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Investigating Factors Influencing Game Piracy in the eSports Settings of South Korea

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INVESTIGATING FACTORS INFLUENCING GAME PIRACY IN THE ESPORTS SETTINGS OF SOUTH KOREA

by

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DISSERTATION

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DEDICATION

This dissertation is dedicated to my parents, my brother, my parents-in-law, and my wife, Joohee Park. Without their love, sacrifice, and support, my educational journey would not have been possible.

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ABSTRACT

eSports, an abbreviation of electronic sports, is a virtual leisure activity (KeSPA, 2011). eSports has been developed through online networks and game software development (Jonasson & Thiborg, 2010), and has commanded national attention and popularity in South Korea. Within cyberspace linked over the Internet or Local Area Networks (LAN's), many participants match electronic game skills against other participants with little spatiotemporal restraint. However, illegal downloading of game materials over the Internet has been prevalent and caused economic losses to game development companies (Korea Creative Content Agency, 2006b).

The main purpose of this study was to propose a theoretical model describing determinants of game piracy among eSports game users in South Korea. The study specifically investigated the piracy behaviors of game users according to their demographic background, awareness of copyright laws, and intention to commit game piracy. Using the theory of reasoned action (TRA), the intention was also examined according to attitude towards game piracy and subjective norm.

A convenience sample was made up of 354 eSports game users who attended an eSports arena to see the regular season games of a professional league. A binary logistic regression and multiple linear regression analysis were employed to answer the research questions of the study.

The results showed that males were more likely to pirate game materials over the Internet than were females. The more intention individuals had, the more they were likely to commit game piracy. Attitude towards game piracy and subjective norm played significant roles in the behavioral intention. Most importantly, the behavioral intention was shaped more by their attitudes towards game piracy than by subjective norms.

This study may initially offer people in eSports and game industries, related research communities, and Korean game content agencies an understanding of how and why eSports consumers pirate game materials. By doing so, the findings of the study may inspire further investigation of game-related piracy and policies aimed at reducing the piracy of game content.

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CHAPTER 1

INTRODUCTION

Background

In the late 1990s, eSports originated with the launching of online networks and the disseminating of game software (Jonasson & Thiborg, 2010; Park, 2009). The term eSports defines electronic matches between individuals or teams in cyberspace with personal computers, game software, and Internet connections (Lee & Ko, 2005). eSports, considered a new sport (Chae & Kang, 2011), has the following characteristics in common with traditional sport: fair competition among human players, rules, required mental and physical abilities, outcomes, etc (Lee, 2005).

Western and eastern eSports have developed separately (Lee & Ko, 2005; Wagner, 2006). The eSports of western countries, such as the United States and Europe, began with Local Area Networks (LAN's) (Lee & Ko, 2005). Hundreds of gamers gathered from all over the world to match their skills against each other. Since 1997, such gatherings have developed as formal eSports competitions and include the Cyberathlete Professional League (CPL) held in the U.S. and the Electronic Sports World Cup (ESWC) held in France (Korea Creative Content Agency, 2006a). The competitions are held once or twice each year and are sponsored by companies in the digital content industry, such as Nvidia, Intel, AMD, etc (Jonasson & Thiborg, 2010; Korea Creative Content Agency, 2006a). However, since the gatherings are characterized as short-term and participation-oriented events for game mania (Lee, Ko, & Kim, 2005; Jung, 2008),

western eSports have been less commercialized than the eastern eSports of South Korea (Soumokil, 2009).

The eastern eSports originated in South Korea and developed as professional sport (Soumokil, 2009; Lee, 2005). In contrast to the LAN parties of the West, Korean eSports are characterized as spectator sports (Lee & Ko, 2005). In the late 1990s, as a result of high-speed Internet networks, cybercafés, and the disseminating of StarCraft (the real time strategy game by Blizzard), eSports users increased dramatically (Lee, 2005). Since 2000, several national competitions organized as amateur games have been watched on television (Park, 2009). Television coverage strengthened the development of eSports in South Korea.

According to the Korea Creative Content Agency (2008a), about 18 million people enjoy eSports. Professional gamers and teams have also grown (Lee, Ko, & Kim, 2005). In 2004, over 100,000 fans came to Gwangahnri Beach in Busan, one of the largest cities in South Korea, to watch the final match of a professional league (Lee & Ko, 2005). Interestingly, at the same time, only about 15,000 baseball fans gathered to watch the All-Star Game in the baseball stadium of the same city (Lee & Ko, 2005). In addition, channels televising eSports matches recorded high audience ratings from younger populations (Lee, 2005). Even though eSports has had a short history, it has become a cultural trend and has experienced rapid growth and national popularity in South Korea (Chae & Kang, 2011).

Need for the Study

In today's information technology (IT), digital piracy has become a chronic headache (Van der Byl & Van Belle, 2008). Digital piracy is defined as "the illegal copying and/or downloading copyrighted software, music, video, or other material (such as MP3, Hollywood movies, and digital audio books among others)" (Al-Rafee, 2002, p. 4). Studies addressing piracy have been investigated in the software industries (Nill, Schibrowsky, & Peltier, 2010; Dupin-Bryant, 2010; Aleassa, Pearson, & McClurg, 2011), music (Wang, Chen, Yang, & Farn, 2009; Woolley, 2010), and movies (Wang, 2005). Each industry has suffered enormous economic losses from digital piracy. The game industry has also suffered similar losses. According to the Korea Federation of Copyright Organizations (2011), the economic loss in South Korea in 2010 due to digital piracy reached about 237 million dollars. Since the basic tool of eSports is electronic games, piracy has also had an economic effect on the growth and popularity of Korean eSports.

The piracy problem remains a critical issue in the eSports setting and related research communities. As of today, no empirical study has been conducted in South Korea on the piracy behavior of game users. As noted above, researchers have, however, studied piracy in computer software, digital movies, and digital music.

For example, computer software piracy was predicted by behavioral intention (Ramayah, Ahmad, Chin, & May-Chiun, 2009), and the intention was affected by attitudes toward software piracy behavior, subjective norms (Yoon, 2011; Aleassa, Pearson, & McClurg, 2011), and an awareness of piracy laws (Cuevas, 2010; Al-Rafee & Rouibah, 2010). Some researchers have recommended the collection of demographic information as factors affecting software piracy, such as gender (Higgins, 2006) and age

(Gupta, Gould, & Pola, 2004). Digital music piracy was believed to have been influenced by attitudes and subjective norms (Woolley, 2010). Wang's research (2005) also supported subjective norms as one of the determinants of digital movie piracy.

Most studies employed the theory of reasoned action (TRA) in order to identify the factors influencing digital piracy behaviors. According to Woolley (2010), the TRA, suggested by Ajzen and Fishbein (1980), described actual behavior mediated by behavioral intention that "can be predicted by a person's attitude toward the behavior and their perceptions of what other people think (social norms)" (p. 31).

Since the game industry, which is the basis of eSports, belongs to the digital content areas, the TRA and other concepts taken from prior research were employed in this study in an effort to describe the piracy behavior of game users in Korean eSports settings.

Purpose of the Study

There were three main purposes in this study.

The first was to identify Korean eSports game users' awareness of piracy laws, attitudes towards game piracy, subjective norms, and demographics.

The second was to discover whether or not the TRA and other information, which have been employed in previous studies to identify piracy behavior of other digital contents, can be applied in this study.

And finally, this study sought to propose a theoretical model describing the factors affecting intention and behavior of game piracy.

Research Questions

The following research questions were developed in order to answer the study purposes.

1. What are determinants of game piracy behavior?
    1-1. Does gender difference affect game piracy behavior?
    1-2. Does variation in age affect game piracy behavior?
    1-3. Does variation in awareness of copyright laws affect game piracy behavior?
    1-4. Does variation in intention towards game piracy affect game piracy behavior?
2. Is the TRA applied to this research?
    2-1. Does variation in attitude towards game piracy affect intention?
    2-2. Does variation in subjective norm affect intention?
3. Does subjective norm have a greater influence on intention than does attitude in Korean culture?

Theoretical Model

Based on the research questions, the following theoretical model was suggested in this study (see Figure 1.1).

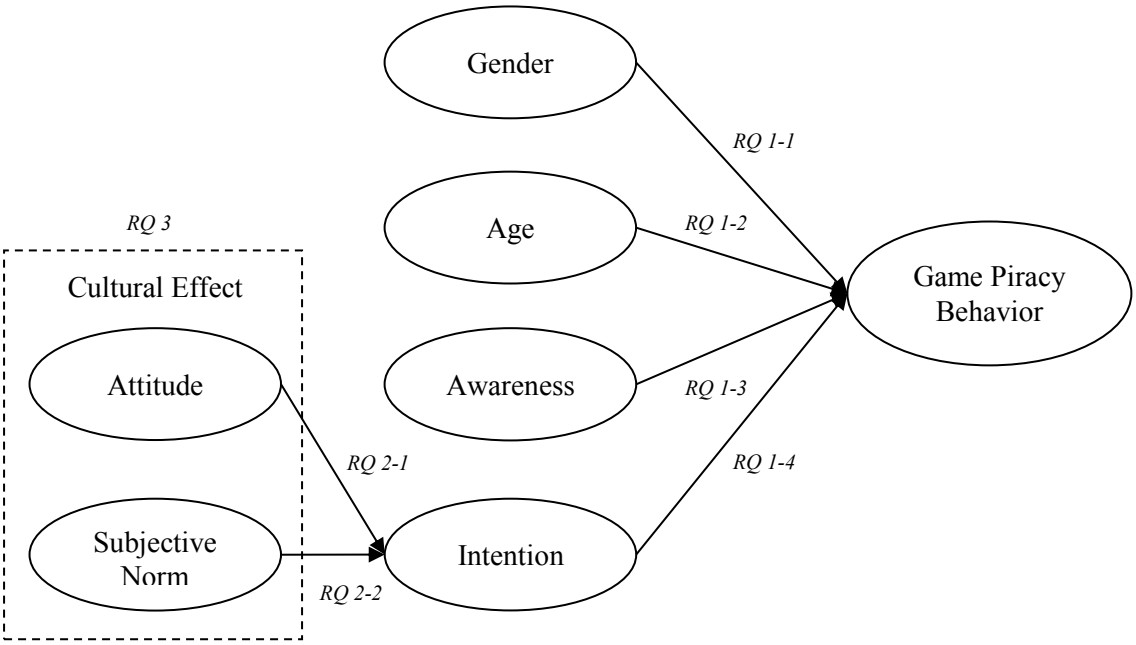

Figure 1.1. Theoretical Model

Importance of the Study

This study may initially offer people in eSports and game industries, related research communities, and Korean game content agencies an understanding of how and why eSports consumers pirate game materials. By doing so, the findings of the study may inspire further investigation of game-related piracy and policies aimed at reducing the piracy of game content.

Delimitations

(1) This study was delimited to Korean eSports fans over the age of 18 who had played electronic games. Using a sample of convenience, the data were collected in an eSports game arena in Seoul, South Korea.

(2) A survey was employed for collecting data. Subjects were assessed at a single time in their lives.

Limitations

(1) The sample of convenience may not fully represent the target population: eSports game users in the arenas may not be generalizable to other game users.

(2) Cross-sectional survey design may not fully provide participants' characteristics.

Assumptions

(1) The instruments of the survey appropriately measured each construct of the theoretical model of the study.

(2) Survey participants followed the directions of the survey and understood what they were asked in each item.

(3) Survey participants made frank and earnest responses to the survey questionnaire.

(4) During the survey process, the participants were independent from each other: their responses were not affected by others.

Definition of Terms

eSports

As a compound word of "electronic game" and "sports", eSports refers to electronic matches between individuals or teams in cyberspace with personal computer, mouse, game software, and Internet connection (Lee & Ko, 2005).

Cybercafé

Cybercafé refers to Internet café in which customers can send email, access websites for searching information, and enjoy computer games by paying a fee.

LAN Party

LAN Party means a festival of hundreds of gamers gathering from all over the world to match their computer game skills against each other in places called Local Area Networks (LAN's).

Copyright

According to the U.S. Copyright Act, 17 USC Section 102 (a), "Copyright protection subsists…in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. Works of authorship include the following categories: (1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) pictorial, graphic, and sculptural works; (6) motion pictures and other audiovisual works; (7) sound recordings; and (8) architectural works."

Korean Copyright laws appear in Chapter 2.

Digital Piracy

Digital piracy is defined as "the illegal copying and/or downloading copyrighted software, music, video, or other material (such as MP3, Hollywood movies, and digital audio books among others)" (Al-Rafee, 2002, p. 4).

