A STUDY OF THE RELATIONSHIP BETWEEN SELECTED FACTORS AND ADOPTION OF ONLINE GAMES BY THAI YOUTH

By

PIYA LEELAPRAD

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

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Abstract

With the help of the IT Revolution at the end of the last century, the advancement of internet technology has lead to a rise of the online games. Furthermore, the online games will be the new trend of the next generation of entertainment industry.

Compared with other advanced countries, Thailand's online game market is still new for the local industry. The importance of Thai online game business was not clearly recognized by the public until the launch of a new Korean online game that came under fire as it attracted more than 600,000 registered players and social problems concerning the game addiction of Thai youth which has emerged to the Thai public in 2003.

Since Thai youth is the largest consumer group in online games business, the purpose of this research was focused on the study of the relationship of selected factors with adoption of online games by Thai youth. The dependent variable used was adoption of online games by Thai youth, and the independent variables are hedonic, social, and utilitarian outcomes, social and secondary influence, personality, allowance/ income, time, and gender.

The data was collected by a self-administrated questionnaire given out to random selected undergraduate students at Assumption University. The hypothesis testing is performed to test the relationship of college students (as the target youth group) and the selected determinant factors of online game adoption.

The results showed that the amount of allowance/ income, time has a direct influence on the level of online game adoption. Furthermore, the difference of gender also has a significant influence on the individual's acceptance of online game adoption.

The results also show that the difference between introvert, extrovert and social outcomes has no significant influence on Thai youth's adoption of online games. Moreover, the results also shown that the hedonic outcomes, utilitarian outcomes, and secondary influence all have relationships with Thai youth's adoption of online games.

Since the online game business is still relatively new in Thailand, it is important to have further studies relating to this field. This research has given recommendation for future research in relating to online games. More specific studies concerning with gender, different age group, and students from different universities are some of the possible recommendations for additional related research topics.

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Piya Leelaprad
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1.1 Introduction

The Game Industry

Originated in research centers and universities in the U.S. back in the 1950s and 1960s, computer games became a commercialized industry in the early 1970s. With the advancement of technology and increase in demand of home entertainment in the 1980s and the 1990s, the game industry has grown into a giant business sector in many large economies of the world. Within the United States alone, the game market sales grew up to an all-time high of $9.4 billion in the year 2001 which outruns the $8 billion Hollywood movie industry (Game Investor, 2003). The Japanese market and European game market sales was $5.2 billion and $5.5 billion in the same year. The sales figure of the game industry worldwide was $27 billion in year 2002 (Game Investor, 2003).

Computer games can be separated into two major types: arcade-style game machines including video game consoles; and computer games, which run on multipurpose personal computers (Ikuine, 1996). Atari video game machine is the first to introduce video games in the 1970's, video game machines began to dominate the game industry as Japanese Nintendo's Famicom made its debut in 1983. The game industry became more competitive as others tried to enter the market. In 1988 Sega's new 16-bit Mega Drive came into the market and took Nintendo's Famicom place as leader of the game industry. But Nintendo made its comeback with the release of its new game machine system, Super Famicom, as well as new popular games provided by

many game software firms. The competition within the game industry grew more fiercely as Sony's PlayStation and PlayStation2 came into the market in 1994 and 2000 which drove Sega out from the game hardware competition and took much of the market share from Nintendo and became the new leader of the game industry. Sony's PlayStation2 was a highly multifunctional equipped game machine, which has RISC processor that will run at 250MHz, and it also used DVD Rom to run the games. Even throughout the 1980s and 1990s the game industry was dominated by the Japanese game makers. U.S.'s Microsoft launched a new game machine system known as the Xbox in 2001 which equipped with Intel 733MHz Pentium II CPU, 8GB hard drive and out-of-box broadband internet support joined the competition with Sony and Nintendo as the three giants of the world's game industry.

Table 1.1 Global Shipment Sales of Game Consoles

Platform	Global Shipments (September 2002) (In US$)	Launch Date (Japan)	(Anticipated) Annual Sales Peak
Sony Playstation	92 million	1994	(1998/1999)
N64	33million	1996	1999
Sega Dreamcast	6 million	1998	2000
Playstation2	42 million	2000	(2004/2005)
Nintendo Game Cube	6.7 million	2001	(2003,)
Microsoft Xbox	4.3 million	2001 (US)	(2004,)
Nintendo Game Boy	119 million	1989	N/A
Game Boy Advance/SP	24million	2001/2003	N/A

(Sources: www.gameinvestor.com)

Table 1.1 shows the global shipment of different kind of game consoles from the launch date of each of the game console until 2004. From the table, it shows Game boy has the largest shipment with 119 million U.S. Dollars, but it is also has the earliest launch date in 1989. On other hand the table also shows that Sony's PlayStation 1 and 2 has a tremendous shipment sales record despite their later launch date in the middle of the 1990s.

Development of Online Games

At the present time while video games remain at the main stream of the games industry, personal computer games have also begun their raise in the industry with the appearance of online games. With advancement of the PC systems and information technology (internet) throughout the 1990s, it gave a great opportunity for traditional PC games on the isolated individual PCs to move into the infinite world of cyber space where it makes possible to start multiplayer games as gamers from all over the world can join through the internet highway. To this date, it has been PC users that have dominated the online games market more than the video game consoles, because until the release of Sega's Dreamcast in November of 1999, no video game console had offered any form of Internet connection or online gaming (Game Investor, 2000).

Since the online games business is a very new type of business, it is also necessary to explain the important business components of online games business in this research. To provide a more understandable explanation of the online game business, analyst Brue Bahlmann from Birds-Eye.Net has categorized the business of online games into the following components:

- **Subscriber**: The consumer of gaming service and the one who ultimately

pays for it;

- **Advertiser**: The organization who subsidizes the costs of providing games or the game content for opportunities to advertise with the game (e.g. co-branding such as "Toyota Adrenaline") within the game play or ancillary to the game (e.g. banner within the game web site or the software box);
- **Broadband Service Provider (BSP)**: The organization providing some kind of last mile connectivity to the subscriber. This organization may also perform the duties of the Network Service Provider/ Reseller;
- **Network Service Provider (NSP)/Reseller**: The organization that supplies various components of a service. In the case of gaming, this organization might supply caching, security, authorization; copy protection, etc. host a gaming service or resell a gaming service provided by some other organization;
- **Gaming Content Provider (GCP)**: The makers of the games or content related to games that it uses to resell games, alongside its content. These organizations may also perform the duties of the NSP/R and/or the Gaming Platform Provider;
- **Game Platform Provider (GPP)**: The makers of the hardware platform either distributed to subscribers by the BSP or purchased by the subscribers independently. This hardware could be a game console or set-top box. These organizations may also perform the duties of the BSP, NSP/R, and GCP.

The various overlaps among these five business components make for a very complex group of companies where each strives for a larger piece of the subscriber dollar (Bahlmann, 2002).

On the other hand there are also independent game sites available on the Internet, where the subscriber can play online games without the need to go through any of these above parties (Bahlmann, 2002). The independent game sites may require the subscriber to obtain the games through retail purchase of game (or by downloading from the net) and then play it over the Internet via either free sites (those run by fellow gamers) or pay sites (or arcades run by businesses). The pay sites often host a number of online games and in most cases operate independently of the different providers previously defined the above. As these gaming sites increase in popularity they promote a completely independent business model which does not work with the BSP while challenging different providers or resellers with BSP ties.

As what Bahlmann has suggested, in short, the online gaming architecture incorporate these six components discussed above which includes the subscriber, advertiser, gaming platform provider (GPP), broadband service provider (BSP), network service provider or reseller (NSP/R), and the gaming content provider. There are further details of the explanation of online gaming architecture in the appendix section of this research.

Development of Online Game Market

Started in the late 1990s, the online game industry is considered a relatively new business by the combination of computer games with the IT (internet) technology; the online games market has been growing drastically as the world Internet users increases. The number of users of Online Games worldwide from 2001 to 2002 was estimated to be around 6 million with the estimated market size about $600 million (Hosoi & Shin, 2003). As an example of the large online game, Sony's EverQuest, a subscription-based massively multiplayer online role playing game that draws 430,000 players worldwide (Ahuna, 2001). The games industry fully expects online gaming to come to maturity in 2003 with an estimation that there are currently 1.7 million online game subscribers in the US and Europe, jumping to 2.9 in 2003 (Hosoi & Shin, 2003). Furthermore, in the United States it is estimated that 72 percent of people aged 15-19 and 32 percent of people aged 45-54, play online games. In Europe, 50 percent of people aged 15-24 and 31 percent of people play online games. These demographics point to a broad and lucrative market; in Western Europe alone, revenue from online gaming is expected to reach $4.9 billion by 2005 (Carrier Market Development, 2003).

Concerning the Asian Online game market, Korea is Asia's leading country in online games (Hosoi & Shin, 2003). The total value of online game shipments has been growing fast in Korea, in 1998 it was only $2.5 million, but in 1999 it increased to $16 million, in 2000 it was $100 million, and in 2002 it was $250 million. For the world leading video game making nation, Japan, traditional video games are still the main-stream; but in that situation too, changes have been seen (Yasugawa, 2003). According to the Digital Content Association of Japan, a research institute affiliated with the Japanese government, online games surged to about $50 million, with a year-on-year

growth rate of 4.2 times. This association has also forecast the 2003 network game market to be $170 million. As for the Chinese market, according to the sources from ICD China, there are about 8.7 million online game users in 2002, which is 2.4 times more than the previous year. Moreover, the market size is about $1.1 billion and is expected to grow up to $4.3 billion in 2006. The Taiwanese online game market also shows a tremendous growth. According to the report from Net Value Company in Taiwan, there are estimated about 2.7 million online games users in 2001 with the market size of $0.5 billion and expect to increase up to $1.1 billion in 2004.

Thailand's game industry is considered a backward one compare with many other Asian countries due to the serious piracy problems of video and computer games. In the video games market, Sony takes the lead with an 80% market share followed by Nintendo and Sega (Siam Future, 2002). But according to Galaxy Group Company, the sole distributor of Sega arcade and video games in Thailand conceded Thai economic crisis in 1997 has left an undesirable legacy of increased popularity in pirated and smuggled products among consumers. Furthermore, Galaxy Group also stated that over 10,000 pirated game machines could be sold each year while sales of legitimately imported products total fewer than 3,000. The number of pirated software games available in the market is so huge that is impossible to determine the total manufactured and sold. As a result the general game industry in Thailand has always remained relatively small compared with other industries with estimated market size of 420 million Baht.

Despite the piracy problem that has hurt the Thailand's game industry for years, the online game industry, however, shows a very positive growth opportunity for the Thai game industry. According to the research conducted by National Electric and

Technology of Thailand (NETEC) in 2001, there are estimated about 3.5 million internet users in Thailand, which only occupied only 5.7 percent of the whole Thai population. And 54 percent of the Internet users are in Bangkok. As for the present population of computer gamers, there is an estimation of 2 million computer gamers in Thailand with a mixture of online and offline computer gamers, according to the research done by New Era, which is one of the few large online game providers in Thailand. Furthermore New Era also further stated that gaming is said to account for one third of digital content accessed on the Internet and although Internet penetration of Thailand was low compared to Singapore and Malaysia, but growth potential over the next five years is huge.

Thai Youth and Online Games: Social Concern and Government Regulations

Before going into the Thai youths' relationship with online games, it is necessary to define the term Thai youth. United Nations (2002) as well as Loudon and Bitta (1993) defined the term youth referring to people age 14 up to 24. Therefore, the term Thai youth refers to Thai people age 14 to 24. In other words Thai youth is also a group of people who mainly live life as a student and have to depend economically on their families. Furthermore, this research will only extract the undergraduate college students from the whole youth group as the research target.

Thailand's online game market is a new field in the local game industry. The importance of the online game market did not catch the general public's attention until one particular online role-playing game called "Ragnarok Online", which launched early this year in Thailand, came under fire as it attracted more than 600,000 registered players in Thailand (CNETAsia, 2003). This role-playing online game, which developed

by Korean firm Gravity Interactive, has attracted the young gamers from elementary school all the way to college. The young online gamers could get access to the game by buying a game account card, which includes the log number and code to access the online game through the game server on the Internet. But the most popular way for the young gamers to get their access to the online game in Thailand is simply by going to an internet café or arcade shops. The access fees for access to the games through computers in the Internet cafés now has dropped as low as 10 to 20 baht per hour. According to the Internet Café Association there are around 4000-registered Internet café in Bangkok (Boonruang, 2003). This new trend of playing online games has grown so popular among the young people that problems concerning of game addictions of school students has forced the government to put regulations for opening hours of the internet cafes or even shut the online servers down to limit the young gamers to get their access to the online games. On the other hand, Thai government actions have caused complaints from adult online gamers who have time to access to the games only late at night as well as the estimation of 300 million baht revenue loss for the game providers according to the report from Kasikorn Thai Research Centre (KRC).

However, according to the latest update of Thai government's policy of online game in September of this year, Thai Information Ministry has announced that even though the government's restriction of Thai teenage student usage of online games from 10 PM until 6 AM, the government is going to implement a new regulation of allowing adult gamers above the age of 18 to access online games after 10 PM. The new regulation will be applied starting from September 30 onward, after which the gamers would only be able to access online games after 10 PM if they had a special security code which they will be able to request from their post office on the presentation of an

ID card proving that they are age 18 or over. And this policy will also be applied to internet cafes.

Despite the Thai government's regulation about online games, this new market continues to grow in Thailand. Local game providers have teamed up with Korean online game makers to provide new online games in Thailand. The most recent large online game which came out in September this year was Mu Online, in which New Era Online has invested some 50 million Baht to promote this new popular Korean online game in the market (Karnjanatawe, 2003). Mu online is one of the top two online games in Korea and there are around 20 millions subscribers in Asia. New Era expects to attract 50,000 subscribers in Thailand during the first month's free testing period. As a result, even though Thailand is still a late developer in the online games business, with the increase in popularity by internet users and the number of young gamers, there is a high potential growth for Thailand's online game market yet to be developed.

Ever since the first appearance of the industry, Thai youth has been the largest target group of consumers for the online game business. Despite the increase of competition among internet cafés and online game providers over the market share (leading to price wars) and facing new implementation of the new regulations set by the government on teenage consumers in July of this year, not much research has been done concerning the online game adopting behavior of Thai youth. Therefore, in order to able to lead and develop in this new industry, it is important to study and understand the Thai youths' behavior toward online games.

