Analysis of the Key Reasons behind the Pirated Software Usage of Turkish Internet Users: Application of Routine Activities Theory

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ABSTRACT

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The basic reason for protection of intellectual property rights is the necessity to encourage and support innovation and to promote the creation of knowledge. Intellectual property has a functional effect on the creation, development and innovation of the intellectual products which improve our life. Software piracy is one of the important parts of the digital piracy problem, and according to Swinward et al. (1990), software was also the first copyrighted product that was duplicated on a large scale. BSA defined software piracy as the illegal copying, downloading, sharing, selling or installing of copyrighted software.

It is difficult to measure accurately the worldwide magnitude of the software piracy problem. According to the Business Software Alliance (BSA) Global Software Piracy Report, the rate of software piracy in 2009 was 43%. This is a serious problem for the world economy, but the problem is more serious in Turkey. According to the BSA 2009 Global Software Piracy Report, the software piracy rate in Turkey was 63% in 2009. If the assumption is made that every instance of pirated software usage equals an amount of loss in the economy, then the impact of the loss on the Turkish economy was 415 million dollars. Before advanced technology and high speed Internet, software piracy was carried out by copying disks or other types of physical objects, but now almost all types of software piracy occur over the Internet.

The aim of this study is to explore the factors that contribute to pirated software usage among Turkish Internet users in order to define the dynamics behind the problem of software piracy from the Internet users' perspective. Definition of the reasons behind an existing problem is a crucial part of the problem solving process. With this study the factors behind the problem of pirated software usage will be empirically analyzed from the users' perspective by applying Routine Activity Theory. According to RAT, three major factors that affect criminal activities include access to suitable targets, motivated offenders and the absence of capable guardians. According to the routine activity approach, crime or the risk of crime increases when a motivated offender identifies or encounters a suitable target in the absence of a capable guardian.

The concurrent triangulation structure, a mixed method approach, was used in this study. The data collection methods included an online survey questionnaire and online interview forms. The survey questionnaires aimed to measure the targeted Turkish Internet users' attitudes toward pirated software usage as a dependent variable and perceptions about the availability and accessibility of pirated software, motivations behind the usage of pirated software, perceptions about social-legal guardians against pirated software usage as independent variables. Results indicated that motivation, accessibility of pirated software, and perception of social guardians have an impact on Turkish Internet users pirated software usage. The perception of legal guardian had a weak relationship with software piracy attitude.

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CHAPTER I

Introduction

The basic reason for protection of intellectual property rights is the necessity to encourage and support innovation and to promote the creation of knowledge. Intellectual property has a functional effect on the creation, development and innovation of the intellectual products which improve our life. Information and communication technologies have improved human life, and the computer plays a leading role in this improvement. Hardware and software are the two basic parts of the computer. "Hardware" is a term used to define the physical components of computer system and "software" describes the digital tools used to operate computer hardware.

Software piracy is one primary area of the issue of copyright infringement, and it is difficult to measure accurately the worldwide magnitude of the software piracy problem. According to the Business Software Alliance (BSA) Global Software Piracy Report, the rate of software piracy in 2009 was 43%. If the assumption is made that every instance of pirated software usage equals an amount of loss in the economy, then the world economy lost more than 51.4 billion dollars in 2009. Compared with 2008 worldwide results, the software piracy rate increased 2% in 2009. This is a serious problem for the world economy, but the problem is more serious in Turkey. Turkey is an official candidate country to become a future member of the European Union (EU). The average software piracy rate among 27 EU countries is 41.7% and this rate is very low compared to the software piracy rate in Turkey. Bulgaria, Romania, Greece, Latvia, and Lithuania have software piracy rates more than 50% among EU countries, and nine of 27 EU countries have software piracy rates less than 30%. According to the BSA 2009

Global Software Piracy Report, the software piracy rate in Turkey was 63% in 2009, and the impact of this loss on the Turkish economy was 415 million dollars.

Statement of Problem

Software piracy is one of the important parts of the digital piracy problem, and according to Swinward et al. (1990), software was also the first copyrighted product that was duplicated on a large scale. BSA defined software piracy as the illegal copying, downloading, sharing, selling or installing of copyrighted software.

Until the 1980s, software was not protected by any legislation, and computer users could use any copyrighted software without permission. Due to the concerns from software producers, national copyright legislation was amended to protect software as a copyrighted material in the 1980s throughout the world. The United States (U.S.) was the first country to develop a specific Software Copyright Act in 1980. In 1999, The U.S. Uniform Computer Information Transaction Act (UCITA) was developed to provide a uniform and certain legal structure to regulate the licensing of software, online access, and information technology transaction data (Rao, 2003; Pilch, 2006; www.ucitaonline.com).

Software piracy has a direct impact on the sales and profits of software companies and the tax revenues of countries, and is also a problem for consumers who buy counterfeit products. According to the BSA 2009 Global Software Piracy Report, if the assumption is made that every instance of pirated software usage equals a loss in the economy, the world economy lost 51.4 billion dollars in 2009 When software piracy rates and economic losses were broken down by region, they included 20% →$8.3 billion in the USA, 35% → $12.4 billion in the European Union and 63% → $415 million in

Turkey (the software piracy rate decreased in Turkey from 2008 to 2009). Furthermore, the Software Information Industry Association (SIIA) Anti-Piracy 2007 Year in Review Study reported that the U.S. software industry lost $28.8 billion dollars in 2007.

Before advanced technology and high speed Internet, software piracy was carried out by copying disks or other types of physical objects, but now almost all types of software piracy occur over the Internet. The Internet and information technologies are globally available, generally speedy, and serve as good means for information copying, fast transfer, large storage, and absolute replication. These technologies are also generally inexpensive, easy to use, and can be very secure for cyber offenders. Because the Internet is still not regulated globally, it can prove difficult for law enforcement to fight Internet-based crime. Usually online software piracy occurs through three basic channels: auction sites, peer-to-peer (P2P) file sharing programs, and other websites. According to SIIA's study, 90% of the software that was sold on eBay was pirated and this created a lack of confidence among consumers toward online software sales.

Purpose of the Study

The aim of this study is to explore the factors that contribute to pirated software usage among Turkish Internet users in order to define the dynamics behind the problem of software piracy from the Internet users' perspective. Definition of the reasons behind an existing problem is a crucial part of the problem solving process. With this study the factors behind the problem of pirated software usage will be empirically analyzed from the users' perspective by applying Routine Activity Theory.

Although the problem is very serious, there is not enough empirical research on copyright infringement and especially pirated software usage in Turkey. While findings

gathered from other studies definitely contribute to our understanding of the seriousness of the issue, they do not provide an explanation for why pirated software usage in Turkey is so high.

In 1979, Lawrence Cohen and Marcus Felson proposed the Routine Activities Theory (RAT) that focused basically mainly on criminal activity opportunities. RAT is considered to be a milestone in criminology because it was the first approach to distinguish between criminal inclinations and criminal events.

According to RAT, three major factors that affect criminal activities include access to suitable targets, motivated offenders and the absence of capable guardians. According to the routine activity approach, crime or the risk of crime increases when a motivated offender identifies or encounters a suitable target in the absence of a capable guardian. Due to its conditional approach, RAT is also identified under the title of "opportunities and crime." Opportunity is considered to be a required condition for crime to occur, and the existence of opportunities and the degree of access explain the crime problem (Lilly et al., 2002). With this approach, research has been conducted to analyze crime geographic which illustrate that crime occurs as a consequence of conditional factors (Arnold et al., 2005; Groff, 2007; Mustaine and Tewksbury, 1999; Willison, 2006). In this context, I would like to analyze Turkish Internet users' degree of accessibility of pirated software, perceptions of both legal and social guardians against pirated software usage, and motivations for pirated software usage as the reasons for the problem of software piracy. I would also like to analyze the demographic characteristics (education, gender, and age) of pirated software usage among Turkish Internet users.

Significance

The significance of this study is that it is the first empirical study conducted in Turkey with the aim of analyzing and investigating the factors that contribute to the issue of pirated software usage among Turkish Internet users. The importance of this study is that it turns attention to this new and serious problem.

CHAPTER II

Review of Related Literature

Introduction

New technologies often result in new regulations to manage the problems associated with copyright holders. Copyright laws became a legal regulation after the invention of the printing press. Nowadays, new cases and problems associated with Information and Communication Technologies (ICTs) arise very frequently, yet both law-makers and prosecutors still have to make a decision on how to deal with digital innovations and the Internet (ICTs) that lead to piracy.

Intellectual Property and Copyright

Intellectual property refers to the creation of an idea that has value and deserves legal protection. Generally, intellectual property involves creative products such as artistic, literary, and musical works, and is protected by patent, copyright or trademark (Stim, 2004). Copyright is a legal structure that gives specific rights to an original property's creator about the property's tenancy, usually for a limited time. A trademark is a distinctive symbol or sign of some kind of legal entity. A patent is a set of rights that are conferred by a state to the creator of a new invention for a defined period of time (Wilson, 2004).

Copyright could be defined in terms of items, rights and terms of usage. The items cover areas of: artistic, literary, and musical works. The rights cover the classes of: reproducing, distributing, performing in public, broadcasting, translating, adapting, selling, and renting. The term covers life plus 70 years in the U.S., European Union, and Turkey (Rao, 2003; Hunter 2005; www.copyright.gov). The main intent of copyright is to

promote public welfare by the protection of original works and to encourage creators by conferring in them exclusive rights in their products to protect them against unauthorized access, copying and distribution (Patterson and Lindberg, 1991; Benkler, 2006). The concept of copyright arose with the invention of the printing press in the 1450's. Before the invention of printing press, copying a book took immense amounts of time and effort. Generally, authors did not worry about unauthorized reproduction of their works. On 1662, the first legislation on copyright was made in England to protect authors from the illegal printing of their books.

The Licensing of the Press Act in 1662 established a register of licensed books and provided a legal authority to the monopoly in the book trade. The Licensing Act of 1662 gave a right to publishers to exclusive control over publishing, but after it expired in 1695, some debates occurred among the publishers and booksellers, which also affected marketing negatively in England. The Act of 1710, the Statute of Anne, was the first copyright law vesting the copies of printed books in the authors; it enabled authors the exclusive right to reproduce books, rather than the printer or bookseller. It granted 21 years of publication rights for books existing at the time of the Statute of Anne's enactment, and 14 years for new works, as well as a renewal right for 14 years if the author was living at the expiration of the term (Kho, 2007; Rao, 2003; Hunter, 2003).

Since the first copyright law, the Statute of Anne, the U.S has considered copyright reform. The Copyright Act of 1790, the first federal copyright law in the U.S, provided protection only to the works of U.S. citizens or residents. Therefore, at that time, the U.S. was one of the most convenient regions for the creation of pirated works of foreign authors (Pilch, 2006). After receiving complaints from both domestic and foreign

authors, the U.S. created the 1892 International Copyright Act, commonly known as the Chace Act, which extended limited copyright protection to foreign authors from select countries. With this Act, based on the principle of reciprocity, the U.S. provided protection to the works of authors from countries that provide copyright protection to the U.S. authors' works.