Game Piracy

The activities of downloading or duplicating game material over the Internet without authorization

Theory of Reasoned Action (TRA)

The TRA explains that an individual's actual behavior can be led by their behavioral intention, and that their behavioral intention is affected by attitudes towards behavior and subjective norm (Ajzen & Fishbein, 1980).

Behavioral Intention

The indicator "of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior" (Ajzen, 1991, p. 181).

Attitude

"The degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (Ajzen, 1991, p. 188)

Subjective Norm

"Individuals' perceptions of the referent social groups' attitudes" towards a behavior (Woolley & Eining, 2006, p. 52)

CHAPTER 2

REVIEW OF LITERATURE

Overview of eSports

Definition of eSports

The Korean eSports Association (KeSPA) defined eSports as a leisure activity within cyberspace in which participants matched their electronic game skills against each other for win or loss (KeSPA, 2011). eSports was also referred to as the competitive gaming played by two or more persons using personal computers or videos (Korea Creative Content Agency, 2008a). Wagner (2006) stated "eSports is an area of sport activities in which people develop and train mental or physical abilities in the use of information and communication technologies" (p. 439). Soumokil (2009) added competition among people, cyber world, and game rules to Wagner's (2006) description. Additionally, Lee and Ko (2005) defined eSports as a match among human players using electronic games through Local Area Networks (LAN's) or the Internet.

Comparison of eSports and Traditional Sports

In the definitions of eSports above, several prominent terms can be found, which characterize sport, in general. They are competition among players, mental and physical abilities, rules, fair play, and win or loss. According to Coakley (2007), traditional sports are defined as "institutionalized competitive activities that involve rigorous physical exertion or the use of relatively complex physical skills by participants" (p. 6).

In eSports, the launching of broadband access service made it possible for game users to connect and play with other people rather than with game machines (Griffiths, Davies, & Chappell, 2003). Interaction among human players was also found in traditional sports (Coakley, 2007). eSports participants are in need of mental and physical abilities the same as those participating in traditional sports (Lee, 2005). eSports also required fast and accurate judgment, high concentration, insight, and the ability to operate computer devices (Chae & Kang, 2011). Outcomes included winning or losing under fair conditions and that the rules in eSports competition were important (Lee, Ko, & Kim, 2005). The main difference between eSports and traditional sports was whether the competitive activities were played in the real world or cyberspace (Park, 2008). In short, eSports had several characteristics in common with traditional sports (see Figure 2.1).

	Baseball Game	StarCraft Tournament
Required devices	Baseball glove Baseball Bat	Personal computer Game software Mouse
Place	Stadium, outdoors	Cyberspace
Competition	Team vs. team	Team vs. team Individual vs. individual
Required competencies	Strategies, operation capability, teamwork	
Similarities	Respect for rules, fair play, competition	

Figure 2.1. Baseball vs. StarCraft. Adopted from "e-Sports as a growing industry," by A. J. Lee, 2005, *Korea Economic Trends*, p. 13. Copyright 2005 by Samsung Economic Research Institute.

eSports as a New Sport Genre

In *Are video games a sport?*, the author stated, "they may not break a sweat, but these competitors say they are tomorrow's athletes" (Goodale, 2003). The word 'athlete' was defined as "a person trained or gifted in exercises or contests involving physical agility, stamina, or strength; a participant in a sport, exercise, or game requiring physical skill" (Dictionary.com, 2011). The phrases, 'athletes in cyberspace' or 'electronic gaming as a sport' is an oxymoron for people who professionally engage in traditional sports (Chun, 2006). It was true that cyber athletes do not use big muscle in electronic games (Chae & Kang, 2011). Furthermore, ordinary people, who do not professionally engage in traditional sports, also do not regard eSports as a sport (Seo, 2009). In the modern digital environment of today, it was anachronistic that human's will could be manifested only by big muscle (Chae & Kang, 2011).

eSports competition does not require physical endurance; however, it does require eye-hand coordination (Morris, 2006). Chae and Kang (2011) presented a new sports spectrum, categorizing eSports as a sport demanding greater mental abilities than other sports (see Figure 2.2).

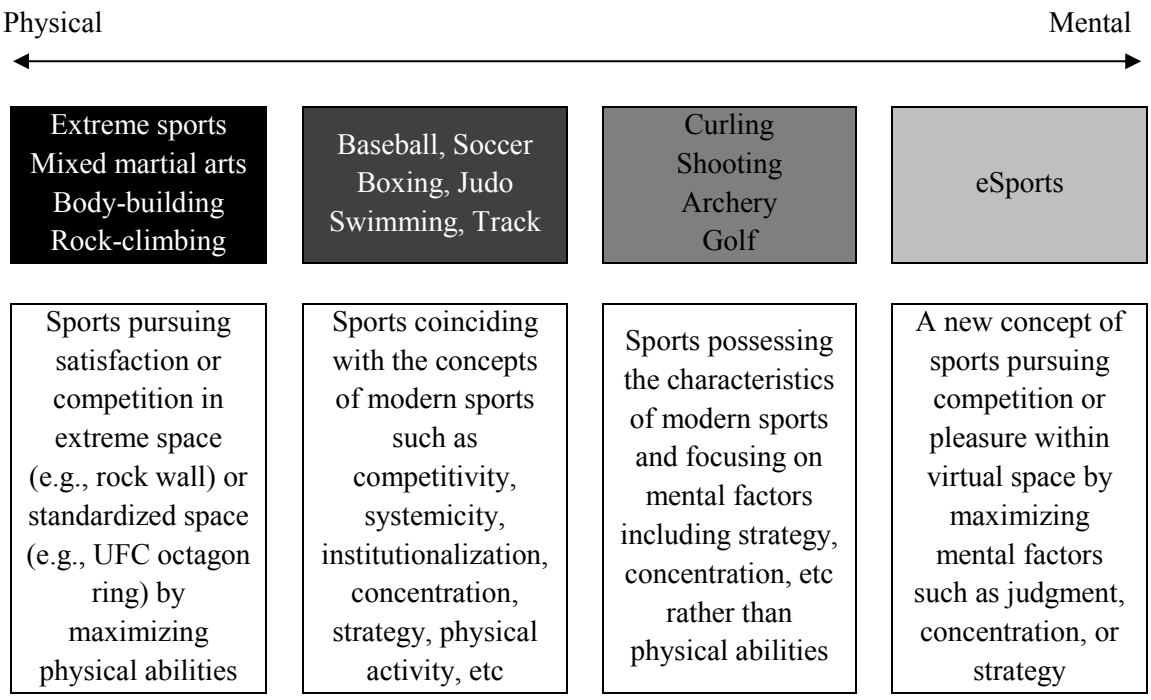

Figure 2.2. Extended Sports Scope and eSports. Adopted from "An exploratory research on categorizing e-sports as one of the sports," by H. S. Chae and S. K. Kang, 2011, *Journal of Korea Game Society*, *11*, p. 93. Copyright 2011 by Korea Game Society.

Games and eSports

Electronic games are the basic tool of eSports competition. According to the Korea Creative Content Agency (2008b), electronic games are classified into the following platforms:

(a) Arcade games – "a coin electronic game of the type that is often played in amusement arcades" (p. 4);

(b) Video games – "a game inserted into a game console system that is connected to a TV set" (p. 4);

(c) PC games – "a game installed on a PC through an optical storage device such as a CD-ROM or a DVD-ROM and requires no server to play" (p. 4);

(d) Online games – “a game that connects many players together on a server that can be accessed over the Internet by individual PC terminal” (p. 4); and

(e) Mobile games – “a game played on mobile phones or portable handheld systems” (p. 4).

With respect to PC games, the Korean domestic game market has continuously declined for the last 10 years (Korea Creative Content Agency, 2006b, 2007, 2008b, 2009, 2010, 2011) (see Table 2.1), despite the popularity of games among Korean eSports consumers. For example, many Korean game users have enjoyed StarCraft (a PC game package) (Gamedonga, 2010b), and most of the television game channels have broadcasted professional leagues of StarCraft (Korea Creative Content Agency, 2006b). However, even though Blizzard (StarCraft production firm) has acquired substantial profits, the profits tend to be due to the cybercafé boom (Gamedonga, 2010b) of the late 1990s in South Korea (Lee, 2005).

The primary reason for the reduction in numbers of registrations of PC games since 2000 is believed to be that individual game users are downloading PC game packages through peer-to-peer (P2P) websites (Korea Creative Content Agency, 2006b). Generally, P2P websites provide computer users with free software programs that allow them to freely download or share each other’s digitized materials through the Internet with small or no payments. These downloads include movies, music files, games, and computer software (e.g., Microsoft Windows/Office, SPSS, etc). PC games are more vulnerable to illegal duplication because they are currently distributed in a completed package form (e.g., CD or DVD) (Kim & Kim, 2003; Korea Creative Content Agency, 2010).

Table 2.1

PC Game Market Status from 2001 to 2010

Year	Sales (100 million won)	Growth rate (%)
2001	1,939	-
2002	1,647	-15.1
2003	937	-43.1
2004	534	-43.0
2005	377	-29.4
2006	264	-30.0
2007	350	32.6
2008	263	-24.9
2009	150	-43.0
2010	120	-20.0

Note. Retrieved from Korea Creative Content Agency (2006b, 2007, 2008b, 2009, 2010, 2011).

Even though PC game manufacturers have consistently tried to prevent illegal duplication by devising serial numbers (CD key) and online authentication (Korea Creative Content Agency, 2006b), the current situation has not improved. Software cracking, the computer programs removing the copyright prevention codes of computer software, has also occurred. The biggest problem in illegal copying in Korea is that game users do not look at these activities as illegal or immoral (Gamedonga, 2010a; Korea Creative Content Agency, 2006b).

Korean Copyright Protection Act

As one of the intellectual property rights, copyright is used to protect authors' works that can be reproduced (Korean Copyright Act, Article 16) or can be communicated to the public (Korean Copyright Act, Article 18). Works refer to "creative productions in which human ideas or emotions are expressed" and authors refer to "the persons who create works" (Korean Copyright Act, Article 2). Authors' works encompass the followings:

(1) "Novels, poems, theses, lectures, speeches, plays, and other literary works;

(2) Musical works;

(3) Theatrical works including dramas, choreographies, pantomimes, and other theatrical works;

(4) Paintings, calligraphic works, sculptures, prints, crafts, works of applied art, and other artistic works;

(5) Architecture, architectural models, architectural plans, and other architectural works;

(6) Photographic works (including other works produced by similar methods);

(7) Cinematographic works;

(8) Maps, charts, plans, sketches, models, and other diagrammatic works; and

(9) Computer program works" (Korean Copyright Act, Article 4).

The activity of uploading authors' works over the Internet without their permission comes under the infringement of copyright (Korea Copyright Commission, 2009) because authors have the "right of public transmission" (Korean Copyright Act, Article 18). Similarly, the activity of downloading authors' works over the Internet is

applicable to reproduction, and authors' permission is required (Korea Copyright Commission, 2009) because they have the "right of reproduction" (Korean Copyright Act, Article 16). On the other hand, individuals may reproduce authors' works without authors' permission if the activities are for private use or non-profit purpose (Korean Copyright Act, Article 30). However, downloading authors' works through P2P file sharing service comes under the infringement of copyright in that a work downloaded by an individual for his or her private use can be simultaneously downloaded by the unspecified general public (Korea Copyright Commission, 2009).

Therefore, "any person who infringes upon author's property rights or other property rights … by means of reproduction, …, public transmission, …, may be punished by imprisonment for not more than five years or a fine of not more than KRW 50 million, or both" (Korean Copyright Act, Article 136).

In addition, along with general users, P2P service providers are liable to "take necessary measures such as technological measures for intercepting illegal interactive transmission of works, etc. upon the requests of rights holders" (Korean Copyright Act, Article 104).

Research Trends of Digital Content Piracy

Digital content is defined as materials or information that is transformed into electronic form in order to use the originals in networks (Kim & Kim, 2003). The activity of downloading or duplicating digital content without authorization is referred to as digital piracy (Cuevas, 2010). Digital piracy occurs when "downloading commercial software from illegal sites (usually called warez sites), using peer-to-peer technology to

download the latest Hollywood movies, downloading a bestseller book in electronic format (either in audio or e-book format) from a newsgroup on the Internet's Usenet, or downloading your favorite artist's songs using torrent software" (Al-Rafee & Rouibah, 2010, p. 283). In addition, games (Cuevas, 2010; Choi, 2008; Ramayah et al., 2009), articles (Ramayah et al., 2009), and comic books (Choi, 2008) are classified as digital content in the studies of digital piracy.

