A longitudinal investigation of the factors driving personal computer (PC) adoption in American homes	MIS Quarterly Volume 25 Number 1

Lee and Ho (2002) studied a retail investor's perspective on the acceptance of Internet stock trading in Singapore. They used Taylor and Todd's Decomposed Theory of

Planned Behavior framework to explain investor's acceptance through consumer's intentions to trade online and to rationalize consumer's intentions in terms of attitudes, subjective norms and perceived behavioral control. The study was based on 291 responses obtained through personal interviews. The results of the study showed that attitude and subjective norm were significant with behavioral intentions. However, *attitude constructs were more significant than subjective norms.* Whereas, perceived behavioral control was found that to have no direct effect on intention to adopt Internet stock trading system, which was contrary to Taylor and Todd's (1995) study.

Shim et al (2001) studied Online Pre-purchase Intentions Model. The focus of this study was to determine whether intent to search the Internet for product information is a key element for marketing researchers to employ in predicting consumer's online purchasing intentions. In Shim et al (2001), an Online Prepurchase Intention model was developed that integrates an interaction model of pre-purchase consumer information search of the Klein model with the Theory of Planned Behavior. The results of this study showed that intention to use the Internet to search for information was not the only predictor of Internet purchase intention. But it also mentioned relationships between purchase intention and other predictors (i.e., attitude toward Internet shopping perceived behavioral control and previous Internet purchase experience).

Taylor and Todd (1995) conducted a study on "Understanding Information Technology Usage: A test of competing models". The Technology Acceptance model of Davis (1989) and two variations of the Theory of Planned Behavior of Ajzen (1991) were compared to assess which model best helps to understand usage of information

technology. The models were compared using student data collected from 786 users of a computer resource center. The Decomposed Theory of Planned Behavior was introduced, it provided a fuller understanding of behavior intention. The results indicate that attitude and subjective norms are significantly related to intention, moreoever, the path from behavior intention to behavior was significant in all models.

Venkatesh and Brown (2001) conducted a longitudinal investigation of the factors driving personal computer (PC) adoption in American homes. The Theory of Planned Behavior of Ajzen (1991) was chosen to be the guiding framework. The results of study showed that attitudinal beliefs were determinants of purchase behavior in current users. The results suggested social influences were also significant determinants of purchase behavior. Especially, the earlier adopters are more likely to be influenced by secondary sources of social influences. Finally, control beliefs were expected to more significantly influence non-adoption than adoption.

CHAPTER 3

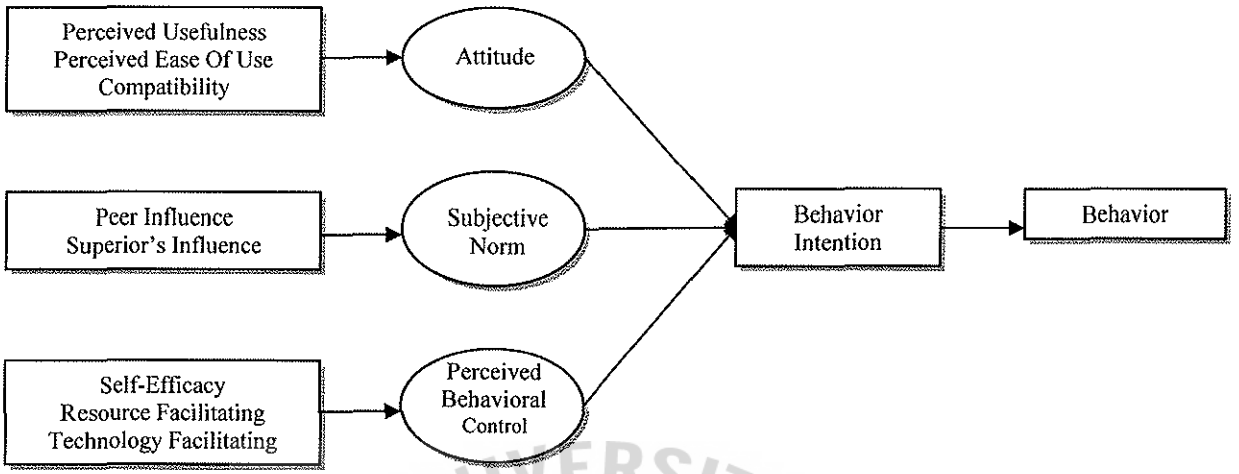
RESEARCH FRAMEWORK

In this chapter, the researcher focuses on four sections, including theoretical framework, conceptual framework, research hypothesis statements, and operationalization variables. In section 3.1, the researcher describes the theoretical framework that is based on the Decomposed Theory of Planned Behavior by Taylor and Todd (1995) combined with demographic factors. Section 3.2 shows the conceptual framework that the researcher designed to explain the association of independent and dependent variables, main variables and sub-variables. Section 3.3 discusses all hypothesis statements, which the researcher tested in this study. In section 3.4, the operationalization of variables are explained.

3.1 Theoretical Framework

For this study, the framework which the researcher conceptualized for explaining the factors influencing consumer's behavioral intention toward PDAs is based on the Decomposed Theory of Planned Behavior model (DTPB; Taylor and Todd. 1995). The researcher developed the conceptual model by identifying three major factors affecting behavioral intentions. The first major factor is Demographics which is composed of Age, Occupation, Education level, and Income.

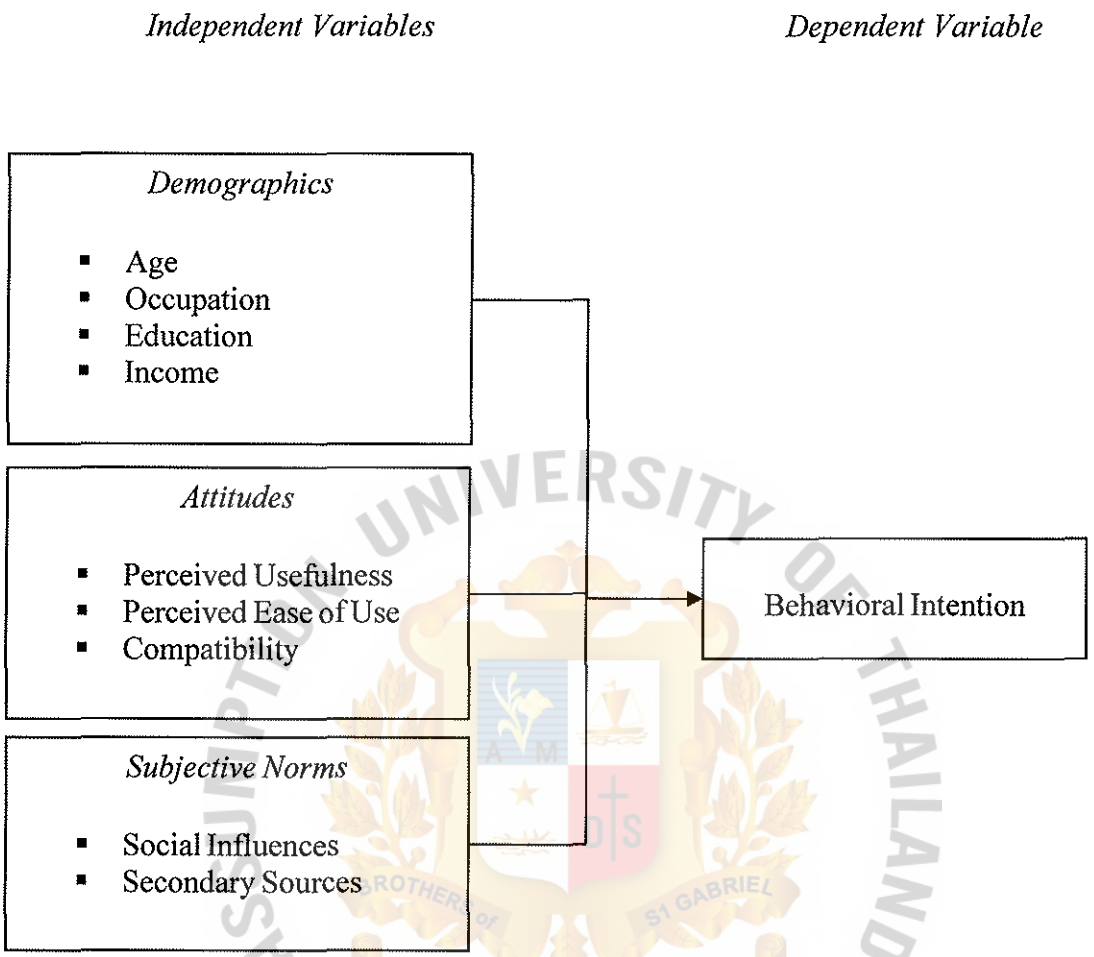
Figure 3.1: Decomposed Theory of Planned Behavior (DTPB)



Source: Taylor, S. and Todd, P. (1995), Understanding Information Technology Usage: A Test of Competing Models, Information System Research 6:2, p.146

The second major factor is Attitudes, which are determined by perceived usefulness, perceived ease of use and compatibility, which are derived from the DTPB model. The third major factor is Subjective norms, which are social influences and secondary sources, that are adapted from the DTPB model.

3.2 Conceptual Framework



Key Variables: Independent Variables:

Demographics

Demographics are one of consumer background characteristics that are an innate part of a consumer's makeup. These are the things that make consumers what they are – the way that individuals describe themselves and the way they label others. These characteristics are stable aspects of consumer's life and cannot be changed. The demographic characteristics are variables such as gender, age, income, religion, education, and ethic background (Wu, 2003).

Attitudes

Attitude refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question. Attitudes develop reasonably from the beliefs people hold about the object of the attitude. In the case of attitude toward a behavior, each belief links the behavior to certain outcome, or to some other. The more favorable an attitude a person has toward a given product/service, the more likely that person is to buy or use product/service (Ajzen, 1999)

Subjective Norms

A global measure of subjective norm is usually obtained by asking respondents to rate the extent to which "important others" would approve or disapprove of their performing a given behavior (Ajzen, 2001).

Key Variables: Dependent Variable:

Behavior Intention

Intentions represent motivational components of a behavior that is the degree of conscious effort that a person will exert in order to perform a behavior. Intentions are assumed to capture the motivational factors that influence a behavior; they indicate how hard people are willing to try, or how much of effect they are planning to exert, in order to perform the behavior (Ajzen, 1991)

3.3 Research Hypotheses

After developing the conceptual framework and identifying proper variables, the researcher set the hypothesis statements based on variables in the conceptual model. In this study, three groups of hypothesis were set up.

Group 1: Demographics and Behavioral Intention

$H1_0$: There is no difference in Behavioral Intention when determined by Age

$H1_1$: There is a difference in Behavioral Intention when determined by Age

$H2_0$: There is no difference in Behavioral Intention when determined by Occupation

$H2_1$: There is a difference in Behavioral Intention when determined by Occupation

$H3_0$: There is no difference in Behavioral Intention when determined by Education

$H3_1$: There is a difference in Behavioral Intention when determined by Education

$H4_0$: There is no difference in Behavioral Intention when determined by Income level

$H4_1$: There is a difference in Behavioral Intention when determined by Income level

Group 2: Attitudes and Behavioral Intention

$H5_0$: There is no relationship between Perceived Usefulness and Behavioral Intention

$H5_1$: There is a relationship between Perceived Usefulness and Behavioral Intention

$H6_0$: There is no relationship between Perceived Ease of Use and Behavioral Intention

$H6_1$: There is a relationship between Perceived Ease of Use and Behavioral Intention

$H7_0$: There is no relationship between Compatibility and Behavioral Intention

$H7_1$: There is a relationship between Compatibility and Behavioral Intention

Group 3: Subjective Norms and Behavioral Intention

$H8_0$: There is no relationship between Social Influences and Behavioral Intention

$H8_1$: There is a relationship between Social Influences and Behavioral Intention

$H9_0$: There is no relationship between Secondary Sources and Behavioral Intention

$H9_1$: There is a relationship between Secondary Sources and Behavioral Intention

3.4 Operationalization of the independent and dependent variables

In this section, the operationalization table contains a concept, definition, operational component and measurement level of independent and dependent variables. The operationalization table is separated into four parts, which are attitudes, subjective norms, behavioral intention, and demographics.