The 1886 Berne Convention provided an international perspective for copyright regulations. With the 1886 Berne Convention, the essentials for reciprocal acknowledgement of copyright protection between countries were provided and the development of international copyright protection was declared. The Universal Copyright Convention (UCC) is the other leading convention about copyright at the international level. The UCC was a meeting point for the countries that didn't accept the requirements of the first international copyright act, the 1886 Berne Convention, but still sought copyright protection at the international level. Talks began in 1947 with the coordination of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Convention was adopted at Geneva on September 6, 1952. The U.S. and the SSCB were also members of the Convention. The UCC requirements became an Act on September 16, 1955 in the U.S. and with this agreement the U.S. aimed to improve relations with both members of 1886 Berne Convention and the UCC about copyright protection.

The Copyright Act of 1976 and Digital Millennium Copyright Act (DMCA) are the main regulations relating to the copyright issue in the US. In 1976 the U.S. created The Copyright Act of 1976, which became effective on January 1, 1978. The 1976 Act is the basis of copyright law in the U.S. because of its new regulations. With the Act, new

types of copyrighted materials received protection, such as musical works, dramatic works, pantomimes and choreographic works, pictorial and graphic works, audiovisual works, and architectural works. The copyright protection period was also extended to author's life plus 50 years. Previously copyright protection was granted only to works that were registered, but with this act any created work automatically receives full term copyright protection. The Copyright Act of 1976 was prepared in anticipation of the U.S. entry into the Berne Convention and on March 1, 1989 the U.S. attended the 1886 Berne Convention.

The 1996 World Intellectual Property Organization Treaty (WIPO Treaty) provides copyright protection for digital materials with the existing terms of the Berne Convention, and the U.S. signed treaties with other countries in 1996. The U.S. Congress passed the DMCA in 1998, which addresses the issues of digital copyright and implements WIPO treaties in the U.S. The DMCA also increased the penalties for online copyright infringement.

The U.S., all EU states and Turkey are members of the Berne Convention. Most of the EU States are members of the Rome Convention, the WIPO and the Phonogram Convention. Therefore, all EU states need to provide national protection for all the works created in other countries that are party to the Conventions, or grant equal treatment for copyrighted materials. In terms of online copyright protection, the EU addressed the WIPO Copyright Treaty with the creation of three directives: the EU Information Society Directive, the Software Directive and the Database Directive. The Information Society Directive, officially Directive 2001/29/EC, was developed for the harmonization of copyright and related rights in the EU on the basis of WIPO Copyright Treaty. The

Software Directive, officially Directive 91/250/EEC, is an EU directive concerning the protection of software and was developed on 14 May 1991. The Database Directive, officially Directive 96/9/EC, is an EU directive on the legal protection of databases and was accepted on 11 March 1996 (Rao, 2003; Crockford, 2008).

The first copyright regulation in Turkey was the Distinctive Signs Regulation, enacted in 1871. The intellectual property system in Turkey is administered by the Directorate General of Copyrights and Cinema under the Ministry of Culture. Turkey joined WIPO in 1976 and the European Patent Convention in 2000. After Turkey became a member of the World Trade Organization (WTO) and began participating in the Customs Union Agreement with the EU, more copyright related developments occurred in Turkey (www.turkpatent.gov). The Turkish Copyright Law is called the Act of Intellectual and Artistic Works No. 5846 (FSEK). Turkish Copyright Law became compatible with the mentioned international conventions and agreements after important amendments occurred in 1995, 2001, 2004 and 2008. With the amendments in 1995, new types of copyrighted materials received protection, including software (FSEK Article 2, and 4). Additional important amendments occurred in 2001: the definition of copyrighted material types widened, the period of protection for copyrighted materials increased to 70 years from the year of death of the author (FSEK Article 27), more austere penalties were introduced for copyright infringements (FSEK Article 71) and “label application” began, which allows law enforcement to seize all non-labeled materials without a court decision (FSEK Article 81). The 2004 amendment mostly concerned demonstration of copyrighted materials in public places. Lastly, with the 2008 amendment, penalties for copyright infringement were increased (FSEK Article, 71, 72, 75).

Legal Protection of Software

Until the 1980s, software was not protected through legislative regulations; therefore, computer users could utilize any copyrighted software without permission. Thus, due to the concerns of software producers, national copyright laws were amended to protect software as copyrighted material in several countries throughout the world. The United States was the first country to develop a specific Computer Software Copyright Act, in 1980, wherein software, or source code, and databases were accepted as literary works and achieved protection for life plus 50 years. With the 1998 Copyright Term Extension Act, the copyright software protection term was extended to life plus 70 years. In 1999, the U.S. Uniform Computer Information Transaction Act was developed to provide a uniform legal structure to regulate the licensing of software and information (Pilch, 2006; Rao, 2003).

On May 14, 1991, with the European Council Directive on the legal protection of computer programs, the EU countries agreed to protect software under Article 2 of the Berne Convention. The EU Commission published a green paper in 1998 titled "Green Paper on Copyright and the Challenge of Technology - Copyright Issues Requiring Immediate Action" that aimed to harmonize and modernize copyright legislation among EU member states. Although individual legislation had previously been established regarding copyright protection within some of the EU members, the software is now protected as copyrighted material throughout the European Union (Crockford, 2008). According to Crockford (2008), however, the U.S. legislation enables more protection since the EU legislation only protects the actual code rather than the underlying idea or purpose.

The first significant software amendment to the Turkish Copyright Law was enacted in 1995 to fulfill the requirements of the EU Customs Union Agreement. With this amendment, software became copyrighted material in Turkey. Due to Turkey's attendance in support of the 1996 WIPO Agreement as well as other declarations, further amendments to the Copyright Law were revised in February 2001. As a result, the copyright software protection period was widened to 70 years and the penalties for software piracy were increased. Turkey's protection for software is of the same degree as that in the EU; it only protects the actual code and not the underlying idea or purpose. Although operations against illegal hard copies of copyrighted software can be conducted by law enforcement agencies, according to the Turkish Copyright Law, a complaint is required from copyright owners to take any action against online software piracy issues. Therefore, Turkish law enforcement agencies are not responsible for investigating online software piracy issues; all inquiries and investigations are the responsibility of copyright owners to report them to law enforcement agencies.

Law Enforcement Structures

The U.S. has both internal and international law enforcement structures to combat software piracy. At the federal level the Federal Bureau of Investigation (FBI) and Department of Justice (DOJ) are responsible for all copyright infringement issues. The U.S. Trade Representative (USTR) is a structure that was developed "to create trade agreements, to resolve disputes, and to participate in global trade policy organization" (www.ustr.gov). USTR has been used by the Software and Information Industry Association (SIIA) and Business Software Alliance (BSA) as an international law enforcement structure against software piracy. The SIIA and BSA prepare a list of

nations that do not have sufficient protection involving software piracy, while USTR collaborates with U.S. embassies, trading partners and leaders to solve the problem of software piracy in those nations (Gopal and Sanders, 1998).

Although EU members have the same legislations regarding intellectual property rights, they are unable to enforce them strictly. For example, some states do not provide adequate protection via law enforcement agencies. In an effort to solve this problem, in April 2004, the EU Commission adopted the Enforcement Directive that "aims to ensure a high, equivalent and homogenous level of protections." With the Directive, the Commission attempted to establish a minimum level of protection for intellectual property rights required by the TRIPS agreement. As a result, countries may increase protection at the enforcement level, but they must meet the measures required by the Directive at minimum. In addition to the Directive, the Commission called for a report from each country, due by early 2009, concerning their current situation involving the protection of intellectual rights (Crockford, 2008).

TNP State Security Department is responsible for both regular and online copyright infringement issues. The Intellectual Property Rights (IPR) Office was established within the TNP State Security Department on October 29, 2003. In February 2007, the Office was structured as a division and designated within the Intellectual Property Rights and Press Division (IPRPD) responsible for leading and coordinating the units regarding IPR-related tasks, developing training plans and programs, and collecting statistical data on operations that violate IPR regulations. In January 2008, offices were established in eight Turkish cities where intense IPR infringements occur. Although all operations and investigations on these infringements have been conducted by the offices

that IPRPD is responsible for coordinating, none of the units with the exception of Istanbul have adequately trained staff or technological tools to effectively perform investigations against online piracy concerns. In the event of any complaint related to online software piracy, the case is both directed to and investigated by the cybercrime division.

Current Status of Software Piracy Rates

Digital products are expensive and difficult to create yet simple and inexpensive to reproduce and distribute. Software piracy is one of the important components of the issue of piracy and, according to Swinward et al. (1990) software was also the first type of copyrighted file to be duplicated on a large scale. As defined by the BSA, software piracy is the "unauthorized copying or distribution of copyrighted software [that] can be done by copying, downloading, sharing, selling, or installing multiple copies onto personal or work computers."

Before advanced technology and high speed Internet, software piracy was carried out by copying disks or other types of physical objects, but now almost all types of software piracy take place through the Internet medium. According to the BSA 2009 Internet Piracy Report website, auction websites are the most popular channels to access pirated software; eBay, UBid, Mercadolibre in Latin America, Taobao and Eachnet in China, QXL in Europe are some of the leading auction websites in the mentioned report.

Peer-to-peer software connects individuals directly, and through this type of software, peer-to-peer (P2P) network users are able to share their digital files with other Internet users quickly and easily without any cost. Hill (2007) explained four types of effects of peer-to-peer networks on digital piracy: quick access to pirated material, easy

search options for pirated material, reduced perceived risk of detention, and zero transaction costs. According to the BSA report, popular protocols were Bit Torrent, eDonkey, Gnutella, and FastTrack in P2P medium. eMule, Kazaa, BearShare, and Limewire are the most popular application in P2P file sharing.

Although measuring the worldwide magnitude of the problem of software piracy accurately is difficult, the BSA has been preparing annual reports since 1995 to draw attention to this serious problem. Until 2003, the BSA calculated software piracy rates based on the difference between computer sales and software sales with an "all computers need basic software tools" approach. In 2003, the BSA changed its methodology; cooperation with International Data Corporation (IDC) made it possible to start considering local data in its annual software piracy calculation.

According to the BSA Global Software Piracy Report, which includes 110 countries, the rate of software piracy in 2009 was 43% in the world, and if the assumption is made that every instance of pirated software usage equals a loss in the economy, the world economy lost more than 51 billion dollars in 2009. Compared to the 2008 worldwide results, the software piracy rate increased 2% in 2009, but the economic loss decreased 3%, from 53 billion dollars. When software piracy rates and economic losses were broken down by region, they included 20% →$8.3 billion in the USA, 35% → $12.4 billion in the European Union and 63% → $415 million in Turkey (64%; the software piracy rate decreased in Turkey from 2008 to 2009). The report also indicated that the lowest regional piracy rate was seen in North America, with 21%, and the highest regional piracy rates occurred in Central and Eastern Europe (64%), Latin America (63%), Middle East and Africa (59%), and Asia (59%). According to the report, 67% of

counties had software piracy rates more than 50%, and the lowest piracy rate was calculated as 20%, which was in the U.S.