Table 2.2 provides a comprehensive list of authors who have conducted research in digital software, music and movie piracy. These studies reveal that few examined the factors influencing the piracy behavior of Korean game users.

Table 2.2

Research Trends of Digital Content Piracy

Area	Researchers	Characteristics
Digital Piracy	Al-Rafee & Cronan (2006); Cronan & Al-Rafee (2008); Choi (2008); Van der Byl & Van Belle (2008); Zhang (2009); Ramayah et al. (2009); Al-Rafee & Rouibah (2010); Cuevas (2010); Yoon (2011)	Behavioral, Cultural, & Demographic
Software Piracy	Christensen & Eining (1991); Peace, Galletta, & Thong (2003); Lau (2007); Goles, Jayatilaka, George, Parsons, Chambers, Taylor, & Brune (2008); Moores, Nill, & Rothenberger (2009); Dupin-Bryant (2010); Nill, Schibrowsky, & Peltier (2010); Aleassa, Pearson, & McClurg (2011); Alam, Ahmad, Ahmad, & Hashim (2011); Tang & Farn (2005); Sims, Cheng, & Teegen (1996); Moores & Dhillon (2000); Gupta, Gould, & Pola (2004); Butt (2006); Higgins (2006); Gopal & Sanders (1998); Acılar (2010); Marron & Steel (2000); Shin, Gopal, Sanders, & Whinston (2004)	
Music Piracy	Woolley (2010); Wang et al. (2009); Plowman & Goode (2009); d'Astous, Colbert, & Montpetit (2005); Bhattacharjee, Gopal, & Sanders (2003); Gerlich, Lewer, & Lucas (2010)	
Movie Piracy	Wang (2005)	

Behavioral Research

Numerous studies have investigated factors influencing piracy behavior. Among the determinants of piracy or actual behavior, were variables representing the theory of reasoned action, including attitude towards behavior, subjective norm, and behavioral intention. In earlier studies, piracy behavior was regarded as an intentional act (Butt, 2006). In recent studies, awareness of piracy laws has been added to the above.

Theory of Reasoned Action

The theory of reasoned action (TRA) was proposed by Ajzen and Fishbein (1980). In *Digital piracy: Ethical decision making*, Al-Rafee (2002) explained the TRA:

> The works of Ajzen and Fishbein about behavior in the psychology literature are some of the most famous and validated research done to date. Their work is based on the premise that intention causes behavior (p. 12). The TRA has been used extensively to predict a wide range of behavior (p. 14). The theory is based upon the notion that human behavior is quite rational and makes use of the limited information available to individuals. The TRA asserts that two determinants affect human behavior: one is personal in nature (attitude), and the other represents the social influence (subjective norm) (p. 13).

In short, The TRA suggested that an individual's actual behavior can be led by their behavioral intention, and that the behavioral intention was affected by attitude towards behavior and subjective norm (Ajzen & Fishbein, 1980) (see Figure 2.3).

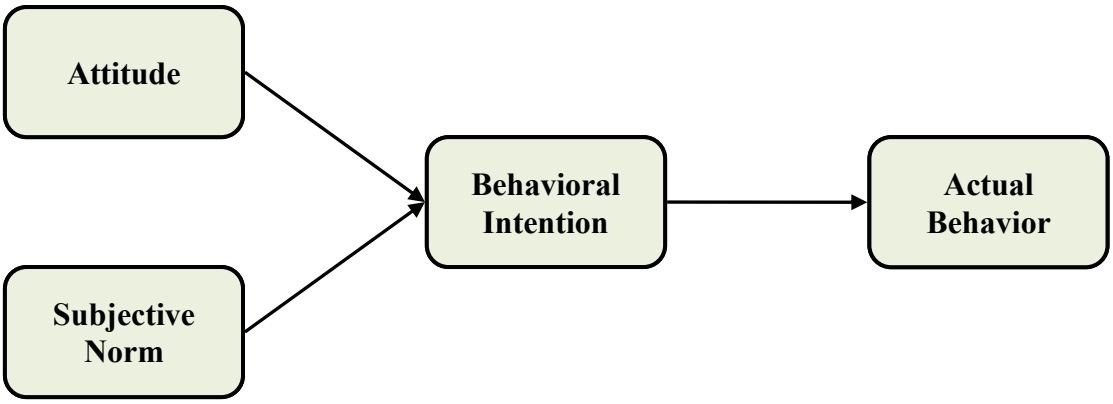

Figure 2.3. Theory of Reasoned Action. Adopted from "Digital piracy: Ethical decision making," by S. Al-Rafee, 2002, *Doctoral dissertation*, p. 13. Copyright 2002 by ProQuest.

Attitude and Subjective Norm

According to Ajzen (1991), attitude was defined as "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (p. 188). The author postulated that individuals with a more favorable attitude towards a behavior would have a greater intent to execute an action in general (Ajzen, 1991). Subjective norm means "perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p. 188). In other words, subjective norm referred to "individuals' perceptions of the referent social groups' attitudes" towards a behavior (Woolley & Eining, 2006, p. 52). In general, once a referent person such as a trustworthy friend, family member, or other is accepting of a behavior, the individual has a greater intention to carry out the behavior (Ajzen, 1991).

A recent study, by Yoon (2011) on digital piracy, investigated the effects of attitudes and subjective norms on behavioral intention among university students in

China. Using a convenience sample, 298 subjects were asked to respond to a survey. The response rate was 90.6% ($N = 270$). Relationships between variables were examined by using a structural equation model (SEM). The author concluded that attitude and subjective norm statistically significantly influenced the behavioral intentions ($\beta = .12$, $p < .01$ and $\beta = .18$, $p < .01$ respectively). Subjects, who displayed favorable attitudes towards digital piracy, were more likely to have behavioral intentions. Subjects, who perceived that their referent people were in favor of the behavior, were more likely to have behavioral intentions.

Aleassa, Pearson, and McClurg (2011) also found the same relationships among 400 business students in Jordan. In the Jordan survey, response rate was 80.7% ($N = 323$). Again, data were analyzed using a SEM to examine the relationships between variables. The results showed that the subjects' intentions towards software piracy behavior were statistically significantly influenced by attitude ($\beta = .17$, $p < .01$) and subjective norm ($\beta = .34$, $p < .001$).

The findings above were aligned with software piracy studies that used working adults enrolled in an MBA program in a university in the U.S. (Peace, Galletta, & Thong, 2003) and college students in Malaysia (Alam et al., 2011). Music piracy studies with teenagers in Taiwan were also consistent with the above findings (Wang et al., 2009), as were Australian undergraduate students (Plowman & Goode, 2009), and business students in Canada (d'Astous, Colbert, & Montpetit, 2005).

In other digital piracy studies, Choi (2008), using college students in South Korea, attained findings similar to those above. However, Cronan and Al-Rafee (2008) did not

find that the behavioral intention of American college students was significantly shaped by subjective norm.

Also, a study by Wang (2005) on piracy of DVD motion pictures showed that subjects with higher subjective norm against piracy behavior were less likely to buy pirated DVDs in collegiate settings in Taiwan.

Behavioral Intention Resulting in Actual Behavior

According to Ajzen (1991), behavioral intention was defined as the indicator "of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior" (p. 181). The author postulated that individuals with greater intention towards a behavior should be more involved in the actual behavior in general (Ajzen, 1991).

Ramayah et al. (2009) examined the intention to commit digital piracy over the Internet, and investigated its effect on actual behavior. The population of the study was business students in a university in Malaysia. 120 students were selected as a sample of convenience; the response rate was 96.6% ($N = 116$). Data were analyzed by using a structural equation model (SEM). The results showed that students' behavioral intention statistically significantly affected their actual behaviors of digital piracy ($\beta = .37$, $p < .01$). Students, who had a higher piracy intention, were more likely to pirate digital contents. Other studies on software piracy, using college student samples in Taiwan (Tang & Farn, 2005), Canada (Butt, 2006), and the U.S. (Cuevas, 2010), were consistent with the above findings.

Awareness of Piracy Laws

Awareness refers to the extent to which an individual was familiar with the laws regarding piracy activities (Cuevas, 2010). Prior studies on digital piracy suggested awareness of laws as a determinant of the person's piracy intent and actual behavior by extending the TRA.

Cuevas (2010) examined student awareness of collegiate institutional intellectual property policies, file sharing, and digital piracy through P2P websites. The target population was undergraduate students over the age of 18 in a southeastern university in the U.S. An Internet-based questionnaire was used to collect data. A sample of convenience of 5,904 persons who lived in the university dormitories was selected; 1,034 students responded. Of the total sample usable surveys were 912 (15.4% of response rate). Among the findings was that students, who were more familiar with the university policy, were less inclined to share or download digital content from the Internet.

Al-Rafee and Rouibah (2010) employed a quasi-experimental design to investigate the effect of awareness on a person's intention to commit digital piracy. Six classes from the business department of a university in the Middle East were selected for the study. Subjects were assigned to a control group (three classes) and treatment group (the other three classes). During a semester, both groups were administered a pre and post questionnaire asking their intention towards digital piracy. The treatment group was provided with a legal understanding of digital piracy before the post-test. The results showed that the treatment group displayed lower intent after treatment. On the other hand, no difference of intent was found in the control group.

The following studies of software piracy were consistent with the above findings. Christensen and Eining (1991) concluded that there was a negative relationship between awareness and the actual behavior of students in business school settings in the U.S. Furthermore, Goles et al. (2008) and Dupin-Bryant (2010) found that intention mediated by attitude towards the behavior was negatively affected by awareness of piracy laws. Moores, Nill, and Rothenberger (2009) found that knowledge of software piracy, fear of legal consequences, and unfavorable attitude also influenced behavior. A study conducted in Germany also reached similar results (Nill, Schibrowsky, & Peltier, 2010).

Cultural Effect

According to Ajzen (1991), the magnitude of the impact of subjective norms and attitudes on intention to commit a behavior might be different in various situations. Aleassa, Pearson, and McClurg (2011) stated that the impact of subjective norm on the intent to pirate was stronger than that of attitude in the Jordan collectivistic culture. People in collectivistic cultures often had a tendency to respect the value of an organization more than the value of an individual (Kotler, 2003). Collectivists value the social norms among group members (Hofstede, 2001). Similarly, in the collectivistic culture, individuals are more likely to be influenced by group members such as trustworthy friends and coworkers (Jerram, 2003). In addition to the study in Jordan, Asian countries, including Korea, Hong Kong, Malaysia, and Taiwan have also been known as collectivistic countries (Hofstede, 2001) recording higher piracy rates than individualistic countries (Marron & Steel, 2000). The results of the studies in Korea

(Choi, 2008), China (Yoon, 2011), Taiwan (Wang et al., 2009), and Malaysia (Alam et al., 2011) confirmed the above assertion.

On the other hand, Zhang (2009) found that the impact of subjective norm on piracy intention was weaker than that of attitude in individualistic culture. People in individualistic cultures were found to care less about the perceptions of other, as compared to collectivists (Shin et al., 2004). Western countries, including the U.S., Canada, and Australia, have been characterized as individualistic cultures (Hawkins, Mothersbaugh, & Best, 2007). Even though the studies in western settings, mentioned above, in the U.S. (Peace, Galletta, & Thong, 2003), Australia (Plowman & Goode, 2009), and Canada (d'Astous, Colbert, & Montpetit, 2005) supported the relationship between subjective norm and behavioral intention, subjective norm was considered a weaker predictor of intention to commit piracy than was attitude. Moreover, another study conducted in the U.S. (Cronan & Al-Rafee, 2008) did not support a significant impact of subjective norm on intention to commit digital piracy.

Demographic Research

In contrast to behavioral research, demographic research has sought to explain piracy behavior according to demographic characteristics. These studies have focused on who were involved in the action. Gender and age have been investigated as the determinants of piracy behavior.

Gender

Higgins (2006) investigated gender in software piracy and suggested self-control and social learning theory as reasons for gender difference in the behavior. Three hundred ninety two students attending an eastern university in the U.S. responded to the questionnaires. Females accounted for 61% and males accounted for 39% of the survey population. The data analysis, conducted with a SEM, revealed that gender was directly associated with software piracy behavior. Higgins indicated that male students displayed low self-control and related to others with favorable attitudes towards software piracy compared to female students.