Table 1.2 Popular Online Games in Thailand

Ragnarok Online (2002) 2.36 million subscribers worldwide (700,000 in Thailand)
Mu Online (2003) 20 million subscribers in Asia (expect to attract 50,000 in Thailand)
Laghaim Online (2003) 50,000 in the first month of release in Korea in middle of 2003

(Sources: Bangkok Post Data Base, 2003)

Table 1.2 shows the three most popular online games in Thailand, which started by the first major hit online game of Ragnarok Online (2002), followed by Mu Online (2003) and Laghaim Online (2003). All these three Korean made online games already gained their popularity in Asia and even worldwide.

1.2 Statement of Problem

Thanks to the IT revolution during the end of the past century, online game industry becomes the new hope for the future of the entertainment market. Even though many developed nations had started shaping their online game market during the later half of 1990s, the online game market had not developed in Thailand until the past few years. Since the online game market is still new within Thai society, not many studies has been done relating to the fact of the potential of the Thai youth population as the main target group for Thailand's online game market. On the other hand, this new field of business has also raised the social concerns of youth-addiction to online gaming. Large numbers of internet cafes have mushroomed resulting in fierce competition among the internet cafes. Therefore, further research concerning Thai youth and online games will be quite beneficial for developing the marketing strategies of the internet cafes and online game companies as well as to the government and parents who are

seeking solutions to deal with this new social behavior of Thai youth.

Therefore the research problem is: "What is the relationship of selected factors with adoption of online games among young Thai people?"

1.3 Research Objective

Since the youth population is the main group of target customers of the online game industry, the research objective will be set for the analysis of the behavior of the youth population in adopting online games. Hence, the objective of the research would be as follows:

1) To identify the adoption determinants of young people to online games;
2) To find the relationship between selected factors and adoption of online games.

1.4 Scope of the Research

This study is about young people's adoption of online games, the scope of research indicated as follows:

- The dependent variable is adoption of online games and the independent variable is attitude factors, normative factors, demographic factors, and psychological factors;
- The respondents are AU undergraduate students;
- The study is conducted in Bangkok only.

1.5 Research Limitation

Since this research is conducted within a few months, the major limitation of this research is time. Furthermore, the gamers target respondents playing in the internet café are mostly busy playing online games and do not have much time for answering the questionnaire. And the target respondents may not be willing to answer the questionnaire seriously; therefore this may cause distorted answers. Lastly another great limitation of this research is that since this is a fairly new market in Thailand, there is lack of references available relating to this research.

1.6 Significance of the Study

- To understand the determinant of young people's adoption of online games.
- This research can serve as direction and guideline for others researchers who wish to study related fields.
- To provide beneficial information for the government and parents in order to control Thai youth's usage of online games.
- To provide beneficial information to the internet cafes to understand more about the consumer behavior of Thai youth towards online games and to be able to develop useful marketing strategies.

1.7 Definition of Terms

Attitude Factors:

1) Hedonic outcomes	The Pleasure derived from the consumption, or use, of a product (Venkatesh and Brown, 2001).

2) Social outcomes	Recognition from "public" or others that would be achieved as a result of adopting an innovation (Venkatesh and Brown, 2001).
3) Utilitarian outcomes	The usefulness of a product that effect the consumer's product adoption (Venkatesh and Brown, 2001).

Normative Factors:

1) Social influence	The extent to which members of a social network influence one another's behavior (Venkatesh and Brown, 2001).
2) Secondary influence	Secondary source of information which are mass mass media sources such as TV and newspapers (Venkatesh and Brown, 2001).
Video games	Any of various computerized games that can be played by using an electronic control to move points of light or graphic symbols on the screen of a visual display unit (worldreference.com).
Adoption of Online Games	The Usage of online games by gamer through internet or internal network from PC. (worldreference.com)

Personality	Natural characteristics of a person, in which shows consistent patterns of response during different situations (worldreference.com).
Video game console	The device or machine that is use to play video games such as Nintendo, and PlayStation (worldreference.com).
Online games	Games that are played through the computer either though internal computer LAN system or through the game servers on the Internet (worldreference.com).
Broadband	A transmission technique using a wide range of frequencies that enables messages to be telecommunicated simultaneously. (worldreference.com)
Thai Youth	Thai people age 15 to 24, who still depends mainly on the economic support from their families. (www.un.org/esa/socdey/unyin/forum/)
Game Addiction	Chronic disease, characterized by impaired control over the use of a psychoactive substance such as video or computer games. Video game addicts are often described by clinicians in the field as

displaying many symptoms characteristic of other addictions. These behaviors include failure to stop playing games, difficulties in work or school, telling lies to loved ones, decreased attention to personal hygiene, decreased attention to family and friends, and disturbances in the sleep cycle. Withdrawal symptoms can even include behaviors as severe as shaking.
(http://serendip.brynmawr.edu/bb/neuro/neuro02/web2/mschlimme.html)

Chapter 2

Literature Review

This part of the study will contain the research from the past researches and theories related to the adoption and diffusion process of the consumer as well as the features and characteristics of youth market. Furthermore, this part of the study will also contain the researches related to the online game habits of the consumers and issues relating to personality (psychographic) and sex gender of online game users.

2.1 Adoption and Diffusion Process of Consumers

Adoption Process

In any kind of marketing studies or study of consumer behavior, to understand the consumer's adoption of a product is a very important issue. The word adoption, according to the Webster's New World Dictionary, means to take something to be one's own. And in marketing terms, the word adoption generally means the acceptance of a product by the consumer, in which the consumer is willing to purchase and use the product. Furthermore, Loudon and Bitta (1993) defined the word adoption as the acceptance and continued use of a product or brand by an individual.

According to Loudon and Bitta, the adoption process basically explains the process of how a consumer adopts a product or brand. Even though there are different views concerning about the actual process, but the adoption process can be explained in following stages from the figure below:

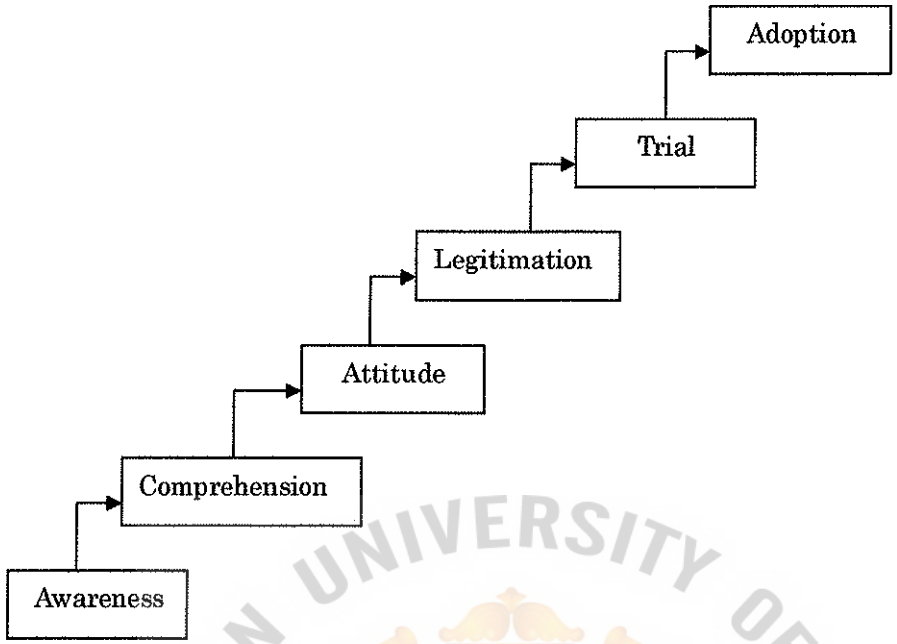


Figure 2.1

The Adoption Process (Loudon and Bitta,1993)

In this model (figure2.1), the adoption process can be separated into six different stages. Below are detailed explanations of these six stages of adoption process:

1) *Awareness Stage*. The potential adopter finds out about the existence of a product but has no well-formed attitude or little information about it.
2) *Comprehension Stage*. The consumer has knowledge and understanding of what the product is and can do.
3) *Attitude Stage* The consumer develops favorable or unfavorable behavior predispositions toward the product. If unfavorable behavior occurs in this stage the consumer will be likely to terminate the adoption process of the product.
4) *Legitimation Stage*. The consumer becomes convinced that the product should be

adopted. Furthermore, there are possibilities that the consumer will have a favorable attitude toward the innovation and consumer may use information already gathered as well as additional information in order to reach a decision.

5) *Trial Stage.* The consumer tries or tests the product to determine its utility. The individual vicariously uses the product in a hypothetical situation or it may be actually used in a limited or total way, depending on the innovation's nature.

6) *Adoption Stage.* The consumer determines whether or not to use the product in a full-scale way. Continued purchase and/or use of the item fulfill the adoption process.

Incompleted Adoption Process

Generally speaking, adoption is considered as a sequence of events in which individual consumers pass over a period of time to adopt the usage of a product (Loudon and Bitta, 1993). Some consumers pass through these stages early in a product's life while others may do so much later. Moreover, Loudon and Bitta claimed that the significance of the adoption process to the marketer is twofold. First not all consumers pass through the adoption process with the same speed; some passes fast while others passes slow. Second, the marketer's communication forms differ in their effectiveness over the different stages in the adoption process. These points can be significant in assisting the marketer to develop a defective promotional program. Moreover, mass media appear to be most effective in creating awareness during the early stages of the adoption process. However, personal sources of information appear to be more important at later stages of the process. On the other hand it is also possible that the adoption process may not be completed by the individual, which means that the

innovation is not adopted. Therefore the marketer should try to minimize the marketing problems that will lead to consumers' failure to complete the adoption process.

Diffusion Process

Once the adoption process is completed by individual customers, then there comes the next level of process known as the diffusion process (Loudon and Bitta, 1993). Loudon and Bitta argued that the adoption process is a phenomenon relating to the sequence of stages through which an individual passes from first hearing about a product to finally adopting it. But as for the diffusion process, on the other hand, refers to a group phenomenon indicating how an innovation spreads among consumers. Therefore, diffusion process is created with the adoption process of many individuals over time. As a result, the diffusion process can be defined as the adoption of new products and services over time by consumers within social systems as encouraged by marketing activities.

2.2 Personality and Psychographic Influences

Definitions of Personality

Personality is a very important factor to determine the adoption behavior of the consumers. There are many definition of personality, which stated as follows:

"Personality is the dynamic organization within the individual of the psychophysical systems that determine this unique adjustment to his environment." (Allport, 1937)

"Personality is the set of characteristics of a person that account for consistent patterns

of response to situations." (Pervin, 1980)

"Personality is the combination of stable physical and mental characteristics that make up an individual's identity and give consistence to a person's behavior." (Royce, 1983)

"Personality refers to the persistent and enduring behavior patterns of an individual that are expressed in a wide variety of situations." (Durbin, 1997)

As a result, personality is mostly recognized as a stable set of distinctive characteristics of the reactions or interactions an individual's behavior patterns to different situations.

Personal Trait Theories

There are a numbers of alternative theories to understand the person as an integrated individual as well as to discern the differences between people. And this also applies to the consumer's adoption behavior.

Theory of Eysenck (1946, 1982)

Eysenck found two basic type dimensions that he labeled as introversion-extroversion and neuroticism -stability. These two personality dimensions are orthogonal, that is they are statistically independent of each other. Person high on neuroticism tends to react more quickly to painful, disturbing, novel or other stimuli than do amore stable persons. Such persons also exhibit a more persistent behavior than do more stable persons. The persons who are high on dimensions of introversion and

neuroticism are a prime candidate for anxiety disorders; obsessions, and compulsions. In contrast the person who is high on the extraversion and neuroticism dimensions is at risk for psychopathic (antisocial) disorder. People who are both introverted and stable tend to be controlled, careful, and thoughtful in their actions. Conversely, the combination of introversion and neuroticism tends to create a more anxious, pessimistic, and reserved quality in behavior. The combined qualities of extraversion and neuroticism tend to be aggressive, impulsive, and excitable (Eysenck, 1982). In addition, for Eysenck, individual differences are to be valued. Thus, no single combinations of these personality types are more desirable than another. Behaving in carefree and outgoing ways has its good and bad points, as does behaving in quiet and reserved ways. The ways are simply different. Additionally, Eysenck (1976) has added a third dimension of personality, which he calls psychoticism-superego people high on this super- trait dimension tend to be egocentric, impulsive, insensitive to others and opposed to social customs. They are often seen as trouble some, as not fitting in well with others, and as intentionally upsetting other people. Eysenck has suggested that psychoticism is a genetic predisposition toward becoming either psychotic or psychopathic. He further regards it as a personality continuum along which all people can be located and as being more common in men than in women.

Eysenck was convinced that his two major type dimensions of introversion-extraversion and stability-neuroticism, has been empirically validated by several researchers using many types of personality tests by Eysenck as underlying the structure of personality (Daniel & Larry, 1992).

Wilson, based on testing predictions derived from Eysenck's theory, added some additional characteristics between introverts and extroverts in the summaries

below (Wilson, 1978):

- Introverts attain higher grades in college than do extroverts. Also students who withdraw from college for psychiatric reasons tend to be introverts, whereas those who withdraw for academic reasons tend to be extroverts.
- Introverts report more frequent masturbation than do extroverts engage in sexual intercourse earlier in life, more often and with more partners than do introverts.
- Introverts prefer theoretical and scientific vocation, whereas extroverts tend to prefer people-oriented jobs.
- Introverts show higher arousal levels in the morning, whereas extroverts show higher arousal levels in the evening. Furthermore, introverts work better in the morning, and extroverts work well in the afternoon.

2.4 Youth Market

The youth market is a significant subculture for marketing studies. Youth are often considered to be those between the ages of 15 and 24 (Loudon & Bitta, 1993). In other words, the youth market could be also referred to the group of population who has not yet enter the working life and still studies at school and depend financially on the parents. Due to lack of Thai reference and sources, U.S. references were implied in the theories and characteristics of the youth market. Furthermore, since a lot of the youth fashion and modern subculture trends are started from the U.S., it is useful to use the U.S. source of reference as example of the characteristic of the modern youth culture as

a whole.

Income and Spending

There is no market without income or any source of money, and the youth segment qualifies on this important dimension. The Thai youths, other than allowances, 27% percent of Thai youths worked part time, earning an average of Bt 2,422 (approximately $58) while 25% earned Bt.1,025 (approximately $25) per month (Asian Market Research News 2002).