Part I: Attitudes factor influencing consumer's behavioral intention

Concept	Definition	Operational Component	Type of Measurement
Perceived Usefulness	The degree to which consumers perceive that using a PDA as a tool enhances their performance.	▪ Personal Use ▪ Work-related Use ▪ Quality of Work ▪ Save Time	Interval
Perceived Ease of Use	The degree to which the consumers perceive that using a PDA would require a minimum of effort.	▪ Learning ▪ Operation	Interval

Concept	Definition	Operational Component	Type of Measurement
Compatibility	The degree to which a PDA is perceived as being consistent with the existing values, needs and past experience of consumers.	▪ Past Experience ▪ Lifestyle	Interval

Part II: Subjective Norms factor influencing consumer's behavioral decision

Concept	Definition	Operational Component	Type of Measurement
Social Influences	The extent to which members of social network influences one's behavior.	▪ Friends ▪ Family ▪ Colleagues	Interval
Secondary Sources	Influential information, such as news on TV, newspapers, etc.	▪ Newspaper ▪ Magazine ▪ Television ▪ Brochures	Interval

Part III: Behavioral Intention

Concept	Definition	Operational Component	Type of Measurement
Behavioral Intention	The probability, as rated by the subject, that consumers will perform the behavior.	▪ Intention to purchase scale	Interval

Part IV: Demographic

Concept	Definition	Operational Component	Type of Measurement
Age	The length of time that a person has existed	▪ Individual's age range	Ordinal
Occupation	An activity that serves as a person's regular source of livelihood	▪ Individual's career	Nominal
Education	Highest education level completed	▪ Individual's highest degree	Ordinal
Income	The amount of money received during a period of time as salary	▪ Individual's monthly income	Ordinal

CHAPTER 4

RESEARCH METHODOLOGY

The purpose of this chapter is to describe an overview of the research methodology conducted, including research method, sampling, research instruments, data collection technique, and statistical tools used in this study. For sampling procedures, target population, sampling unit, sample size and sampling method, are explained.

4.1 Research Methods: Sample Survey

In this study, the descriptive research was employed to describe the factors influencing consumer's behavioral intention toward PDAs. The descriptive research method that the researcher used was a survey method by cross-sectional design. The researcher collected primary data by surveying the sample only once. In order to use the survey technique, the researcher used questionnaires to gather information from respondents. Zikmund (1999) mentioned that the survey research technique provides advantages of quickness, inexpensiveness, efficiency, and accuracy in terms of assessing information about a population.

4.2 Respondents and Sampling Procedures

Target Population

Zikmund (1997) stated that a population is defined as any complete group of entries that shares some common set of characteristics. The target populations of this study were people who are aged 20-55 years old, who have never purchased a PDA before, and living in the Bangkok area.

Sampling Unit

A sampling unit is an element or set of elements considered for selection at a particular stage in a sample. The sampling unit in this study, was persons who have never purchased a PDA, living in Bangkok, and aged 20-55 years old. This unit was chosen mainly because this group of people are students, employees, and business owners, who are well educated and have strong potential to be PDA users (eTForecast, 2003).

Determining the Sample Size

The sample size of this study is determined from the table proposed by Anderson (1996) who suggested that population over 1,000,000 with 95 percent confidence level requires a size of 384 samples, as shown in the table below. In this study, the area of this research is limited only to the Bangkok area which has population aged 20-55 years old of approximately 3,191,660 persons (NSO, 2003). Therefore, this study determined a sample size at 384 samples.

Table 4.1: Theoretical Sample Size for Different Size of Population

Population	Required sample for tolerate error			
	5%	4%	3%	2%
100	79	85	91	96
500	217	272	340	413
1,000	277	375	516	705
5,000	356	536	897	1,622
50,000	381	593	1,044	2,290
100,000	382	596	1,055	2,344
1,000,000	384	599	1,065	2,344
25,000,000	**384**	600	1,067	2,400

Source: Anderson, G. (1996), Fundamentals of Education Research, p.202

Sampling Method: Non-Probability Sample

Non-Probability sampling is proposed to be used in this study because the population being chosen is unknown. In order to select the respondents, the researcher's choice is based on quota-sampling method. The researcher asked two screening questions to respondents prior to conducting the survey in order to ensure that the respondents were the target population.

4.3 Collection of Data and Gathering Procedures

In accordance with data collection for this study, the researcher used both primary and secondary sources. The primary source of this study was collected by distributing questionnaires to the target population in Bangkok, whereas the secondary sources were collected from several sources, such as textbooks, Internet, newspaper, journals, and research articles. In this study, self-administered questionnaires were used as the method for collecting data from respondents. The advantage of this method is the researcher can communicate with respondents to reduce the error possibility of error while filling up questionnaires.

In order to distribute questionnaire, the researcher used quota sampling method to collect data from respondents. Malhotra (1999) stated that quota sampling is a non-probability sampling technique that is a two stage restricted judgmental sampling. The first stage consists of developing control categories or quotas of population elements. In the second stage, sample elements are selected based on convenience or judgment. In the first stage, places of distribution is the control characteristic. The researcher selected three places in Bangkok which are well-known for selling IT products. The venues for distributing questionnaires were Pantip Plaza, IT Mall-Fortune and Seri Center (eTForecast, 2003). In each place, 128 questionnaires were distributed. For the

second stage of distribution of questionnaires, the respondents were selected based on convenience method.

4.4 Research Instrument and Questionnaire

This study used a questionnaire to gather information from respondents. The questionnaire for this research was divided into four parts, which are attitudes, subjective norms, behavioral intention and demographics. The questionnaires were based on the theoretical and conceptual framework.

Part I: Attitudes

This part contained eight questions for evaluating attitude of respondents toward PDA by using a five-point Likert scale, ranging from strongly agree to strongly disagree. The underlying attitude belief structure comprises of three variables, which are perceived usefulness, perceived ease of use, and compatibility.

Part II: Subjective Norms

This section involved the study of factors related to subjective norms influencing respondents in their purchase of a PDA. To measure this section, the questionnaire contains seven questions in which the first three questions are social influences and the last four questions are secondary sources.

Part III: Behavior Intention

The third part is meant to measure behavior intention for PDA. In order to measure behavior intention for PDA, this part asks respondents how likely they are to purchase a PDA, using a five-point Likert scale.

Part IV: Demographics

In the last part, the questions are intended to gather demographic data, that is, personal information on respondents. There are five questions, which are Gender, Age, Occupation, Education level and Income.

Pretest

Malhotra (1999) described a pretest as the testing of the questionnaire on a small sample of respondents for the purpose of identifying and eliminating potential problem. Ordinarily, the pretest sample size is small, varying from 15 to 30 respondents for the initial testing, depending on the heterogeneity of the target population. Hence, to pretest this study, the researcher distributed questionnaires to 30 respondents.

For this pretest, the research used the Coefficient Alpha or Cronbach's Alpha to test reliability. Malhotra (1999) mentioned that this method is the average of all possible spilt-half coefficient resulting from different ways of splitting the scale items, this coefficient varies from 0 to 1, and a value of 0.6 or less generally indicates unsatisfactory internal consistency reliability.

Table 4.2 Test Reliability

Variables	Number of Items	Cronbach's Alpha value
Perceived Usefulness	4	0.8039
Perceived Ease of Use	2	0.8742
Compatibility	2	0.7506
Social Influences	2	0.7216
Secondary Sources	4	0.8255

From Table 4.2, the results of reliability analysis of all variables had values greater than the standard value of 0.6. Therefore, it can be concluded that this questionnaire has satisfactory internal reliability value.

4.5 Statistical Treatment of Data

The researcher analyzed data collected from respondents by using the Statistical Package for Social Science (SPSS) program. A one-way analysis of variance (ANOVA) and Pearson Correlation Coefficient was used to test the hypothesis statements of this study.

In this study, ANOVA was used to test differences in the means of behavioral intention variables broken down by the levels of demographic variables (age, occupation, education and income). Malholtra (1999) stated that ANOVA is a statistical technique for examining the differences among means of two or more population. The Pearson correlation coefficient was used to indicate a linear relationship between attitudes (perceived usefulness, perceived ease of use and compatibility) and subjective norms (social influences and secondary sources) with behavioral intention variable. Malholtra (1999) stated that Pearson correlation coefficient (Product moment correlation) is the most widely used statistic, summarizing the strength of association between two metric (interval or ratio scales).

Table 4.3 Statistical used to test hypotheses

No.	Hypothesis Statements	Statistic Measurement
H1	There is difference in Behavioral Intention when determined by Age group	ANOVA

No.	Hypothesis Statements	Statistic Measurement
H2	There is difference in Behavioral Intention when determined by Occupation	ANOVA
H3	There is difference in Behavioral Intention when determined by Education levels	ANOVA
H4	There is difference in Behavioral Intention when determined by Income levels	ANOVA
H5	There is a relationship between Perceived Usefulness and Behavioral Intention	Pearson Correlation Coefficient
H6	There is a relationship between Perceived Ease of Use and Behavioral Intention	Pearson Correlation Coefficient
H7	There is a relationship between Compatibility and Behavioral Intention	Pearson Correlation Coefficient
H8	There is a relationship Social Influences and Behavioral Intention	Pearson Correlation Coefficient
H9	There is a relationship between Secondary Sources and Behavioral Intention	Pearson Correlation Coefficient

CHAPTER 5

PRESENTATION OF DATA AND CRITICAL DISCUSSION OF RESULTS

In this chapter, the researcher presents the results of data collected by survey method. The data were collected from distributing questionnaires to 384 target respondents. Section 5.1 presents the descriptive statistical analysis showing demographic data of respondents, the general information of respondents' gender, age, occupation, education level and income level, is explained. Section 5.2 contains the tests of hypotheses. The first four hypotheses which tests the differences in behavioral intention when determined by demographic factors, are tested using ANOVA. The last five hypotheses that tests the relationship between attitudes, subjective norms and behavioral intention, employ Pearson correlation coefficient

5.1 Descriptive Analysis

In this section, descriptive statistics were used to describe the demographics of respondents in terms of their gender, age, occupation, education, and income levels. Descriptive statistics describes data in terms of measures of tendency found in the sample. The primary propose of descriptive statistics is to describe or summarize the population and sample (Zikmund, 2003). The demographic data of respondents is presented in the form of frequency counts and percentages.

5.1.1 Gender

Table 5.1: Gender of respondents

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	205	53.4	53.4	53.4
	Female	179	46.6	46.6	100.0
	Total	384	100.0	100.0	

Table 5.1shows that most of respondents of this study are male, 205 respondents (53.4%) and the rest are female, 179 respondents (46.6%).