In SIIA's Anti-Piracy 2007 Year in Review Study the types of software most often pirated were: productivity (34%), operation systems (23%) and document management (8%). In the same report the 10 most pirated brands of software were reported as follows: Symantec Norton Anti-Virus, Adobe Acrobat, Symantec PC Anywhere, Adobe PhotoShop, Autodesk AutoCAD, Adobe Dreamweaver, Roxio Easy CD/DVD Creator, Roxio Toast Titanium, Ipswitch WS_FTP and Nero Ultra Edition.

From an online piracy perspective, a case study of eBay conducted by the BSA in 2008 revealed that only 49% of the software sold was genuine, 39% was counterfeit, 8% was tampered with, and 4% had counterfeit components. Further, one out of five U.S. Internet users who bought software online encountered a variety of problems: *53% received software that was not what they had ordered, 36% reported that the software did not work, 14% immediately realized the software was pirated, and 12% never received the product.*

Reasons behind Software Piracy

Reasons behind Software Piracy-Individual

Researchers have attempted to determine the factors and reasons behind the issues surrounding the problem of software piracy. The following studies are indicative of their efforts.

Public Awareness

The term "public awareness" means users' knowledge of copyright legislation and punishments. Lau's (2003) study that addressed public awareness regarding the current

copyright laws represents one of the central explanations that affect software piracy rates. Although software industries currently employ licensing agreements as a means of information during the installation process, a majority of users pay no attention to the licensing agreements, thus making the tool ineffective. Thus, a strong negative correlation exists between a user's knowledge of current copyright legislation and the software piracy rate. Similarly, Hsu and Shiue (2008) found that "normative susceptibility" has a significant positive effect on the degree to which a user's "willingness to pay" for copyrighted software is involved.

High Software Prices

In the study conducted by Hsu and Shiue (2008), the degree of "willingness to pay" and the factors that affect a user's "willingness to pay" were analyzed. Their findings revealed that more than 80% of the participants regarded "software price" as one of the main aspects that affected their decision in purchasing software. Essentially, prices were considered to be too high, and the products did not appear to be as valuable as their retail prices. As a result, high software prices were determined to be a contributing factor to software piracy.

In addition to Lau (2003), Cheng et al. (1997) also found high software prices as an important factor leading to software piracy rates. For example, "software is too expensive" and "can't afford the software" were two complaints regarding the cost of software, and both reasons indicated users placed a high degree of importance on cost when formulating their attitudes toward piracy. According to Cheng et al. (1997), using a pirated product was more desirable than paying for overpriced software.

To illustrate the effect that high software prices have on the software piracy rate, Hill (2007) used equity theory, which explains human behavior during social exchanges from an equity standpoint. According to this theory, an individual seeks justice between inputs and outcomes. In other words, if there is a lack of justice, the individual user will attempt to restore equity by taking counteractions under the assumption that high software prices represent a case of injustice; by using pirated software, equity can be restored in this social exchange by blaming "high software prices" to justify their actions.

Risk of Penalty

Higgins et al. (2005) conducted research among undergraduate students on the effect of software piracy by explaining the problem from a deterrence theory viewpoint. Results indicated that "certainty about the security measures" had a negative effect on the software piracy rate and concluded that "certainty" is an important factor in the prevention of software piracy. Similarly, Peace et al. (2003) found that "punishment severity and punishment certainty" resulted in a negative effect on software piracy intention by the users.

Hsu and Shiue (2008), Hill (2007), Limayem et al. (2004), Peace et al., (2003) and Tan (2002) all concurred that the lack of penalty risk was a positive factor leading to software piracy rates. In these studies, consumers of pirated software were of the opinion that they were not prone to becoming high prosecution risks. However, when Hsu and Shiue (2008) approached the issue from a different point of view, corporations that were fined due to pirated software usage were occasionally encountered by the media, but because individuals were rarely fined, a confidence in using pirated software resulted.

Moral Factors

Using a sample of college students, Cronan and Al Rafee (2008) conducted research to determine the factors that influence an individual's intent behind software piracy. Results indicated that moral obligation played a considerable role in the effect of the users' intentions, or simply put, feelings of guilt prevented users from contributing to pirated software. Higgins (2005) also found that moral beliefs had a significant effect on an individual's behavioral attitudes toward software piracy.

When Gupta et al. (2008) sought to identify the factors that affect users' "attitudes" toward software piracy, they found that in addition to ethical attitudes that had a strong effect on their piracy behavior, users who exhibited fewer ethical considerations were more likely to partake of pirated software. In studies conducted by Swinyard et al. (1990), Christensen and Eining (1991), and Tan (2002), an individual's ethical attitude was found to be a factor that negatively affects software piracy rates.

Opportunity

Cronan and Al Rafee (2008), Peace (1997) and Cheng et al. (1997) revealed that the degree of a user's opportunity, consisting of skills and resources, is another factor that plays a role in the intention of using pirated software. According to Cronan and Al Rafee (2008), 84.3% of users believed that it is was very simple to pirate software as opposed to only 0.3% who felt that pirating was difficult. As Cheng et al. also found, "ease of pirating software" was considered to be a motivation behind pirated software usage, although it was ranked as a fifth reason when compared to other factors, namely "high software prices" and "required for school work or at the workplace." In another study regarding computer user professionals, Peace (1997) found that if users were given the

chance to pirate software with an extra personal benefit, a large majority would take advantage of the situation.

Social Factors

Social factors, specifically family and friends, play an important role in the user's behavior regarding software piracy. In most studies (Gupta et al., 2004; Higgins, 2005; Higgins et al., 2005; Hsu and Shiue, 2008; Lau, 2003; Limayem et al., 2004; Tan, 2002; Tang and Farn, 2005), "social factors" were considered to be the central reason for both positive or negative effects related to software piracy rates.

According to Hsu and Shiue (2008), individuals are affected by the values of family members or friends. According to the researchers, users' attitudes toward pirated software usage were defined basically by the beliefs of other people in their environment. Higgins et al. (2005) also found that "family disapproval had a significant negative link with software piracy." In another study, when Higgins (2005) placed special emphasis on peer networks and association with software piracy, peer association had an important effect because it creates an environment that shapes an individual's behavior.

Because behaviors are shaped based on the current values of society, according to Lau's (2003) findings, users do not generally believe that piracy is wrong because "everyone is doing it;" further, using pirated products has become normal activity in some developing countries. On the other hand, Higgins et al. (2005) and Tan (2002) found that social consensus has a significant negative effect on the rates against software piracy. As such, Gupta et al. (2004) considered software piracy to be not only an individual activity but one that takes place in a community "where others support piracy or at least ignore instances of it."

Previous Behavior

Besides the effects of moral factors on software piracy, Cronan and Al Rafee (2008) researched previous behaviors that influence college students' future intentions with respect to digital piracy. They found that if students had used a pirated product in the past, their intention to pirate in the future increased. Likewise, Tan (2005) suggested that use of pirated and/or copyrighted software were significantly related to users' previous behaviors.

Gender

Lau (2003), Hinduja (2001, 2003), Gopal and Sanders (1997), and Kini et al. (2003) found a relationship between pirated software usage and gender, with males being more prone to usage than females.

Author's Remoteness

In a study conducted by Hill (2007), another reason behind software piracy stems from an author's remoteness, an issue that assumedly makes software piracy a clean "digital transaction" in the user's mind. Nettler (1984) also mentioned this concern by suggesting that individuals feel less guilty due to an author's remoteness (cited in Gupta et al., 2004).

Reasons Behind Software Piracy - Social

Critiques Regarding Copyright Laws

According to Drahos and Braithwaite (2001), a critique relating to international copyright agreements exists among countries that do not have a domestic software industry. Those countries were under the impression that copyright and related agreements were tools utilized by software producing countries for the purpose of

creating a monopoly over production and software distribution. Accordingly, this is one reason behind the lack of effective copyright enforcement in countries that experience a high piracy rate; they do not want their law enforcement structure to be used for economic gains by other countries (cited in Piquero and Piquero, 2006).

Domestic Software Industry

Piquero and Piquero (2006) examined the relationship between software piracy and a nation's democracy status by analyzing data of 82 countries from 1995 to 2000 including the U.S., EU members and Turkey. According to their findings, democratic countries that enjoy a high level of civil and political liberties have less software piracy rates than non-democratic countries. They explained their findings using the conflict perspective in criminology (Taylor et al. 1973; Greenberg, 1981; La Free, 2005 cited in Piquero and Piquero, 2006). According to the conflict approach "cross-national patterns of unequal development, economic inequality, and unemployment may account for growing crime differences between highly industrialized core nations and developing peripheral nations." According to Piquero and Piquero (2006), from the conflict viewpoint, the differences between the software piracy rate of developed and developing countries can be explained as follows; democratic countries are rich, and most of the copyrighted intellectual properties are produced in those countries. Because democratic countries benefit from intellectual property production, their copyright enforcement structure is strict, but states that have a low degree of democracy receive a lesser benefit from intellectual property production. This in turn creates a lack of motivation for copyright law enforcement and this issue also arouses critics regarding copyright regulation. Similarly, Oksanen and Valimaki (2008) stated: "Developing countries do not

have much internal reason to enforce copyright[s]. Their national cultural industries are weak and the trade balance is distorted towards the rich countries." Gopal and Sanders' (1998) research findings also supported the relationship between domestic software industry and software piracy by concluding that a domestic software industry has a motivation to support a country's antipiracy measures.

Individualism vs. Collectivism

There were several research studies about the effects of cultural factors (such as masculinity, power distance, uncertainty avoidance and individualism) on countries' software piracy rates. But only the individualism vs. collectivism factor was found to have a significant affect on software piracy rate (Depken and Simmons, 2004; Gopal and Sanders, 1998; Husted, 2000; Moores, 2003; Cohen et al., 1996; Swinyard et al., 1990; Yang and Sonmez, 2004; Ronkainen, 2001; Morron and Steel, 2000; Bagchi et al., 2006).

According to Bagchi et al. (2006), Moores (2008), Marron and Steel (2000), and Swinyard et al. (1990), a nation's social individualist or collectivist characteristics have a considerable effect on the software piracy rate. For example, individualist societies place importance on individual rights and benefits, contrary to collectivist societies that consider communal benefits to be more important than individual ones that can be sacrificed for the community's benefits. According to related studies, this phenomenon has an important effect on a country's copyright law enforcement structure. Because collectivist societies value the community benefit that can arise from pirated software usage more than individual copyright holders' benefits, this influences usage of pirated software.

Economic Wealth

Bagchi et al. (2006) and Moores (2008) suggested that a country's economic status has a considerable effect on the software piracy rate because individuals in low GNP countries cannot afford to purchase high priced software. Bagchi et al. (2006) found that an increase in GNP per capita results in a decrease in the software piracy rate. In other research (Cheng et al., 1997; Hill, 2007; Hsu and Shiue, 2008; Lau, 2003), high software prices were also found to be a leading factor in determining an individual's "willingness to pay" for copyrighted software and software piracy rates.