The most important fact of the youth incomes is that they are almost entirely discretionary; that is, there are few if any, fixed obligation such as taxes, rent, insurance, and utilities that these youth must meet (Loudon & Bitta, 1993). Therefore, a result of increasing youth income is the increasing tendency of youths to buy more durable and high-priced products, from electronics, to designer clothes, cosmetics, footwear and forms of entertainment products such as CDs and games.

There are three possible significant forces that caused the strong consumption orientation of the youth market (Loudon & Bitta, 1993):

-Experience of growing up in a long period of prosperity has produced a widely shared feeling of economic optimism, since most youth in the recent decades are well financially protected by their parents since birth.

-Permissive child rearing, which has been linked by researchers to a capacity for initiative and independence.

-The new generation has a higher educational level and heavier exposure to the mass media.

The above environmental forces have had significant influences on the consumer-behavior orientation of the youths. The result has been that these youth tend

to be more optimistic about their future financial situations and level of living more than the elder generation groups.

Psychographic Characteristics

Concerning with the youth's psychographic groups of consumption, Loudon and Bitta argued that youths are no more alike than adults. Youth consumers can be segmented into four attitudinal groups:

- Socially Driven. They have the highest disposable incomes, are the most brand- conscious, and spend heavily on personal grooming and clothing to give them status.
- Diversely motivated. They are the most energetic, adventurous, and cultured, and are equally as comfortable in solitary activities as in group ones.
- Socioeconomically introverted. They like solitary activities and spend money on products and services for use in these pursuits.
- Sports-oriented. They represent the biggest market for sports and home video equipment.

Product Purchase Patterns:

Both female and male youths spend most of their money on clothes, music CDs, stereo equipment, entertainment and travel. But on the other hand, there are also different purchase patterns between female and male youths (Loudon & Bitta, 1993). The female youth tend to spend more on cosmetics, flowed by clothes, health and beauty aids, and jewelry whereas the male youth spend more on dates, and audios,

followed by sporting goods, cameras, records, stereo equipments, bicycles, athletic shoes, hobby-type products, musical instrument and electronic games. Furthermore, since the youths are the members of a highly consumption-oriented society, they have become increasingly aware of new products and brands. As a result the youth consumers have a much higher tendency in trying new products or brands than most of the adult consumers.

2.5 Past Researches

In this section below are some of the past researches that are related to this the study of this research.

2.5.1 Online Gaming Habits

Through the Internet connection to the cyber space, the online games trend has spread to gamers from different nations and cultures together. An interesting research survey research was conducted online by www.game-research.com in April of 2002 and was hosted by the Web bureau Framfab. A total of 680 online gamers took the survey within a period of two months within the United States.

Concerning with the basic finding from the research, the average age of the online gamer is 23 years and 95% of the online gamers are between 15-31 years. The female gamers are extremely few compare to the males who consists 95% of the respondents. Furthermore, there are also tendency that online games are not for the inexperienced gamer and Internet user.

- 75% of online gamers have played from 1-5 years online.

- 96% have been on the net for more than a year.
- Only 10% of the gamers have played less than one year.
- 64% have 256 kbps connections and above.
- 75% have bought articles online within the last 6 months
- 95% have a computer that is less than 3 years old.

Action games are the most popular among the respondents, and within this genre the popular games are Counter-Strike and Quake. Most of the respondents play the online games at home but at the same time they also usually are physically together with someone when they play. 91% sate that they play from their home and 41% are physically alone when playing. Interestingly the gamers both play against real-life friends, random acquaintances and friends from the net. What is perhaps even more intriguing and in line with the hypothesis that gaming is a social community/ phenomenon is that 50% have met friends in real life that they first encountered online. For women this figure is as high as 80%. Lastly, two result tables concerning with playing time and game experience are shown below:

Table 2.1 Duration of Playing Computer Games

How many Years have you Played Computer Games Online?		
Less than 1 year	65	9.56%
1-2 years	156	22.92%
2-3 years	138	20.29%
3-4 years	133	19.56%
4-5 years	85	12.50%

5-6 years	37	5.44%
6-7 years	21	3.09%
7-8 years	15	2.21%
8-9 years	3	0.44%
More than 9 years	18	2.65%
Total Responses	380	100%

Table 2.2 Hours Spent per week on Playing Computer Games

How many hours do you play Computer Games online each Week?		
0-2hrs	106	15.90%
3-6hrs	81	11.91%
6-9hrs	87	12.79%
9-12hrs	76	11.18%
12-15hrs	56	8.24%
15-18hrs	60	8.82%
18-21hrs	46	6.76%
21-24hrs	40	5.88%
24-27hrs	19	2.79%
27-30hrs	29	4.26%
30-33hrs	17	2.50%
33-51	33	4.60%
above 51	21	3.09%

(not answered)		10	1.47%
Total Responses		680	100%

(Sources: www.game-research.com)

As a result, the two tables (tables 2.4 and 2.5) on the above shows that the online gamers have spent quite some time and continue to spend large amount of time playing online games.

Since online games are still new in Thailand, there are no references similar to the past research in the above concerning online game habits of Thai online gamers that are available for use. Therefore, it would be interesting to compare the results of this past research of the online game behavior with the results of this research, which concerns the behavior of young Thai online gamers.

2.5.2: Computer Games as a Learning Resource

Play especially during really childhood, forms important roles in psychological, social, and intellectual development, and could be defined as a voluntary activity that is intrinsically motivating, involves some level of activity (often physical) and may possess make-believe qualities (Rieber, 1996). These attributes closely match those of modern educational theories which learning should be self-motivated and rewarding activity.

Researchers from the Biology Department of University of Natal (South Africa) argued that playing games is an important part of social and mental development of people (Amory, Naicker, Vincent and Adams, 1997). These researchers

selected 20 college students, which made up of an equal proportion of the different race groups and an equal number of male and female students for the evaluation of the computer games in concern of the role that games could play in education. Four different types of computer games are selected for the evaluation are listed in the following table:

Table 2.3 Computer Games & Learning

Game Title	Game Type
1) Command and Conquer (Red Alert)	Strategy
2) Duke Nukem	Action
3) Sim Isle	Simulation
4) Zork Nemesis	Adventure

To evaluate the computer games, the students are asked to play each of these four computer games and experience the different game types. After the students have experienced all of four computer games listed above, then a questionnaire, regarding to the game and computer experience as well as the rate of the four games, is given to each of the students to answer. Furthermore, the students is also asked to identify attractive game properties and suggestion of how such a game could be used in education, which strategies they used to solve problems and if they acquired new knowledge skills.

As for the results of the rating of the game aspects in terms of fun aspect,

sounds and graphics, type of game, game story, and use of technology, the students found Zork Nemesis scored the highest in all aspects, closely followed by Red Alert; Sim Isle, on the other hand, was rated poorly by the students.

As for the number of different skill required to play the games (which are asked in terms of logic, memory, visualization, mathematics, reflexes, and problem solving), the students found out that Zork Nemesis required the widest variety of skills and followed by Red Alert. Few of the games required mathematical skills, while reflexes were necessary in Duke Nukem and problem solving was rated highest for Zork Nemesis and Red Alert.

As a result, the researchers found out that the students appear to favor 3D adventure (Zork Nemesis) and Strategy games (Red Alert). The development of an adventure game by research group was use to test the applicability of such technology in education. The pilot project on integrating information into an adventure game was enjoyed by most students and they also learned something while playing.

On the other hand, the findings of this research concluded that 3D adventure games is the most popular type of games, could be related to the similar trend of popularity to the young Thai gamers. Since most of the popular online games in Thailand, such as Ragnarok, Mu, and Laghaim Online are all RPG adventure games with 3D graphics, there are similarities of the results of this research with the young Thai online gamers.

2.5.3: Gender and Electronic Game Play

The gender issue in the game industry has always been a big controversy among researchers. Besides the difference noted in people who do and do not play electronic games, differences exist in people's use of electronic games. Several researchers have noted that electronic games are not created to suit female's interests. "Entertainment software fulfills primarily male desires," (Margolis and Fischer 2002). Cassell and Jenkins (1998) argued that effort to make games geared toward females does not go much further than "slapping the pink bow on PacMan". It takes more than marketing the games in pink and purple packages and creating female protagonists for females to enjoy them. It is important for us to determine exactly what it is that females want in electronic game design in order to ensure that they gain the experience necessary to prepare them for high-tech jobs.

A group of researchers from Purdue University and Michigan State University has conducted a research in concern of differences of the female and male behavior and attitude towards electronic games (Sherry, Holmstrom, and Binns, 2002). By using the model of uses and gratification paradigm the research team has made a survey for male and female students from different age groups; fifth grade, eighth grade and college undergraduates. And the survey was undertaken to determine electronic game usage patterns, favorite game genres and reasons for playing games.

The results of the research are shown in the discussion of each of the issue points below:

Playing Time

The result of the research found that males tend to spend more time playing

electronic games than females. Across age groups, and within each cohort males play nearly twice as many house per week as females. Unlike previous studies, the patterns found in the research shows the reasons for electronic game usage and the genres preferred by males and females offer some insights into who male play for longer periods of time than females. While socialization is always an important factor, but the research results suggest that there is more to gender differences than early training.

Genre Preference

The research results show a clear and consistent difference between males and females of each age group is the games that they report liking the most. Females consistently prefer classic board games, card-dice games, quiz-trivia games, arcade games, and puzzle games more than males. Males prefer fighters, shooters, sports, fantasy role-playing games, action adventure games, and strategy games more than females. Because games in the male genre set typically take longer to play, genre preference alone would account for the gender difference in playing time.

Furthermore, the research group also tried to apply the different genre preference results to the neuroscience studies detailing the physiology and hormonal influences that predict cognitive differences between female and males. Germane to this discussion are differences in abilities to solve particular tasks. Men tend to outperform women in tasks involve three dimensional object rotation and target-directed motor skills such as guiding or intercepting projectiles. These are the skills required to excel at and master games found in the male genre set. Therefore, males are more suitable in plying shooter games, and all different sports games in 3D space. On the other hand, females are better than males at verbal memory and fluency, matching tasks and

remembering a displaced object. Therefore, quiz-trivia games, card games, and puzzle games are more suitable for females. As a result, the genre preference of electronic games does match to the genetic behavior of females and males. The results of the findings in this research could be related to the case of Thailand. Due to the fact that in most game centers or internet cafes, there are more male than female customers playing the arcade or computer games.

2.5.4: New Market Research on the Thai Youth Market

In concerning about the generality of the present Thai youth market, the Thailand Marketing Research Society (TMRS) has conducted a survey among 1,200 thirteen to eighteen years old Thai youths in major Thai cities shows that the Thai youth are getting serious to toward the drastic economic and social trend in Thailand (Asian Market Research News, 2002).

According to the survey, the top five most important issues that Thai teens concerned were drugs, the economy, the environment, traffic problems, and the loss of "Thai identity" to the coming in of foreign influence. The TMRS categorized the respondents into four categories of liberals, individualist, follower/mainstream, and image seekers. The youth who belong to each of these categories has different social views as well as behavior toward consumption or fashion. And the summary of each categories are listed in the below:

Liberal:

- Open minded about sexual subjects
- Like to be a leader and always tried new things before others. Also known as the

innovator or early adopter in marketing terms

- Likes to gain friend's acceptance but not by impressing people with material wealth

Individualist:

- Doesn't care about brands and western values
- Like to travel to natural places
- No need to buy expensive things to gain friends' acceptance
- Responsible for taking care of parents

Follower/Mainstream:

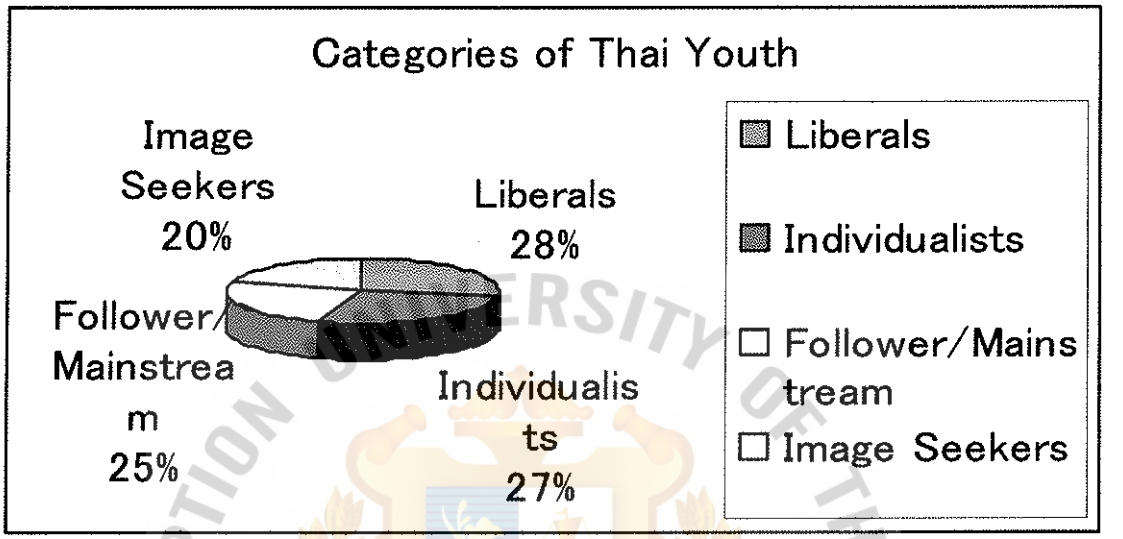
- Withdraws from informal leadership positions
- Friend's acceptance is not very important
- Conservative about sex
- Judges good things by price
- Non-extremist

Image Seeker:

- Admire Western values
- Wants to be leader
- Brand oriented
- Influenced by advertising
- Friends are important
- A person's value depends upon their family background

Below is a table that shows what categories does the respondents belong:

Table 2.4



(Sources: Asian Market Research News, 2002)

As a result, this study concluded that the majority of Thai youths tend to take a more skeptical attitude to advertising and brands than the elder generation, who are more influenced by Western culture. The research also suggested that the re-branding products as "Western" just may not have the sway it used to.

2.5.5: Internet Usage of Thai University Students

Due to convenience regarding availability of information, entertainment and personal communication between users, Internet has become one of the most popular options for human communication and interaction. The trend of usage online games can also be considered a by-product of Internet.

As Internet is becoming more popular among the university students, it is important to understand the impacts of Internet to their social behavior and interactions. According to study conducted by Research Information Scientific Question (RISQ, 1997) indicated that the group of university student users spent approximately 2-5 hours and more than 5 hours logging in the internet (Komolsevin, 1992). Furthermore, the Internet usage of the university students in Bangkok has also been increasing in the recent years.