5.1.2 Age groups

Table 5.2: Age of respondents

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-28	234	60.9	60.9	60.9
	29-37	120	31.3	31.3	92.2
	38-46	17	4.4	4.4	96.6
	47-55	13	3.4	3.4	100.0
	Total	384	100.0	100.0	

Table 5.2 shows the age range of respondents. The majority of respondents are aged between 20-28 years old that represents 234 respondents (60.9%). The second highest is age group between 29-37 years old, that represents 120 respondents (31.3%). The rest are groups of age ranging between 38-46 and 47-55 years old which represents 17 respondents (4.4%) and 13 respondents (3.4%), respectively. Hence, the majority of respondents are young adults (less than 30 years old).

5.1.3 Occupation

Table 5.3: Occupation of respondents

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	73	19.0	19.0	19.0
	Official	48	12.5	12.5	31.5
	Private employee	179	46.6	46.6	78.1
	Business owner	73	19.0	19.0	97.1
	Other	11	2.9	2.9	100.0
	Total	384	100.0	100.0	

Table 5.4, represents the major occupation of respondents in this study, which is private employees, 179 (46.6%). The second group of student and business owners accounted for 73 respondents (19%). Among 384 respondents, 48 respondents (12.5%) are officials (public sector employees), and 11 respondents (2.9%) hold other occupations, respectively.

5.1.4 Education Level

Table 5.4: Education level of respondents

Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School or below	10	2.6	2.6	2.6
	Bachelor degree	250	65.1	65.1	67.7
	Master degree or above	124	32.3	32.3	100.0
	Total	384	100.0	100.0	

Table 5.4 shows that the education levels of most respondents fall under bachelor degree 250 respondents (65.1%), master degree and above are 124 respondents

(32.3%) and high school and below 10 respondents (2.6%), respectively. This indicates that the majority of respondents are educated at the tertiary level.

5.1.5 Income Level

Table 5.5: Monthly income level of respondents

Income Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 15,000	115	29.9	29.9	29.9
	15,001-25,000	119	31.0	31.0	60.9
	25,001-35,000	73	19.0	19.0	79.9
	35,001-45,000	45	11.7	11.7	91.7
	More than 45,000	32	8.3	8.3	100.0
	Total	384	100.0	100.0	

From table 5.5, the majority of respondents have monthly incomes ranging between 15,001-25,000 baht that accounted for 119 respondents (31%). The second group are those whose income is less than 15,000 baht that represents 115 respondents (29.9%). The rest of respondents have monthly income ranges of 25,001-35,000 baht accounting for 73 respondents (19%), 35,001-45,000 baht accounted for 45 respondents (11.7%), and more than 45,000 baht accounted for 32 respondents (8.3%), respectively.

5.2 Test of Hypotheses

In this section, the first four hypotheses were tested by ANOVA. This was done to test differences in means of behavioral intention variable when determined by demographic variables (age, occupation, income level and education level). Pearson correlation coefficient was employed to test the relationship between attitudes

(perceived usefulness, perceived ease of use and compatibility) and subjective norms (social influences and secondary sources) with the behavioral intention variable. In this study, all of hypotheses were set at the level of significance at 0.05.

Hypothesis 1

$H1_0$: There is no difference in Behavioral Intention when determined by Age

$H1_1$: There is a difference in Behavioral Intention when determined by Age

Table 5.6.1: ANOVA test of difference in behavioral intention when determined by age groups

ANOVA

Behavioal Intention

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.634	3	6.211	4.616	.003
Within Groups	511.356	380	1.346		
Total	529.990	383			

From table 5.6.1, the results of ANOVA tests the difference in behavioral intention when determined by age groups. The results shows significant value at 0.003, which is less than 0.05 (0.003<0.05). This indicated that there is enough evidence to reject the null hypothesis, hence, the researcher accepted the alternative hypothesis. Therefore, there is a significant difference among the age groups. Thus, it is appropriate to proceed to a post-hoc multiple comparison testes to explore which age groups show differences. According to unequal sample sizes, Tamhane's T2 was employed to test multiple comparisons

Table 5.6.2: Post-hoc multiple comparison tests of age groups

Multiple Comparisons

Dependent Variable: Behavioal Intention

Tamhane

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
20-28	29-37	-.03	.125	1.000	-.36	.30
	38-46	.21	.126	.474	-.14	.56
	47-55	1.19*	.263	.003	.39	1.98
29-37	20-28	.03	.125	1.000	-.30	.36
	38-46	.24	.134	.375	-.12	.61
	47-55	1.22*	.267	.002	.42	2.02
38-46	20-28	-.21	.126	.474	-.56	.14
	29-37	-.24	.134	.375	-.61	.12
	47-55	.98*	.267	.013	.17	1.78
47-55	20-28	-1.19*	.263	.003	-1.98	-.39
	29-37	-1.22*	.267	.002	-2.02	-.42
	38-46	-.98*	.267	.013	-1.78	-.17

*. The mean difference is significant at the .05 level.

According to table 5.6.2. , the results of post-hoc multiple comparison tests indicate that the age group ranging between 47-55 years old shows significance value less than 0.05 when compared with other age groups. This means that age group in range between 47-55 years shows a difference in behavior intention from other age groups.

Hypothesis 2

$H2_0$: There is no difference in Behavioral Intention when determined by Occupation

$H2_1$: There is a difference in Behavioral Intention when determined by Occupation

Table 5.7.1: ANOVA test of difference in behavioral intention when determined by occupation

ANOVA

Behavioal Intention

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	29.398	4	7.349	5.564	.000
Within Groups	500.592	379	1.321		
Total	529.990	383			

From table 5.7.1, the results of ANOVA tested the difference in behavioral intention when determined by occupation. The findings shows significant value at 0.000, which is less than 0.05 (0.000<0.05). This indicated that there is enough evidence to reject the null hypothesis, the researcher accepted the alternative hypothesis. Therefore, there is a significant difference among the occupation. Thus, it is appropriate to proceed to a post-hoc multiple comparison test to explore which occupation show differences.

Table 5.7.2: Post-hoc multiple comparison test of occupation

Multiple Comparisons

Dependent Variable: Behavioal Intention

Tamhane

(I) Occupation	(J) Occupation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Student	Official	.56	.224	.127	-.08	1.20
	Private employee	-.20	.165	.933	-.66	.27
	Business owner	.01	.177	1.000	-.49	.52
	Other	.82	.297	.133	-.15	1.78
Official	Student	-.56	.224	.127	-1.20	.08
	Private employee	-.76*	.198	.003	-1.33	-.19
	Business owner	-.55	.208	.095	-1.15	.05
	Other	.26	.317	.996	-.74	1.25
Private employee	Student	.20	.165	.933	-.27	.66
	Official	.76*	.198	.003	.19	1.33
	Business owner	.21	.143	.792	-.20	.62
	Other	1.01*	.278	.031	.07	1.96
Business owner	Student	-.01	.177	1.000	-.52	.49
	Official	.55	.208	.095	-.05	1.15
	Private employee	-.21	.143	.792	-.62	.20
	Other	.80	.286	.131	-.15	1.75
Other	Student	-.82	.297	.133	-1.78	.15
	Official	-.26	.317	.996	-1.25	.74
	Private employee	-1.01*	.278	.031	-1.96	-.07
	Business owner	-.80	.286	.131	-1.75	.15

*. The mean difference is significant at the .05 level.

According to table 5.7.2, the result of post-hoc multiple comparison tests indicate that "official" and "other" groups of occupation shows a significance value less than 0.05

when compared with other occupation. In this study, official represented respondents who worked in the public sector or government organizations. The findings showed that "official" and "other" groups of occupation show a difference in behavior intention from other occupation.

Hypothesis 3

$H3_0$: There is no difference in Behavioral Intention when determined by Education level

$H3_1$: There is a difference in Behavioral Intention when determined by Education level

Table 5.8.1: ANOVA test of difference in behavioral intention when determined by education level

ANOVA

Behavioal Intention

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	35.570	2	17.785	13.705	.000
Within Groups	494.420	381	1.298		
Total	529.990	383			

From table 5.8.1, the results of ANOVA tested the difference in behavioral intention when determined by education level. The findings show significant value at 0.000, which is less than 0.05 (0.000<0.05). This indicated that there is enough evidence to reject the null hypothesis, the researcher accepted the alternative hypothesis. Therefore, there is a significant difference among the education levels. Thus, it is appropriate to proceed to a post-hoc multiple comparison testes to explore which education level show differences.

Table 5.8.2: Post-hoc multiple comparison test of education level

Multiple Comparisons

Dependent Variable: Behavioal Intention

Tamhane

(I) Education Level	(J) Education Level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
High School or below	Bachelor degree	.02	.336	1.000	-.94	.98
	Master degree or above	-.64	.335	.239	-1.59	.32
Bachelor degree	High School or below	-.02	.336	1.000	-.98	.94
	Master degree or above	-.65*	.109	.000	-.91	-.39
Master degree or above	High School or below	.64	.335	.239	-.32	1.59
	Bachelor degree	.65*	.109	.000	.39	.91

*. The mean difference is significant at the .05 level.

According to table 5.8.2, the result of Post-hoc multiple comparison tests indicate that "master degree or above" group shows significance value less than 0.05 when compared with other education level groups. This means that "master degree or above" group shows a difference in behavior intention from other education levels.

Hypothesis 4

$H4_0$: There is no difference in Behavioral Intention when determined by Income level

$H4_1$: There is a difference in Behavioral Intention when determined by Income level

Table 5.9.1: ANOVA test of difference in behavioral intention when determined by income level

ANOVA

Behavioal Intention

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	63.998	4	16.000	13.013	.000
Within Groups	465.991	379	1.230		
Total	529.990	383			

From table 5.9.1, the results of ANOVA tested the difference in behavioral intention when determined by income level. The results show significant value at 0.000, which is less than 0.05 (0.000<0.05). This indicated that there is enough evidence to reject the null hypothesis, the researcher accepted the alternative hypothesis. Therefore, there is a significant difference among income level groups. Thus, it is appropriate to proceed to a post-hoc multiple comparison testes to explore which group of income level show differences.

Table 5.9.2: Post-hoc multiple comparison test of income level

Multiple Comparisons

Dependent Variable: Behavioal Intention

Tamhane

(I) Income Level	(J) Income Level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Less than 15,000	15,001-25,000	-.91*	.160	.000	-1.36	-.46
	25,001-35,000	-.82*	.153	.000	-1.25	-.38
	35,001-45,000	-.96*	.117	.000	-1.29	-.63
	More than 45,000	-.84*	.191	.000	-1.40	-.29
15,001-25,000	Less than 15,000	.91*	.160	.000	.46	1.36
	25,001-35,000	.09	.178	1.000	-.41	.60
	35,001-45,000	-.05	.148	1.000	-.47	.37
	More than 45,000	.07	.211	1.000	-.54	.68
25,001-35,000	Less than 15,000	.82*	.153	.000	.38	1.25
	15,001-25,000	-.09	.178	1.000	-.60	.41
	35,001-45,000	-.14	.141	.978	-.54	.26
	More than 45,000	-.03	.206	1.000	-.62	.57
35,001-45,000	Less than 15,000	.96*	.117	.000	.63	1.29
	15,001-25,000	.05	.148	1.000	-.37	.47
	25,001-35,000	.14	.141	.978	-.26	.54
	More than 45,000	.11	.181	.999	-.42	.65
More than 45,000	Less than 15,000	.84*	.191	.000	.29	1.40
	15,001-25,000	-.07	.211	1.000	-.68	.54
	25,001-35,000	.03	.206	1.000	-.57	.62
	35,001-45,000	-.11	.181	.999	-.65	.42

*. The mean difference is significant at the .05 level.