Benefits of Software Piracy

Besides BSA's annual software piracy reports, governments that do not have possession of a domestic software industry are also aware of the benefits that pirated software generates for their productivity and economy. With the availability of pirated software, more citizens can use the latest versions of software at a low price or without payment. According to Gopal and Sanders (1998), "IT capital stock (which includes hardware, data communications, software, and services) provides an impressive 70.6% return on investment." Thus, an awareness regarding the benefits of software piracy creates a dilemma for governmental agencies concerning the enforcement of copyright laws.

Proposed Solutions for the Problem - Individual

Software piracy is a different type of problem that requires diverse action from governments, educational institutions and software companies. According to Lau (2003), the issue of software piracy cannot be solved through only educational and legal actions

because the problem is not related to only these aspects. Therefore, software developers should take additional actions that are vital to this concern.

There are also dilemmas for governments and software producers in regard to taking serious action against software piracy. One concerns civil rights, in that current digital copyright regulations have been criticized for various reasons, namely that they promote reduction of civil rights, form a barrier against the development of civil society and restrict an individual's creative abilities. Another dilemma involves the benefits gained through piracy for both software producers and users. In other words, software piracy expands a network's size, recruits new customers and increases the product's market value in the user's mind. Further, software producers acknowledge that other software producers intentionally disregard pirated samples at the product's beginning term in an effort to evaluate its usability and expand the size of a user's network (Gupta et al., 2004).

Previous research regarding software piracy has offered solution strategies for both government and software producers. To clearly define these strategies, they are divided into two sections: Proposed Strategies for Governments and Suggestions for Software Producers.

Proposed Strategies for Governments

Legal Actions

Lau (2003) and Higgins et al. (2005) suggested that government agencies should enforce copyright laws in an effort to reveal the legal certainty of software piracy. Lau (2003) proposed that heavier penalties should be considered as a solution for software piracy since they would raise the cost of using pirated software. On the other hand,

according to Piquiro and Piquero (2006), legal regulations are not sufficient to end software piracy because the rates are so high in many countries that already include severe legislation. Higgins et al. (2005) emphasized that in addition to legal changes, investigation procedures should be developed, and prosecutors and law enforcement staff should be trained and properly funded in an effort to seriously enforce legislation.

Educational Action

According to Higgins et al. (2005), in addition to legal actions, governments should develop educational programs to inform students about the legal and ethical issues surrounding software piracy. Further, education should not be restricted to students but rather be directed to families as well, due to the strong effect that their behaviors have on the users' attitudes toward software piracy. In addition to educational programs, students should be informed through school computer usage with pop-ups or similar technical tools. According to Higgins et al. (2005), these actions would create a school climate against software piracy, which is important in initiating prevention strategies. Limayem et al. (2004) also stressed the importance of ethical education but added that prevention should be strongly supported by "clearly stating penalties and criminal liabilities."

Suggestions for Software Producers

Lowering Prices

"High software prices" have been identified as a leading factor related to software piracy (Cheng et al., 1997; Hill, 2007; Hsu and Shiue, 2008; Lau, 2003). Therefore, lowering prices should be considered a software piracy prevention tool (Hsu and Shiue, 2008; Hill, 2007). Lau (2003) further suggested that software companies should approach

piracy as a competitor. Simply stated, decreasing the high software costs may very well result in recruiting consumers who would otherwise use pirated products.

Tang and Farn (2005) approached the "high software prices" from the perspective of developing countries by suggesting that software prices should be regulated based on the country's per capita income. In other words, although $100 may be considered as a low price for individuals in Western countries, this amount is difficult to afford if it represents a user's monthly income.

Although Lau (2003) suggested lowering software prices, he also considered the issue from a software producer's perspective. For example, a low price strategy might decrease the product's quality and "might discourage software developers in their research and development."

Ethical Training

As demonstrated by numerous researchers (Christensen and Eining, 1991; Cronan and Al Rafee, 2008; Gupta et al., 2008; Higgins, 2005; Swinyard et al., 1990; Tan, 2002), ethical and moral factors play an important role in the prevention of pirated software usage.

Hill (2007), Lau (2003) and Hsu and Shiue (2008) suggested that a consumer's ethical education could serve as a prevention strategy for software producers. However, according to Hsu and Shiue (2008), the software piracy problem will continue to survive as long as users' intentions and demands to use pirated software remain on the market. In this context, software producers should also consider ethical training. According to Hill (2007) and Lau (2003), ethical training might also be a means of creating social consensus against software piracy.

Legal Training

Training consumers about the legal regulations against software piracy is another suggested solution offered to software producers (Gupta et al., 2004; Higgins et al., 2005; Hsu and Shiue, 2008; Lau, 2003;). According to Higgins et al. (2005), in addition to governmental regulations, software producers should establish educational programs to demonstrate to families and students "what software piracy is."

Hsu and Shieu (2008) emphasized the value of cooperation between software producers and governmental institutions in developing long-term educational consumer programs that stress the "importance and legitimacy" of using copyrighted software. Gupta et al. (2004) also defended the benefits of educational programs by suggesting that they should be provided for specific user groups, namely young males, who are most likely to use pirated software.

Market Strategies

Lau (2003) suggested that software companies should treat piracy as competition, and, by so doing, producers might perhaps provide "shareware" to break the cycle of pirated software usage. Another strategy includes the provision of discounted packages for specific users such as students and/or academia. Hsu and Shiue (2008) further proposed a long-term trial as a solution that might encourage users to buy the full software version and also suggested that higher standards of customer service should be extended to users.

According to Limayem et al. (2004), in addition to piracy prevention strategies, software producers should focus on informing users about the benefits of using

copyrighted software, for example, providing a reduced upgrade price or high standard customer support.

Hill (2007) proposed the following three strategies that copyright holders might use to solve the problems of software piracy:

- *Counter piracy by providing free samples.*
- *Offer something extra to consumers who purchase the legal good.*
- *Switch to a business model that is less vulnerable to piracy* (lowering software prices, providing high standard online service, upgrading and supporting low prices).

Alternative Dynamics as a Solution

Numerous studies have pointed out the benefits of legal precautions regarding software piracy (Higgins et al., 2005; Hill, 2007; Hsu and Shiue, 2008; Lau, 2003; Limayem et al., 2004; Peace et al., 2003; Tan, 2002). Although a regulatory approach does produce positive effects on solving the piracy problem for software producer countries, this method is not successfully implemented in non-domestic software industry countries, thus creating a dilemma for governments. As Oksanen and Valimaki (2008) reported, although ample legal tools are available, "developing countries do not have much internal reason to enforce copyright[s]. Their national cultural industries are weak and the trade balance [is] distorted towards the rich countries." With the availability of pirated software, more citizens can access the latest versions at either an affordable price or devoid of payment, and governments are aware that pirated software offers benefits to their national productivity and economy. Additionally, a "copyright" is considered a legal tool that is used by developed countries to create a monopoly over production and

distribution of intellectual property products (Gopal and Sanders, 1998; Piquero and Piquero, 2006).

Originally, copyright laws were created when intellectual property was embodied in a continual physical form. However, with the development of new technologies, communication devices and the Internet's wide range of usage, governments must reconsider the scope of a copyright. As such, copyright law enforcement has been criticized for becoming an obstruction to freedoms and personal development. In today's reality, freedom of speech as well as democracy have reached their most effective terms throughout history. Both the Internet and ICTs have the potential to enable individual creativity and produce new pathways for personal growth. Thus, one can positively state that modern technology is the most powerful tool for creating a digital culture and non-market production. Regulating Internet copyright laws could, perhaps, bring order to this sphere yet also result in a reduction of civil rights and place obstacles in the development of civil society and the creative abilities of individuals.

After establishing software for legal copyright protection, the following movements were assembled that offer a variety of critiques and alternative solutions.

Free Software Movement

The Free Software Movement (FSM) was initiated by Richard Stallman's GNU Project in 1983 followed by his founding of the Free Software Foundation (FSF) in 1985, which basically critiqued copyright software protection due to the user's restricted authorization. Under the "free software" term, this philosophy does not indicate free of charge but rather "freedom to share, study and modify" software. Stallman aimed to create a society wherein knowledge and experiences could be shared in an effort to

develop the best product. The GNU project, also known as the Linux operating system, is sponsored by FSF in addition to other important free software developments. Currently, the GNU/Linux operating system movement has more than 5,000 software packages available that enable most copyrighted activities to be created (www.fsf.org).

Liberty is the FSM movement's primary theme, as opposed to the software's purchase price. In other words, users can either distribute a copy of free software to their friends or neighbors or they can sell a copy without requiring permission. The major issue revolves around a user's liberty to run, copy, distribute, revise, and improve the software. As defined by FSF, the following four types of FSM freedom are provided in addition to commercial freedom for users who are allowed to sell free software with or without improvements (www.fsf.org):

- *The freedom to run the program, for any purpose,*
- *The freedom to study how the program works, and adapt it to your needs,*
- *The freedom to redistribute copies so you can help your neighbor,*
- *The freedom to improve the program, and release your improvements (and modified versions in general) to the public to benefit the entire community.*

Although FSM's slogan, "GNU is not UNIX," was created as a reaction to copyrighted softwares, "most free software licenses are based on copyright" that include various kinds of free software licenses. For example, software developers or corporations must register for one of these free software licenses (i.e., GNU General Public License) with an application submitted to FSF which, in turn, determines whether or not the software is free based on the freedoms that software developers provide to the users. According to the FSF, thousands of applications are received each year (www.fsf.org).

Open Source Movement

In 1998, the Open Source Movement (OSM) was initiated by Eric S. Raymond and Bruce Perens from the FSM society. Although OSM and FSM have cooperative projects, they are separate movements with different goals and philosophies. The basic difference between the movements is the theme. While FSM places ethical issues and freedom in the center and is principally a social movement, OSM, a "development methodology," takes benefits and collaboration into account and criticizes copyright protection due to software development restrictions (www.opensource.org, www.fsf.org).

The Open Source Initiative is not simply access to the source code but should also provide other user rights, including free redistribution/derivation/selling, non-discrimination based on any particular group, person or field and no restrictions that are distributed with the licensed software. The promise declared by OSM is "better quality, higher reliability, more flexibility, lower cost, and an end to predatory vendor lock-in." (www.opensource.org, www.fsf.org).

Free Culture and Creative Commons

Lawrence Lessig, a law professor, defined "free culture" as a term that depicts a society or culture by which creativity is shared freely, distributed quickly and reached easily in addition to being described as free speech, free markets, free trade, free enterprise, free will and free elections, but does not include free food (Benkler, 2006). In essence, free culture is not a means for abdicating property rights and does not make everything complimentary, but rather is similar to a cultural free market that is regulated with property rules that enable the easy spread of culture.

Free culture is closely related to the development of ICTs and the Internet, and further encourages the free distribution of creative works over the Internet. In addition, free culture aims to support creators and innovators by granting intellectual property rights; however, it sets up limitations with respect to property rights in an effort to grant creators and innovators as much freedom as possible. Free culture does not denote 'anarchy' or a culture 'without property', or as defined by Lessig (2004), 'a balance between anarchy and control'.