R. Komolsevin has conducted a research to study the impact of internet usage on the university students in Bangkok by using survey instruments to seek for the basic demographic data and information relating to the behavior and experience toward internet usage. There were 200 students selected from two state universities (Chulalongkorn and Kasetsart University) and two private universities (Bangkok and Assumption University) in Bangkok to answer the survey. And some important facts of the results are listed in the below (% of the interviewed students):

- Types of Internet programs used by the students:
  - -World Wide Web: 52%
  - -Chat programs only: 26%
  - -Both World Wide Web and Chat programs: 22%

- Internet Usage Frequency per Week:
  - -2-3 days per week: 54%
  - -6-7 days per week: 24%
  - -4-5 days per week: 22%
- Amount of time per usage:
  - -1-3 hours: 75%
  - -Less than 1 hour: 11%
  - -4-6 hours: 14%
- Place to use internet:
  - -At home: 38%

-At university: 26%
-Both home and university: 36%

In concern with the other results of the research, Komolsevin discovered that internet usage did not cause significant changes in students' overall social behavior and interaction. However, they reported meeting more new friends and talking more with strangers, while talking less with their family members and playing sports less with friends. Since the result shows half of the respondents only use Internet 2-3 days per week, there may still have adequate time for the students to socialize with friends. Furthermore, Komolsevin also argued that this phenomenon of the behaviors of the university students may be caused by the fact that interpersonal networking and relationship building is one of the most distinguished cultural attributes in Thailand.

Due to the lack of Thai reference available relating to online games, this 10 year old research was chosen as part of the references. On the other hand, this research also showed internet usage was already popular among the Thai college students back then, and this could be an important factor of setting up the base for the adoption of online games.

Table 2.3 List of Past Researches

Author	Year	Title	Variables	Method of Research
1) Game-research.com	2002	"Online Games Habits"	Use of Computer Games by adopters	Survey
2) Alan A., Kevin N., Jackie V., and Claudia A.	1997	"Computer Games as a Learning Resource"	Use of computer game by students	Survey
3) Sherry J., Holmstrom A., Binns R., et.al.	2002	"Gender and Electronic Game Play"	Female/male students' Attitude and behavior toward games	Survey
4) Asian Market Research News	2002	"New Market Research on Thai Youth Market"	Thai youths' attitude and behavior toward Thai market and social trend	Survey
5) R.Komolsevin	1992	"Study of Internet usage and its impact on University Students' social Behavior and Interactions"	The effect of internet Usage to college students' social behavior	Survey

Chapter 3

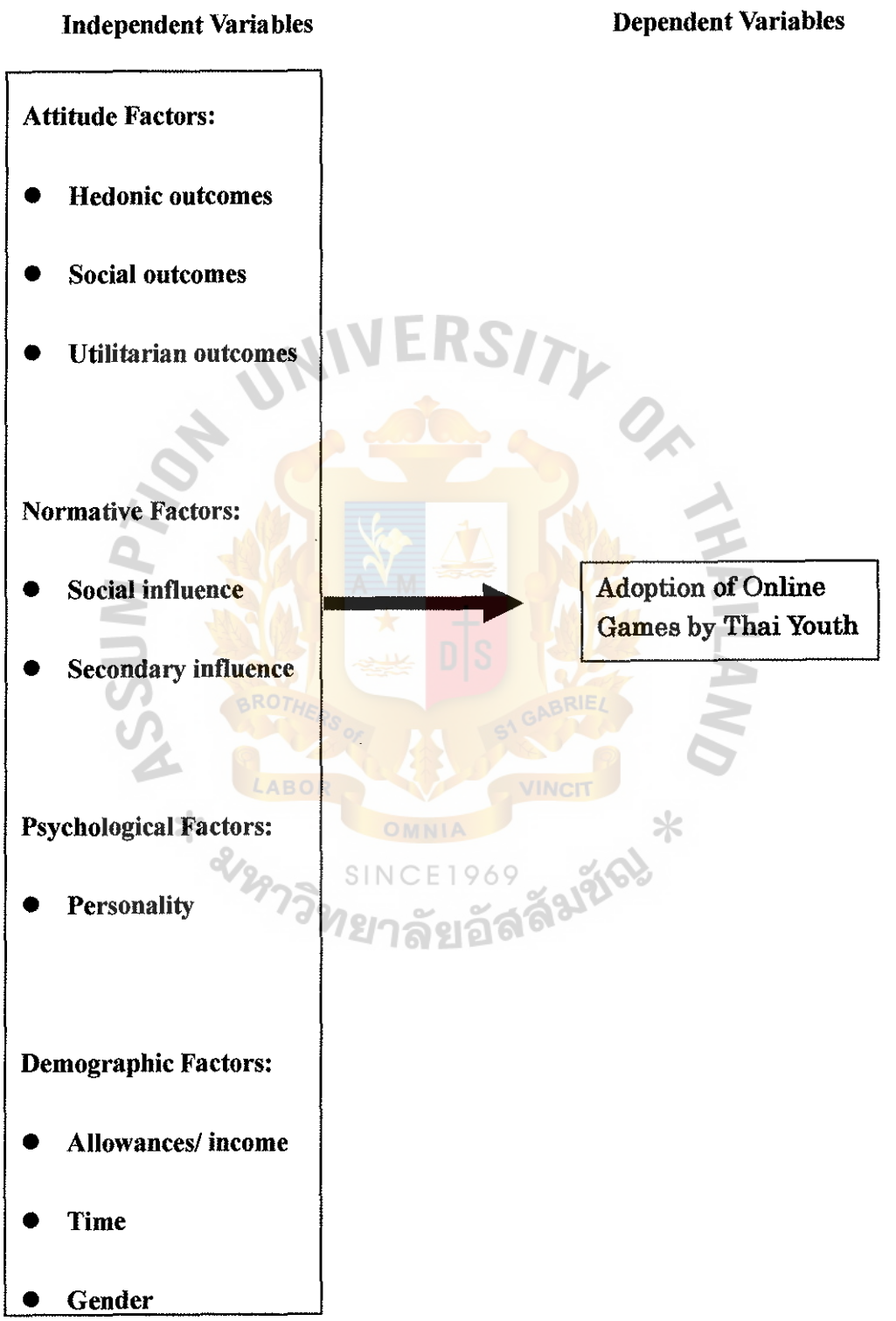
Research Framework

Online game has become a new trend of the global game market. With the advancement of the broadband Internet technology as well as the population of the Internet users, the online games has been transformed into a much more complex game environment compare with the traditional video and computer games. Its social sphere involves no more just between the game player and the computer, but also includes thousands and millions of other online gamers all over the world. Furthermore, the past researches have shown the young gamers are considered as the largest portion of customers of online games. Therefore, to have a clear understanding of young people's adoption of online games is vital for the future of this new market in the game industry. As a result, the purpose of this research's designed frame work will be applied to study on the selected factors of the young people from middle school to college who have adopted or not adopted the use online games and to find out the relationship between the adopters and non adopters plus the factors of adoption.

3.1 Conceptual Framework

Since the development of the online game market in Thailand is considered relatively new compare to the big markets of America, Japan, Europe and many other Asian countries. Therefore not much research has been done about the young people's adoption of online games. A conceptual framework for this research (Figure 3.1) shows the selected factors that affect the online game adoption of the Thai young people.

Figure 3.1 The Conceptual Framework



The Figure above shows the complete framework structure of this study. The independent variables are hedonic outcomes, social outcomes, utilitarian outcomes, social influence, secondary influence, allowance/ income, time, age/ gender, and personality. And these independent variables can be categorized into four main categories: attitude factors, normative factors, demographic factors, and psychographic factors.

3.2 Variables Definition

- **Adoption of Online Games by Thai Youth:** The usage of online games by the Thai youth, which consist of only the undergraduate college students who are above 18 years of age in this research.
- **Hedonic Outcomes:** The pleasure derived from the consumption or the usage of a product.
- **Social Outcomes:** General social recognition of adoption of a product by others on something good.
- **Utilitarian Outcomes:** Consumer's perception of the usefulness of a product.
- **Social Influence:** The extent to which members of a social network influence one another's behavior in adopting the product.
- **Secondary Influence:** Secondary sources of information such as TV, newspapers and magazines which influence consumer's adoption of a product.
- **Personality:** General personality of the consumer in which whether they are introverted or extroverted.
- **Allowance/ Incomes:** Monthly or weekly allowance from parents or income per

month.

- **Time:** The time spent using the product.
- **Gender:** The sex of the consumers.

3.3 Hypothesis Statements

A hypothesis is an assumption or guess that a researcher makes about some characteristics of the population under study. Hypotheses are conjectural statements of the relationship between two or more variables that carry clear implication for testing and stated relations. According to the figure of the conceptual framework, the complete conceptual framework can be developed into the following hypothesis statements:

Ho1: There is no relationship between *Hedonic outcomes* and Adoption of Online games.

Ha1: There is a relationship between *Hedonic outcomes* and Adoption of Online games.

Ho2: There is no relationship between *Social outcomes* and Adoption of Online games.

Ha2: There is a relationship between *Social outcomes* and Adoption of Online games.

Ho3: There is no relationship between *Utilitarian outcomes* and Adoption of Online games.

Ha3: There is a relationship between *Utilitarian outcomes* and Adoption of Online games.

Ho4: There is no relationship between *Social influence* and Adoption of Online games.

Ha4: There is a relationship between *Social influence* and Adoption of Online games.

Ho5: There is no relationship between *Secondary influence* and Adoption of Online games.

Ha5: There is a relationship between *Secondary influence* and Adoption of Online games.

Ho6: There is no relationship between *Personality* and Adoption of Online games.

Ha6: There is a relationship between *Personality* and Adoption of Online games.

Ho7: There is no relationship between *Allowance/Income* and Adoption of Online games.

Ha7: There is a relationship between *Allowance/Income* and Adoption of Online games.

Ho8: There is no relationship between *Time* and Adoption of Online games.

Ha8: There is a relationship between *Time* and Adoption of Online games.

Ho9: There is no difference between *Gender* and Adoption of Online games.

Ha9: There is a difference between *Gender* and Adoption of Online games.

3.4 Concept and Operationalization of Independent and Dependent Variables

The concept is a general meaning for variables. A concept must be designed to be operational in order to be measured. An operational definition provides the clarified meaning of concepts and also states the activities or operations, which are necessary to measure it. The operation definition states what must be done to measure the concept under investigation. The researcher will be use the operational definition in order to specify the rules for assigning the values. The values will be assigned in the measuring

process, which can be manipulated according to certain mathematical and statistical methods. When the variables were identified and conceptually defined, a type of scale will be selected. The types of scale which will be applied for this research are Ordinal scales. The appropriated statistical methods must be selected to analyze each scale and each of conjectured hypotheses will be measured by one of the proposal scale.

The detailed of operational variables are presented in the table below:

Table 3.1 Operational Definition of Influencing Variables

Variable	Concept Definition	Operational Definition	Level of Measurement	Question Number in Questionnaire
Adoption of Online Games	Usage of online games by young people	The frequency of playing Online games	Ordinal	15
Hedonic Outcomes	The Pleasure derived from the consumption or usage of online games.	Joy is the result of playing online games.	Ordinal	1
Social Outcomes	General recognition of adopting online games by others as something good.	Whether friends thinks playing online games is fashionable or not	Ordinal	2
Utilitarian Outcomes	Consumer's perception of the usefulness of the product.	Following benefits you get from playing online games: Strategic thinking control reflex built patience teamwork / social skills	Ordinal	4
Social Influence	The extent to which	The level of influence from	Ordinal	3

	members of a social network influence on another's behavior in adopting online games.	friends in playing online games.		
Secondary Influence	Secondary sources of information such as TV, newspaper, magazines, or internet websites which influence young people's adoption of online games.	The level of influence from secondary source of information (TV, Newspaper, Magazine, Internet Website) in the adoption of Online Game?	Ordinal	5
Introverted / Extroverted Personality	Two opposite personalities of people; introverts are interested more in oneself than external objects or other people whereas extroverts are interested more in the external environment rather than him or herself.	-Time spent on talking with friends about social events -Enjoy taking care of other people's Needs or not -Usually the one who take first step in making new friends or not Like to do your planning alone or not Like best when have people around or not.	Ordinal	6-10
Allowance / Income	Young people's monthly allowance or income (if they are working)	Amount of allowance or Income Amount of money spend on online games	Ordinal	11-12
Time	Time spend on usage of online games.	Amount of hours do spend playing online games per week	Ordinal	13
Gender	The gender of young people who adopted the usage of online games.	Gender: Male or Female	Nominal	14

Chapter 4

Research Methodology

As conceptual framework and hypothesis are designed and set for measuring the level of young people's online game adoption, the research methodology is designed for accurate measures. The designed research methodology will provide a more clear view in young people's online game adoption base on the factors that are selected in this research. The research method and data is properly designed for survey, collect, and measure according to the nature of target respondents and collected data.

4.1 Research Method: Sample Survey

Due to the large population of the target population and the lack of time, a sample survey is a useful method to collect the information needed in a short time period. Therefore in the sample survey is the appropriate method that has been applied in this research.

4.2 Research Instrument: Structured Questionnaire

Survey is a design that usually depends upon the use of questionnaire for the primary purpose of describing and/or predicting some phenomenon. A questionnaire is used to provide an orderly and structured approach to data gathering and the target questions structure presents the respondents with a fixed set of choices (The questionnaire is shown in the Appendix section).

4.3 Sources of Data

4.3.1 Documentary Research (Secondary Data)

Secondary data collection comes from several sources such as business research magazines, newspaper articles as well as several library sources, which are used to develop the concept and framework for this research. Furthermore, the Internet gaming or game industry related websites also provides are great sources of articles and researches relating to game industry and online games.

4.3.2 Survey Research (Primary data collection tool)

The primary data for this research was collected by using questionnaire (self-administered questionnaire) with the list of target respondent, which there are no interviewer requirement. This approach is most flexible method of data collation, which can be easily provide and interpret by the computer. Due to the limitation of time of the target respondents, the questionnaire was distributed to the students in random locations inside the school. Furthermore, the researcher also gave the direction and explanation for the question in order to reduce the error in completing the questionnaires.

Structured questionnaire is used in this research. Structured questionnaire is a list of questions that have pre-specified answer choices. The wording is also standardized in order to ensure that all respondents are replying to the same questions and fixed-alternative question is also used in which the responses are limited to the stated alternatives.