According to table 5.9.2, the results of Post-hoc multiple comparison tests indicate that the group of people whose income is less than 15,000 baht shows significance value less than 0.05 when compared with other income groups. This means that group of income less than 15,000 baht shows a difference in behavior intention from other income level groups.

Hypothesis 5

$H5_0$: There is no relationship between Perceived Usefulness and Behavioral Intention

$H5_1$: There is a relationship between Perceive Usefulness and Behavioral Intention

Table 5.10: Pearson's correlation coefficient test of relationship between Behavioral Intention and Perceived Usefulness

Correlations

		Behavioral Intention	Perceived Usefulness
Behavioral Intention	Pearson Correlation	1	.762**
	Sig. (2-tailed)	.	.000
	N	384	384
Perceived Usefulness	Pearson Correlation	.762**	1
	Sig. (2-tailed)	.000	.
	N	384	384

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5.10 shows the finding of the test of the relationship between behavioral intention and perceived usefulness is 0.000, which is less than 0.05 level of significance (0.00<0.05). This indicated that there is enough evidence to reject null hypothesis, therefore, the researcher accepted the alternative hypothesis. Hence, there is a relationship between behavioral intention and perceived usefulness variable. Moreover, the value of Pearson correlation *(r)* is 0.762, which implies a high positive

relationship between the two variables.

Hypothesis 6

$H6_0$: There is no relationship between Perceived Ease of Use and Behavioral Intention

$H6_1$: There is a relationship between Perceived Ease of Use and Behavioral Intention

Table 5.11: Pearson's correlation coefficient test of relationship between Behavioral Intention and Perceived ease of use

Correlations

		Behavioral Intention	Perceived Ease of Use
Behavioral Intention	Pearson Correlation	1	.314**
	Sig. (2-tailed)	.	.000
	N	384	384
Perceived Ease of Use	Pearson Correlation	.314**	1
	Sig. (2-tailed)	.000	.
	N	384	384

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5.11 shows the result of hypothesis testing the relationship between behavioral intention and perceived ease of use is 0.000, which is less than 0.05 level of significance (0.00<0.05). This indicates that there is enough evidence to reject null hypothesis, therefore, the researcher accepted the alternative hypothesis. It shows that there is a relationship between behavioral intention and perceived ease of use variable. Moreover, the value of Pearson correlation *(r)* is 0.314, which implies that there exists a low positive relationship between the two variables.

Hypothesis 7

$H7_0$: There is no relationship between Compatibility and Behavioral Intention

$H7_1$: There is a relationship between Compatibility and Behavioral Intention

Table 5.12: Pearson's correlation coefficient test of relationship between Behavioral intention and Compatibility

Correlations

		Behavioral Intention	Compatiblity
Behavioral Intention	Pearson Correlation	1	.383**
	Sig. (2-tailed)	.	.000
	N	384	384
Compatiblity	Pearson Correlation	.383**	1
	Sig. (2-tailed)	.000	.
	N	384	384

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5.12 shows the result of hypothesis testing the relationship between behavioral intention and compatibility is 0.000, which is less than 0.05 level of significance (0.00<0.05). This indicates that there is enough evidence to reject null hypothesis, therefore, the researcher accepted the alternative hypothesis. It shows that there is a relationship between behavioral intention and compatibility variable. Moreover, the value of Pearson correlation *(r)* is 0.383, which implies that there is a low positive relationship between the two variables.

Hypothesis 8

$H8_0$: There is no relationship between Social Influences and Behavioral Intention

$H8_1$: There is a relationship between Social Influences and Behavioral Intention

Table 5.13: Pearson's correlation coefficient test of relationship between Behavioral intention and Social influences

Correlations

		Behavioral Intention	Social Influences
Behavioral Intention	Pearson Correlation	1	.507**
	Sig. (2-tailed)	.	.000
	N	384	384
Social Influences	Pearson Correlation	.507**	1
	Sig. (2-tailed)	.000	.
	N	384	384

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5.13 shows the result of hypothesis testing the relationship between behavioral intention and perceived usefulness is 0.000, which is less than 0.05 level of significance (0.00<0.05). This indicates that there is enough evidence to reject null hypothesis, therefore, the researcher accepted the alternative hypothesis. It means that there is a relationship between behavioral intention and social influences variable. Moreover, the value of Pearson correlation *(r)* is 0.507, which implies that there is moderate positive relationship between the two variables.

Hypothesis 9

$H9_0$: There is no relationship between Secondary Sources and Behavioral Intention

$H9_1$: There is a relationship between Secondary Sources and Behavioral Intention

Table 5.14: Pearson's correlation coefficient test of relationship between Behavioral intention and Secondary sources

Correlations

		Behavioral Intention	Secondary Sources
Behavioral Intention	Pearson Correlation	1	.446**
	Sig. (2-tailed)	.	.000
	N	384	384
Secondary Sources	Pearson Correlation	.446**	1
	Sig. (2-tailed)	.000	.
	N	384	384

**. Correlation is significant at the 0.01 level (2-tailed).

From table 5.14, the result of hypothesis testing the relationship between behavioral intention and perceived usefulness is 0.000, which is less than 0.05 level of significance (0.00<0.05). This indicates that there is enough evidence to reject null hypothesis, therefore, the researcher accepted the alternative hypothesis. It means that there is a relationship between behavioral intention and secondary sources variable. Moreover, the value of Pearson correlation *(r)* is 0.446, which implies that there is moderate positive relationship between the two variables.

CHAPTER 6

SUMMARY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter consists of four sections. In section 6.1, the researcher presents a summary of the results of descriptive statistics and hypotheses testing of this study. Section 6.2 contains the conclusion of this study. In section 6.3, the researcher presents the recommendations based on the research findings and the final section offers suggestions for further research.

6.1 Summary of Findings

In this study, the summary of results is based on data collected from 384 target respondents using the survey method. The questionnaires were distributed in three places in Bangkok which are well known for selling IT products; Panthip Plaza, IT Mall-Fortune, and Seri Center. The data collected from distributed questionnaires was analyzed by using Statistical Package for Social Science (SPSS) program.

6.1.1 Summary Demographic of Respondents

In this study, descriptive statistics were used to describe demographics of respondents that are related to gender, age, education, and income levels.

Out of the 384 target respondents, 205 (53.4%) respondents were male and 179 (46.6%) respondents were female. The majority of age group of respondents was between 20-28 years old, which accounted for 234 respondents (60.9%). When considering occupation of respondents, the majority were private employees 179 respondents (46.6%). A total of 250 respondents (65.1%) had bachelor degrees. The majority of respondents had a monthly income level between 15,001-25,000 baht. A

summary of the demographic profile of the respondents is presented in Table 6.1.

Table 6.1: Summary the results of respondents' demographic data

Demographic	Major respondents	Number of respondents
Gender	Male	205 (53.4%)
Age	20-28 years old	234 (60.9%)
Occupation	Private employee	179 (46.6%)
Education level	Bachelor degree	250 (65.1%)
Income level	15,000-25,000 Baht	119 (31.0%)

6.1.2 Summary Results of Hypotheses Tests

According to the research framework presented in Chapter 3, there were three major factors in this study that examined behavior intention toward PDAs, which were demographics, attitudes, and subjective norms. The first major factor was demographics (age, occupation, education level and income level), which were set as hypotheses 1 to 4, and tested by ANOVA. These 4 hypotheses tested the differences in means of behavioral intention variable broken down by demographic variables. Pearson correlation coefficient was employed to test the relationship between behavioral intention toward PDAs with Attitude (perceived usefulness, perceived ease of use and compatibility) which was set as hypotheses 5 to 7, and Subjective norms (social influences and secondary sources) which were set as hypotheses 8 to 9.

For the first four hypotheses that were tested by ANOVA, the findings showed significance values of less than 0.05 in all hypotheses for demographic variables. Therefore, all null hypotheses of demographic variables were rejected, this means that there were differences in behavioral intention toward PDAs when determined by all

demographic variables. To explore which group of demographic variables showed differences, the results showed that age group of 47-55 years old showed a difference in behavioral intention from other age groups. With regard to the occupation variable, there were two groups of occupation that were "official" and "other" groups which showed differences in behavioral intention from other occupations. Moreover, respondents with "master degree or above", also showed a difference in behavioral intention when compared with other education level groups. For monthly income level, the findings showed that those respondents earning "less than 15,000 baht" were different from other income level groups in their behavioral intention. The summary of results of hypotheses testing 1 to 4 is shown below in table 6.2.

Table 6.2: Summary the results of test hypotheses 1-4, using ANOVA

No.	Significance Value	Groups of mean difference	Results of hypotheses
H1	0.003	47-55 years old	Rejects $H1_1$, accepts $H1_0$
H2	0.000	Official and Other	Rejects $H2_1$, accepts $H2_0$
H3	0.000	Master degree or above	Rejects $H3_1$, accepts $H3_0$
H4	0.000	Less than 15,000 Baht	Rejects $H4_1$, accepts $H4_0$

Employing Pearson correlation, the results of the test of relationships between attitude (hypotheses 5-7) and subjective norms (hypotheses (8-9) with behavioral intention were less than 0.05 in all hypotheses. Therefore, all null hypotheses were rejected. Thus, it can be concluded that attitude and subjective norms have a significant relationship with respondents' behavior intention toward PDAs.

For attitude factor, perceived usefulness (hypothesis 1) variable (r = 0.762)

showed the highest positive correlation with behavioral intention toward PDAs when compared with the other two variables. The values of Pearson correlation of compatibility (hypothesis 7) and perceived ease of use (hypothesis 6) were 0.383 and 0.314, respectively. When considering subjective norms factor, the social influences (hypothesis 8) and secondary sources (hypothesis 9) showed a moderate positive correlation with behavioral intention toward PDAs, the values of correlation were 0.507 and 0.446, respectively. In order to conclude the strength of variables that influence consumer's behavioral intention toward PDAs, (in descending rank) are perceived usefulness, social influences, secondary sources, compatibility and perceived ease of use. The summary of the results of Pearson correlation coefficient are shown in Table 6.3.

Table 6.3: Summary of the test of hypotheses 5-6, using Pearson correlation coefficient

No.	Significance Value (2-tailed)	Pearson Correlation	Results of hypotheses
H5	0.000	.762	Rejects $H5_1$, accepts $H5_0$
H6	0.000	.314	Rejects $H6_1$, accepts $H6_0$
H7	0.000	.383	Rejects $H7_1$, accepts $H7_0$
H8	0.000	.507	Rejects $H8_1$, accepts $H8_0$
H9	0.000	.446	Rejects $H9_1$, accepts $H9_0$

6.2 Conclusion

The purpose of this research was to examine the factors that influence consumer's behavioral intention towards PDAs in Bangkok area by focusing on

demographic, attitude and subjective norm factors. From the research findings, it can be concluded that all factors have an influence on consumer's behavioral intention toward PDAs.

6.2.1 Demographic

According to Etzel el al (2001), demographics are an important factor for marketing executives because they influence the creation of appropriate marketing plans. In this study, the demographic of respondents in terms of age, occupation, education level and income level were tested.