Lessig (2004) criticized the U.S. copyright system changes of the Copyright Act of 1979 which stated that any created work automatically receives full-term copyright protection even if the author chooses no protection. Previously, copyright regulations protected only those works that were registered and more importantly, only 5% of creative works were registered with the copyright office. Essentially, all previous requirements regarding copyright protection were removed with the Copyright Act of 1976, a situation that placed all creators into a deadlock since they could no longer create any work built by others without permission. Lessig recommended that the copyright term should be reduced and the Copyright Act's key feature should be changed thus ensuring that every Internet-created work does not automatically become copyrighted material. Lessig argued that copyright restrictions should work against someone who attempts to profit from financial gain rather than when the work is copied for one's own personal use.

Basically, in the context of "free culture," Lessig (2004) affirmed that although innovative technologies provide vast opportunities, many cannot be used due to current copyright restrictions. Accordingly, the right of copyright holders should not restrict

others from creating similar works. More especially, Lessig emphasized that financial and political power by corporations are used to maintain the status quo and foster commercial interests.

Creative Commons

Based on the free culture movement, Creative Commons (CC) was founded by Lawrence Lessig to offer creators and authors a balance between the "all rights reserved" style of absolute control and the "public domain" style of utilization. As an alternative to an "all rights reserved" model, CC suggested a "some rights reserved" model where, with the exception of a "sampling license," copyright holders could allow others to use their work without permission and without payment in noncommercial activities. Copyright laws now protect all creative works regardless of whether or not the author opts for protection. Thus, without permission, no one can legally take advantage of creative works beyond fair use. Considering the Internet and ICTs and their vast opportunities, the intent of the CC license is to provide to authors a standard legal medium that would make their works openly accessible, and to users whose objective is to produce works without violating rules in a shady cyber system (Seadle, 2005).

Under CC, licensing of creative works does not make material absolutely free but rather provides rights to public members only under certain conditions. There are presently six core licenses accessible on the Creative Commons website that permits creators to mix and match conditions from a list of options. These licenses are currently available in 46 different countries, and in other country jurisdictions, nine projects are still in progress and eight projects are impending. Creative Commons International is responsible for jurisdictions outside of the United States as well as volunteer teams in

each jurisdiction who are devoted to adapting CC to their country's jurisdiction. According to CC license adoption statistics, there are at least 40 to 60 million Internet CC-licensed items of which approximately two-thirds are licensed under a "non-commercial use only license" with the Spanish license being the most popular.

Creative Commons have a flexible structure that can be used in a variety of different mediums and can be easily modified as the cyber system and creator's needs rapidly change. One of the major theoretical grounds of the CC movement is to encourage user creativity by removing copyright impediments (Byfield, 2008; Kim, 2005; Seadle, 2005). Creative Commons licenses formulate creative works for public usage and provide a set of standards that allow authors to decide how their works are used through commercial or derivative studies. These options provide the following benefits for both authors and artists: authors and artists can publish their works more easily, their works can be reached more quickly, and they can be used under more flexible conditions as well (Garlick, 2005).

Upon review of the literature, it can be seen that there is a lack of empirical research about pirated software usage in Turkey with an application of theory. Routine Activities Theory (RAT) was proposed in 1979 and states that there are three components required in a situation for a crime to be committed: a motivated offender, a suitable target, and a lack of guardianship (Cohen and Felson, 1979). In the next part of this chapter definitions of these three main components of the theory will be provided and the RAT will be applied to the problem of pirated software usage.

Routine Activities Theory and Software Piracy

Lawrence Cohen and Marcus Felson proposed the RAT, which focused basically on criminal activity opportunities. Specifically, the theory took its roots from Hawley's (1950) human ecology study of communities. Using this theory, Cohen and Felson explained the occurrence of crime from the standpoint of criminal conditions as opposed to the criminal characteristics perspective (cited in Cohen and Felson, 1979).

Cohen and Felson (1979) held that changes in an individual's work, school or leisure routine activities affect crime rates. They explained the rapid increase in crime during the postwar period with the criminal conditions model, by hypothesizing that "the dispersion of activities away from households and families increases the opportunity for crime and thus generates high crime rates." Accordingly, crime is not an accidental activity, as Cohen and Felson intended to formalize the occurrence of crime with three major components related to the RAT theory.

From Cohen and Felson's (1979) standpoint, three major factors that affect criminal activities include suitable targets, motivated offenders and the absence of capable guardians. According to the routine activity approach, crime or the risk of crime increases when a motivated offender identifies or encounters a suitable target in the absence of a capable guardian. Cohen and Felson (1979) also noted that an absence of any one of the three major factors may be sufficient to prevent the occurrence of crime.

Routine Activities Theory (RAT) is considered to be a milestone in criminology because it was the first approach to distinguish between criminal inclinations and criminal events. Unlike previous criminological approaches that focused on either individual or group characteristics or motivation tools as key causations behind crime,

RAT considered social conditions, or suitable targets, motivated offenders and absence of capable guardians as key factors that could help to transform inclinations into actions (Clarke and Felson, 1993; Holsapple et al., 2008; Lilly et al., 2002).

Due to its conditional approach, RAT is also identified under the title of "opportunities and crime." Opportunity is considered to be a required condition for crime to occur, and the existence of opportunities and the degree of access explain the problem of crime (Lilly et al., 2002). With this approach, research has been conducted to analyze crime geographic which illustrate that crime occurs as a consequence of conditional factors (Arnold et al., 2005; Groff, 2007; Mustaine and Tewksbury, 1999; Willison, 2006).

Recently, researchers have regarded some of the conditions and opportunities created by the Internet as a motivation for users who have an inclination to commit crime (Brenner, 2001; Godoy, 2000; Grabosky, 2000; Sofaer and Goodman 2001). Regulatory difficulties, lack of adequate control, easy and remote access to victims, and financial benefits available through the Internet are among the conditional factors that have been pointed out to be influence the occurrence of crimes. In this context, the three basic factors of RAT−suitable targets, motivated offenders and the absence of capable guardians−have significant overlap with the conditional factors created by the Internet. Because RAT does not make any distinction between target features, they may be either human or inanimate objects. Therefore, from this point of view, software might be considered a target (Holsapple et al., 2008; Willison, 2006).

Suitable Targets

Cohen and Felson (1979) described the suitability target status in terms of four factors: Value, Inertia, Visibility, and Accessibility (VIVA). Following is a brief description of each factor.

Value

Value is a factor that can be described as goods the offender expects to gain from the target. In other words, the software's value can be considered in terms of its financial benefit, its use as prestige tool or its role in fulfilling a specific work need. Typically, software is expensive and thus using pirated software provides considerable profit for Internet users. According to Cheng et al. (1997), Hill (2007), and Lau (2003), software users frequently regard software prices as being very high, which has lead some researchers to conclude that users gain financial rewards from the use of pirated software (Conner and Rummelt, 1991; Gopal and Sanders, 1997; Peace et al., 2003; Tang and Farn, 2005).

Necessity to use software may also be considered value. For example, as Cheng et al. (1997) reported, the most important reason for purchasing software was its

requirement for school or work. It is also mentioned in the same study that using expensive software may represent a prestige tool from some users' points of view.

Inertia

Inertia is considered to be the target's size or weight, which affects the occurrence of crime in either a positive or negative way. Because fast transfer and large storage are characteristics of information communication technologies, high-speed Internet access has become readily available to the public at large, and external hard drives are becoming less and less expensive. With these opportunities available, Internet users are able to very simply download, copy and store material.

Visibility

A target's visibility may also affect its suitability. Hypothetically, a GPS receiver misplaced on an automobile's windshield or a person counting money in a crowded area may be considered visible targets. Peer-to-peer (P2P) networks or file sharing websites are typically used mediums for downloading pirated software and are both free for basic users and well recognized by Internet users. In today's world of modern technology, practically anyone who has access to a computer, an Internet connection and some amount of knowledge about the cyber system is capable of downloading software.

Accessibility

Target accessibility increases suitability for victimization. For example, copyrighted materials can be reached easily from either software piracy market or Internet (P2P file sharing mediums or file sharing Web sites) through a simple search. Internet forums are also used as another tool for illegal file sharing because Internet users can locate most of the software downloading links by making a basic search on those

forums. Limayem et al. (2004) found that easy access to software was a facilitating condition for software piracy. Similarly, findings from Cronan and Al Rafee's (2008) research revealed that 84.3% of the users were under the impression that software was extremely easy to pirate, and only 0.3% believed that pirating software was a difficult task.

Absence of Capable Guardian

A capable guardian is defined as a person or a tool that may hinder or stop a criminal act (Boetig, 2006; Sasse, 2006). According to Felson (1994), a guardian is not only a formal person who has the responsibility or role of protecter but can also be parents, friends or a tool that may deter an offender from committing a crime. Legislation and law enforcement as well as ethics and society might also be considered as a guardian tool for software piracy.

Legislation and Law Enforcement

Technological tools are becoming less expensive and training in information technology is practically complimentary over the Internet. In addition, the Internet and information technologies are globally available, generally speedy and serve as good means of information copying, fast transfer, large storage, and absolute replication. Because these technologies are also generally inexpensive and easy to use, they can be extremely secure for cyber offenders. Due to rapid technological innovations, social structures are changing faster than legal structures, which creates a legal loophole in the cyber medium. In addition, because of the Internet's varied characteristics, the cyber system cannot be regulated through common copyright legislation. Thus, cyber offenders are using this opportunity to their advantage (Godoy, 2000).

Because cyber problems are typically transnational, they frequently require large-scale assistance among states. Thus, current problems have appeared with respect to inadequate international cooperation in that necessary information to combat cyber crime is not typically shared in a timely manner between organizations and states. Therefore, investigations have been slow and difficult to coordinate. In addition, law enforcement officials cannot perform cyber investigations effectively unless they are equipped with the necessary legal tools that will cover well-defined cybercrime offenses and procedural rules regulating evidence gathering and investigation. Due to the transnational characteristics of the cyber system, offenders can take advantage of gaps in current legislations to evade detention or prosecution (Brenner, 2001; Sofaer and Goodman 2001).

Effects of Law Enforcement on Software Piracy Rates

According to Becker's (1968) economy theory effective legislation and law enforcement structure increase the cost of crime and resulted in a decrease in crime rates (cited in Andre's, 2004). Findings in Holm's (2003), Andre's (2004) and Peace et al.'s (2003) studies supported Becker's (1968) theory on the software piracy issue. Holm (2003) conducted an analysis of 75 countries' software piracy and law enforcement effectiveness data, and found a significant negative correlation between these variables. Andre's (2004) reached the same conclusion in his study. Peace et al. (2003) found a negative correlation between seriousness and certainty of legislation and law enforcement structures and software piracy rate. Moores' (2008) research results also supported this theory. Moores (2008), in his study, analyzed the correlation between software piracy rate and cultural factors and found a negative correlation between "uncertainty

avoidance" and software piracy rate. He explained the issue as following: "Much of the legislation aimed at protecting software under copyright and intellectual property rights was adopted in the mid- and late-1990s, a time that saw sharp declines in software piracy in most countries. ……it seems reasonable to suggest that legislation, and the publicity surrounding it, may have persuaded people in high "uncertainty avoidance index" countries to reduce their level of software piracy."