4.4 Sampling Plan

4.4.1 Definition of Target Population

The target population will be the undergraduate students studying in Assumption University.

4.4.2 Sampling Element

Any undergraduate students studying at Assumption University

4.4.3 Sampling Unit

Assumption University

4.4.4 Sampling Method

Nonprobability methods are sampling methods that use sampling procedures in which each sampling unit has an unknown chance of being selected. There are three nonprobability sampling methods that are widely used in marketing research: convenience, judgment or purposive, and quota samples. Since it is very difficult to measure the behavior of each respondent who adopted online games, this research will use the convenience sampling.

4.4.5 Sample Size

The sample size used in this research is 200, which means the researcher will collect data from 200 respondents. The researcher decided the number of the sample size according to the marketing research studies of sample size as shown in the Table 4.1 below:

Table 4.1 Sample Size Used in Marketing Research Studies

Type of Study	Minimum Size	Typical Range
Problem Identification Research (e.g. market potential)	500	1000-2500
Problem Solving Research (e.g. pricing)	**200**	**300-500**
Product Tests	200	300-500
Test Marketing Studies	200	300-500

(Sources: Naresh K.Malhotra, "Marketing Research an Applied Orientation", 1999)

The sample size is decided to be 200 since the aim of this research is to find out the important factors that effect Thai youths' adoption to online games, the sample size for the problem solving research will be suitable for this research.

4.5 Pilot study

For this study, the researcher had done a pretest to examine the questionnaire by using 30 sampling. Wanichbancha (2001, P.29) mentioned that the pilot test survey should have at least 25 respondents answering the questions. The questionnaire in this research comprised of 3 parts, which are general information on consumer behavior, then the perception toward corporate reputation of the mobile phone users, and personal data or demographic profile. After getting the results of the questionnaire from the pilot test, the researcher used the reliability analysis to examine the results.

Pre-testing is an established practice for discovering errors in questions, question sequencing, instructions, skip directions (Cooper and Schindler, 2001). Pretests are trial runs with a group of respondents for the purpose of detecting problems

in the questionnaire instructions or design. In a pretest the researcher looks for evidence of ambiguous questions and respondent misunderstanding, whether the questions mean the same thing to all respondents, the point at which respondent fatigue sets in, places in the questionnaire where a respondent is likely to terminate, and other considerations.

Sekaran (1992) mentioned that if the reliability value is at least 0.6 it is considered to be reliable. As the results of the reliability testing from the pilot study shows all the results of the questions are above 0.6 in which indicated that this research questionnaire is sufficient for examining the hypotheses of this research. The reliability result has been displayed in Table 4.2.

Table 4.2 xxx Result of Reliability Analysis-Scale (Cronbach's Alpha)

Variable	Question Number	Cronbach's Alpha
Attitude Factors	2,3,5	0.8515
Normative Factors	4,6	0.7642
Demographic Factors	7,9,10	0.7235
Psychological Factors	11-15	0.7511

There are two main sources of data, which are primary and secondary data. The primary data was collected through the questionnaires. The secondary data was collected from textbooks, journals, magazines, newspapers, articles, and theoretical studies.

On the primary data, the researcher prepared the question both in English and Thai for better understanding of respondents. The researcher had distributed all the questionnaires by himself.

All the feedback on the questionnaires was brought back to be examined and analyzed through SPSS/PC. The questionnaires were designed to examine the adoption of Online Games among Thai youth. The researcher had made a pretest of the questionnaire, about 30 people were examined for reliability before the questionnaires were actually used.

4.7 Statistical Treatment of Data

The information obtained from the respondents was used for statistical analyses through the SPSS program. From a modified conceptual framework, descriptive analysis, correlation coefficient is main selected statistic for this research to measure the relationship among elements. The researcher sets 95 percent confidence.

Descriptive Analysis

In order to interpret the data gathered, descriptive analysis is applied to transform the raw data into a form. The form will make them easy to understand and interpret; rearrange, order, and manipulate data to generate descriptive information such as frequency distributions, percentage distributions, and means (Zikmund, 1991).

Correlation Analysis

Correlation analysis involves measuring the closeness of the relationship between two or more variables; it considers the joint variation of two measures, neither of which is restricted by the experimenter (Churchill, 1991).

A positive correlation reflects a tendency for a high value in one variable to be

associated with high value in the second. A negative correlation reflects an association between a high value in one variable and a low value in the second variable. The Spearman rank-order correlation coefficient measures the degree to which there is a linear association between two ordinal scaled variables (Zikmund *et* 1997). Correlation analysis has a value between –1 and +1 that indicates the strength of the linear relationship between two quantitative variables called bivariate correlation, or among three quantitative variables called partial correlation. Both of correlations are used to analyze this research.

- **Spearman rank-order correlation coefficient**

The Spearman rank-order correlation coefficient is used to test the Hypothesis 1 to Hypothesis 8 (H_{01} to H_{08}). Since the data are in ordinal scale, the Spearman rank-order correlation coefficient is used for this study for nonparametric correlation.

- **Chi-Square Test**

The Chi-Square Test is used to make comparisons between two or more samples, when nominal or frequency data have been obtained. As for hypothesis 9 (H_{09}), which concerned with gender and adoption of online games, is a hypothesis based on a nominal scale; therefore the Chi-Square Test is used for this particular hypothesis testing.

Chapter 5

Data Analysis

In this chapter, the data collected from the questionnaire is translated into information which will be useful for marketing strategies and project planning as well as useful information for government and parents' social understanding of the behavior of Thai youth toward online game adoption. The results will be explained with quantitative and qualitative interpretations. The results should be relevant to the objectives of the study, which is to determine the relationship of the selected factors with adoption of online games among young Thai people.

This chapter will include the following sections:

1. Descriptive statistics for demographic factors
2. Hypothesis Testing

5.1 Profile of Respondents

The respondents of this research are undergraduate students from Assumption University who play online games. The demographic characteristics of the respondents in this research are allowance/income, time, and gender.

5.1.1 Allowance/ Income

The distribution of monthly allowance/income of the respondents indicated that nearly half of the respondents' monthly allowance/income falls in the range between

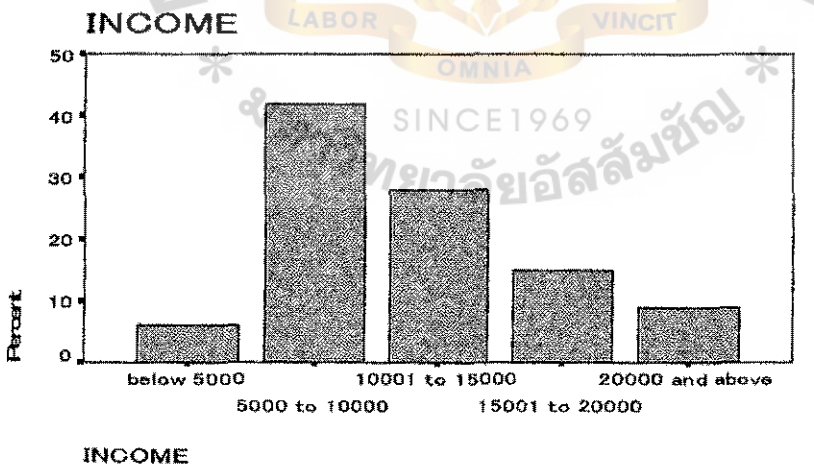
5,000 to 10,000 Baht per month (42 percent). 28 percent of the respondents have allowance/income from 10,001 to 20,000 Baht. Furthermore, only 9 percent of the respondents have allowance/income above 20,000 and 6 percent of the respondents have allowance/income below 5,000 per month.

Table 5.1 ALLOWANCE/INCOME

INCOME

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below 5000	12	6.0	6.0	6.0
	5000 to 10000	84	42.0	42.0	48.0
	10001 to 15000	56	28.0	28.0	76.0
	15001 to 20000	30	15.0	15.0	91.0
	20000 and above	18	9.0	9.0	100.0
	Total	200	100.0	100.0	

Figure 5.1 ALLOWANCE/INCOME



5.1.1.1 Monthly Spending on Online Games

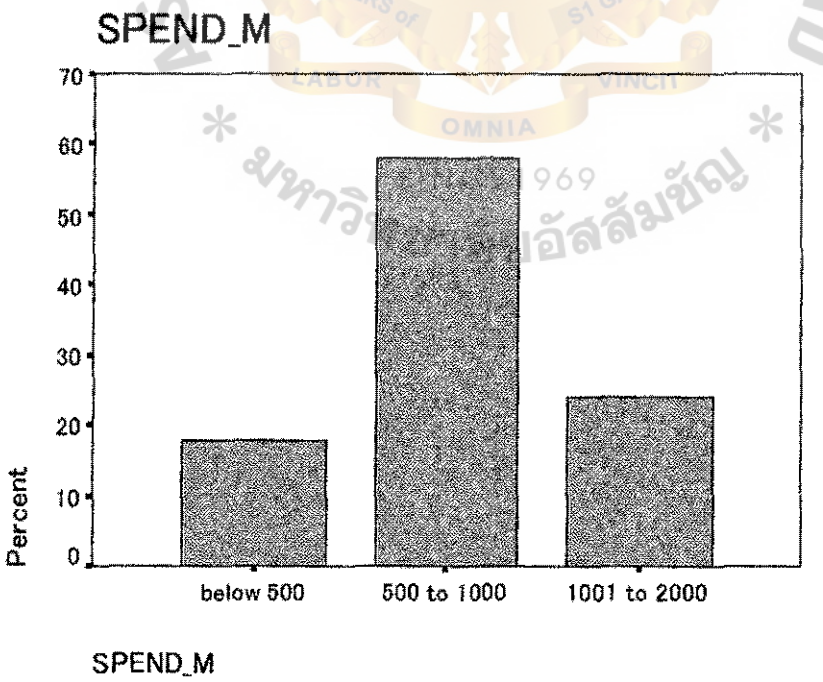
The distribution of the respondents' monthly spending indicated that over half of the respondents spend 500 to 1,000 Baht per month on online games (58 percent). 24 percent of the respondents spend 1,001 up to 2,000 Baht and 18 percent spend less than 500 Baht per month on online games.

Table 5.2 MONTHLY SPENDING ON ONLINE GAMES

SPEND_M

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below 500	36	18.0	18.0	18.0
	500 to 1000	116	58.0	58.0	76.0
	1001 to 2000	48	24.0	24.0	100.0
	Total	200	100.0	100.0	

Figure 5.2 MONTHLY SPENDING ON ONLINE GAMES



5.1.2 Time

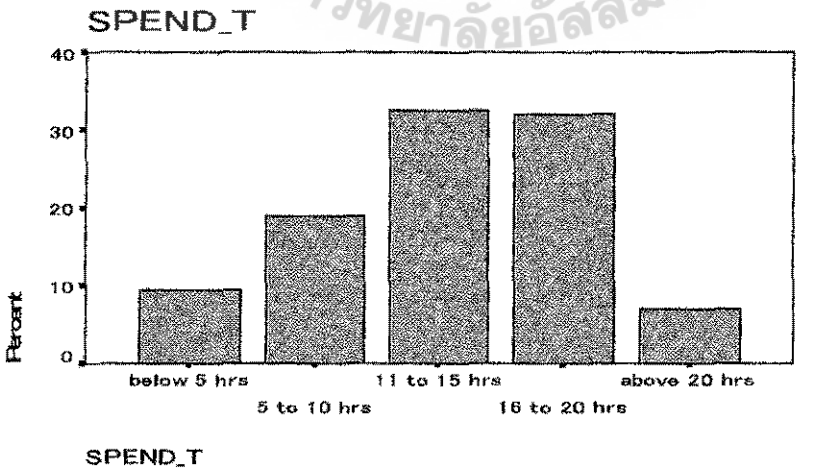
Concerning with the time which the respondents spend on playing online games per week, 32.5 percent of the respondents spend 11 to 15 hours to play online games per week. 32 percent of the respondents spend 16 to 20 hours, whereas 19.5 percent of the respondents spend 5 to 10 hours per week. On the other hand, only 7 percent of the respondents spend more than 20 hours and 9.5 percent spend less than 5 hours to play online games per week.

Table 5.3 TIME SPEND ON ONLINE GAMES PER WEEK

SPEND_T

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below 5 hrs	19	9.5	9.5	9.5
	5 to 10 hrs	38	19.0	19.0	28.5
	11 to 15 hrs	65	32.5	32.5	61.0
	16 to 20 hrs	64	32.0	32.0	93.0
	above 20 hrs	14	7.0	7.0	100.0
	Total	200	100.0	100.0	

Figure 5.3 TIME SPEND ON ONLINE GAMES PER WEEK



5.1.3 Gender

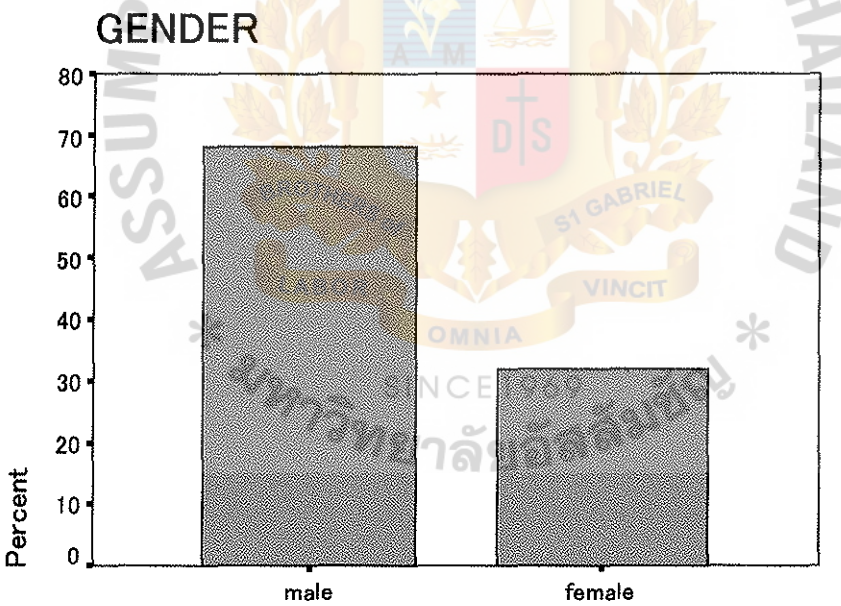
The distribution of gender shows that there are more male than female adopting online games. The percentage was 68 percent to 32 percent.