The results of this study found that the age group between 47-55 years old are different from other age groups, in that they showed a lower mean value in behavior intention toward PDAs. The groups with high mean value were those between 29-37, 20-28 and 38-46 years old, respectively. This group of consumers may not see any necessity in buying PDAs, or they might not be comfortable with using them. There is evidence that age has an important influence on technology usage. As suggested by Karjaluoto et. al (2002), there exists a strong relationship between age and acceptance technology. In the study, older consumers were found to have problems with new technologies and also held negative attitude to change. Morris and Venkatesh's study (2000) also suggested that age has an important influence on technology usage in the workplace, in that older workers have a more difficult time adapting to changes in the work environment and will likely take refuge in methods that are familiar to them. Therefore, the findings of this study might infer that older people have a lower possibility than younger people in their purchase of PDAs. Many prior studies also confirmed that younger people are more likely to accept new technology than older people who often suffer from technostress (Elder et al and Teo 2001). For occupation,

the findings of this study show that "official" and "other" groups showed lower mean scores in behavioral intention toward PDAs. It can be concluded that officials have less intention to purchase PDAs. It might be explained by the fact that officials (who are identified in this study as public sector employees) are those whose nature of work is routine and often clerical, and they might not see the usefulness in buying PDAs or they might not see the benefits of the functions provided by PDAs.

According to Teo (2001), respondents with higher levels of education are more likely to have a positive relationship with technology usage. The results of this study confirm his finding, because "master degree or above" group showed the higher mean score as compared with other education level groups in their behavior intention toward PDAs. Moreover, Karjaluoto et al. (2002) suggested groups with higher levels of education, often earn high salaries and have higher discretionary income for buying innovative products. In income level groups, the group of "less than 15,000" baht showed a lower mean value in their behavioral intention toward PDAs. Income has been recognized as also having a strong effect on technology adoption. In some rapidly developing countries and regions, stronger purchasing power brought about by higher income levels is enabling a larger percentage of people to spend more on technology. These findings are in line with a previous study which showed that upper-income groups have long been recognized as those having the highest rates of technology adoption (Lu et al, 2003). Therefore, this implies that people with higher income are more likely to purchase PDAs.

6.2.2 Attitude

Attitude has long been identified as a cause of intention. In consumer research, attitude is the construct that receives the most attention and is used most widely for

predicting consumer's likelihood to adopt a technology. In this study, there were three variables of attitude, which are perceived usefulness, perceived ease of use and compatibility. From the research findings, all three variables of attitude showed positive relationships with behavioral intention. The findings showed that perceived usefulness (r = .762) was the strongest indicator of consumer's attitude toward PDAs, while compatibility (r = .383) and perceived ease of use (r = .314) variables showed low positive correlations in behavioral intention toward PDAs. This implies that among the sampled respondents, all three factors, perceived usefulness, compatibility and perceived ease of use do influence purchase intention toward PDAs. Many prior studies found that perceived usefulness is a strong determinant of user intentions and usage behavior over a period of time (Davis et al, 1989; Taylor and Todd, 1995; Venkatesh and Davis, 1996). Tornatzkey and Klien's study (1982) found that consumers are more likely to adopt a technology when it has a high compatibility fit with their responsibilities, lifestyles, and value systems. In addition, the results of this study confirmed those of Davis (1989) who suggested that *perceived usefulness* had a significantly greater correlation with behavior than *perceived ease of use*. Monsuwé et al (2004) and Lu et al (2003) argued that perceived usefulness should be linked with perceived ease of use, as improvements in ease of use may contribute to improved perceived usefulness. Therefore, the easier and more effortless the technology, the more likely are consumers to adopt it

6.2.3 Subjective norms

The research results showed that social influences and secondary sources were significant with behavior intention toward PDAs. Both variables showed a moderate positive correlation with behavioral intention. The social influences were positive at

0.507, whereas secondary sources were positive at 0.446. The importance of social influences as determinants of consumer behavior has been highlighted in prior research (eg., Ajzen and Fishbein 1980; Ajzen 1991; Taylor and Todd 1995; Venkatesh and Brown, 2001). Agarwal (2000) also stated that technologies are more likely to be successfully implemented when they are actively promoted and endorsed by an influential individual. Moreover, the closer a referent source of influence is to the potential user of a technology, the more salient the influence. In addition, Roger (1995) identified secondary sources of information as a strong influence, especially on early adopters.

6.3 Recommendations

The results of the study can help the PDA industry to gain better understanding of the factors that influence consumer purchasing intention toward PDAs. It also will help people who are involved in PDA industry to gain competitive advantages in order to push their sales.

6.3.1 Demographics

The results of this study supported all of the demographic hypotheses that tested for differences in behavioral intention toward PDAs. By knowing the demographics that influence consumer intention, marketers know which groups they should focus on as their potential target customers. From research findings, it can be concluded that consumers who tend to purchase PDAs are more likely to be young, well educated and earn a high level of income. The results suggest that the marketers should focus on these younger people who find it easier to adopt technology than older consumers, especially those who are aged 20-37 years old, because they have the

highest behavioral intention toward PDAs. Consumers with a master degree education also had the highest intention scores, therefore this group is also a highly potential target market. It is quite likely that people who are well educated, and over 30 years, will generally be in the managerial cadre (supervisory or middle management levels) where the nature of their work might benefit from the use of PDA and the many functions that these devices can perform.

Knowing the potential segments, PDA marketers should create marketing program to target these groups of people. Special promotional offers using appropriate media can assist in creating awareness among potential buyers. While desktops, notebooks, and new models of mobile phones are heavily advertised to the public, the same is not true for PDAs.

In the occupation group, "student" did show a high behavioral intention score. Moreover, the researcher believes that many students in graduate level programs can be potential buyers of PDAs because they fall in the slightly older age group of students and many of them are employed full-time. More marketing campaigns in universities might also help to increase behavioral intention.

In this study, consumers with a monthly income less than 15,000 show low scores in their purchase intention for PDAs. The researcher believes that marketers should not ignore this group but rather offer them low-end PDA models that have fewer functional specifications, which might fit in with their budgets. If targeted at an early stage, these consumers might in the future, obtain higher levels of income and move up to purchasing more expensive models (filter up behavior). Therefore, it is in the marketers' benefit to familiarize them at an early stage, which may create brand loyalty later. The same argument can be extended for officials (public sector) who showed low mean value in behavioral intention toward PDAs. Even though this group

shows less likelihood of buying PDAs right now, the ones who are in managerial levels may be targeted as a niche market because their work structures are different from other occupations in these organizations.

6.3.2 Attitude

All variables of attitude show significant relationships with behavioral intention toward PDAs. Moreover, the research results indicate that perceived usefulness has a higher correlation than perceived ease of use and compatibility. Thus, it can be concluded that the most important factor in order to persuade customers to purchase a PDA is its usefulness or advantages that a PDA can offer its users. Marketers can increase behavior intention by informing potential buyers they can get from PDA, such as, improved job performances, saving time, convenience, etc. Some people might know of the benefits but they are still reluctant to buy because they fear that PDAs are difficult to use and require a lengthy learning process. Hence, it is also important for marketers to emphasize how easy it is to use a PDA, and how PDAs will fit well with their lifestyles.

6.3.3 Subjective Norms

The findings of this study showed that social influences and secondary sources have an impact on consumer's purchase intention of PDAs. Moreover, social influences scored higher than secondary sources. This indicates that influences from friends, colleagues and family (informal sources) have a stronger influence on consumer's decision making, more than messages conveyed via media such as television, newspaper, magazine and brochures. For social influence, friends were highest influences than colleagues and family. Whereas, magazines had the highest

mean score for secondary sources of influences consumers' purchase intention toward PDAs. Schiffman and Kanuk (2000) argue that in terms of relative influence, after an individual's family, his or her friends are most likely to influence the individual's purchase decision. Therefore, marketing programs should emphasize both stimulation or word-of-mouth strategy (tell your friends how much you like our product), and simulation, which are advertisements designed to simulate product discussions by showing people in the act of informal communication. Moreover, the marketer also should convey the message to consumers by creating opinion leaders who can "carry the message" to others. Kotler (2000) stated that product-specific opinion leaders can be created by taking socially-involved or influential people and deliberately increasing their enthusiasm for a product category. PDA marketers can use celebrity spokespeople or experts to endorse their products – this will increase both product awareness as well as credibility.

In addition, subjective norms, especially from family and friends, can be expected to be critical in the short-term when one has little or no prior experience with a specific technology (Venkatesh and Morris, 2000). The authors believed that subjective norms will diminish and become less significant over time, with increasing experience of consumers, nevertheless, the role of perceived usefulness remains significant over long periods of time.

6.4 Further Research

Additional research on the topic can be deduced from the limitations of the research. Specifically, the scope of this research was limited only to the Bangkok area. Therefore, further studies should extend to other geographic areas since consumers in different areas may have different factors influencing their purchase of PDAs. This

study focuses only on demographic factors, attitude and subjective norm factors toward behavioral intention of PDAs. Therefore, additional factors should be investigated, such as, perceived price, quality, image, brand etc. Moreover, further research is needed to investigate in greater detail, differences in consumer attitudes towards operating systems of PDAs (eg., PalmOs and Pocket PC) as well as differences between traditional PDAs and smart-phones. Research findings conducted at different times may give different results. Therefore, longitudinal studies may be useful in tracking changes in consumer attitudes and behavior.

Bibliography and References

Ajzen, I. (1991), The theory of planned behavior, Organizational Behavioral and Human Decision Processes, 50, 179-211.

Ajzen, I. (2001), Nature and operation of attitudes, Annual Reviews Psychology, 52, 27-58.

Ajzen, I. and Fishbein, M. (1980), Understanding the attitudes and predicting social behavior, Englewood Cliffs, NJ, Prentice Hall.

Analyze PDA in Thai Market, Last updated September 6, 2004. http://www.manager.co.th

Anderson, G. (1996), Fundamentals of education research (1st ed.), London, Falmer Press.

Argarwal, R. (2000), Individual acceptance of information technologies, In Zmud, R. W. (Ed.), Framing the domains of IT management: Projecting the future through the past (pp.85-104), Cincinnati, Pinnaflex Educational Resources.

Chiou, J. S. (1998), The effects of attitude, subjective norm, and perceived behavioral control on consumer's purchase intentions: The moderating effects of product knowledge and attention to social comparison information, Proceedings of The National Science Council, Republic of China, 9, 2, 298-308.

Davis, F. D. (1989), Perceived usefulness, perceived ease of use, and user acceptance of information technology, MIS Quarterly, 13, 3, 319-340.

Davis, F. D., Bagozzi, R. P. and Warshaw, P. R. (1989), User acceptance of computer technology: A comparison of two theoretical models, Management Science, 35, 8, 982-1003.

Elder, V. B., Gardner, E. P., and Ruth, S. R. (1987) Gender and age in technostress: effects on white collar productivity, Government Finance Review, 3, 6, 17-21.

Etzel, M. J., Walker, B. J. and Stanton, W. J. (2001), Marketing (12th ed.), Avenue of the Americans, NY, Irwin/McGraw Hill.

Fishbein, M. and Ajzen, I. (1975), Belief, attitude, intention and behavior: An introduction to theory and research, Reading, MA: Addision-Wesley.

Ha, C. L. (1998), The theory of reasoned action applied to brand loyalty, Journal of Product and Brand Management, 7, 1, 51-61.

Handheld Device Market in Asia/Pacific Softened in H1 2002, Last updated: 6 August, 2002.
http://www.idc.com

Hanna, N. and Wozniak, R. (2001), Consumer Behavior: an applied approach, Upper Saddle River, NJ, Prentice Hall.