Results of other software piracy studies aligned with Higgins (2006). Sims, Cheng, and Teegen (1996) found that piracy behavior occurred more among male business students than among female business students. Males were also found to be more involved in pirated software purchases than were females in business school settings in Hong Kong (Moores & Dhillon, 2000). Music piracy research also supported gender difference in the behavior of female college students compared to male college students (Bhattacharjee, Gopal, & Sanders, 2003; Gerlich, Lewer, & Lucas, 2010).

Based on the significant gender difference in piracy behavior, researchers hypothesized that gender difference in attitude towards piracy behavior existed. Male students were found to have a higher favorable attitude towards digital piracy, than were found among female students in the U.S. (Cuevas, 2010). Lau (2007), in a study conducted in Hong Kong, also found gender to be significantly linked to attitude towards software piracy.

Age

Gupta, Gould, and Pola (2004) investigated age difference in software piracy behavior using an Internet-based questionnaire. Six hundred eighty nine of the computer software consumers in the U.S. responded to the survey. The age of the samples ranged from 20 to 50; the mean was 33. Through discriminant analysis the author found that younger respondents were more involved in software piracy than were older respondents.

The findings above were consistent with other software piracy studies that used graduate students in the U.S. (Gopal & Sanders, 1998) and business students in Hong Kong (Moores & Dhillon, 2000). The same results were found in music piracy studies. Older college students were less likely to pirate digitized music files than were younger college students (Bhattacharjee, Gopal, & Sanders, 2003; Gerlich, Lewer, & Lucas, 2010). These studies suggested that younger students were more favorable towards digital piracy than were older students in business school settings in the U.S. (Al-Rafee & Cronan, 2006).

Nill, Schibrowsky, and Peltier (2010) found no age difference in software piracy behavior among mid-level managers with bachelor degrees in Germany. That corresponded with a study by Acılar (2010) that showed that age difference did not exist in attitude towards software piracy behavior among Turkish freshman students ranging from 18 to 24 years (narrow age range).

Summary

This chapter provided an overview of eSports including definition, comparison with traditional sports, and as a new sport. The decreasing growth of PC game sales in the

Korean market was believed to be due to the downloading of game packages through P2P file sharing service (Korea Creative Content Agency, 2006b). Digital content including movie, MP3, e-book, game, etc is protected by the copyright act, and thus the piracy is known as illegal activity.

Many researchers have studied factors affecting piracy activities regarding computer software and digital music files. However, research investigating game piracy has not been conducted. The previous published literature has customized the TRA and employed demographic information for their results.

CHAPTER 3

METHODOLOGY

Based on the findings of the behavioral, cultural, and demographic research in the literature review chapter, the following research questions were developed.

1. What are determinants of game piracy behavior?
    1-1. Does gender difference affect game piracy behavior?
    1-2. Does variation in age affect game piracy behavior?
    1-3. Does variation in awareness of copyright laws affect game piracy behavior?
    1-4. Does variation in intention towards game piracy affect game piracy behavior?
2. Is the theory of reasoned action (TRA) applied to this research?
    2-1. Does variation in attitude towards game piracy affect intention?
    2-2. Does variation in subjective norm affect intention?
3. Does subjective norm have a greater influence on intention than does attitude in Korean culture?

To examine the proposed research questions of the study, a survey was conducted. This chapter describes instrumentation, pilot study for evidence of validity based on test content, translation & back translation for translation equivalence, population & sample, data collection, and data analysis.

Instrumentation

The survey included six sections of questions and a cover letter (see Appendix A). The cover letter ensured anonymity and confidentiality for participants. It also informed participants of the purpose, procedures, and the importance of the study. The survey instruments measured the following variables: (1) awareness of copyright laws, (2) attitude towards game piracy, (3) subjective norm, (4) behavioral intention, (5) game piracy behavior, and (6) demographic characteristics. Awareness of copyright laws and game piracy behavior were measured applying Cuevas' (2010) questionnaires. The TRA variables, including attitude, subjective norm, and behavioral intention, were measured through Yoon's (2011) questionnaires.

Cuevas (2010) created his survey to measure awareness of institutional policies regarding digital piracy and students' actual behavior. Nine hundred twelve undergraduate students from a university in the U.S. completed the online survey. To obtain validity, Cuevas conducted an exploratory factor analysis to provide evidence based on internal structure. This analysis allowed the author to discover the number of factors and the test items related to each factor (unidimensionality) (Floyd & Widaman, 1995). Four items were bound into a factor (awareness) with the eigenvalue of 2.88, which meant that they were highly correlated with the awareness factor (the factor loadings of the items ranged from .73 to .88). Three items were bound into another factor (piracy behavior) with the eigenvalue of 2.01, which meant that they were highly correlated with the piracy behavior factor (the factor loadings of the items ranged from .81 to .83). For reliability, Cuevas employed a Cronbach's alpha in order to estimate internal consistency. The reliability coefficient for awareness was .85 and for piracy

behavior was .75, which meant that the test scores produced by the instruments exceeded acceptable standards and were considered to be reliable.

Similarly, Yoon (2011), using a questionnaire of attitude, subjective norm, and behavioral intention, provided reliability and validity evidence of the test scores of university students in China ($N = 270$). For validity, Yoon used a confirmatory factor analysis to provide evidence based on internal structure. This analysis allowed the author to know whether the previously given structure fit the test scores of the instruments through hypothesis testing (Floyd & Widaman, 1995). Four items of attitude measurement were significantly correlated with the attitude factor (the factor loadings of the items ranged from .74 to .84). Four items of subjective norm measurement were significantly correlated with the subjective norm factor (the factor loadings of the items ranged from .64 to .84). Three items of intention measurement were significantly correlated with the subjective norm factor (the factor loadings of the items ranged from .73 to .81). For reliability, Yoon used the coefficients of composite construct reliability (CCR). The coefficients of attitude, subjective norm, and intention were .87, .86, and .81 respectively. That meant that the test scores produced by the instruments exceeded acceptable standards and were internally consistent.

In this study, the first section of the survey was employed to measure the value of a continuous variable; awareness of copyright laws. This component was adopted from Cuevas' (2010) awareness questionnaire. Awareness of copyright laws referred to the extent to which an individual was familiar with the laws regarding piracy activities (Cuevas, 2010). Four items were scored with a seven-point Likert-type scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree). The questions included the following:

(1) It is okay to download game material without permission of the copyright owner.

(2) It is okay to download game material that was obtained through peer to peer (P2P) networks.

(3) Downloading game material through peer to peer (P2P) networks is in accordance with copyright law.

(4) It is not illegal to download game material through peer to peer (P2P) networks.

In the above, higher scores reflected a lower awareness of copyright laws.

The second section of the survey measured the value of a continuous variable; attitude towards game piracy, which was adopted from Yoon's (2011) attitude questionnaire. Attitude refers to an individual's thought about a behavior (Ajzen, 1991). The question, "Downloading game material through peer to peer (P2P) networks is", was classified into three items scored with seven-point Likert-type scales, ranging from 1 (Very foolish/harmful/bad idea) to 7 (Very wise/beneficial/good idea). The last item of this section, "Overall, my attitude towards that behavior is", was also scored with a seven-point Likert-type scale, ranging from 1 (Very unfavorable) to 7 (Very favorable). Higher scores reflected a more favorable attitude towards game piracy.

The third section of the survey measured the value of a continuous variable; subjective norm, which was adopted from Yoon's (2011) subjective norm questionnaire. Subjective norm means the degree to which an individual perceives that her or his referent people are favorable or unfavorable regarding a behavior (Woolley & Eining,

2006). Four items were scored with a seven-point Likert-type scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree). They included:

(1) If I downloaded game material through peer to peer (P2P) networks, most of the people who are important to me would disapprove.

(2) Most people who are important to me would look down on me if I downloaded game material through peer to peer (P2P) networks.

(3) No one who is important to me is favorable regarding game material download through peer to peer (P2P) networks.

(4) My colleagues think that behavior is wrong.

The scales of all items in this section used reverse coding so that higher scores could reflect higher subjective norms in favor of game piracy.

The fourth section of the survey was used to measure the value of a continuous variable; behavioral intention, which was adopted from Yoon's (2011) intention questionnaire. According to Ajzen (1991), behavioral intention was defined as the indicator "of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior" (p. 181). Three items were scored with a seven-point Likert-type scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree). They were:

(1) I intend to download game material through peer to peer (P2P) networks in the near future.

(2) If I have a chance, I will download game material through peer to peer (P2P) networks.

(3) I will never download game material through peer to peer (P2P) networks.

Among the items, the scale of the third item used reverse coding so that higher scores could reflect a higher behavioral intention to commit game piracy.

The fifth section of the survey was employed to measure the value of a continuous variable; game piracy, which was adopted from Cuevas' (2010) behavior questionnaire. Game piracy referred to the illegal activities of downloading or duplicating copyrighted game material without authorization. In this study, the behavior was limited to downloading of game material through P2P networks. Two items were scored with a seven-point Likert-type scale, ranging from 1 (Never) to 7 (Always). They were:

(1) How often do you download game material through peer to peer (P2P) networks?

(2) How often do you share game material with others on peer to peer (P2P) websites?

Higher scores reflected more frequent game piracy behaviors.

The last section in the survey was used to gather the demographic information of participants including gender and age.

(1) What is your gender?

(2) In what year were you born?

Pilot Study

A pilot study was conducted in order to obtain validity evidence based on test content. According to Furr and Bacharach (2008), the clear meaning of each survey item appropriately asked is likely to make survey participants respond earnestly and frankly to the questionnaire. Fifteen Korean students at the University of New Mexico, who had

played electronic games and resided in Albuquerque, New Mexico, were selected to check the wordings of the items in the survey. They were asked to respond to the survey questionnaire and to comment on the survey regarding the following questions:

(1) Do you understand what you are asked in each question?

(2) Does each question use appropriate wording?

(3) Are there sensitive words that make you feel reluctant to respond?

Their participation was voluntary. On the basis of participants' feedback, two items, which were found to be ambiguous, were refined. The item, "No one who is important to me is favorable regarding game material download through peer to peer (P2P) networks", was revised to "No one who is important to me thinks favorably of game downloading through peer to peer (P2P) networks". The item, "My colleagues think that behavior is wrong", was revised to "My colleagues think game downloading through peer to peer (P2P) networks is wrong". In addition, their test scores were not included in the main study.

Translation and Back Translation

The questionnaire was originally written in English. The English version was translated to Korean by a bilingual translator, and then back-translated by a second bilingual translator. The English version and the back-translated version of the questionnaire were then compared for discrepancies. The first translation was done by a Korean doctoral candidate from the department of Language, Literacy and Sociocultural Studies and the back-translation was done by a Korean postdoctoral fellow who worked

for the Multicultural Bilingual Education Center as an Education Specialist at the University of New Mexico, who spoke both languages fluently.

Sampling and Data Collection

The main focus of this study was to explore determinants of game piracy behavior. The target population was Korean eSports fans over the age of 18 who had played electronic games. Since potential participants were available in eSports game arenas, a sample of convenience was employed in the study.

Data collection was conducted at I'PARK mall eSports Stadium located in Yongsan, Seoul, South Korea after obtaining the approvals from the Institutional Review Board (IRB) in the University of New Mexico and the Korean eSports Association (KeSPA). In the arena, an eSports professional league called, "SK planet StarCraft Proleague Season 2" was held on every Saturday, Sunday, Monday, and Tuesday from May 20, 2012 to September 22, 2012. Paper-based survey questionnaires were distributed to potential participants in August, 2012 who attended the arena to see the regular season games of the league.

All participants in the study were ensured anonymity and confidentiality in completing the survey. They were informed of the purpose and procedures of the study and the importance of their participation. Participation in the study was voluntary.

Data Analysis

The collected survey data were coded into the Statistical Product and Service Solutions (SPSS) of version 20.0 for (1) descriptive analysis, (2) analysis of psychometric

properties, and (3) inferential analysis. Descriptive analysis included the frequencies of the respondents for the items of each scale (awareness of copyright laws, attitude, subjective norm, and intention towards game piracy, and game piracy behavior) and for demographic characteristics (gender and age). The second analysis showed the reliability and validity of the test scores produced by the survey instruments of the study. Lastly, inferential analysis employed statistical tests with the significance level of .05 for addressing the research questions of the study. The results for the three analyses with the quantified data were shown in the next chapter.

CHAPTER 4

RESULTS

Four hundred paper-based survey questionnaires were distributed, and 375 were collected over a month, August, 2012. Of the surveys collected, 21 surveys with missing or duplicate values were excluded in this study. Therefore, 354 completed survey data (88.5% of response rate) were employed in obtaining the following results through descriptive analysis, analysis of psychometric properties, and inferential analysis.