Table 5.4 GENDER

GENDER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	136	68.0	68.0	68.0
	female	64	32.0	32.0	100.0
	Total	200	100.0	100.0	

Figure 5.4



GENDER

5.1.3.1 Gender and Time Spent on Online Games

The distribution of gender concerning with the time spent on online games per week also shown that males spent more time playing online games more than females. Around 76% of the males spent between 11 to 20 hours playing online games per week whereas only 41% for the females. Furthermore, there are 27% of the females spent less than 5 hours playing online games, where as only 1% for the males.

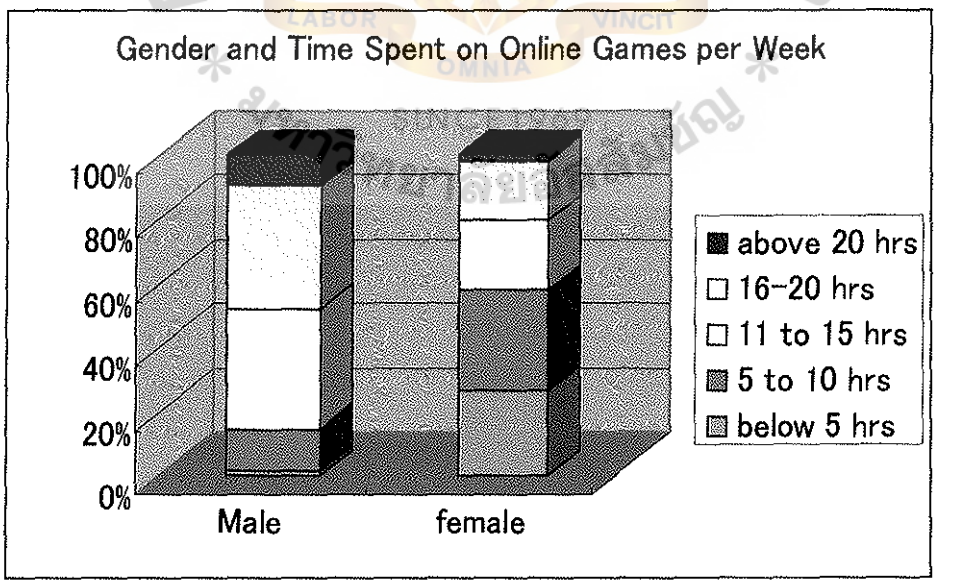
Table 5.5 Gender and Time Spent on Online Games

GENDER * SPEND_T Crosstabulation

Count

		SPEND_T					
		below 5 hrs	5 to 10 hrs	11 to 15 hrs	16 to 20 hrs	above 20 hrs	Total
GENDER	male	2	18	51	52	13	136
	female	17	20	14	12	1	64
Total		19	38	65	64	14	200

Figure 5.5 Gender and Time Spent on Online Games per Week



5.2 Hypothesis Testing

This research contains nine hypotheses. The first eight hypotheses are analyzed with Spearman rank-order correlation coefficient. The Spearman rank-order correlation coefficient measures the degree to which there is a linear association between two ordinal scaled variables. Since the first eight hypotheses are all in ordinal scale, Spearman rank-order correlation coefficient was chosen to be a primary statistical method. As for the ninth hypothesis, since it was based on nominal scale, Chi-Square Test was used to measure this hypothesis.

In this research each of the hypotheses was analyzed by comparing with the significant level of each independent factor to Thai youth's adoption of online games, and computing using the 2 tailed significant tests. The significant test by using Spearman rank-order correlation coefficient is at the 0.05 level. Therefore, any result greater than 0.05 will lead to the accepting of the null hypothesis, and any result less than 0.05 will lead to the reject the null hypothesis and accept the alternate hypothesis. As for the significant test by using the Chi-Square Test, the level is also at 0.05. Any result greater than 0.05 will lead to the accepting of the null hypothesis, and any result less than 0.05 will lead to the reject the null hypothesis and accept the alternate hypothesis.

5.2.1 Hypothesis 1

H1o: There is no relationship between *Hedonic outcomes* and Adoption of Online Games.

H1A: There is a relationship between *Hedonic outcomes* and Adoption of Online

games.

Table 5.6 Test of Hypothesis 1

Correlations

			Level of online games adoption	How much do you enjoy playing online games?
Spearman's rho	Level of online games adoption	Correlation Coefficient	1.000	.758**
		Sig. (2-tailed)	.	.000
		N	200	200
	How much do you enjoy playing online games?	Correlation Coefficient	.758**	1.000
		Sig. (2-tailed)	.000	.
		N	200	200

**. Correlation is significant at the .01 level (2-tailed).

Result: Reject H1o (P=0.000<0.05). Therefore it can be concluded that there is a relationship between *Hedonic outcomes* and Adoption of Online games.

Explanation: There is a relationship between *Hedonic outcomes* and Adoption of Online games because with higher customer satisfaction will lead to higher chance of Thai youth's online game adoption.

Implications: Entertainment pleasure does have effect on Thai youth's adoption of online games. Therefore, it is important for the game developers or businesses to create more unique and creative games to enhance the level of entertainment pleasure for Thai youth to adopt online games.

5.2.2 Hypothesis 2

H2o: There is no relationship between *Social outcomes* and Adoption of Online games.

H2A: There is a relationship between *Social outcomes* and Adoption of Online games.

Table 5.7 Test of Hypothesis 2

Correlations

			Level of online games adoption	Do most of your friends think that playing online games is cool?
Spearman's rho	Level of online games adoption	Correlation Coefficient	1.000	.114
		Sig. (2-tailed)	.	.108
		N	200	200
	Do most of your friends think that playing online games is cool?	Correlation Coefficient	.114	1.000
		Sig. (2-tailed)	.108	.
		N	200	200

Result: Fail to reject H2o (P=0.108>0.05). It means that there is no relationship between *Social outcomes* and Adoption of Online games.

Explanation: The result of no relationship between social outcomes and adoption of online games shows that adopting online games is based on the interest of individual. In other words, the general recognition of online games by others is not an important factor to the online game adopters.

Implications: Young online gamers do not care much about the public recognition of whether playing online games is good or not. Therefore the messages of what the government or parents tried deliver to the young online gamers about the negative or positive aspects of playing online games will not have much effect to these youngsters to play online games.

5.2.3 Hypothesis 3

H3o: There is no relationship between *Utilitarian outcomes* and Adoption of Online games.

H3A: There is a relationship between *Utilitarian outcomes* and Adoption of Online games.

Table 5.8 Test of Hypothesis 3

Correlations

			Level of online games adoption	Utilitarian Outcomes
Spearman's rho	Level of online games adoption	Correlation Coefficient	1.000	.157*
		Sig. (2-tailed)	.	.026
		N	200	200
	Utilitarian Outcomes	Correlation Coefficient	.157*	1.000
		Sig. (2-tailed)	.026	.
		N	200	200

*. Correlation is significant at the .05 level (2-tailed).

Result: Reject H3o (P=0.026<0.05). Therefore it can be concluded that there is a relationship between *Utilitarian outcomes* and Adoption of Online games.

Explanation: Even though the main purpose of games is to entertain or bringing fun and pleasure satisfaction to the users; on the other hand, combination of fun with practical benefits to develop extra metal and social skills to the users will also increase the users' level of online game adoption.

Implications: Thai young online gamers do concern about the extra benefits of developing practical mental and social skills from playing online games. Therefore, the game developers and businesses can try to develop games that contain these extra qualities to attract young gamers.

5.2.4 Hypothesis 4

H4o: There is no relationship between *Social influence* and Adoption of Online games.

H4A: There is a relationship between *Social influence* and Adoption of Online games.

Table 5.9 Test of Hypothesis 4

Correlations

			Level of online games adoption	How much do friends affect you in playing online games?
Spearman's rho	Level of online games adoption	Correlation Coefficient	1.000	.879**
		Sig. (2-tailed)	.	.000
		N	200	200
	How much do friends affect you in playing online games?	Correlation Coefficient	.879**	1.000
		Sig. (2-tailed)	.000	.
		N	200	200

**. Correlation is significant at the .01 level (2-tailed).

Result: Reject H4o (P=0.000<0.05). Therefore it can be concluded that there is a relationship between *Social influence* and Adoption of Online games.

Explanation: There is a relationship between social influence and adoption of online games may caused by the group orientation of Thai society as well as the nature of the youth to follow fashion and social trend. Therefore, friends, peers and other social influences does have a strong effect to youth's online game adoption.

Implications: Peers and friends have a strong effect for a Thai youth to adopt online games. Therefore, if the parents want to control their child to play online games, it is wise to be aware of what kind of friends are around their child.

5.2.5 Hypothesis 5

H5o: There is no relationship between *Secondary influence* and Adoption of Online games.

H5A: There is a relationship between *Secondary influence* and Adoption of Online games.

Table 5.10 Test of Hypothesis 5

Correlations

			Level of online games adoption	How much does commercial source of information influence the adoption of online games?
Spearman's rho	Level of online games adoption	Correlation Coefficient	1.000	.194**
		Sig. (2-tailed)	.	.006
		N	200	200
	How much does commercial source of information influence the adoption of online games?	Correlation Coefficient	.194**	1.000
		Sig. (2-tailed)	.006	.
		N	200	200

**. Correlation is significant at the .01 level (2-tailed).

Result: Reject H5o (P=0.006<0.05). Therefore it can be concluded that there is a relationship between *Secondary influence* and Adoption of Online games.

Explanation: Secondary source of information or commercial sources has always been a major player in promoting new products to the consumers. And this idea also applies to the youth's online game adoption.

Implications: Secondary sources have strong influence on Thai youth. Therefore, it is important for the online games businesses to focus more on different media sources to promote online games to Thai youth.

5.2.6 Hypothesis 6

H6o: There is no relationship between *Personality* and Adoption of Online games.

H6A: There is a relationship between *Personality* and Adoption of Online games.

Table 5.11 Test of Hypothesis 6

Correlations

			Level of online games adoption	Personality (Introverted/ Extroverted)
Spearman's rho	Level of online games adoption	Correlation Coefficient	1.000	.071
		Sig. (2-tailed)	.	.319
		N	200	200
	Personality (Introverted/Extroverted)	Correlation Coefficient	.071	1.000
		Sig. (2-tailed)	.319	.
		N	200	200

Result: Fail to reject H6o (P=0.319>0.05). It means that there is no relationship between *Personality* and Adoption of Online games.

Explanation: Video games and computer games has evolved greatly throughout the past decades from isolated PC and game consoles into online games that connect gamers around the globe through internet. Therefore through the highly social interactive environment of online games, gaming becomes suitable for both introverted and extroverted people.

Implications: People who play online games do not consist of introverted people alone, but also consist of the out going extroverted people as well. Therefore, parents should not be worrying too much whether their child is anti-social or not if the child plays online games.

5.2.7 Hypothesis 7

H7o: There is no relationship between *Allowance/Income* and Adoption of Online games.

H7A: There is a relationship between *Allowance/Income* and Adoption of Online games.

Table 5.12 Test of Hypothesis 7

Correlations

			Level of online games adoption	How much allowance or income do you get per month?
Spearman's rho	Level of online games adoption	Correlation Coefficient	1.000	−.142*
		Sig. (2-tailed)	.	.045
		N	200	200
	How much allowance or income do you get per month?	Correlation Coefficient	−.142*	1.000
		Sig. (2-tailed)	.045	.
		N	200	200

*. Correlation is significant at the .05 level (2-tailed).

Result: Reject H7o (P=0.045<0.05). Therefore it can be concluded that there is a relationship between *Allowance/Income* and Adoption of Online games.

Explanation: The level of allowance or income also determined the consumer's purchasing power. Even though the price for playing online game has decreased due to great competition among game firms in the recent years, many of the online games do require a long time period to complete the game. And since online games are charged by

time bases, the amount of allowance and income does have a strong impact to the consumers' online game adoption.

Implications: Amount of allowance or income does have an important influence of the ability of the youngster's adoption of online games. Therefore, the parents could control the online games usages of their child by limiting the allowance of their child.

5.2.8 Hypothesis 8

H8o: There is no relationship between *Time* and Adoption of Online games.

H8A: There is a relationship between *Time* and Adoption of Online games.

5.13 Test of Hypothesis 8

Correlations

			Level of online games adoption	How many hours do you spend on playing online games per week?
Spearman's rho	Level of online games adoption	Correlation Coefficient	1.000	.731**
		Sig. (2-tailed)	.	.000
		N	200	200
	How many hours do you spend on playing online games per week?	Correlation Coefficient	.731**	1.000
		Sig. (2-tailed)	.000	.
		N	200	200

**. Correlation is significant at the .01 level (2-tailed).

Result: Reject H8o (P=0.000<0.05). Therefore it can be concluded that there is a relationship between *Time* and Adoption of Online games.

Explanation: Since many of the online games are time consuming, to able to have enough free time to play games is a very important factor to game adoption.

Implications: The amount of free time is an important factor for the Thai youth's adoption of online games. Therefore, different social activities could be applied to occupy the students' free time in able to control their time spending on online games.

5.2.9 Hypothesis 9

H9o: There is no difference between Gender and Adoption of Online games.

H9A: There is a difference between Gender and Adoption of Online games.

Table 5.14 Test of Hypothesis 9

GENDER

	Observed N	Expected N	Residual
male	136	100.0	36.0
female	64	100.0	-36.0
Total	200		

Test Statistics

	ADOPT	GENDER
Chi-Square[a,b]	66.400	25.920
df	4	1
Asymp. Sig.	.000	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 40.0.

b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 100.0.

Result: Reject H9o (P=0.000<0.05). Therefore it can be concluded that there is a difference between *Gender* and Online games.

Explanation: Males have higher level of adopting online games than females. Most of the major popular online games are all male oriented, such as Ever Quest, Ragnarok, and Mu. These games are all adventurous role playing games which requires strategic thinking that are more attractive to male players rather than female players (Sherry, Holmstrom, Binns, etc., 2002). This result also proves the validity of the previous research of gender and electronic games, in which male tend to outperform female in tasks involve three dimensional object rotation and target-directed motor skills such as guiding or intercepting projectiles as well as strategic thinking. On the other hand, females are better than males at verbal memory and fluency, matching tasks, and remembering a displaced object. Therefore, male players prefer fighters, shooters, sports, fantasy role-playing games more than females. Whereas females players prefer classic board games, card-dice games, quiz trivia games, arcade games, and puzzle games, more than males (Sherry, Holmstrom, Binns, etc., 2002).