According to Higgins et al. (2005) and Peace et al. (2003), "certainty about the security measures" has a negative effect on software piracy rates, and clearly defined copyright measures and enforcement have an important effect on users' attitudes toward piracy. Hsu and Shiue (2008), Hill (2007), Limayem et al. (2004), Peace et al., (2003) and Tan (2005) all found that the lack of detention risk affected software piracy rates. According to these researchers, one of the main reasons behind software piracy includes onsumers' idea about a lack of detention risk for software piracy. Hsu and Shiue (2008) further posited that one of the reasons behind the "lack of risk of detention" idea was the rarity of an individual being prosecuted for using a pirated product. Although penalization of organizations or firms stemming from pirated software usage might occasionally be exposed by the media, penalization of an individual for software piracy is an unusual occurrence.

Another issue regarding the legal guardian is public awareness relating to current copyright laws. According to Hsu and Shiue (2008) and Lau (2003), public awareness is one of the central factors that affect software piracy rates. According to Lau (2003), licensing agreements during the software installation process are not being employed in an effective way, which is one the reasons behind a users' lack of knowledge concerning

current legislation. Simply stated, most users do not usually pay enough attention to read long and concealed text during the installation process.

Legislation and Law Enforcement in Turkey

Turkey also has legal protection mechanisms for computer software. According to the Turkish National Police (TNP) Security Department's annual reports as well as personal interviews, there were 17,148 operations performed against Intellectual Property Rights (IPR) piracy between 2004 and 2008; however, most of these operations were carried out in response to illegally made hard copies of copyrighted materials and only a small portion were in response to online software piracy. The other important point is that all of these operations targeted vendors or companies but not individual users. Individual pirated software users are not the primary issue for the law enforcement agencies in Turkey. If we consider how widely piracy occurs throughout the mentioned Internet channels, this issue creates a legal guardian gap for software piracy in Turkey.

The basic reason behind the lack of online operations against software piracy in Turkey is legislation and its law enforcement structure. According to Turkish Copyright law, a complaint is required from copyright owners to take any action against any piracy issues, including software piracy. According to FSEK article 81, all copyrighted products require tax labels. Any product that doesn't have a tax label can be seized by law enforcement directly. The legislation that authorized law enforcement for the direct operations in response to illegal copies of any pirated material was not designed to protect copyright holders' rights, but to protect government's tax-related rights. Therefore there is indirect protection for pirated hard copies of copyrighted material in Turkey. At this point, it can be easily understood that there is an important gap in Turkish copyright

law concerning online piracy. Because there is no online tax label application in Turkey, there is therefore no online protection from online piracy from Turkish law enforcement. According to the current legislation structure, a complaint is required from copyright owners to take any action against online software piracy issues. Therefore, Turkish law enforcement agencies are not responsible for identifying and/or investigating online software piracy issues. As such, it is the responsibility of copyright holders to conduct initial research and explorations and to report cases to law enforcement agencies. Although this might be accomplished by large software companies, most small companies or individual copyright owners cannot cope with this responsibility. Therefore, complaints applicable to online software piracy are typically made by Microsoft located in Ankara and Istanbul.

The other important factor that has an effect on the lack of operation against online piracy is Turkey's law enforcement structure. Intellectual Property Rights (IPR) offices were established in eight Turkish cities where intense infringements occur. Although complete operations and investigations have been conducted against IPR infringement, none of the offices, with the exception of Istanbul, are equipped with trained staff or technological tools to adequately investigate online piracy issues. In the event of any complaint regarding online software piracy, the issue is directed to and investigated by the cybercrime units. This creates a barrier for effective enforcement of copyright laws from two perspectives. Firstly it consumes extra time due to the procedural issues between departments and secondly, copyright-related issues should be investigated and analyzed by copyright experts.

Lack of effective law enforcement structure against online software piracy is also due to countries which do not have access to a domestic software industry such as Turkey. The copyright enforcement is therefore much more beneficial for software-producing countries than for those which do not have an industry. Thus, according to Oksanen and Valimaki (2008), in a country that lacks a software industry, there is no internal reason to enforce copyright laws. In addition, information technologies are well-known to have a positive impact on a country's productivity and development. Gopal and Sanders (1998) reported that "IT capital stock (includes hardware, data communications, software, and services) provides an impressive 70.6% return on investment." With the availability of pirated software, more citizens can access the latest software versions with low cost or without any payment.

Ethics

Ethics were considered a guardian tool for software piracy by numerous researchers (Christensen and Eining, 1991; Cronan and Al Rafee, 2008; Gupta et al., 2004; Higgins, 2005; Swinyard et al., 1990; Tan, 2005). Cronan and Al Rafee (2008), Gupta et al. (2004) and Higgins (2005) found that moral obligation and ethical factors had a considerable effect on users' intention to pirate software. Cronan and Al Rafee (2008) also determined that feeling guilty often prevents users from pirating software, and according to Gupta et al. (2004), users who have fewer ethical considerations are more likely to partake in pirating software.

Society

Society, more specifically family and friends, has a considerable effect on Internet users' behavior relating to software piracy. For example, Hsu and Shiue (2008) found

that an individual's degree of "willingness to pay" for a copyrighted software is relatively higher when others' ideas regarding software piracy are negative. Higgins et al. (2005) also found that "family disapproval had a significant negative link with software piracy." Accordingly, peer association also plays an important role on software piracy since it creates an environment that shapes one's individual behaviors (Higgins, 2005).

Higgins et al. (2005), Tan (2003) and Lau (2003) all concurred that social consensus in relation to software piracy has either a significant negative or positive effect on software piracy rates. Finally, Lau (2003) suggested that users do not believe that piracy is wrong because "everybody is doing it."

The Motivated Offender

Researchers dealing with software piracy have attempted to identify the reasons behind the problem and seek to define the motives of those who commit software piracy. Some have found "the cost of authorized software" as a leading motivation (Bhal and Leekha, 2008; Cheng et al., 1997; Hill, 2007; Hsu and Shiue, 2008; Lau, 2003; Moore, 2008). According to Hsu and Shiue's (2008) findings, more than 80% of users considered "software price" as of one of the factors that affected their decision in purchasing software. Similarly, Cheng et al.'s (1997) study revealed that responses of "software too expensive" or "can't afford the software" were two complaints regarding software that led to using a pirated product being perceived as more preferable. According to Hill (2007), users consider high software prices to be an injustice and thus by using pirated software, equity can be restored as a social exchange and "high software prices" can be used to justify their activities. "Ease of pirating software" was also considered a motivation for use of pirated software by Peace (1997), who revealed that

when given the chance to pirate software involving personal benefits, a majority of users would participate in the opportunity. Necessity of specific software may also be considered as a motivation tool as Cheng et al. (1997) suggested that one of the leading reasons for usage of pirated software was declared as “required for school work or workplace.”

CHAPTER III

Methodology and Research Questions

This project aims to explore the factors that contribute to pirated software usage among Turkish Internet users in order to define the dynamics behind the software piracy problem in light of the Routine Activity approach. This chapter explains the data collection methods, research questions and hypotheses, study site, population and sampling, translation of the instruments into Turkish language, data collection strategies, dependant and independent variables, statistical data analysis procedures, and instruments used in this research project.

Mixed Method

The concurrent triangulation structure, a mixed method approach, was used in this study. Most researchers believe that using only one type of method for data collection is not enough for evaluation of the situation. Mixed method includes qualitative and quantitative methods to produce better results, reduce biases, enhance validity and provide a better understanding of the subject. With this structure, the mixed method combines the strength of qualitative and quantitative methods, and provides a wider view of the subject. Using mixed method also has some disadvantages: it takes extra time to gather more than one type of data and to analyze additional data, and it requires specialization in both research strategies (Creswell, 2003).

The concurrent triangulation approach is perhaps the most used approach among other mixed method structures. In this type of approach both qualitative and quantitative data are collected at the same time and compared to find the differences or similarities (Creswell, 2003).

Data Collection

In this study, the data collection methods included an online survey questionnaire and online interview forms.

Survey

As a quantitative data collection method, the survey questionnaire is used in this study. The following features of the survey technique were the main reasons for this selection (Creswell, 2003; Maxfield and Babbie, 2008);

- The survey method is one of the most common data collecting methods,
- It is also one of the best techniques to analyze the correlation between variables in the literature,
- The survey tool is best for gathering information from individual subjects,
- It is the most frequently used technique to collect data from a sample and make inferences about the larger population,
- It is the most frequently used technique to collect data about social subjects in numeric value.

The survey questionnaires aimed to measure the targeted Turkish Internet users' attitudes toward pirated software usage, perceptions about the availability and accessibility of pirated software, motivations behind the usage of pirated software, and perceptions about social-legal guardians against pirated software usage. For this research design, the responses to survey questions are ordered on a Likert scale, varying from (1) low to (5) high. In addition to the original questions, additional demographic questions were attached to the research instruments. This allowed examination of the impact of these factors on Turkish Internet users' attitudes according to demographic similarities

and differences. Since this study's target population is Turkish Internet users, the survey was done via the Internet and www.surveymonkey.com was used to administer the questionnaire. The subjects were reached via emails sent to email lists and public announcements (Creswell, 2003; Maxfield and Babbie, 2008).

Population

Turkish Internet users were taken as a study site in this project. According to the Turkish Statistics Department 2009 ICT Usage Survey on Households and Individuals, 35.8% of the Turkish population aged 15-74, approximately 18, 879, 272 people, have an Internet connection. According to the same report, 63.6 % of this population is male and 36.4 % is female. (www.tuik.gov.tr).