Descriptive Analysis

Demographic Characteristics

Table 4.1 shows the frequencies of the 354 respondents' characteristics including gender and age. Of the total, 61.0% of the respondents were male and 39.0% were female. The average age of the respondents was 25.4. Twelve point seven percent were aged 18-20; 45.8% 21-25; 24.9% 26-30; 12.7% 31-35; and 4.0% 36 or more. The age group, 21-25, accounted for the largest proportion in the distribution.

Table 4.1

Frequency of Demographic Characteristics

Gender	Frequency (Percentage)	Age	Frequency (Percentage)
Male	216 (61.0%)	18-20 years old	45 (12.7%)
Female	138 (39.0%)	21-25 years old	162 (45.8%)
		26-30 years old	88 (24.9%)
		31-35 years old	45 (12.7%)
		36 years or older	14 (4.0%)
Total	354 (100%)	Average	25.4 years old

Awareness of Copyright Laws

Awareness of copyright laws refers to the extent to which an individual is familiar with the laws regarding piracy activity (Cuevas, 2010). Items 1, 2, 3, and 4 were included in the scale. On average, respondents who were aware of copyright laws accounted for 46.2%. Thirty five point one percent were not aware of the laws and 18.7 % were neutral.

Table 4.2 presents the frequency of the 354 respondents for Item 1. Of the total, 25.2% (*Somewhat agree*, *Agree*, *Strongly agree*) of the respondents displayed positive opinions while respondents with negative opinions were 56.0% (*Strongly disagree*, *Disagree*, *Somewhat disagree*).

Table 4.2

Frequency of Responses for Item 1

N = 354 (100%)	It is okay to download game material without permission of the copyright owner						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	30	104	64	67	46	31	12
%	8.5	29.4	18.1	18.9	13.0	8.8	3.4

The frequency for Item 2 is shown in Table 4.3. In this distribution, respondents with positive opinions were 45.8% (*Somewhat agree*, *Agree*, *Strongly agree*), which was a larger proportion than 36.9% (*Strongly disagree*, *Disagree*, *Somewhat disagree*) with negative opinions. Neutral responses were 17.2%.

Table 4.3

Frequency of Responses for Item 2

N = 354 (100%)	It is okay to download game material that was obtained through P2P networks						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	20	68	43	61	90	59	13
%	5.6	19.2	12.1	17.2	25.4	16.7	3.7

Table 4.4 presents the frequency for Item 3. Forty point one percent (*Somewhat agree*, *Agree*, *Strongly agree*) of the responses were positive opinions; while 39.0% (*Strongly disagree*, *Disagree*, *Somewhat disagree*) of the responses were negative opinions.

Table 4.4

Frequency of Responses for Item 3

N = 354 (100%)	Downloading game material through P2P networks is in accordance with copyright law						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	26	65	47	74	58	73	11
%	7.3	18.4	13.3	20.9	16.4	20.6	3.1

The frequency for Item 4 is presented in Table 4.5. Respondents with positive opinions accounted for 29.3% (*Somewhat agree*, *Agree*, *Strongly agree*) while respondents with negative opinions were 52.8% (*Strongly disagree*, *Disagree*, *Somewhat disagree*). Neutral responses were 17.8%.

Table 4.5

Frequency of Responses for Item 4

N = 354 (100%)	It is not illegal to download game material through P2P networks						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	36	101	50	63	56	39	9
%	10.2	28.5	14.1	17.8	15.8	11.0	2.5

Attitude towards Game Piracy

Attitude refers to an individual's thought about a behavior (Ajzen, 1991). Items 5, 6, 7, and 8 measured attitude. On average, respondents with positive attitudes accounted for 41.5%. Thirty four point four percent of the respondents reported negative attitudes.

Table 4.6 presents the frequency of the 354 respondents for Item 5. Of the total, 43.8% (*Somewhat wise idea*, *Wise idea*, *Very wise idea*) of the respondents displayed positive attitudes while respondents with negative attitudes were reported by 27.7% (*Very foolish idea*, *Foolish idea*, *Somewhat foolish idea*).

Table 4.6

Frequency of Responses for Item 5

N = 354 (100%)	Downloading game material through P2P networks is						
	Very foolish idea	Foolish idea	Somewhat foolish idea	Neutral	Somewhat wise idea	Wise idea	Very wise idea
Frequency	16	42	40	101	86	52	17
%	4.5	11.9	11.3	28.5	24.3	14.7	4.8

The frequency for Item 6 is shown in Table 4.7. Respondents with positive attitudes were 40.4% (*Somewhat beneficial idea*, *Beneficial idea*, *Very beneficial idea*) while respondents with negative attitudes accounted for 35.3% (*Very harmful idea*, *Harmful idea*, *Somewhat harmful idea*).

Table 4.7

Frequency of Responses for Item 6

N = 354 (100%)	Downloading game material through P2P networks is						
	Very harmful idea	Harmful idea	Somewhat harmful idea	Neutral	Somewhat beneficial idea	Beneficial idea	Very beneficial idea
Frequency	17	50	58	86	76	50	17
%	4.8	14.1	16.4	24.3	21.5	14.1	4.8

Table 4.8 presents the frequency for Item 7. Thirty four point five percent (*Somewhat good idea*, *Good idea*, *Very good idea*) of the respondents displayed a positive attitude, which was somewhat smaller than the 43.3% (*Very bad idea*, *Bad idea*, *Somewhat bad idea*) with a negative attitude.

Table 4.8

Frequency of Responses for Item 7

N = 354 (100%)	Downloading game material through P2P networks is						
	Very bad idea	Bad idea	Somewhat bad idea	Neutral	Somewhat good idea	Good idea	Very good idea
Frequency	17	59	77	79	58	47	17
%	4.8	16.7	21.8	22.3	16.4	13.3	4.8

The frequency for Item 8 is shown in Table 4.9. Respondents with positive attitudes accounted for 47.2% (*Somewhat favorable*, *Favorable*, *Very favorable*) while those with negative attitudes were 31.4% (*Very unfavorable*, *Unfavorable*, *Somewhat unfavorable*).

Table 4.9

Frequency of Responses for Item 8

N = 354 (100%)	Overall, my attitude towards game downloading through P2P networks is						
	Very unfavorable	Unfavorable	Somewhat unfavorable	Neutral	Somewhat favorable	Favorable	Very favorable
Frequency	15	42	54	76	86	64	17
%	4.2	11.9	15.3	21.5	24.3	18.1	4.8

Subjective Norm

Subjective norm refers to an individual's thought about significant others' attitudes towards a behavior (Woolley & Eining, 2006). Items 9, 10, 11, and 12 measured subjective norm. On average, 61.2% of the respondents perceived that their referent people would be in favor of game piracy. Nineteen point one percent of the respondents displayed subjective norms against game piracy.

Table 4.10 presents the frequency of the 354 respondents for Item 9. Of the total, 62.2% (*Strongly disagree*, *Disagree*, *Somewhat disagree*) of the respondents displayed negative opinions while respondents with positive opinions were 20.8% (*Somewhat agree*, *Agree*, *Strongly agree*).

Table 4.10

Frequency of Responses for Item 9

N = 354 (100%)	If I download game material through P2P networks, most of the people who are important to me would disapprove						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	25	111	84	60	43	28	3
%	7.1	31.4	23.7	16.9	12.1	7.9	.8

The frequency for Item 10 is shown in Table 4.11. Respondents with negative opinions accounted for 73.5% (*Strongly disagree*, *Disagree*, *Somewhat disagree*) while those with positive opinions were 12.9% (*Somewhat agree*, *Agree*, *Strongly agree*).

Table 4.11

Frequency of Responses for Item 10

N = 354 (100%)	Most people who are important to me would look down on me If I download game material through P2P networks						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	58	134	68	48	26	17	3
%	16.4	37.9	19.2	13.6	7.3	4.8	.8

Table 4.12 presents the frequency for Item 11. Fifty eight point two percent (*Strongly disagree*, *Disagree*, *Somewhat disagree*) of the respondents displayed negative opinions, while 16.4% (*Somewhat agree*, *Agree*, *Strongly agree*) had positive opinions.

Table 4.12

Frequency of Responses for Item 11

N = 354 (100%)	No one who is important to me thinks favorably of game downloading through P2P networks						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	29	107	70	90	30	23	5
%	8.2	30.2	19.8	25.4	8.5	6.5	1.4

The frequency for Item 12 is shown in Table 4.13. Respondents with negative opinions accounted for 51.1% (*Strongly disagree*, *Disagree*, *Somewhat disagree*) while those with positive opinions were 26.3% (*Somewhat agree*, *Agree*, *Strongly agree*).

Table 4.13

Frequency of Responses for Item 12

N = 354 (100%)	My colleagues think game downloading through P2P networks is wrong						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	19	90	72	80	48	38	7
%	5.4	25.4	20.3	22.6	13.6	10.7	2.0

Intention towards Game Piracy

Intention refers to the degree to which an individual is interested in doing a behavior (Ajzen, 1991). Items 13, 14, and 15 measured intention towards game piracy. On average, respondents with intention to download game material on P2P websites accounted for 48.3%. Thirty two point nine percent of the respondents had no intention.

Table 4.14 presents the frequency of the 354 respondents for Item 13. Of the total,

33.1% (*Somewhat agree*, *Agree*, *Strongly agree*) of the respondents displayed positive opinions while respondents with negative opinions were 45.2% (*Strongly disagree*, *Disagree*, *Somewhat disagree*).

Table 4.14

Frequency of Responses for Item 13

N = 354 (100%)	I intend to download game material through P2P networks in the near future						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	38	75	47	77	54	51	12
%	10.7	21.2	13.3	21.8	15.3	14.4	3.4

The frequency for Item 14 is shown in Table 4.15. Respondents with positive opinions accounted for 53.1% (*Somewhat agree*, *Agree*, *Strongly agree*); those with negative opinions were 31.1% (*Strongly disagree*, *Disagree*, *Somewhat disagree*).

Table 4.15

Frequency of Responses for Item 14

N = 354 (100%)	If I have a chance, I will download game material through P2P networks						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	21	59	30	56	89	75	24
%	5.9	16.7	8.5	15.8	25.1	21.2	6.8

Table 4.16 presents the frequency for Item 15. Fifty eight point seven percent

(*Strongly disagree*, *Disagree*, *Somewhat disagree*) of the respondents displayed negative opinions, which was more than the positive respondents with 22.3% (*Somewhat agree*, *Agree*, *Strongly agree*).

Table 4.16

Frequency of Responses for Item 15

N = 354 (100%)	I will never download game material through P2P networks						
	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Frequency	40	100	68	67	26	42	11
%	11.3	28.2	19.2	18.9	7.3	11.9	3.1

Game Piracy Behavior

Game piracy refers to the activities of downloading or duplicating copyrighted game material over the Internet without authorization. Items 16 and 17 measured game piracy behavior. On average, respondents who at least one time downloaded and/or shared game material on P2P websites accounted for 77.5%. Twenty two point five percent of the respondents never experienced the behavior.

Table 4.17 shows the frequency of the 354 respondents for Item 16. Of the total, only 17.5% (*Never*) of the respondents did not download while 82.5% (*Rarely*, *Occasionally*, *Somewhat regularly*, *Regularly*, *Frequently*, *Always*) have experienced game downloading on P2P websites at least one time.

Table 4.17

Frequency of Responses for Item 16

N = 354 (100%)	How often do you download game material through P2P networks?						
	Never	Rarely	Occasionally	Somewhat regularly	Regularly	Frequently	Always
Frequency	62	130	87	31	14	21	9
%	17.5	36.7	24.6	8.8	4.0	5.9	2.5

The frequency for Item 17 is presented in Table 4.18. Similar to Item 16, respondents with no sharing experience accounted for 27.4% (*Never*), and those with the experience were 72.6% (*Rarely*, *Occasionally*, *Somewhat regularly*, *Regularly*, *Frequently*, *Always*).

Table 4.18

Frequency of Responses for Item 17

N = 354 (100%)	How often do you share game material with others on P2P websites?						
	Never	Rarely	Occasionally	Somewhat regularly	Regularly	Frequently	Always
Frequency	97	133	68	20	16	14	6
%	27.4	37.6	19.2	5.6	4.5	4.0	1.7

Analysis of Psychometric Properties

As mentioned in the methodology chapter, the scales of attitude, subjective norm, and intention were adopted from Yoon (2011). Awareness and behavior scales were adopted from Cuevas (2010). In this regard, two separate analyses were conducted for obtaining validity and reliability of the test scores produced by the survey instruments. For reliability, a Cronbach's alpha was used to gauge internal consistency. For validity, an exploratory factor analysis was employed to provide evidence based on internal structure.