Implications: Most of the popular online games are more suitable for male gamers rather than female gamers. Therefore, since most of the Thai youth online game adopters are males, the female online game market are still waited to be opened.

Chapter 6

Conclusion & Recommendations

This chapter summarizes the research results from data analysis in the previous chapter. The interpretation and discussion of the results will yield a better understanding of the purpose of this research. Implications and recommendation of the research will also be discussed in this chapter.

6.1 Summary of Findings

The focus of this research is to determine the relationship of the selected determinants with Thai youth's adoption to online games, and to see whether each of the determinants factors is significant to online game adoption of Thai youths. There are nine determinant factors used to test the relationship with Thai youth's online game adoption. These nine determinant factors are:

1) Hedonic outcomes (Hypothesis 1)
2) Social outcomes (Hypothesis 2)
3) Utilitarian outcomes (Hypothesis 3)
4) Social influence (Hypothesis 4)
5) Secondary influence (Hypothesis 5)
6) Personality (Hypothesis 6)
7) Allowances/ income (Hypothesis 7)

8) Time (Hypothesis 8)

9) Gender (Hypothesis 9)

6.1.1 Summary Findings of Descriptive Statistics for Demographic Factors

In concerning of the findings of the descriptive statistic for demographic factors, a summary of the average mean of each demographic factor is listed in Table 6.1 below:

Table 6.1 Average of Descriptive Statistics for Demographic Factors

Demographic Factors	Average (Mean)	Maximum Scale
Income	2.79	5
Monthly Spending on Online Games	2.00	3
Time Spent on Online Games per Week	3.08	5
Males' Time Spent on Online Games per Week	3.41	5
Females' Time Spent on Online Games per Week	2.38	5

As what the table shows, the maximum scale for each of the demographic factors are different due to the different numbers of choices of the answers of the demographic factor question from the questionnaire. The demographic factor of monthly spending, with average of 2.00 is based on the maximum scale of 3 whereas for the other 4 demographic factors are based on the maximum scale of 5. As for the demographic factors of the male and females' time spend on online games, which both based on a scale of 5, it clearly shows that males has a higher average (3.41) than females (2.38).

In concern of the scale to calculate the average mean, since the questionnaire was designed for the respondents to answer in multiple choices, there were no specified numbers in the answers available for calculation of the average mean. Therefore, we applied each group of the multiple choice answers into scales from 1 to 3 or 1 to 5 (depending on the numbers of multiple choice answers in each of the questions) to calculate the average mean. A clearer interpretation of the scales of average mean is listed in Table 6.2 below:

Table 6.2 Interpretation of Scales

Income	Scale
Below 5000	1
5000 to 10000	2
10001 to 15000	3
15001 to 20000	4
20000 and above	5
Monthly Spending on Online Games	**Scale**
Below 500	1
500 to 1000	2
1001 to 2000	3
Time Spent on Online Games per Week	**Scale**
Below 5 hrs	1
5 to 10 hrs	2
11 to 15 hrs	3
16 to 20 hrs	4
Above 20 hrs	5
Males' Time Spent on Online Games per Week	**Scale**
Below 5 hrs	1
5 to 10 hrs	2
11 to 15 hrs	3
16 to 20 hrs	4
Above 20 hrs	5

Females' Time Spent on Online Games per Week	Scale
Below 5 hrs	1
5 to 10 hrs	2
11 to 15 hrs	3
16 to 20 hrs	4
Above 20 hrs	5

6.1.2 Summary Findings of Hypothesis Testing

The first eight hypothesis testing, which are ordinal scaled based hypothesis, were tested by using Spearman rank-order correlation coefficient. The ninth hypothesis concerning with the relationship of Gender and online game adoption is a nominal scaled based hypothesis. Therefore, it is tested by using Chi-Square Test. The results of the hypothesis tests, tested at 95% confident level, are summarized in the table below:

Table 6.3 Summary Findings of Hypothesis Testing

Hypothesis	Level of Significance	Findings
H1o: There is no relationship between Hedonic outcomes and Adoption of Online games.	0.000	Reject **Ho**
H2o: There is no relationship between Social outcomes and Adoption of Online games.	0.108	Fail to Reject **Ho**
H3o: There is no relationship between Utilitarian outcomes and Adoption of Online games.	0.026	Reject **Ho**
H4o: There is no relationship between Social influence and Adoption of Online games.	0.000	Reject **Ho**
H5o: There is no relationship between Secondary influence and Adoption of Online	0.006	Reject **Ho**

games.		
H6o: There is no relationship between Personality and Adoption of Online games.	0.319	Fail to Reject **Ho**
H7o: There is no relationship between Allowance/Income and Adoption of Online games.	0.045	Reject **Ho**
H8o: There is no relationship between Time and Adoption of Online games.	0.000	Reject **Ho**
H9o: There is no difference between Gender and Adoption of Online games.	0.000	Reject **Ho**

As what the above results table have shown, seven hypothesis including H_1, H_3, H_4, H_5, H_7, H_8, H_9 rejected the null hypothesis, since their significant levels are below 0.05. Whereas the other two hypotheses, H_2, and H_6, Has failed to reject the null hypothesis due to their significant levels are above 0.05 at 95% confident level.

6.2 Conclusion

There are two main objectives in this research. The first objective is to identify the adoption determinants to online games. There nine determinant factors (Hedonic outcomes, Social outcomes, Utilitarian outcomes, social influence, Secondary influence, Personality, Allowance/ income, Time, and Gender) are identified and used to compare with the online game adoption of Thai youth.

The second objective is to find out the relationship between selected factors and Thai youth's adoption of online games. The finding concludes that not all the nine selected determinant factors are significant to Thai youth's adoption of online games. From the result of the hypothesis testing, it shows that the social outcome (H_2) and personality of introvert/ extrovert factors (H_6) are not significant to the online game

adoption of Thai youth.

In conclusion, online games become the new trend of the next generation of entertainment. Despite of the late coming of the Thailand's online game market, online game business in Thailand continue to grow among Thai youth.

6.3 Implications and Recommendations

As what the results of the study shows, seven out of the nine determinant factors have significant relationship with online game adoption of Thai youth. As for the two determinant factor, though has no significance with online game adoption, they also give us a clearer idea of Thai youth's behavior toward their adoption of online games. From these findings, market strategies, project planning, as well as social control of Thai youth's adoption of online games can be developed with the these information in accordance to the organization's strategy and needs.

Table 6.4 Summary of Findings & Recommendations

Findings	Interpretations	Recommendation
Reject H_7	There is a significant relationship between allowance and online game adoption of Thai youth. More monthly Allowance means more purchasing power of the students for online games.	Parents should limit the monthly allowance of students to control their online game usage.
Reject H_8	There is a significant relationship between time and online game adoption of Thai youth. Since most of the online games are time consuming to complete, Therefore, time becomes a important factor for Thai youth's online game	School and parents should organize other social activities for the students to do to able to occupy students' free time in order to avoid them spend too much time on online games.

	adoption.	
Reject H9	There is a significant relationship between gender and online game adoption of Thai youth. There are more males adopting online games than females. And males also spending more time on online games than females.	Online game business should develop more games that are suitable for females in order to attract more female consumers as new target group since there are greater numbers of females than males in Bangkok area.

6.3.1 Recommendations for Government and Parents

The biggest problem that the government and parents are facing in concern with Thai youth and online games is the problem of Thai youth's game addiction, in which many of the school students are spending too much time on playing games rather than focus on their school works and other social activities. Up to this point, what the government has done to control this problem was to set regulation of the time restriction for teenagers to access to online games from 10 pm until 6 am in the internet cafes. But from the findings of this research could also suggest different strategies to control Thai youth's online game usage.

- *Control of Allowance*

From what the results have shown in this study, allowance has a significant effect to the online game adoption of Thai youth. The study shows that over half of the respondents have monthly allowance range from 5,000 up to 20,000 Baht and most of them spent only 500 up to 2,000 Baht on online games per month. As a result, most of the respondents do have plenty of purchasing power for online games. Therefore, parents can control the students' usage of online games by limiting their monthly allowance.

- *Control of Time*

The study also show that time has a significant effect to online game adoption of Thai youth. Despite of the cost of playing online games has decrease dramatically due to the heavy price competition among online game business, yet, most of the online games are highly time consuming. Most of the popular online games today are story-like role playing games, which involves with problem solving, strategic thinking, are extremely time consuming to complete the whole story of the game. Therefore, parents and school can try to control the time of the students by organizing other social activities to occupy their time to avoid the students spending too much time on online games.

6.3.2 Recommendations for Game Business

Despite of the fast growth of Thailand's online game market, Thai online game business are facing heavy competitions to divide this new market. Furthermore, with the government's new regulations in restricting Thai teenager's usage of online games, it further increased the hardships for the competition among the game businesses. However, this study also has the suggestions for the online game business.

- *Female Population as the New Target Group*

As what this study and previous study has shown, most of the online games as well as many of the traditional computer games are male-oriented games. Therefore, gender difference also has a great significance to online game adoption. This study has shown that almost 70% of the respondents are male gamers, and only around 30% are female. Furthermore, the study also has shown that males spent much time playing

online games than females. Data of this study showed that 76% of the males spent between 11 to 20 hours playing online games per week whereas only 41% for the females.

As a result, there is still has a lot of potential to open up the female market for online games, despite the fact that there is a greater population of females than males in Bangkok area. Therefore, the game developers should develop more online games that are suitable for females such as classic board games, card-dice games, quiz-trivia games, arcade games, and puzzle games to attract female gamers (Sherry, Holmstrom, Binns, etc.al, 2002).

6.3.3 Recommendations for Future Research

Despite its fast growth and great potential, online games business is still quite a new business in Thailand. Therefore, there are very few references available concerning the online game business in Thailand. Most of the references used in this research are implied from studies of online games in more advanced countries. Therefore, further studies with this or related fields are recommended. Some of the suggested topics that could be used for further research are listed in the following:

-*Study concerning with Gender and Online game Adoption (focus on male or female).*

-*Study concerning with different age groups and Online game Adoption.* Since this study only focused on the youth group and different group has different attitude toward games. Therefore studying in the adult group could be interesting.

-*Study concerning with students from different universities and Online game*

Adoption. Since students from different universities may have different personalities due to the school's culture and level of allowance. Therefore it is recommendable to do studies of the attitude toward online games for students from other universities.

6.4 Comparing Findings with Past Researches

From the findings of the difference of gender and online games, it has shown that more males are into online games than females. And this result could be back up with the findings from past research article ***Gender and Electronic Game*** *Play* by Sherry, Holmstrom, and Binns (2002). Sherry, Holmstrom, and Binns have distinguished the types of computer games that are suitable for male and female based on the different psychological behaviors of the two sexes. The result of their research stated that males are prefer to play strategy, adventure, role playing, fighter and sport type of games, while females, on the other hand, prefer to play classic board games, card-dice games, quiz-trivia games, and puzzle games. Therefore, from these findings concerning the different game preference of males and females, we could say that the reason why there are more males than female playing online games is that most popular online games are role-playing adventure games, which are more suitable to the males than females, based on the difference of their psychological behaviors.

The research article ***Computer Games as a Learning Source*** (Amory, Naicker, Vincent and Adams, 1997) has found out that most of the respondents (students) of the research believes that strategic and adventure type of games are the most enjoyable and able to pick up different practical skills such as logic, visualization reflexes and problem solving in comparing with other types of games. Comparing to the findings of this

article with the findings of this research, we could say that the most popular online games are strategic role-playing adventure type of games, which are quite similar to the types of games that are popular to the respondents in the article. Furthermore, this article also stated that the strategic and adventure games are also the types of games that the respondents believe to able to acquire the most practical skills or utilitarian outcomes. On the other hand from the finding of this research, we also found out that utilitarian outcomes have an important relationship with the Thai youth's adoption of online games. Therefore, we could also conclude that utilitarian outcomes or the development of practical metal or social skills are important factor that lead to the popularity of the online computer games.

For comparison of the article ***Online Game Habits*** (Game Research, 2002), with this research, it is interesting to see the findings concerned with the respondents' time spent on online games per week in both research. As we can see, most of the respondents in both studies play online games approximately less then 20 hours (75% in the article and 97 percent in this research). Therefore we could conclude that most online gamers do not play games more than 20 hours per week.

The article ***New Market Research on Thai Youth Market*** (Asian Market Research News, 2002) has separated Thai youth into four categories (image seekers, follower/mainstream, liberals and individualists) based on different characteristics. And as from the findings of this research, it has shown that social influence and secondary influence are important factors relating to Thai youth's adoption of online games. Therefore, we could say that most of the Thai young online gamers belongs to the category of image seeker, who are brand orientated, influenced by advertising and friends.

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Appendix

Questionnaire

To whom this may be concerned,

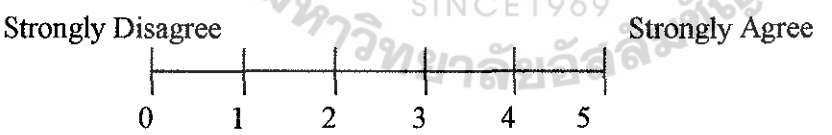
This questionnaire was designed to obtain the information on *the relationship between adoption determinants of online games among Thai youth* as well as collecting the necessary data to prove the hypothesis made for this research. With your generosity, please answer all the items in this questionnaire. Thank you for your cooperation.

Sincerely yours,

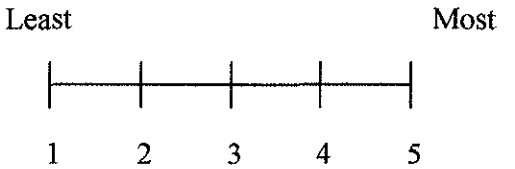
Piya Leelaprad

1) How much do you enjoy playing online games? (Scale of 1-5)

2) Do most of your friends think that playing online games is fashionable?



3) How much do friends affect you in playing online games?



4) Rank the following benefits that you get from playing online games.
(Scale of 1 to 5: 5 as the highest benefit and 1 as the least benefit)

Strategic thinking ◯ Control of reflex ◯

Patients ◯ Teamwork/social skills ◯

5) How much does secondary source of Information(TV, Newspaper, Magazines, Internet Website) influence the adoption of Online Games?

6) You usually enjoy spending time talking with friends about social events or parties.

Always ◯ Often ◯ Occasionally ◯

Sometimes ◯ Never ◯

7) You enjoy taking care of other people's needs.