Hawkins, D. I., Best, R. J. and Coney, K. A. (2001), Consumer behavior: Building marketing strategy (8th ed.), Boston, Irwin/McGraw-Hills

Johnston, W. J. and Lewin, J. E. (1996), Organizational buyer behavior: toward an integrative framework, Journal of Business Research, 15, 1-15.

Karjaluoto, H., Mattila, M. and Pento, T. (2002), Factors underlying attitude formation towards online banking in Finland, International Journal of Bank Marketing, 20, 6, 261-272.

Klobas, J. E. and Clyde, L. A. (2001), Social influence and Internet use, Library Management, 22, 61-67.

Kotler P., (2000), Marketing management (Millennium ed.), Upper Saddle River, NJ, Prentice Hall.

Laudon, K. C., and Laudon, J. P. (2002), Management information systems (7th ed.), Upper Saddle River, NJ, Prentice Hall.

Lee, J.E. and Ho, P.S. (2002), A retail investor's perspective on the acceptance of Internet stock trading, 36th Annual Hawaii International Conference on System Sciences (HICSS'03), IEEE Computer Society, 7, 191b.

Lewis, N. J. and Orton, P. (2000), The five attributes of innovation E-learning, Training and Development, 54, 6, 47-51.

Lindgren, J. H. Jr. and Shimp, T. A. (1996), Marketing: An interactive learning system, Fort Worth, TX, Dryden Press.

Lu, J., Yu, C. S., Liu, C. and Yao, J. E. (2003), Technology acceptance model for wireless internet, Internet Research: Electronic Networking Applications and Policy, 13, 3, 206-222.

Malhotra, N. (1999), Marketing research (3rd ed.), Upper Saddle River, NJ, Prentice Hall.

Market Share: PDAs, Asia/Pacific 2Q03, Last updated August 31, 2003. http://www.gartner.com

Mittal, B., Newman, B. and Sheth, J. N. (1999), Customer behavior: Consumer behavior and beyond, Fort Worth, TX, Dryden Press

Monsuwé, T. P., Dellaert B. G. C. and Ruyter K. D. (2004), What drives consumers to shop online? A literature review, International Journal of Service Industry Management, 15, 1, pp.102-121.

Moore, G. C. and Benbasat, I. (1991), Development of an instrument to measure the perceptions of adopting an information technology innovation, Information Systems Research, 2, 3, 192-222.

Morris, M. G. and Venkatesh, V. (2000), Age differences in technology adoption decisions: Implications for a changing workforce, Personnel Psychology, 53, 375-403.

National Statistical Office of Thailand, Population of Bangkok citizens in year 2003, Last updated: March 13, 2003.
http://www.nso.go.th

Palm fight back, Last updated January 30, 2003.
http://www.thannews.com.th

Page, C. and Luding, Y. (2003), Bank mangers' direct marketing dilemmas-customers' attitudes and purchase intention, International Journal of Bank Marketing, 21, 3, 147-163.

PDA in year 2003, Last updated July 24, 2003.
http://www.bangkokbiznew.com

PDA Opportunity In Market, Last updated June 14, 2004
http://www.businessthai.co.th

PDA OS Market Share, Last updated August 5, 2004.
http://www.idc.com

Rogers, E. M. (1995), Diffusion of innovations (4th ed.), New York, Free Press

Santrock, J. W. (1998), Pschology (6th ed.), NY, McGraw Hill.

Shih, Y. and Fang, W. (2004), The use of a decomposed theory of planned behavior to study Internet banking in Taiwan, Internet Research, 14, 3, 213-223.

Shim, S., Eastlick, M. A., Lotz S. L. and Warrington, P. (2001), An online prepurchase intention model: The role of intention to search, Journal of Retailing, 77, 397-416.

Smartphone, Last updated November 11, 2004

http:www.wikipedia.com

Solomon, M. R. (1999), Consumer behavior (4th ed.), Upper Saddle River, NJ, Prentice Hall.

Taylor, S. and Todd, P. (1995), Understanding information technology usage: A test of competing models, Information Systems Research, 6, 2, 144-176.

TechEncyclopedia, Last updated July 20, 2003. http://www.techtarget.com

Teo, T. S. H. (2001), Demographic and motivation variables associated with Internet usage activities, Internet Research: Electronic Networking Applications and Policy, 11, 2, 125-137.

Thompson, K. E. and Panayiotopoulos, P. (1999), Predicting behavioral intention in a small business context, Journal of Marketing Practice: Applied Marketing Science, 5, 3, 89-96.

Tornartzky, L. G. and Klien, K. L. (1982), Innovation characteristics and innovation adoption implementation: A meta-analysis of findings, IEEE Transactions on Engineering Management, 29, 28-45.

Trafimow, D. and Finlay, K. A. (2001), The relationship between normatively versus attitudinally controlled people and normatively versus attitudinally controlled behaviors, The Social Science Journal, 38, 203-216.

Venkatesh, V. and Brown, S. (2001), A Longitudinal investigation of personal computers in homes: Adoption determinants and emerging challenges, MIS Quarterly, 25, 1, 71-102.

Venkatesh, V. and Davis F. D. (1996), A model of the antecedents of perceived ease of use: development and test, Decision Sciences, 27, 3, 451-481.

Venkatesh, V. and Davis, F. D. (2000), A theoretical extension of the technology acceptance model: Four longitudinal field studies, Management Science, 46, 2, 186-204.

Venkatesh, V. and Morris, M. G., (2000), Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior, MIS Quarterly, 24, 1, 115-139.

Venkatesh, V., Morris, M. G., Davis, G. B. and Davis, F. D. (2003), User acceptance of information technology: Toward a unified view, MIS Quarterly, 23, 7, 425-478.

Wood, W. (2000), Attitude change: Persuasion and social influence, Annual Review of Psychology, 51, 539-570.

Worldwide PDA forecast 1998-2008, Last updated: July 16, 2003. http://www.etforecasts.com

Zikmund, W. G. (1991), Business research method (3rd ed.), Forth Worth, NY, Dryden Press.

PDA Opportunity In Market, Last updated June 14, 2004 http://www.businessthai.com

Appendix A

Questionnaire

This questionnaire is designed to obtain information for use as part of my thesis entitled "A study of factors influencing consumer's behavior intention toward Personal Digital Assistants (PDAs) in Bangkok". This study is conducted for the purpose of the preparation of a thesis for completion of the Master of Business Administration program.

Please answer all questions regarding the facts in this questionnaire and thank you for your cooperation.

Part I: Please indicate your agreement on the following questions about PDA

Attitude	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Perceived Usefulness					
1. PDA is a useful tool for my personal use.					
2. PDA is a useful tool for my work-related use.					
3. Using a PDA makes me improve my quality of work.					
4. Using a PDA makes me save time.					
Perceived Ease of Use					
5. Learning to use a PDA is easy for me.					
6. Operating a PDA is easy for me.					
Compatibility					
7. Using a PDA fits well with my way of doing things					
8. Using a PDA fits well with my lifestyle					

Part II: Please indicate the level of influence the following factors might have on your purchase of a PDA

Subjective Norms	Most Influence	Influence	Neutral	Less influence	Least Influence
Social Influences					
9. Friends					
10. Colleagues					
11. Family					
Secondary Sources					
12. Newspaper					
13. Magazine					
14. Brochures					
15. Television					

Part III: Behavior Intention

16. How likely would you be to purchase a PDA in the next 6 month?
    1) Most likely to purchase
    2) Likely to purchase
    3) Unsure
    4) Unlikely to purchase
    5) Most unlikely to purchase

Part IV: Personal Data

Gender 1) Male 2) Female

Age

1) 20-28 2) 29-37 3) 38-46 4) 47-55

Occupation

1) Student 2) Official 3) Private employee

4) Business owner 5) Other .....

Education Level

1) High school or below 2) Bachelor Degree 3) Master Degree or above

Income/Month

1) Less than 15,000 2) 15,001-25,000 3) 25,001-35,000

4) 35,001-45,000 5) More than 45,000

แบบสอบถาม

แบบสอบถามนี้เป็นส่วนหนึ่งของวิทยานิพนธ์ เรื่อง การศึกษาปัจจัยที่มีอิทธิพลต่อการสนใจซื้อ PDA (Personal Digital Assistant) ในกรุงเทพฯ ของภาคปริญญาโทบริหารธุรกิจ มหาวิทยาลัยอัสสัมชัญ กรุณาตอบคำถามโดยความเป็นจริง และขอขอบคุณในการร่วมมือ

ส่วนที่ 1: คุณมีความคิดเห็นอย่างไรต่อการใช้ PDA (โปรดทำเครื่องหมาย √ ลงในช่องว่าง)

	เห็นด้วยมากที่สุด	เห็นด้วย	ปานกลาง	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างมาก
ความเป็นประโยชน์					
1. PDAเป็นอุปกรณ์ที่มีประโยชน์ต่อการใช้ในการส่วนตัว (personal use)					
2. PDAเป็นอุปกรณ์ที่มีประโยชน์ต่อการใช้ในหน้าที่การงาน (work-related use)					
3. การนำ PDA มาใช้ ทำให้คุณภาพของงานดีขึ้น					
4. การนำ PDA มาใช้ ทำให้ช่วยประหยัดเวลา					
ความง่ายในการนำมาใช้					
5. การเรียนรู้ที่จะใช้งานของ PDA เป็นสิ่งที่ง่ายสำหรับฉัน					
6. การนำ PDA มาปฏิบัติใช้ เป็นสิ่งที่ง่ายสำหรับฉัน					
การเข้ากันได้					
7. การนำ PDA มาใช้ สามารถเข้ากันได้กับวิธีการ หรือความเคยชินที่ฉันเคยทำมาก่อน					
8. การนำ PDA มาใช้ เหมาะกับการดำเนินชีวิตของฉัน (lifestyle)					

ส่วนที่ 2: ปัจจัยต่างๆดังต่อไปนี้มีอิทธิพลต่อการเลือกซื้อ PDA ของคุณ มากน้อยแค่ไหน? (โปรดทำเครื่องหมาย √ ลงในช่องว่าง)

	มีอิทธิพลมากสุด	มีอิทธิพล	ปานกลาง	มีอิทธิพลน้อย	มีอิทธิพลน้อยมาก
สังคม					
9. เพื่อน					
10. เพื่อนร่วมงาน					
11. ครอบครัว					
สื่อต่างๆ					
12. หนังสือพิมพ์					
13. นิตยสาร					
14. แผ่นพับ					
15. โทรทัศน์					

ส่วนที่ 3: การตั้งใจในการซื้อ

16. คุณมีความตั้งใจที่จะซื้อ PDA ในอีก 6 เดือนข้างไหนมากน้อยแค่ไหน?

1) มีความตั้งใจที่จะซื้อมาก
2) มีความตั้งใจที่จะซื้อ
3) ค่อนข้างไม่แน่ใจ
4) มีความตั้งใจน้อยมี่จะซื้อ
5) ไม่มีความตั้งใจที่จะซื้อ

ส่วนที่ 4: ข้อมูลส่วนตัว

เพศ

1) ชาย 2) หญิง

อายุ

1) 20-28 2) 29-37 3) 38-46 4) 47-55

อาชีพ

1) นักเรียน 2) ข้าราชการ 3) พนักงานเอกชน
4) เจ้าของกิจการ 5) อื่นๆ .....