Part 1: Attitude, Subjective Norm, and Intention Scales

The scales in this part were comprised of a total of eleven items; four items for attitude, four items for subjective norm, and three items for intention. The reliability coefficient for all items was .92, which indicated that the test scores measured by the items were reliable.

With the use of methods of principal component extraction and varimax rotation, three factors with the eigenvalues of above one were extracted among the eleven items. Specifically, Items 5, 6, 7, and 8 for attitude measurement were bound into Factor 1 with the eigenvalue of 3.56, and the factor loadings of the items ranged from .87 to .77. It was found that the domain of attitude was appropriately measured by the items. Factor 2, with the eigenvalue of 2.98, was categorized by Items 9, 10, 11, and 12 measuring subjective norm, and the factor loadings of the items ranged from .85 to .71. Items 13, 14, and 15 for intention measurement with factor loadings ranging from .78 to .71 were bound into Factor 3 with eigenvalue of 2.12. The items bound by each factor appropriately measured each construct domain (attitude, subjective norm, and intention). Lastly, the reliability

coefficient for each factor was reported as .94 for attitude, .87 for subjective norm, and .83 for intention. It indicated that the test scores measured by the items in each factor were internally consistent (see Table 4.19).

Table 4.19

Results of Factor Analysis for Attitude, Subjective Norm, and Intention Scales

Items	Factor Loadings**		
	Factor 1 Attitude	Factor 2 Subjective Norm	Factor 3 Intention
Item 7: Downloading is bad or good	**.87**	.23	.24
Item 6: Downloading is harmful or beneficial	**.87**	.18	.25
Item 5: Downloading is foolish or wise	**.85**	.26	.27
Item 8: Overall, my attitude towards downloading is unfavorable or favorable	**.77**	.34	.33
Item 10: If I downloaded, most people who are important to me would look down on me*	.16	**.85**	.18
Item 9: If I downloaded, most people who are important to me would disapprove*	.12	**.83**	.17
Item 11: No one who is important to me thinks favorably of game downloading*	.27	**.80**	.21
Item 12: My colleagues think game downloading is wrong*	.36	**.71**	.13
Item 15: I will never download*	.15	.32	**.78**
Item 14: If I have a chance, I will download	.48	.20	**.75**
Item 13: I intend to download in the near future	.48	.13	**.71**
Eigenvalues	3.56	2.98	2.12
Cronbach's Alpha	.94	.87	.83

*Reverse coding.
**Factor loadings > .70 appear in bold.

Part 2: Awareness and Behavior Scales

The second part included six items; four items for awareness of copyright laws and two items for game piracy behavior. Items 1, 2, and 4 for awareness measurement

were bound into Factor 1 with the eigenvalue of 2.16, and the factor loadings of the items ranged from .89 to .77. Factor 2, with the eigenvalue of 1.88, was categorized by Items 16 and 17 measuring piracy behavior, and the factor loadings of the items ranged from .92 to .91.[1] Thus, it was found that the items bound by each factor appropriately measured each construct domain (awareness and piracy behavior). Lastly, the Cronbach's alpha for each factor was reported as .82 for awareness and .91 for behavior. The coefficients indicated that the test scores measured by the items in each factor were reliable (see Table 4.20).

Table 4.20

Results of Factor Analysis for Awareness and Behavior Scales

Items	Factor Loadings*	
	Factor 1 Awareness	Factor 2 Behavior
Item 2: It is OK to download through P2P	**.89**	.23
Item 1: It is OK to download without permission of the copyright owner	**.78**	.33
Item 4: It is not illegal to download through P2P	**.77**	.24
Item 17: How often do you share on P2P	.28	**.92**
Item 16: How often do you download through P2P	.30	**.91**
Eigenvalues	2.16	1.88
Cronbach's Alpha	.82	.91

*Factor loadings > .70 appear in bold.

[1] The reliability coefficient for the total items was .83 and for the five items except for Item 3 (*Downloading game material through P2P networks is in accordance with copyright law*) was .86. However, just because the test scores measured by the total items were reliable did not mean they were valid. In a factor analysis with the same methods used above, factors expecting awareness and behavior scales were not adequately extracted among the total items. For resolving the problem, Item 3 was eliminated, and consequently two factors with the eigenvalues of above one were adequately extracted among the five items.

Inferential Analysis

Based on the analysis of psychometric properties, the variables shown in Table 4.21 were used for inferential analysis. Game piracy behavior, originally continuously scaled, was dichotomously categorized and re-scaled as "No download" (*Never*) or "Download" (*Rarely*, *Occasionally*, *Somewhat regularly*, *Regularly*, *Frequently*, *Always*) with Item 16.[2] The former coded as 0 reflected no experience of game downloading on P2P websites, and the latter coded as 1 reflected experience of at least one time and over. In the analysis, two statistical techniques with the significance level of .05 were performed to address the research questions.

Table 4.21

Variables for Inferential Analysis

Variable	Instrument	Characteristics
Awareness	Item 1, 2, & 4	Continuous
Attitude	Item 5, 6, 7, & 8	
Subjective Norm	Item 9, 10, 11, & 12	
Intention	Item 13, 14, & 15	
Age	Item 19	
Gender	Item 18	Categorical
Game Piracy Behavior	Item 16	

[2] Item 17, asking the experience or frequency of game sharing, was not considered in the behavior measurement of this analysis because this study limited the behavior into game downloading on P2P websites.

Research Question One: Determinants of Game Piracy Behavior

A binary logistic regression was modeled with a dichotomous dependent variable, game piracy behavior. This model estimates the odds that the dependent variable occurs according to an independent variable (DeMaris, 1995; Clement & Otto, 2007). Gender, age, awareness of copyright laws, and intention towards game piracy were input in the model as the independent variables in order to see the relationships.

However, the presence of multicollinearity among independent variables was known to increase the standard errors for estimated regression coefficients and to cause a statistically unstable regression model (Chan, 2004b; Yeung & Yee, 2011). Thus, before analyzing the logistic regression, multicollinearity was diagnosed with the statistics of tolerance and Variance Inflation Factor (VIF). According to Menard (2002), "a tolerance of less than .20 is cause for concern; a tolerance of less than .10 almost certainly indicates a serious collinearity problem" (p. 76). Since VIF is the reciprocal number of tolerance, a VIF with the value of more than 10 also implies the presence (Myers, 1990). In this case, tolerances and VIFs ranged from .53 to .83 and 1.20 to 1.90 respectively, which indicated that multicollinearity did not exist among the independent variables (see Table 4.22).

Table 4.22

Results of Multicollinearity Test

Variable	Tolerance	VIF
Gender	.82	1.22
Age	.83	1.20
Awareness of Copyright Laws	.53	1.90
Intention towards Game Piracy	.53	1.90

The results of the logistic regression analysis are as follows. Overall, the model was statistically significant, $\chi^2(4, N = 354) = 117.08, p = .00$. This indicated that at least one independent variable could be significantly related to the dependent variable (DeMaris, 1995). Cox and Snell R^2 was reported as .28. However, its maximum value mathematically cannot reach 1 (Nagelkerke, 1991). As the modification of Cox and Snell R^2, Nagelkerke R^2 ranging from 0 to 1 was also reported as .47. Therefore, these statistics can be interpreted as that the model accounted for between 28% and 47% of the variation in game piracy behavior.

Table 4.23 presents the logistic regression coefficient (*B*), odds ratio, Wald statistic, and *p* value for each independent variable. Using Wald test at the significance level of .05, gender and intention were found to be the significant factors to game piracy behavior while age and awareness were not. For gender, the regression coefficient, 1.66, was positive and the odds ratio was 5.24. That is, males compared to females were 5.24 times more likely to download game material on P2P websites. For intention, the odds of committing the behavior increased by 3.30 times with one-unit increase in intention, showing the positive regression coefficient of 1.19 and the odds ratio of 3.30.

Table 4.23

Results of Logistic Regression Analysis

Variable	*B*	Odds ratio	Wald	*p*
Gender[a]	1.66	5.24	16.11	.00*
Age	-.01	.99	.04	.84
Awareness	.06	1.06	.11	.75
Intention	1.19	3.30	39.01	.00*

[a]Reference group = female.
*$p < .05$.

Research Question Two: Application of Theory of Reasoned Action (TRA)

A multiple linear regression was modeled with a dependent variable, intention towards game piracy. This model predicts the variation of the dependent variable according to independent variables (Lomax, 2007). Attitude towards game piracy and subjective norm were input in the model as the independent variables in order to see the relationships described in the TRA.

The results of the linear regression analysis are as follows. Overall, the model was statistically significant, $F(2, 351) = 197.88$, $p = .00$. This indicated that at least one independent variable could be significantly related to the dependent variable (Pedhazur, 1997). The analysis produced the adjusted R^2 of .53. That is, 53% of the variation in intention towards game piracy was explained by the model.

Table 4.24 shows the unstandardized regression coefficient (b), standardized regression coefficient (β), t statistic, and p value for each independent variable. Attitude statistically significantly predicted intention, $b = .62$, $t(351) = 13.75$, $p = .00$, as did subjective norm, $b = .23$, $t(351) = 4.30$, $p = .00$. Collinearity between the input independent variables was found to be not problematic in the model, showing the tolerance of .69 and the VIF of 1.45.

Table 4.24

Results of Multiple Regression Analysis

Variable	*b*	β	*t*	*p*
Attitude[a]	.62	.61	13.75	.00*
Subjective Norm[a]	.23	.19	4.30	.00*

[a]Tolerance = .69, VIF = 1.45
*$p < .05$.

Research Question Three: Cultural Effect

Continuing the analysis of the multiple regression model, the standardized regression coefficients (βs) of attitude and subjective norm were employed to understand the relative importance of each on intention. Betas refer to the coefficient estimates for all variables with the mean of 0 and the standard deviation of 1. Therefore, it can be possible to compare them under the same conditions. In this case, attitude (β = .61) had a greater influence on intention than did subjective norm (β = .19) (see Table 4.24).

CHAPTER 5

DISCUSSION

The final chapter has four sections. The first section discusses validity based on the results from the two statistical techniques; multiple linear regression and binary logistic regression. The second section discusses the findings of research questions one, two, and three. Finally, conclusions and recommendations for future study are provided.

Statistical Techniques

According to Osborne and Waters (2002), "most statistical tests rely upon certain assumptions about the variables used in the analysis. When these assumptions are not met the results may not be trustworthy, resulting in a Type I or Type II error, or over- or under-estimation of significance or effect size(s)" (p. 1). Therefore, it is critical for the researcher to check the assumptions of the statistical techniques used in the current study for verifying that the associated results are valid.

Multiple Linear Regression

A multiple linear regression analysis was conducted with a continuous dependent variable, intention and continuous independent variables, attitude and subjective norm. Thus, the analysis is suitable for identifying the relationship between them. However, linear regression usually requires the assumptions of linearity, homoscedasticity, normality, and independence (Osborne & Waters, 2002).

Linearity means that the relationship between a dependent variable and

independent variables is linear. Homoscedasticity means that the variance of residuals is constant at all values of independent variables. The two assumptions were checked with the scatter plot of standardized residual versus standardized predicted value (Pedhazur, 1997; Osborne & Waters, 2002). According to Figure 5.1, the points are randomly and evenly scattered around the horizontal line at the mean of residuals. This indicates a linear relationship and equal variances of residuals (Pedhazur, 1997; Osborne & Waters, 2002). Thus, these assumptions are satisfied.