The target population for this project was the following Turkish public email list members:

No	Email List Name	Contact Email	Members
1	AAA Lisesi Mezunlari	aaalist@yahoogroups.com	1145
2	Academy of Information	AkademIT@yahoogroups.com	5501
3	Aktuel	aktuel@yahoogroups.com	1635
4	Alezya	alezya@yahoogroups.com	1385
5	Ankara Universitesi	ankarauniversitesi@yahoogroups.com	1969
6	Avrupa Birliği	avrupa-birligi@yahoogroups.com	1692
7	BaSKeNT	baskent@yahoogroups.com	2984
8	BDL Mezunlari	bdl-mezun@yahoogroups.com	955
9	Benim Turkiyem	benimturkiyem@yahoogroups.com	10201
10	Bizler Genciz	bizlergenciz@yahoogroups.com	1648
11	Canim Grubum	canimgrubum@yahoogroups.com	106139
12	Catlak	catlak@yahoogroups.com	1288

No	Email List Name	Contact Email	Members
13	Cay-Simit	Cay-simit@yahoogroups.com	1768
14	Dokuz Eylül Üniversitesi	DokuzEylulUniversitesi@yahoogroups.com	1920
15	E_Turkey	E_Turkey@yahoogroups.com	3744
16	Ege Universitesi	egeuniversitesi@yahoogroups.com	1221
17	Ekoanaliz	ekoanaliz@yahoogroups.com	4590
18	Emailimvar	emailimvar@yahoogroups.com	3753
19	Funky-Turkey	Funky-Turkey@yahoogroups.com	14817
20	Funlimited_2002	*funlimited_2002@yahoogroups.com*	16881
21	Gizlibahce	gizlibahce@yahoogroups.com	2158
22	Globalce	globalce@yahoogroups.com	6188
23	Guzel Grubum	guzelgrubum@yahoogroups.com	31480
24	Haberin Var Mi?	haberinvarmi@yahoogroups.com	741
25	Haber Ver	haberver@yahoogroups.com	16185
26	Hersey-Free	Hersey-free@yahoogroups.com	900
27	Hersey Konusulacaksa	Hersey-konusulacaksa@yahoogroups.com	5393
28	Hersey-Serbest	Hersey-serbest@yahoogroups.com	49704
29	Kapsam Group	Kapsamgroup@yahoogroups.com	642
30	Kirmizi Biber	kirmizibiber@yahoogroups.com	4728
31	Liberal Turkiye	Liberal-Turkiye@yahoogroups.com	681
32	Mail Lovers	Mail_lovers@yahoogroups.com	3923
33	Matrak	matrak@yahoogroups.com	3786
34	Mutlu	mutlu@yahoogroups.com	26135
35	Netbul	netbul@yahoogroups.com	29122
36	Oha Filan Oldum	ohafilanoldum@yahoogroups.com	13564
35	Orange People	Orange_people@yahoogroups.com	24464
36	PoSTaM	postam@yahoogroups.com	3984
37	Sozler	sozler@yahoogroups.com	2367
38	Su Samuru	Su_samuru@yahoogroups.com	3105

No	Email List Name	Contact Email	Members
39	Tech-Strategy	Tech-Strategy@yahoogroups.com	2446
40	Turk Universiteleri	turk_universiteleri@yahoogroups.com	5894
41	TurkBT	TurkBT@yahoogroups.com	861
42	Turkeli Postasi	turkelipostasi@yahoogroups.com	1948
43	Turkish Jokes	Turkish_jokes_fikralar@yahoogroups.com	3149
44	Turkiye Haber	Turkiyehaber@yahoogroups.com	6485
45	Yuksek Turkiye Ideali	YuksekTurkiyeIdeali@yahoogroups.com	3686

Sample Size

To determine the sample size to administer the survey questionnaires, "survey sample calculator" tools on websites such as "www.raosoft.com/samplesize.html" and "www.surveysystem.com/sscalc.htm" were used. The larger the sample, the more accurately the results reflect the population characteristics. When the choices were entered in the calculator, such as Confidence Level = 95%, Confidence Interval = 5, Population = 18, 979, 272; the sample size was calculated as 384-385. If the hypothesis test was conducted at the 5% significance level, the confidence level will be 95%. In most social studies, a 95% confidence level is regarded as sufficient for research. There were 900 participants in this study, 595 of whom fully completed the survey. As the sample size calculator had found the ideal sample size as 385 participants for this project, therefore, it appears that the sample size requirement was met.

Sampling Procedure

Email list names were gathered through online searches on the groups.yahoo.com website. During these searches 45 email lists were accessed. Sampling was done

randomly by sending email invitations to the listed email groups. No individual emails were ever sent to the email list members.

Survey Instruments to Collect Data

The survey questions were separated into five sections, which were structured as follows:

The first section of the questionnaire included demographic questions about participants, including gender, age, and education.

The second section of the survey included four close-ended questions concerning the attitudes of Internet users toward the usage of pirated software, which were developed by Cronan and Al-Rafee (2008).

The third section of the survey included four close-ended questions concerning the availability and accessibility of pirated software, also developed by Cronan and Al-Rafee (2008).

The fourth section of the survey included ten close-ended questions concerning the motivations behind pirated software usage, which were developed by Rahim et al. (2001).

The fifth section of the survey include seven-close ended questions concerning the perceptions of Internet users about social guardians, and four close-ended questions concerning the perceptions of Internet users about legal guardians, all of which were developed by Hsu and Shiue (2008).

Table 1 Research Instruments

Variable	**Description**
Attitude	4 items
Accessibility	4 items
Motivation	10 items
Social Guardians	7 items
Legal Guardians	4 items

Reliability of the Survey Components

The survey components were gathered from three previous studies: Cronan and Al-Rafee (2008), Rahim et al. (2001), and Hsu and Shiue (2008). All these studies used Cronbach's Alpha as a measure of reliability. An alpha value of 0.7 or above was used as an acceptable value for reliable measures in all studies (Field, 2008). For the second and third sections of the survey, the questions of which were developed by Cronan and Al-Rafee (2008), Cronbach's Alpha value was found to be more than 0.9 (0.908 for the second section and 0.943 for the third). For the fourth section of the survey, the questions of which were developed by Rahim et al. (2001), Cronbach's Alpha value was found to be .886, and for the fifth section of the survey, the questions of which were developed by Hsu and Shiue (2008), Cronbach's alpha value was found to be 0.7 and above for both scales. Therefore, all the scales gathered from other studies indicate acceptable reliability.

Translation of the Research Instruments into Turkish

The following method was used for the translations of the questionnaires from English into Turkish:

- First, the questionnaires were translated from English into Turkish by the primary researcher of this project.
- Second, this translation was reviewed by four academicians proficient in speaking and writing in English and Turkish. Based on the suggestions from reviewers some changes were made on the translated survey.
- Third, the translated survey was sent to two English-Turkish translators for final corrections.
- Finally, a Turkish linguist checked the translated document for the clarity of the questions for the target population.

Test/Re-test Evaluation of the Research Instruments

To determine the reliability of the research instruments, the test/re-test method was used (Field, 2008; Agresti and Finlay, 2006). The purpose was to create functional and linguistic uniformity, as well as reliability analysis of the instruments from a Turkish point of view. For this reason, the same instruments were administered to the same persons on two different occasions. For a research tool to be reliable, it should give the same or very similar results for the same subjects under identical situations at two different points in time.

First, the translated and revised survey instruments were tested on a sample of 10 Turkish Internet users. Second, three weeks later, the same instruments were re-tested on the same participants to find out whether the responses to the same questionnaire would produce similar results. The results of the test and re-test surveys were compared by calculating the correlation coefficient scores between the two sets of data. This reliability

technique uses a scale from .00 to 1.00, where a value close to 1.00 means that the questionnaire has perfect reliability.

The reliability coefficient between the test/re-test administrations for the survey was 0.973, and was significant at the 0.05 level (2-tailed). As a result, the test/re-test data provided sufficient evidence to conclude that the survey instruments were perfectly reliable for use in this research project.

Data Collection Strategies

An electronic version of the translated and revised research questionnaires was sent to the email list members through e-mail as a hyperlink to the survey website, which includes brief information about the researcher, survey subject and requirements for participation (living in Turkey, and being over 16 years old). The computer generated automatic e-mail messages were not used to invite the subjects; instead all the invitations were sent directly to the email list contact email to increase the participation rate.

Two weeks after the initial invitation e-mails were sent, a reminder e-mail was sent to each of the targeted email groups, and this continued every two weeks on Mondays. The purpose of this message was to invite the group members who had not yet participated, to complete the survey. Four waves of e-mails were sent to the targeted groups. The website was open for participants' access for two month from the date the first invitation e-mails were sent.

An Informed Consent text was provided on the first page of the survey. All participants were informed about the content of the research, why the study was being conducted, how it was being conducted, and why participation was important. This document also explained that participation in the survey was completely voluntary and

anonymous. The study was anonymous in that no names, addresses, or any other identifying information were requested or stored. The consent form also mentioned that no information entered on the questionnaire would in any way influence participants' lives.

The Likert scale (5-point) was used to indicate respondents' level of satisfaction and agreement. It allowed for quicker responses and easy coding of the questions. The survey used a one-to-five point Likert scale, where 1= Strongly Disagree, 2 = Disagree, 3 = Indifferent, 4 =Agree, and 5 = Strongly Agree.

Field Research

Field research is another way of gathering data in social science research. This type of research uses two types of methods to gather data: observation and interviews questions. Some of the leading advantages of field research are: it provides a wider perspective on the subject, as well as flexibility in the field to the researcher (Maxfield and Babbie, 2008).

Due to the target populations' characteristics, online field research was conducted in this study via www.surveymonkey.com. The interview form was provided after the completion of the survey questionnaire. Qualitative data, gathered from online interview forms, was used as a validation tool for the quantitative data gathered from survey questionnaire (Creswell, 2009).

The questions administered in the field interviews include two categories of questions as follows:

- First section: personal demographics (gender, age, education, and monthly income)

- Second section: Five open ended questions on the following issues:

    1. Availability and accessibility of software,
    2. Motives behind the usage of pirated software,
    3. Perceptions about social guardians, and
    4. Perceptions about legal guardians.

Ethical Issues

In this research, the following ethical considerations were implemented (Creswell, 2003; Maxfield and Babbie, 2008):

- Participation in the research was on a voluntary basis,
- A consent form was provided to every participant,
- Any subjects who wanted to withdraw was free to do so,
- Participants were assured that all information would only be used for the research purposes,
- No personal identification information was collected.

Variables

Dependent Variable

Pirated Software Usage Attitude

Independent Variables

1. Availability and accessibility degree of software
2. Motivation degree

3. Perception of Guardian
    - Social Guardians
    - Legal Guardians

Research Questions and Hypothesis

Research Questions

Main Question: What is the relationship between Turkish Internet users' pirated software usage attitude and their perceptions of accessibility of pirated software, their perceptions of social and legal guardianship and their degree of motivation to use pirated software? This research question analyzes if there is a measurable relationship between pirated software usage and availability of software, lack of capable guardians, and users' motivation.

Subsidiary Research Questions:

1. Is there any relationship between Turkish Internet users' pirated software usage attitude and their perception about the accessibility to pirated software?
2. Is there any relationship between Turkish Internet users' pirated software usage attitude and their motivation degree to use pirated software?
3. Is there any relationship between Turkish Internet users' pirated software usage attitude and their perceptions about social guardians?
4. Is there any relationship between Turkish Internet users' pirated software usage attitude and their perceptions about legal guardians?
5. What is the impact of Turkish Internet users' perceptions of the availability of pirated software on their pirated software usage attitude?

6. What is the impact of Turkish Internet users' motivation degree on their pirated software usage attitude?
7. What is the impact of Turkish Internet users' perceptions of social guardians on their pirated software usage attitude?
8. What is the impact of Turkish Internet users' perceptions of the legal guardian on their pirated software usage attitude?
9. Is there any relationship between the Attitude, Accessibility, Motivation, Social Guardian and Legal Guardian factors and gender?

Hypothesis

The following research hypotheses are tested in this research project:

Hypothesis 1: Turkish Internet users' accessibility degree to pirated software is positively related to their pirated software usage attitude.