การศึกษา

1) มัธยมตอนปลาย หรือต่ำกว่า 2) ปริญญาตรี 3) ปริญญาโท หรือสูงกว่า

รายได้/เดือน

1) น้อยกว่า 15,000 2) 15,001-25,000 3) 25,001-35,000
4) 35,001-45,000 5) มากกว่า 45,000

Appendix B

Hypothesis 1

Descriptives

Behavioal Intention

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
20-28	234	3.03	1.263	.083	2.87	3.20	1	5
29-37	120	3.07	1.035	.094	2.88	3.25	1	5
38-46	17	2.82	.393	.095	2.62	3.03	2	3
47-55	13	1.85	.899	.249	1.30	2.39	1	3
Total	384	2.99	1.176	.060	2.88	3.11	1	5

Test of Homogeneity of Variances

Behavioal Intention

Levene Statistic	df1	df2	Sig.
12.614	3	380	.000

ANOVA

Behavioal Intention

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.634	3	6.211	4.616	.003
Within Groups	511.356	380	1.346		
Total	529.990	383			

Post Hoc Tests

Multiple Comparisons

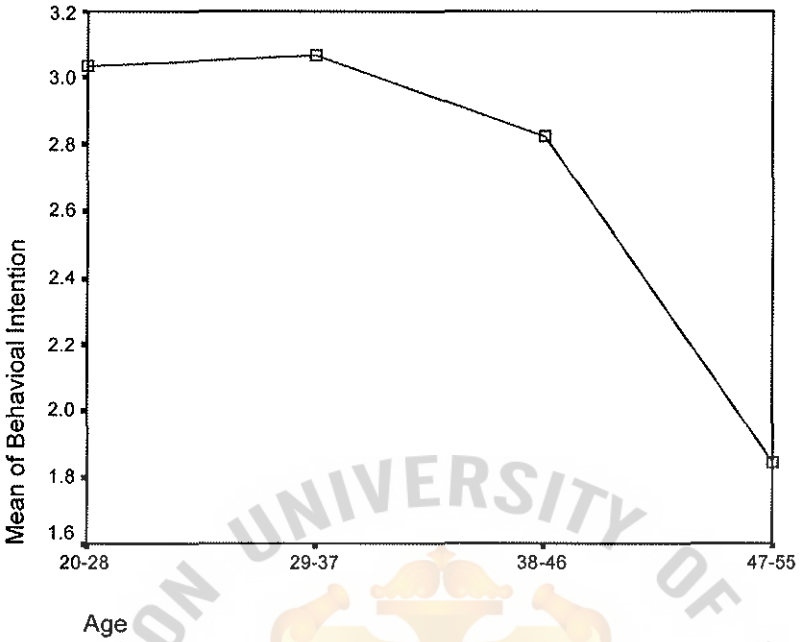
Dependent Variable: Behavioal Intention

Tamhane

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
20-28	29-37	-.03	.125	1.000	-.36	.30
	38-46	.21	.126	.474	-.14	.56
	47-55	1.19*	.263	.003	.39	1.98
29-37	20-28	.03	.125	1.000	-.30	.36
	38-46	.24	.134	.375	-.12	.61
	47-55	1.22*	.267	.002	.42	2.02
38-46	20-28	-.21	.126	.474	-.56	.14
	29-37	-.24	.134	.375	-.61	.12
	47-55	.98*	.267	.013	.17	1.78
47-55	20-28	-1.19*	.263	.003	-1.98	-.39
	29-37	-1.22*	.267	.002	-2.02	-.42
	38-46	-.98*	.267	.013	-1.78	-.17

*. The mean difference is significant at the .05 level.

Means Plots



Hypothesis 2

Descriptives

Behavioal Intention

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Student	73	3.00	1.179	.138	2.73	3.27	1	5
Official	48	2.44	1.219	.176	2.08	2.79	1	4
Private employee	179	3.20	1.204	.090	3.02	3.37	1	5
Business owner	73	2.99	.950	.111	2.76	3.21	1	5
Other	11	2.18	.874	.263	1.59	2.77	1	3
Total	384	2.99	1.176	.060	2.88	3.11	1	5

V

Behavioal Intention

evene Statisti	df1	df2	Sig.
9.039	4	379	.000

ANOVA

Behavioal Intention

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	29.398	4	7.349	5.564	.000
Within Groups	500.592	379	1.321		
Total	529.990	383			

Post Hoc Tests

Multiple Comparisons

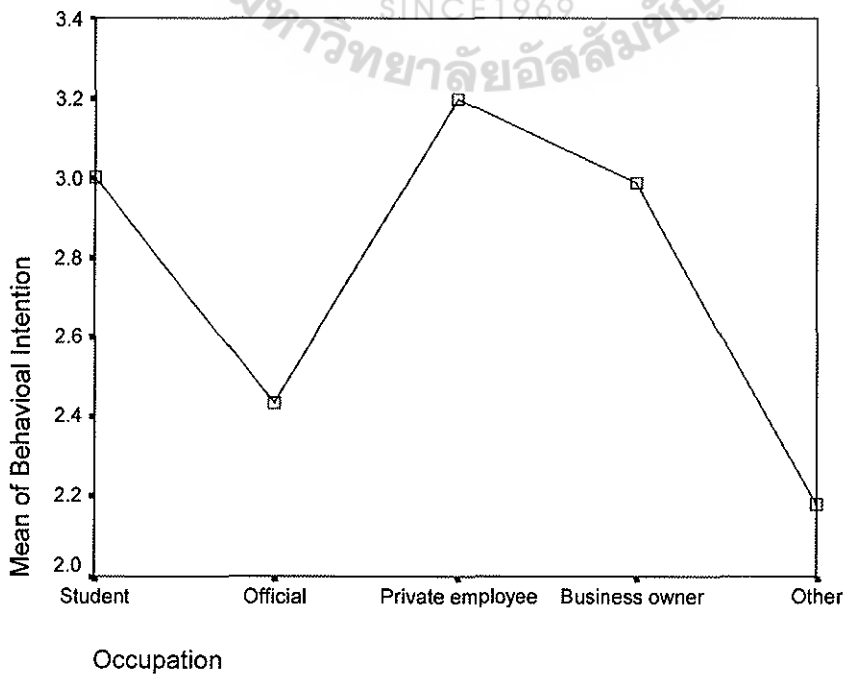
Dependent Variable: Behavioal Intention

Tamhane

(I) Occupation	(J) Occupation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Student	Official	.56	.224	.127	-.08	1.20
	Private employee	-.20	.165	.933	-.66	.27
	Business owner	.01	.177	1.000	-.49	.52
	Other	.82	.297	.133	-.15	1.78
Official	Student	-.56	.224	.127	-1.20	.08
	Private employee	-.76*	.198	.003	-1.33	-.19
	Business owner	-.55	.208	.095	-1.15	.05
	Other	.26	.317	.996	-.74	1.25
Private employee	Student	.20	.165	.933	-.27	.66
	Official	.76*	.198	.003	.19	1.33
	Business owner	.21	.143	.792	-.20	.62
	Other	1.01*	.278	.031	.07	1.96
Business owner	Student	-.01	.177	1.000	-.52	.49
	Official	.55	.208	.095	-.05	1.15
	Private employee	-.21	.143	.792	-.62	.20
	Other	.80	.286	.131	-.15	1.75
Other	Student	-.82	.297	.133	-1.78	.15
	Official	-.26	.317	.996	-1.25	.74
	Private employee	-1.01*	.278	.031	-1.96	-.07
	Business owner	-.80	.286	.131	-1.75	.15

*. The mean difference is significant at the .05 level.

Means Plots



Hypothesis 3

Descriptives

Behavioal Intention

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
High School or below	10	2.80	1.033	.327	2.06	3.54	2	4
Bachelor degree	250	2.78	1.271	.080	2.63	2.94	1	5
Master degree or above	124	3.44	.819	.074	3.29	3.58	2	5
Total	384	2.99	1.176	.060	2.88	3.11	1	5

est e eit ri ces

Behavioal Intention

Levene Statistic	df1	df2	Sig.
14.344	2	381	.000

Behavioal Intention

	Sum of S uares	df	Mean S uare		Sig.
Between roups	35.570	2	17.785	13.705	.000
ithin roups	494.420	381	1.298		
Total	529.990	383			

Post Hoc Tests

Multiple Comparisons

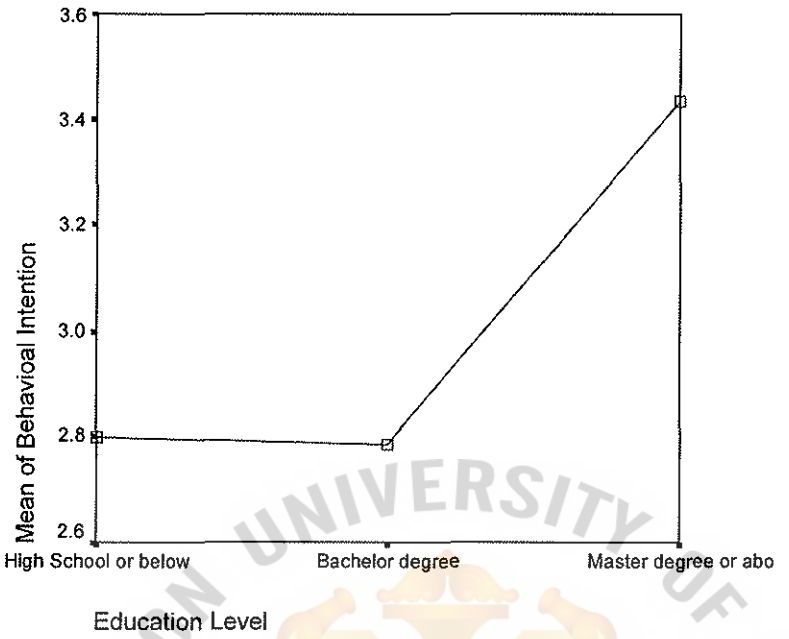
Dependent Variable: Behavioal Intention

Tamhane

(I) Education Level	(J) Education Level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
High School or below	Bachelor degree	.02	.336	1.000	-.94	.98
	Master degree or above	-.64	.335	.239	-1.59	.32
Bachelor degree	High School or below	-.02	.336	1.000	-.98	.94
	Master degree or above	-.65*	.109	.000	-.91	-.39
Master degree or above	High School or below	.64	.335	.239	-.32	1.59
	Bachelor degree	.65*	.109	.000	.39	.91

*. The mean difference is significant at the .05 level.