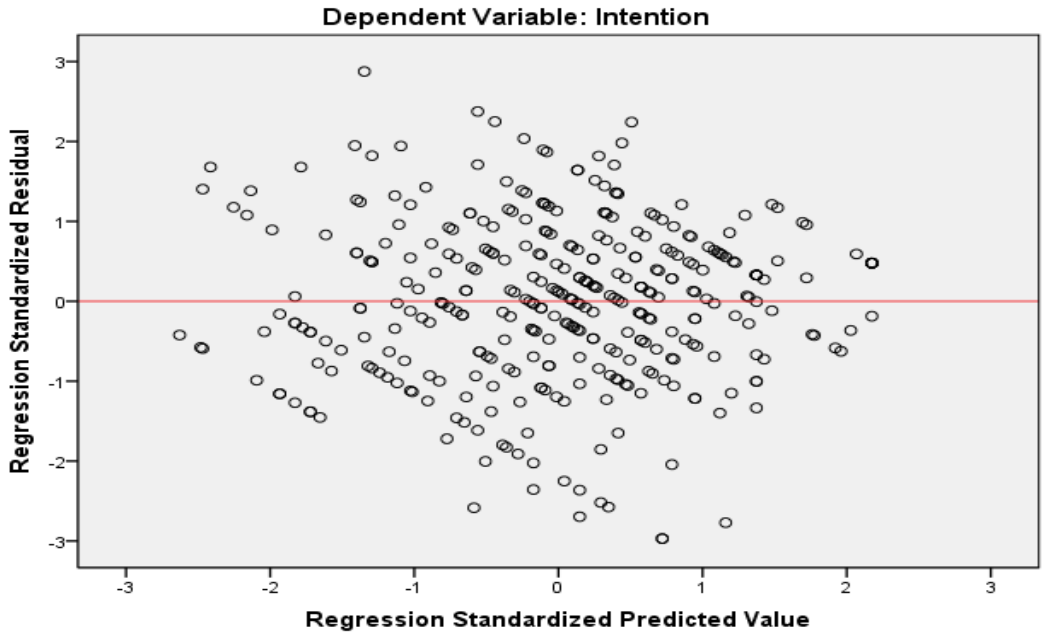

Figure 5.1. Scatter Plot of Standardized Residual versus Standardized Predicted Value

Linear regression requires the residuals to be normally distributed. The normality was checked with the histogram and normal probability plot of the standardized residuals (Chan, 2004a). The curved line indicating a normal distribution is reasonably overlapped on the frequency distribution of the residuals (See Figure 5.2). In Figure 5.3, the points

are approximately located on the straight diagonal line. This indicates the normality of the residuals (Chan, 2004a). Thus, the assumption is deemed to be met.

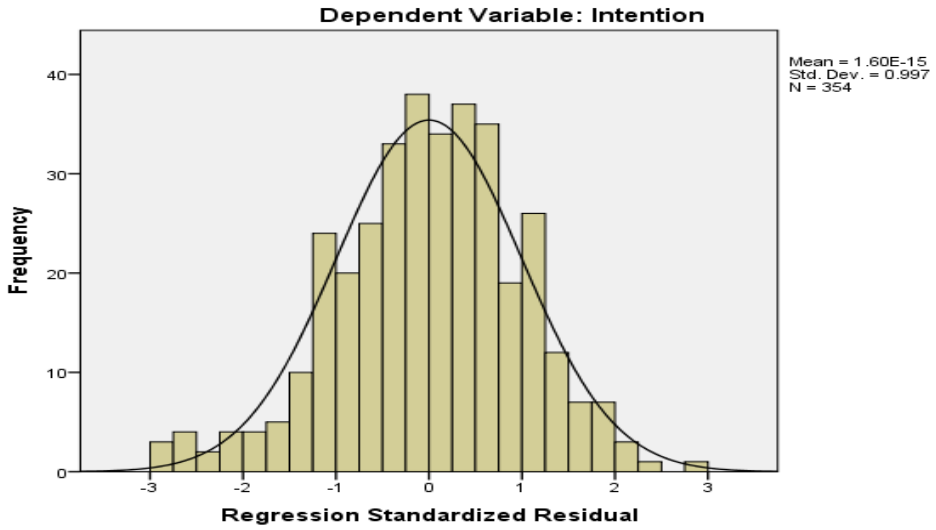

Figure 5.2. Histogram of Standardized Residuals

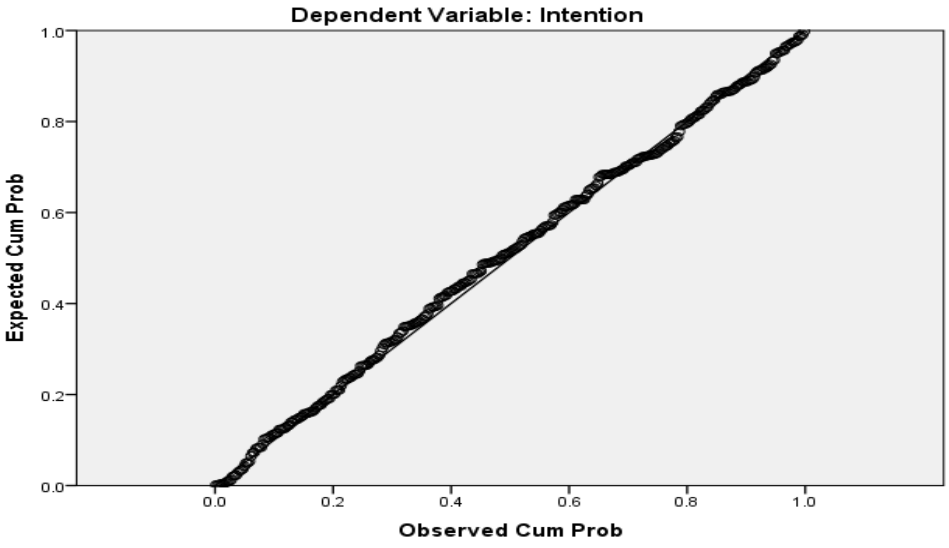

Figure 5.3. Normal Probability Plot of Standardized Residuals

Linear regression also requires that there be no autocorrelation among the residuals. It was checked with the Durbin-Watson statistic (Chan, 2004a). The value close to 2 indicates no correlation, close to 0 indicates positive correlation, and close to 4 indicates negative correlation (Chan, 2004a). In this case, the Durbin-Watson statistic is 1.89 and thus, the assumption is satisfied.

All things considered, the results of the multiple regression analysis used for research question two and three are valid.

Binary Logistic Regression

Logistic regression has been widely used in social science research when a dependent variable is categorical and one or more of the independent variables is categorical or continuous (DeMaris, 1995; Lottes, Adler, & DeMaris, 1996; Peng, Lee, & Ingersoll, 2002; Yeung & Yee, 2011).

A dependent variable, game piracy behavior originally continuously scaled was dichotomously categorized as “Download” or “No download” to perform a binary logistic regression analysis. It was because the assumption of homoscedasticity was not met when conducting a linear regression analysis with the continuous dependent variable. According to Hosmer and Lemeshow (1989), logistic regression does not require linearity, normality, and homoscedasticity that are assumed in linear regression. In this regard, logistic regression is suitable for this case.

The assumption of independence, however, is required in logistic regression. The independence means that participants are unrelated to one another. Since participants were tested individually during the survey process, the assumption is deemed to be

satisfied. Accordingly, the results of the binary logistic regression analysis used for research question one are considered to be valid.

Findings of Research Questions

Research Question One: Determinants of Game Piracy Behavior

The results of research question one showed that gender difference affected game piracy behavior. The demographic variable is considered to be the important determinant of digital content piracy. In this case, males were more likely to commit game piracy behavior than were females. This finding follows the earlier studies on software piracy (Sims, Cheng, & Teegen, 1996; Moores & Dhillon, 2000; Higgins, 2006) and on music piracy (Bhattacharjee, Gopal, & Sanders, 2003; Gerlich, Lewer, & Lucas, 2010). It may be attributed to gender difference in attitude towards digital content piracy. Indeed, Lau (2007) and Cuevas (2010) found that males displayed more favorable attitude towards digital piracy than did females. Other plausible reasons for the above finding are that males were more likely to have low self-control and to be involved in peers committing piracy behaviors than were females (Higgins, 2006).

The other demographic variable of the study, age, was not found to be a significant factor of game piracy behavior. This finding contradicts the previous studies that younger people were more involved than older people in software piracy (Gopal & Sanders, 1998; Moores & Dhillon, 2000; Gupta, Gould, & Pola, 2004) and in music piracy (Bhattacharjee, Gopal, & Sanders, 2003; Gerlich, Lewer, & Lucas, 2010). It may be due to the narrow age range of the study samples, which is congruent with the studies of Acılar (2010) and Nill, Schibrowsky, and Peltier (2010).

Interestingly, awareness of copyright laws did not explain game piracy behavior. This finding is inconsistent with the prior research that concluded a negative relationship between awareness and piracy behavior. That is, the more familiar with the laws individuals were, the less involved they were in digital piracy (Al-Rafee & Rouibah, 2010; Cuevas, 2010) and in software piracy (Christensen & Eining, 1991; Goles et al., 2008; Moores, Nill, & Rothenberger, 2009; Dupin-Bryant, 2010; Nill, Schibrowsky, & Peltier, 2010).

Lastly, the results of research question one also found that the variation in intention towards game piracy affected game piracy behavior. The more intention individuals had, the more they were likely to commit game piracy. This finding is in line with earlier studies on digital piracy (Ramayah et al., 2009) and on software piracy (Tang & Farn, 2005; Butt, 2006; Cuevas, 2010).

Research Question Two: Application of Theory of Reasoned Action (TRA)

In the results of research question two, attitude towards game piracy and subjective norm were found to play significant roles in game piracy intention. According to Ajzen and Fishbein (1980) developing the TRA, an individual's behavioral intention is influenced by his or her attitude and subjective norm. Thus, these findings embrace the theory. In this case, specifically, the more favorable attitude towards game piracy individuals displayed, the more intention they had. Individuals with lower subjective norm in favor of game piracy were less likely to display intention. The positive relationships between them are consistent with previous studies on digital piracy (Yoon, 2011; Choi, 2008) on software piracy (Peace, Galletta, & Thong, 2003; Alam et al., 2011;

Aleassa, Pearson, & McClurg, 2011). The findings also correspond to music piracy studies (d'Astous, Colbert, & Montpetit, 2005; Plowman & Goode, 2009; Wang et al., 2009).

Research Question Three: Cultural Effect

Unexpectedly, the result of research question three showed that the impact of attitude on intention to commit game piracy behavior was stronger than that of subjective norm. South Korea, one of Asian countries, has been traditionally known as a collectivistic culture that values the social norms among group members more than individuals (Hofstede, 2001). Previous studies conducted in collectivistic cultures revealed that subjective norm had a greater influence on piracy intention than did attitude (Choi, 2008; Wang et al., 2009; Alam et al., 2011; Aleassa, Pearson, & McClurg, 2011; Yoon, 2011). That is because collectivists are heavily influenced by their significant others (Jerram, 2003). The finding of the current study contradicts the above piracy studies. Rather, it is consistent with other studies in individualistic cultures where subjective norm was found to be a weaker determinant of piracy intention than was attitude (Peace, Galletta, & Thong, 2003; Plowman & Goode, 2009; d'Astous, Colbert, & Montpetit, 2005). This may be attributed to a change in the Korean cultural values. In other words, some Koreans may care less about others' thinking as individualists do.

Conclusions

The current study examined determinants of game piracy behavior among eSports game users in South Korea. The results indicated that the game piracy behavior was

influenced by their gender and behavioral intentions. Males were more likely to download game material on P2P websites than were females. Individuals with greater intentions were more likely to commit the behaviors. In addition, the behavioral intentions were shaped more by their attitudes towards game piracy than by subjective norms.

The laws for intellectual property rights are clear, and the campaign to fight against illegal downloading is currently carried out nationwide in South Korea. As noted in the results of the study, however, individual perceptions of game users, especially males on game downloading should be considered as a priority.

A turnaround of their thinking patterns for game downloading or consuming is the way to minimize economic losses of game development companies. Further, the derived revenues will surely lead to the research and development of new games that can meet the needs of game users, and ultimately the ripple effects will promote the sustainability in the eSports settings of South Korea.

Recommendations for Future Study

Based on the delimitations and results of the current study, several directions are suggested for future study.

The sample was collected in an eSports game arena in Seoul, South Korea. The convenience sample may not be representative of other eSports game users. Therefore, future study should employ a probability sampling method in order to increase external validity. Further, minors should be included in future studies, since this study focused on eSports game users over the age of 18. A wider age range including minors might be

helpful for future study to draw more accurate results.

Qualitative research should be conducted for in-depth understanding of the characteristics of eSports game users. The current study found that their attitudes and subjective norms towards game piracy played significant roles in the behavioral intention. Interview process might be useful in capturing how and why their attitudes and subjective norms are formed. In addition, socioeconomic status (SES) might contribute to exploring game piracy behavior. Future study should take into account income, education, and occupation for more different findings.

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APPENDIX A

COVER LETTER AND SURVEY (ENGLISH)

THE UNIVERSITY of NEW MEXICO
Department of Health, Exercise and Sports Sciences
Johnson Center, MSC04 26101
Albuquerque, NM 87131

Dear Participants,

My name is Eui-Yul Choi, a Ph.D. candidate from the Department of Health, Exercise and Sports Sciences at the University of New Mexico. I am currently conducting a research study. The purpose of the study is to investigate factors of game downloading through peer to peer (P2P) networks. You are being asked to participate in this study because you are a game user and 18 years or older.