Always ◯ Often ◯ Occasionally ◯

Sometimes ◯ Never ◯

8) You are usually the one who takes the first step in making new friends.

Always ◯ Often ◯ Occasionally ◯

Sometimes ◯ Never ◯

9) You usually like to do your planning alone, without interruption or suggestions from others.

Always ◯ Often ◯ Occasionally ◯

Sometimes ◯ Never ◯

10) You like it best when you have people around you.

Always ◯ Often ◯ Occasionally ◯

Sometimes ◯ Never ◯

11) How much allowance or income do you get?

Below 5000 Baht ◯ 5000-10000 Baht ◯ 10001-15000 Baht ◯

15001-20000 Baht ◯ 20001 Baht and above ◯

12) How much money do you spend on online games per month?

Below 500 Baht ◯ 500-1000 Baht ◯ 1001-2000 Baht ◯

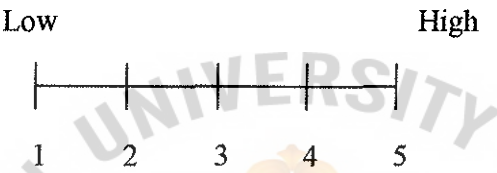
2001-3000 Baht ◯ 3001 Baht and above ◯

13) How many hours do you spend on playing online games per Week?

Below 5 hrs ◯ 5-10 hrs.◯ 11-15 hrs. ◯ 16-20 hrs. ◯ above 20 hrs ◯

14) Gender: Male ◯ Female ◯

15) What is your level of online games adoption?



Types of Online Gaming Architecture

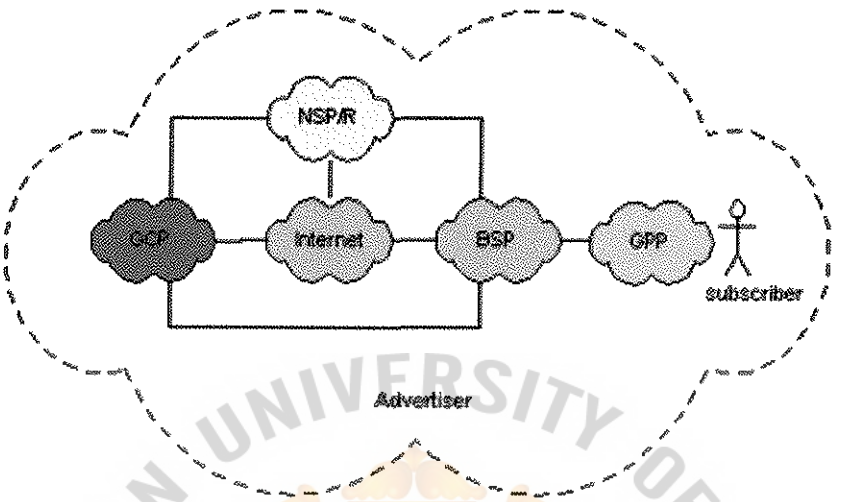


Figure 1.1: Free Market Architecture of an Online Gaming Service

(Source: www.birds-eye.net)

Figure 1.1 shows one possible way of how an online game service can be created by the assembly of the six business components (Bahlmann, 2002). This kind of online gaming service business architecture could be considered as a free market architecture because all parties have an opportunity to capitalize on the delivery of the online gaming service to the subscriber. However, since some of these business components can perform multiple duties, other architectures exist as well.

For Figure 1.2 shows an example of a GPP driven online gaming architecture (Bahlmann, 2002). In this Figure the GPP manages the gaming service, any and all content carried over this service, and any and all advertising permitted over this service. This service highly leverages Internet access and connectivity provided by the BSP. Beyond that single dependency, however, the GPP owns and runs a vertical business of

online gaming using their proprietary game console or STB.

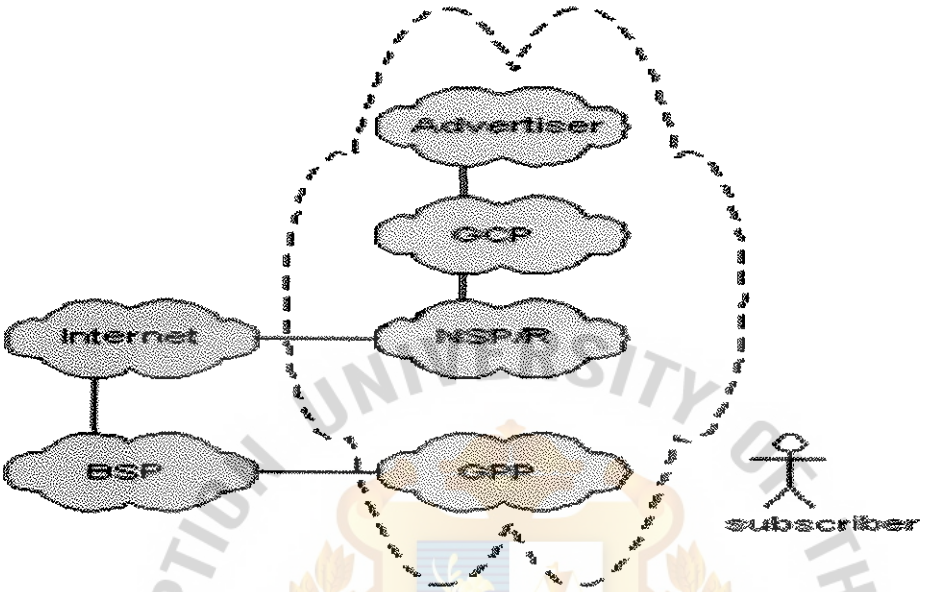


Figure 1.2: GPP Driven Online Gaming Architecture

(Source: www.birds-eye.net)

Bahlmann further suggest a third possible architecture which is GPP oriented architecture. Figure 1.3 represents one such GPP driven architecture.

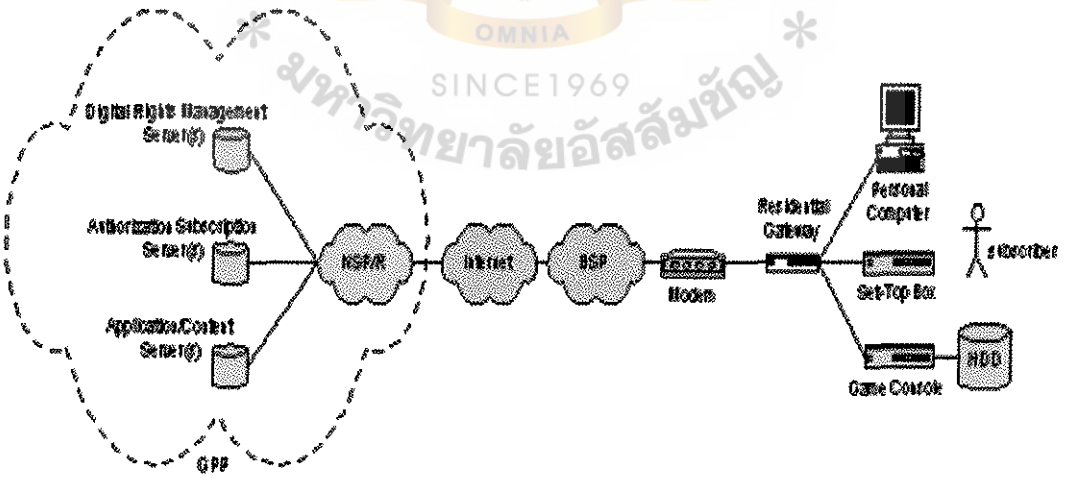


Figure 1.3: GPP Driven Online Gaming Infrastructure Components

Bahlmann stated that in the GPP driven architecture it all begins with a proprietary hardware and software presence in the subscriber's dwelling. Since a PC is fairly generic and unsecured, it does not have the same impact as a game console; these are the preferred customer presence devices for GPPs. Through these devices the GPPs can attach to the television. Subscribers intact with the GPP through the STB or game console's user interface (typically some kind of browser). The browser then communicates using some standard language (HTML/XML) through the STB or game console, on the Internet, to the NSP/R or the GPP (they are one in the same in this case). Three different clusters of servers then handle things from there.

Concerning with the authorization and subscription of the online games, Bahlmann further explained that the authorization and subscription servers provide permission for HDD (hard-disk-drive) downloading of the games or content sought, authentication for renewing subscription or other account information online, parental lock functions, and time based access (recording keeping function. The digital rights management servers keep track of what game software is going to which STB or game console). Most GPPs have placed unique identification information within each piece of game software (content) as well as each STB or game console. The digital rights management servers keep track of this identification as a means to track usage, subscription and billing where necessary. The information in the digital rights management server becomes especially important as gaming software or other content becomes increasingly large to the point where all of the purchased content will not fit on the subscriber's STB or game console HDD. Thus it is important to all allow them to download software they have already purchased if for some reason the most current version of the content no longer resides on the HDD within their STB or game console.

Having gaming software available via download permits the GPP and the GCP to continually provide only the most up to date software for download while decreasing the need to imprint compact discs (CDs) with the software. The CD is perhaps the least secure method of software distribution. Once more, the digital rights management software could also provide a virtually library of audio and video titles owned by the subscriber. The application or content servers provide a carousel for certain types of content to sit in preparation for global, regional, community distribution, as well as handling individual gaming content downloads, and hosting numerous gaming servers.

Most Recent News Article about Thai Online Game Business

(Sources: *The Nation Sunday*, May 30, 2004)

INTERNET BUSINESS

Web games spawn new industry

Ragnarok Online and others spur a Bt1-bn sales boom for variety of firms

Theeranuch Pusaksrikit
THE NATION

Online gaming big in S Korea

Pheryasak Lilakul
The Nation
SEOUL

Consumers starting to feel the pinch

Achara Deboonme
THE NATION

With cheaper prices and offering items in flexible amounts, fresh markets have become the choice of consumers forced to tighten their belts after a rise in prices.

KfW 'agr[illegible] its skytra[illegible]

Somluck Srimalee
THE NATION

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ppraisal. If they can
reasonably, the matter
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Finance Minister
mpitak instructed the
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ry, land sales rose by
t year on year, com-
per cent for all of last
5 per cent for 2002. In
nth, new housing reg-
re up by 52.6 per cent,
to a 48.7-per-cent
year and no growth in

about half are foreign," he said, "especially on tours from Korea and China almost all of the tour guides are their own natives."

Wirote said some 20,000 native Thai tour guides worked in the tourism business.

The government, he said, has to take urgent action to tackle the flow of illegal foreign tour guides to protect the industry.

While foreign guides have an advantage in that they speak their customers' native languages, some of them still lack knowledge and are unable to give accurate information about Thailand's attractions and historic places.

To cope with the illegal-guide problem the government should take the tourism industry off the table in free-trade-agreement

[redacted] but tour agencies need more time to develop," he said. *Wirote*

Kiattibut Lersvidhaya, manager of Shindai Co, a travel agency, said the company had no illegal foreign guides and employed only qualified Thai guides. However, he said, the company used to accept illegal guides on occasion when facing shortages.

"Illegal guides do not focus on high payment from the travel agents, because their income comes from commissions from restaurants and retail shops they take tourists to," he said.

Kiattibut suggested that travel agents consider employing illegal guides as translating assistants to Thai guides who did not speak certain languages.

to address illegal guides speaking these languages.

However, foreign guides with a good command of Russian and Korean are needed, said Nathavut Lokasiriwat, managing director of Trans Global.

The industry's other big problem is the increasing number of "zero-dollar" tour groups. These tours cater to "low-quality" tourists who spend little money but destroy a lot of resources, Wirote said.

Zero-dollar tour groups offer very cheap or almost expense-free packages created by foreign tour agencies, particularly in China and Korea. These tour agents receive commissions and extra money from connected tour agencies in Thailand. The package

and Thailand gains nothing," he said.

"The government should not worry about reductions in tourist numbers and some foreign-exchange income and try to eliminate these low-quality tourists and concentrate on high-quality tourists for sustainable development," he said.

Anake Srishevachart, president of the Thai Travel Agents Association (TTAA), said stringent regulations to limit numbers of foreign tour-operators should be drawn up by the government to protect local tour-operators.

"Foreigners have the advantage over Thai operators in terms of capital, technology and networks. If we open the market wide, local Thai tour agencies will not be able to survive," he said.

Online game success draws more players

■ From 1B

"Many Thai consumers buy more than one magazine because they want to compare information. Some buy three of our brands and two from others as the magazines' prices are around Bt20 to Bt30," she said.

In the first two months after each launch, sales double or triple and then grow, albeit at a slower pace, she added.

Frisda Gomutbutra, director of Play FM 102, the only radio programme offering an online game show, said the company planned to attract 80 per cent of all online game players and revenues of Bt20 million this year.

"We aim to become an integrated media outlet. We have just linked with one of South Korea's 24-hour online game TV channels to plan an online game TV programme which will be launched in the third quarter," he said.

D-Fusion produces the only television programme dedicated to gaming: "Gamers' Zone" on ITV. The company has 500,000 viewers a week, said managing director Mark Tayangkanont, who projects revenues of Bt30 million this year. He plans to launch two or three more shows in the third quarter.

"These [new] programmes won't be about the game but will involve the lifestyle, as we have very clear demographics. They are around 15 to 25 years old, well-educated, have high household incomes, and like to interact with hi-tech gadgets," Mark said.

There are currently about 10 online game companies that together offer 17 different products. The number of games will increase by at least 25 and there will be two or three newcomers this year, said Rithirong of BM Media.

"The company has obtained five games and is planning to launch a new game by the end of this year. We also expect to break even this year," he added.

Online game companies' main strategies include strategic partnerships for marketing promotions and giving customers convenient access to buy airtime cards, the firms' main source of income. Customers can buy airtime cards at game distributors, Internet cafes and 7-Eleven stores, or they can pay at ATMs or via mobile phone.

These companies also generate income from selling advertising on their websites and copyright fees.

Niti Chivaprasertitorn, project manager of New Era Online – which offers the MU Online game – said only Ragnarok of BM Media required Internet cafes to pay copyright fees, about Bt1,200 per computer per month.

Sukit Wongwipas, owner of Gnome Internet Cafe near Thammasat University, said his shop had about 30 computers. He has to pay more than Bt30,000 to install the game on every computer, which he said was worthwhile.

"We have got about 150 customers and charge them access fees of Bt25 an hour, and that brings us more than Bt3,000 a day," he said.

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■ SEOUL

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■ OIL PRICES

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