Means Plots



Hypothesis 4

Descriptives

Behavioal Intention

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Less than 15,000	115	2.37	.995	.093	2.19	2.56	1	5
15,001-25,000	119	3.29	1.421	.130	3.03	3.54	1	5
25,001-35,000	73	3.19	1.036	.121	2.95	3.43	1	5
35,001-45,000	45	3.33	.477	.071	3.19	3.48	3	4
More than 45,000	32	3.22	.941	.166	2.88	3.56	2	5
Total	384	2.99	1.176	.060	2.88	3.11	1	5

est e elt ri ces

Behavioal Intention

Levene Statistic	df1	df2	Sig.
15.306	4	379	.000

ANOVA

Behavioal Intention

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	63.998	4	16.000	13.013	.000
Within Groups	465.991	379	1.230		
Total	529.990	383			

Post Hoc Tests

Multiple Comparisons

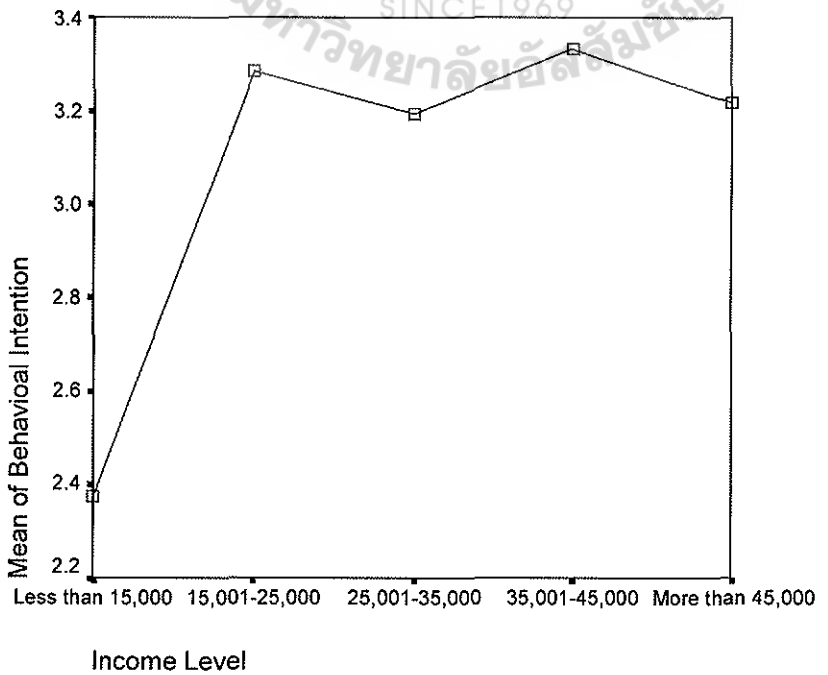
Dependent Variable: Behavioal Intention

Tamhane

(I) Income Level	(J) Income Level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Less than 15,000	15,001-25,000	-.91*	.160	.000	-1.36	-.46
	25,001-35,000	-.82*	.153	.000	-1.25	-.38
	35,001-45,000	-.96*	.117	.000	-1.29	-.63
	More than 45,000	-.84*	.191	.000	-1.40	-.29
15,001-25,000	Less than 15,000	.91*	.160	.000	.46	1.36
	25,001-35,000	.09	.178	1.000	-.41	.60
	35,001-45,000	-.05	.148	1.000	-.47	.37
	More than 45,000	.07	.211	1.000	-.54	.68
25,001-35,000	Less than 15,000	.82*	.153	.000	.38	1.25
	15,001-25,000	-.09	.178	1.000	-.60	.41
	35,001-45,000	-.14	.141	.978	-.54	.26
	More than 45,000	-.03	.206	1.000	-.62	.57
35,001-45,000	Less than 15,000	.96*	.117	.000	.63	1.29
	15,001-25,000	.05	.148	1.000	-.37	.47
	25,001-35,000	.14	.141	.978	-.26	.54
	More than 45,000	.11	.181	.999	-.42	.65
More than 45,000	Less than 15,000	.84*	.191	.000	.29	1.40
	15,001-25,000	-.07	.211	1.000	-.68	.54
	25,001-35,000	.03	.206	1.000	-.57	.62
	35,001-45,000	-.11	.181	.999	-.65	.42

*. The mean difference is significant at the .05 level.

Means Plots



Descriptive

PDA is useful tool for personal use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	1.0	1.0	1.0
	Disagree	65	16.9	16.9	18.0
	Neutral	130	33.9	33.9	51.8
	Agree	108	28.1	28.1	79.9
	Strongly Agree	77	20.1	20.1	100.0
	Total	384	100.0	100.0	

PDA is useful tool for work related use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.5	.5	.5
	Disagree	50	13.0	13.0	13.5
	Neutral	139	36.2	36.2	49.7
	Agree	150	39.1	39.1	88.8
	Strongly Agree	43	11.2	11.2	100.0
	Total	384	100.0	100.0	

Quality of work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	16	4.2	4.2	4.2
	Disagree	67	17.4	17.4	21.6
	Neutral	126	32.8	32.8	54.4
	Agree	129	33.6	33.6	88.0
	Strongly Agree	46	12.0	12.0	100.0
	Total	384	100.0	100.0	

Save Time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	18	4.7	4.7	4.7
	Disagree	60	15.6	15.6	20.3
	Neutral	100	26.0	26.0	46.4
	Agree	134	34.9	34.9	81.3
	Strongly Agree	72	18.8	18.8	100.0
	Total	384	100.0	100.0	

Perceived Usefulness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.5	.5	.5
	Disagree	46	12.0	12.0	12.5
	Neutral	131	34.1	34.1	46.6
	Agree	159	41.4	41.4	88.0
	Strongly Agree	46	12.0	12.0	100.0
	Total	384	100.0	100.0	

Learning to use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	14	3.6	3.6	3.6
	Disagree	87	22.7	22.7	26.3
	Neutral	119	31.0	31.0	57.3
	Agree	92	24.0	24.0	81.3
	Strongly Agree	72	18.8	18.8	100.0
	Total	384	100.0	100.0	

Operate with

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	2.1	2.1	2.1
	Disagree	71	18.5	18.5	20.6
	Neutral	95	24.7	24.7	45.3
	Agree	171	44.5	44.5	89.8
	Strongly Agree	39	10.2	10.2	100.0
	Total	384	100.0	100.0	

Perceived Ease of Use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	1.0	1.0	1.0
	Disagree	48	12.5	12.5	13.5
	Neutral	122	31.8	31.8	45.3
	Agree	139	36.2	36.2	81.5
	Strongly Agree	71	18.5	18.5	100.0
	Total	384	100.0	100.0	

Past Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	23	6.0	6.0	6.0
	Disagree	60	15.6	15.6	21.6
	Neutral	113	29.4	29.4	51.0
	Agree	139	36.2	36.2	87.2
	Strongly Agree	49	12.8	12.8	100.0
	Total	384	100.0	100.0	

Lifestyle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	10	2.6	2.6	2.6
	Disagree	89	23.2	23.2	25.8
	Neutral	111	28.9	28.9	54.7
	Agree	110	28.6	28.6	83.3
	Strongly Agree	64	16.7	16.7	100.0
	Total	384	100.0	100.0	

Compatiblity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	38	9.9	9.9	9.9
	Neutral	115	29.9	29.9	39.8
	Agree	181	47.1	47.1	87.0
	Strongly Agree	50	13.0	13.0	100.0
	Total	384	100.0	100.0	

Factors influencing consumer to purchase PDA - Friend

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Influence	9	2.3	2.3	2.3
	Less Influence	50	13.0	13.0	15.4
	Neutral	78	20.3	20.3	35.7
	Influence	200	52.1	52.1	87.8
	Most Influence	47	12.2	12.2	100.0
	Total	384	100.0	100.0	

Factors influencing consumer to purchase PDA - Colleagues

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Influence	9	2.3	2.3	2.3
	Less Influence	63	16.4	16.4	18.8
	Neutral	136	35.4	35.4	54.2
	Influence	164	42.7	42.7	96.9
	Most Influence	12	3.1	3.1	100.0
	Total	384	100.0	100.0	

Factors influencing consumer to purchase PDA - Family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Influence	6	1.6	1.6	1.6
	Less Influence	86	22.4	22.4	24.0
	Neutral	108	28.1	28.1	52.1
	Influence	133	34.6	34.6	86.7
	Most Influence	51	13.3	13.3	100.0
	Total	384	100.0	100.0	

Social Influences

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	tron ly isa ree	4	1.0	1.0	1.0
	isa ree	38	9.9	9.9	10.9
	Neutral	126	32.8	32.8	43.8
	ree	210	54.7	54.7	98.4
	tron ly ree	6	1.6	1.6	100.0
	Total	384	100.0	100.0	

Factors influencing consumer to purchase PDA - Newspaper

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Influence	6	1.6	1.6	1.6
	Less Influence	91	23.7	23.7	25.3
	Neutral	96	25.0	25.0	50.3
	Influence	131	34.1	34.1	84.4
	Most Influence	60	15.6	15.6	100.0
	Total	384	100.0	100.0	

Factors influencing consumer to purchase PDA - Magazine

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Influence	9	2.3	2.3	2.3
	Less Influence	60	15.6	15.6	18.0
	Neutral	103	26.8	26.8	44.8
	Influence	83	21.6	21.6	66.4
	Most Influence	129	33.6	33.6	100.0
	Total	384	100.0	100.0	

Factors influencing consumer to purchase PDA - Brochure

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Influence	17	4.4	4.4	4.4
	Less Influence	82	21.4	21.4	25.8
	Neutral	74	19.3	19.3	45.1
	Influence	142	37.0	37.0	82.0
	Most Influence	69	18.0	18.0	100.0
	Total	384	100.0	100.0	

Factors influencing consumer to purchase PDA - Television

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Influence	19	4.9	4.9	4.9
	Less Influence	77	20.1	20.1	25.0
	Neutral	103	26.8	26.8	51.8
	Influence	144	37.5	37.5	89.3
	Most Influence	41	10.7	10.7	100.0
	Total	384	100.0	100.0	

Secondary Sources

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	52	13.5	13.5	13.5
	Neutral	128	33.3	33.3	46.9
	Agree	132	34.4	34.4	81.3
	Strongly Agree	72	18.8	18.8	100.0
	Total	384	100.0	100.0	

Descriptive Statistics

	N	Minimum	Maximum	Mean
Factors influencing consumer to purchase PDA - Friend	384	1	5	3.59
Factors influencing consumer to purchase PDA - Colleagues	384	1	5	3.28
Factors influencing consumer to purchase PDA - Family	384	1	5	3.36
Factors influencing consumer to purchase PDA - Newspaper	384	1	5	3.39
Factors influencing consumer to purchase PDA - Magazine	384	1	5	3.68
Factors influencing consumer to purchase PDA - Brochure	384	1	5	3.43
Factors influencing consumer to purchase PDA - Television	384	1	5	3.29
Valid N (listwise)	384			

Behavioral Intention

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mostly unlikely	51	13.3	13.3	13.3
	Unlikely	71	18.5	18.5	31.8
	Unsure	133	34.6	34.6	66.4
	Likely	87	22.7	22.7	89.1
	Mostly likely	42	10.9	10.9	100.0
	Total	384	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	205	53.4	53.4	53.4
	Female	179	46.6	46.6	100.0
	Total	384	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-28	234	60.9	60.9	60.9
	29-37	120	31.3	31.3	92.2
	38-46	17	4.4	4.4	96.6
	47-55	13	3.4	3.4	100.0
	Total	384	100.0	100.0	

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	73	19.0	19.0	19.0
	Official	48	12.5	12.5	31.5
	Private employee	179	46.6	46.6	78.1
	Business owner	73	19.0	19.0	97.1
	Other	11	2.9	2.9	100.0
	Total	384	100.0	100.0	

Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School or below	10	2.6	2.6	2.6
	Bachelor degree	250	65.1	65.1	67.7
	Master degree or above	124	32.3	32.3	100.0
	Total	384	100.0	100.0	

Income Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 15,000	115	29.9	29.9	29.9
	15,001-25,000	119	31.0	31.0	60.9
	25,001-35,000	73	19.0	19.0	79.9
	35,001-45,000	45	11.7	11.7	91.7
	More than 45,000	32	8.3	8.3	100.0
	Total	384	100.0	100.0	