Your participation will involve completing a survey with regard to your opinion and experience on game downloading through peer to peer (P2P) networks. The survey should take about 5 to 10 minutes of your time to complete. Your involvement in the study is voluntary, and you may choose not to participate. If you choose to participate, you may also refuse to answer any questions you do not want to answer at any time.

There is no known risk of harm to you. The survey does not require your name, and your answers will be completely anonymous. Answered questionnaires will be viewed only by the researcher and will be used for the academic purpose only. All the data will be kept for one year in a locked cabinet in my office and then destroyed no later than July 14, 2013. The results of the study will be released in summary form only, to present at academic conferences and to be included in the investigator's dissertation. No individual answers will be identified.

If you have any questions about this survey or this research project, please feel free to contact me by phone (1-505-340-4426) or email (dyna46@unm.edu or dyna46@hanmail.net). You may also contact my academic advisor, Dr. Annie Clement, Esq. at 1-505-277-5721 or annieclement1@bellsouth.net. If you have questions regarding your legal rights as a research subject, you may contact the UNM Human Research Protections Office at 1-505-272-1129 or at HRPO@salud.unm.edu.

By returning this survey in the envelope provided, you will be agreeing to participate in the above described research study.

Thank you in advance for your help!

Sincerely,

Eui-Yul Choi
Ph.D. candidate

SECTION 1: Awareness of Copyright Laws

Please indicate your level of agreement by circling ONE of the following numbers for each question.

1. It is okay to download game material without permission of the copyright owner.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

2. It is okay to download game material that was obtained through peer to peer (P2P) networks.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

3. Downloading game material through peer to peer (P2P) networks is in accordance with copyright law.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

4. It is not illegal to download game material through peer to peer (P2P) networks.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

SECTION 2: Personal Opinion towards Game Downloading

Please indicate your level of agreement by circling ONE of the following numbers for each question.

5. Downloading game material through peer to peer (P2P) networks is

Very foolish idea	Foolish idea	Somewhat foolish idea	Neutral	Somewhat wise idea	Wise idea	Very wise idea
1	2	3	4	5	6	7

6. Downloading game material through peer to peer (P2P) networks is

Very harmful idea	Harmful idea	Somewhat harmful idea	Neutral	Somewhat beneficial idea	Beneficial idea	Very beneficial idea
1	2	3	4	5	6	7

7. Downloading game material through peer to peer (P2P) networks is

Very bad idea	Bad idea	Somewhat bad idea	Neutral	Somewhat good idea	Good idea	Very good idea
1	2	3	4	5	6	7

8. Overall, my attitude towards game downloading through peer to peer (P2P) networks is

Very unfavorable	unfavorable	Somewhat unfavorable	Neutral	Somewhat favorable	Favorable	Very favorable
1	2	3	4	5	6	7

SECTION 3: Significant Others' Opinion towards Game Downloading

Please indicate your level of agreement by circling ONE of the following numbers for each question.

9. If I downloaded game material through peer to peer (P2P) networks, most of the people who are important to me would disapprove.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

10. Most people who are important to me would look down on me if I downloaded game material through peer to peer (P2P) networks.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

11. No one who is important to me thinks favorably of game downloading through peer to peer (P2P) networks.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

12. My colleagues think game downloading through peer to peer (P2P) networks is wrong.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

SECTION 4: Intention towards Game Downloading

Please indicate your level of agreement by circling ONE of the following numbers for each question.

13. I intend to download game material through peer to peer (P2P) networks in the near future.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

14. If I have a chance, I will download game material through peer to peer (P2P) networks.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

15. I will never download game material through peer to peer (P2P) networks.

Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

SECTION 5: Behavior towards Game Downloading

Please indicate your level of agreement by circling ONE of the following numbers for each question.

16. How often do you download game material through peer to peer (P2P) networks?

Never	Rarely	Occasionally	Somewhat regularly	Regularly	Frequently	Always
1	2	3	4	5	6	7

17. How often do you share game material with others on peer to peer (P2P) websites?

Never	Rarely	Occasionally	Somewhat regularly	Regularly	Frequently	Always
1	2	3	4	5	6	7

SECTION 6: Personal Background

18. What is your gender?

❑ Male ❑ Female

19. In what year were you born?

1	9		

Thank you very much for taking the time to complete this questionnaire!

APPENDIX B

COVER LETTER AND SURVEY (KOREAN)

THE UNIVERSITY of NEW MEXICO
Department of Health, Exercise and Sports Sciences
Johnson Center, MSC04 26101
Albuquerque, NM 87131

설문지 참가자 여러분께,

저는 미국 뉴멕시코 주립대학의Health, Exercise, and Sports Sciences 과의 박사과정 학생인 최의열입니다. 현재 연구 과제를 수행 중에 있는데, 이 연구는 개인 간 파일공유 네트워크(P2P)를 통한 게임 다운로드의 요인을 조사하는 것을 목적으로 합니다. 여러분은 e스포츠 게임 사용자로서 그리고 18세 또는 이상의 성인으로서 연구에 참여하셔서 질문을 받게 됩니다.

여러분은, 개인 간 파일공유 네트워크(P2P)를 통한 게임 다운로드 대한 여러분의 경험과 견해에 관한 설문지를 작성하시게 될 것입니다. 이 설문조사를 다 작성하는 데는 약 5분에서 10정도가 소요됩니다. 이 설문조사의 참여 여부는 본인의 의사에 달렸습니다. 만일 참여하시기로 하셨다면, 여러분이 답하기 원하지 않는 질문항목에 대해서는 언제든지 답변을 거부할 수 있습니다.

이 설문조사는 여러분께 어떠한 해도 끼치지 않을 것입니다. 이 설문조사에서는 여러분의 이름을 적도록 요구하지 않으며, 여러분이 제공해 주신 개별답변 내용은 절대 익명이 보장될 것이고 오직 학문적 목적으로만 사용되어 질 것입니다. 모든 데이터는 제 사무실의 잠금장치가 있는 케비넷안에 안전히 보관되었다가 1년 후 (2013년 7월 14일 이전에) 파기될 것입니다. 이 설문조사 결과는 요약된 형태로만 공개되고 본 연구자의 논문에 실리게 될 것이기 때문에, 개별답변 내용은 결코 확인되어 지지 않을 것입니다.

본 설문조사 혹은 연구 프로젝트에 대한 질문이 있으시면, 언제든지 저에게 연락주시기 바랍니다. 제 전화번호는: 1-505-340-4426이며, 이메일 주소는dyna46@unm.edu 또는 dyna46@hanmail.net 입니다. 또한 제 지도교수인 Dr. Annie Clement (변호사) 에게 연락하실 수도 있습니다 (전화번호: 1-505-277-5721 이메일: annieclement1@ bellsouth.net). 연구 참여자로서의 법적 권리에 대한 질문이 있으시면 UNM Human Research Protections Office로 전화 (1-505-272-1129) 또는 이메일 (HRPO@salud.unm.edu)로 연락하실 수 있습니다.

여러분께서 첨부된 봉투에 작성하신 설문지를 넣어 돌려주시게 되면, 앞서 설명해 드린 연구에 참여하시기로 동의하시게 됨을 알려 드립니다.

여러분의 도움에 감사드립니다.

최 의열,
박사 과정

1부: 저작권법에 대한 인식도

아래 문항들을 보시고 귀하에 해당되는 번호에 하나만 동그라미 해 주십시오.

1. 저작권자의 허락 없이 게임을 다운로드 하는 것은 괜찮다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

2. 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 하는 것은 괜찮다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

3. 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 하는 것은 저작권법에 부합된다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

4. 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 하는 것은 불법이 아니다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

2부: 게임 다운로드에 대한 개인적 견해

아래 문항들을 보시고 귀하에 해당되는 번호에 하나만 동그라미 해 주십시오.

5. 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 하는 것은

매우 어리석은 생각이다	어리석은 생각이다	약간은 어리석은 생각이다	중립적	약간은 현명한 생각이다	현명한 생각이다	매우 현명한 생각이다
1	2	3	4	5	6	7

6. 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 하는 것은

매우 해로운 생각이다	해로운 생각이다	약간은 해로운 생각이다	중립적	약간은 유익한 생각이다	유익한 생각이다	매우 유익한 생각이다
1	2	3	4	5	6	7

7. 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 하는 것은

매우 나쁜 생각이다	나쁜 생각이다	약간은 나쁜 생각이다	중립적	약간은 좋은 생각이다	좋은 생각이다	매우 좋은 생각이다
1	2	3	4	5	6	7

8. 전반적으로, 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 하는 것에 대한 나의 태도는

매우 호의적이지 않다	호의적이지 않다	약간은 호의적이지 않다	중립적	약간은 호의적이다	호의적이다	매우 호의적이다
1	2	3	4	5	6	7

3부: 게임 다운로드에 대한 내 주변사람들의 견해

아래 문항들을 보시고 귀하에 해당되는 번호에 하나만 동그라미 해 주십시오.

9. 내가 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 한다면, 나에게 중요한 대부분의 사람들이 못마땅하게 생각할 것이다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

10. 내가 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 한다면, 나에게 중요한 대부분의 사람들이 나를 경멸할 것이다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

11. 나에게 중요한 사람들 중 누구도 개인 간 파일공유 네트워크(P2P)에서의 게임 다운로드를 호의적으로 생각하지 않는다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

12. 내 동료들은 개인 간 파일공유 네트워크(P2P)를 통한 게임 다운로드가 잘못된 것이라고 생각한다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

4부: 게임 다운로드에 대한 의도

아래 문항들을 보시고 귀하에 해당되는 번호에 하나만 동그라미 해 주십시오.

13. 나는 조만간 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운받을 생각이다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

14. 기회가 생긴다면, 나는 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운받을 것이다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

15. 나는 절대 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 하지 않을 것이다.

절대 동의하지 않음	동의하지 않음	약간은 동의하지 않음	중립적	약간은 동의함	동의함	절대 동의함
1	2	3	4	5	6	7

5부: 게임 다운로드에 대한 행동

아래 문항들을 보시고 귀하에 해당되는 번호에 하나만 동그라미 해 주십시오.

16. 얼마나 자주 개인 간 파일공유 네트워크(P2P)를 통해 게임을 다운로드 하나요?

그런 적 없음	거의 안함	가끔	약간은 정기적으로	정기적으로	자주	항상
1	2	3	4	5	6	7

17. P2P웹사이트에서, 얼마나 자주 다른 사람들과 게임을 공유합니까?

그런 적 없음	거의 안함	가끔	약간은 정기적으로	정기적으로	자주	항상
1	2	3	4	5	6	7

6부: 개인 정보

18. 귀하의 성별은 무엇입니까?

❑ 남자 ❑ 여자

19. 귀하는 몇 년도에 태어나셨습니까?

1	9		

본 설문조사에 참여해 주셔서 대단히 감사합니다!

APPENDIX C

IRB APPROVAL

THE UNIVERSITY of
NEW MEXICO
Main Campus Institutional Review Board
Human Research Protections Office
MSC08 4560
1 University of New Mexico--Albuquerque, NM 87131-0001
http://hsc.unm.edu/som/research/HRRC/

05-Jul-2012

Responsible Faculty: Annie Clement
Investigator: Eui-Yul Choi
Dept/College: Health Exercise & Sports Science

SUBJECT: IRB Determination of Exempt Status
Protocol #: 12-324
Project Title: Investigating the Factors Influencing Game Piracy in the eSports Settings of South Korea
Approval Date: 05-Jul-2012

The Main Campus Institutional Review Board has reviewed the above-mentioned research protocol and determined that the research is ***exempt*** from the requirements of Department of Health and Human Services (DHHS) regulations for the protection of human subjects as defined in 45CFR46.101(b) under category , based on the following:

1. Application submitted 6/27/2012;
2, Attachment 1 submitted 6/27/2012;
3. Protocol v6/27/2012;
4. UNM Consent Cover Letter v6/27/2012;
5. Korean UNM Consent Cover Letter v6/27/2012;
6. English and Korean Surveys submitted 6/27/2012 with acknowledgment of Letter of Support and Dissertation Committee Approval submitted 6/27/2012.

Because it has been granted exemption, this research project is not subject to continuing review.

Changes to the Research: It is the responsibility of the Principal Investigator to inform the IRB of any changes to this research. A change in the research may disqualify this project from exempt status. Reference the protocol number and title in all documents related to this protocol.

Sincerely,

J. Scott Tonigan, PhD
Chair
Main Campus IRB