Hypothesis 2: Turkish Internet users' motivation degree is positively related to their pirated software usage attitude.

Hypothesis 3: Turkish Internet users' positive perceptions of social guardian are negatively related to their pirated software usage attitude.

Hypothesis 4: Turkish Internet users' positive perceptions of legal guardian are negatively related to their pirated software usage attitude.

Data Analysis

Quantitative Data Analysis Procedure

To analyze the quantitative data gathered from the survey, this study used the Statistical Program for Social Sciences (SPSS), a widely used, reliable program. To determine the level of internal consistency and reliability of each of the instruments

Cronbach's Alphas were computed. Cronbach's Alpha is one of the most widely used reliability coefficient scales in social research (Field, 2008; Agresti and Finlay, 2006). Descriptive measures were calculated for all variables to describe key demographic characteristics of the Turkish Internet users participating in this research project. Independent Samples T-Tests and one way ANOVA tests were performed to analyze the effects of the demographic variables (gender, age and education) on Attitude, Accessibility, Motivation, Social Guardian and Legal Guardian Factors. The Pearson correlation coefficient was used to find the strength of the relationship between Turkish Internet users' pirated software usage attitude and their perceptions of availability of pirated software, their perceptions of social and legal guardians and their degree of motivation to use pirated software.

Regression analysis is an effective tool to determine the causal relationship between dependent and independent variables (Field, 2008; Agresti and Finlay, 2006). Regression analysis is considered the appropriate technique for this study to describe the contribution of factors to pirated software usage attitude, and to assess the strength of the relationship between variables. A stepwise multiple regression analysis method was used for examining the relationship between variables and for making predictions of the effect of three variables on the pirated software usage attitude of Turkish Internet users: their perceptions of availability of pirated software, their perceptions of social and legal guardians, and their degree of motivation. In this process, the regression equation was determined.

Qualitative data analysis

The following steps were followed during the qualitative data analysis process (Creswell, 2009).

1. Interview responses were sorted based on the question topics to prepare the data for analysis.
2. All the responses were read to obtain general information about participants' ideas, and the tone and depth of those ideas.
3. A detailed analysis was conducted, in which general topics were listed and responses were categorized according to these topics.
4. Responses were transferred into a qualitative narrative.
5. As a final step, an interpretation was made about the qualitative data.

CHAPTER IV

Quantitative Analysis Results and Findings

Introduction

This chapter includes results and findings of the statistical analysis of the survey data, which was conducted using the Statistical Package for the Social Sciences (SPSS) version 16. The following steps were taken during the statistical analysis process:

- First, to determine the reliability of the instruments, the test/re-test method was used, and the Pearson correlation coefficients were calculated between the two sets of test results. Moreover, the Cronbach's Alpha coefficients were computed after the administration of the survey to determine the internal consistency reliability of the research instruments.
- Second, key demographic characteristics of the Turkish Internet users' participating in this research project were described using descriptive and frequency tables.
- Third, means, standard deviations, and frequency distributions were determined for each item of the questionnaires. This same procedure was used to rank the factors of the questionnaire.
- Fourth, Independent Sample T-Tests and one-way ANOVA tests were performed to analyze the effects of the demographic variables (gender, age and education) on the Attitude, Accessibility, Motivation, Social Guardian and Legal Guardian Factors.
- Fifth, Pearson correlations were computed to reveal any relationships within the factors and between the factors of the questionnaire.

- Sixth, Stepwise Multiple Regression was performed to reveal the prediction effect of the study's four factors on the pirated software usage attitude of Turkish Internet users.
- Lastly, the research questions and hypothesis of this research project were tested.

Reliability Tests of the Research Instruments

Reliability analysis indicates whether or not the questions in a single research instrument are related to each other and have a considerable level of internal consistency. This research used Cronbach's Alpha coefficient, which is one of the most commonly used measures of reliability (Field, 2008; Agresti and Finlay, 2006). After the data collection process, Cronbach's Alpha coefficient was calculated to determine the internal consistency and reliability of each survey instrument separately. The value of Cronbach's Alpha can range from 0.00 to 1.00, where a value of 1.00 means that the questionnaire has perfect internal consistency and reliability. The generally accepted value between 0.6 and 0.7 for Alpha reflects an appropriate level of reliability, but during the interpretation of the alpha value, the number of items on the scale should also be considered. This is because when the number of items in the scale increases, the alpha value also increases.

The Cronbach's Alpha of the results for the entire data are reported in Table 2.

Table 2 Cronbach's Alpha Coefficients of the Survey Factors

NO	Survey Factors	N. of Item	Cronbach's Alpha
1	Pirated Software Usage Attitude	4	0.883
2	Perception of Accessibility	4	0.916
3	Motivation	10	0.866
4	Social Guardian	7	0.863
5	Legal Guardian	4	0.954

As seen in Table 3, the Cronbach's Alphas for internal consistency and reliability of the 5 factors of the survey were strong, ranging from .5431 for Motivation to .9138 for Legal Guardian. This means that the questions within each section of the survey or for each factor were related to each other. In other words, the Cronbach's Alpha coefficients confirmed that there was high internal consistency of the items for the survey factors. Detailed reliability analysis for each factor is provided below. According to Field (2008), Corrected Item-Total Correlation scores indicate the correlation between each item and the total score from the questionnaire. A score that is more than 0.3 is considered as an acceptable value. A score less than 0.3 indicates that a particular item does not have a very strong correlation with the scale overall. The Corrected Item-Total Correlation scores for all items are provided below. All the items' scores are over 0.3, with the lowest computed item score 0.476.

Table 3 Cronbach's Alpha Coefficient of the Attitude Scale Items

		N	%
Cases	Valid	595	100.0
	Excluded	0	.0
	Total	595	100.0

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item 1	.820	.829
Item 2	.869	.809
Item 3	.701	.878
Item 4	.638	.894

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.886	.889	4

Table 4 Cronbach's Alpha Coefficient of the Accessibility Scale Items

		N	%
Cases	Valid	595	100.0
	Excluded	0	.0
	Total	595	100.0

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.918	.918	4

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item 1	.765	.909
Item 2	.861	.877
Item 3	.832	.887
Item 4	.794	.900

Table 5 Cronbach's Alpha Coefficient of the Motivation Scale Items

		N	%
Cases	Valid	595	100.0
	Excluded	0	.0
	Total	595	100.0

	Cronbach's Alpha Based on Standardized Items	N of Items
	.955	10

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
tem 1	.502	.905
Item 2	.704	.893
Item 3	.588	.901
Item 4	.791	.888
Item 5	.786	.888
Item 6	.658	.896
Item 7	.715	.893
Item 8	.696	.894
Item 9	.574	.902
Item 10	.618	.899

Table 6 Cronbach's Alpha Coefficient of the Social Guardian Scale Items

		N	%
Cases	Valid	595	100.0
	Excluded	0	.0
	Total	595	100.0

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.863	.865	7

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item 1	.563	.853
Item 2	.473	.865
Item 3	.770	.824
Item 4	.777	.823
Item 5	.686	.837
Item 6	.556	.855
Item 7	.632	.843

Table 7 Cronbach's Alpha Coefficient of the Legal Guardian Scale Items

		N	%
Cases	Valid	595	100.0
	Excluded	0	.0
	Total	595	100.0

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.905	.906	4

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item 1	.875	.944
Item 2	.906	.935
Item 3	.872	.946
Item 4	.905	.935

Based on above computations and explanations, the survey questionnaire scales achieved a high level of internal consistency and reliability for the entire data set. So, it can be inferred that the consistency on the correlations of questions was satisfactory.

Univariate Analysis Results

Frequencies of Demographic Variables

There were 900 participants in this project, 595 of whom fully completed the survey. The sample size calculator found an ideal sample size of 388 for this project. Therefore, the sample size requirement was met. Key demographic characteristics of the Turkish Internet users participating in this research are presented below using descriptive, cross tabular, and frequency tables.

Table 8 Distribution of Participants by Gender

		Frequency	Percent	Cumulative Percent
Valid	**Male**	474	79.7	79.7
	Female	121	20.3	100.0
	Total	595	100.0	

According to the Turkish Statistics Department 2009 ICT Usage Survey on Households and Individuals, 63.6 % of the Turkish Internet user population is male and 36.4 % is female. Out of 595 participants in this study, 474 (or 79.7 %) were male and 121 (20.3 %) were female. The frequency distribution analysis of gender groups indicates that the majority of the sample was male, which is also true for the population of Turkish Internet users. However the percentage of female participants in the sample is lower than the that of female Turkish Internet users in the population.

According to the independent T-test results (see Tables 16 and 17):

- Male Turkish Internet users have a more favorable attitude toward pirated software usage than do females
- Male Turkish Internet users' perception of accessibility to pirated software is higher than that of females,
- Male Turkish Internet users' motivation to use pirated software is higher than that of females, and
- There is no significant differcence between social and legal guardianship perception scores between males and females.

The difference between the mean scores of males and females is small for all three factors (1.98 for Attitude, 1.87 for Accessibility and 2.26 for Motivation) and no significant differences exist for social and legal guardian factors. For this reason, it was expected that the proportional differences between gender groups would have only a small effect on the statistical findings of this study.

Table 9 Distribution of Participants by Age

		Frequency	Percent	Cumulative Percent
Valid	**15-24**	114	19.2	19.2
	25-34	287	48.2	67.4
	35-44	130	21.8	89.2
	45-54	50	8.4	97.6
	55 and up	14	2.4	100
	Total	595	100.0	

According to the Turkish Statistics Department 2009 ICT Usage Survey on Households and Individuals, the age distribution of the population of Turkish Internet users is as follows: 41.7 % of the population is aged 15-24, 31.4 % is aged 25-34, 17.2 %

is aged 35-44, 8.3 % is aged 45-54, and 1.4 % is 55 and up. In this study, the sample covers Turkish Internet users from different age groups. 114 participants, corresponding to 19.2 % of the sample, were aged 15-24, 287 participants, corresponding to 48.2 % of the sample, were aged 25-34, 130 participants, corresponding to 21.8 % of the sample, were aged 35-44, 50 participants, corresponding to 8.4 % of the sample, were aged 45-54, and 14 participants, corresponding to 2.4 % of the sample, were aged 55 and up.

Based on the frequency distribution of age groups, it can be said that;

- The youngest age group (15-24) was underrepresented in the sample in relation to its proportion of the general population of Turkish Internet users,
- The second youngest age group (24-34) was overrepresented in the sample in relation to its percentage of the general population of Turkish Internet users.
- Other age groups have very similar distribution in the sample as they do in the general population of Turksih Internet users.

According to the one-way ANOVA results, the mean scores of the youngest two age groups (15-24 and 24-35) have no significant differences on any of the five factors (see Tables 18, 19, 20, 21, and 22) and they have very small differences between their mean scores. Based on this finding it was expected that the proportional differences in these two age groups would have little effect on the statistical findings of this study.

Table 10 Distribution of Participants by Education level

		Frequency	Percent	Cumulative Percent
Valid	Elementary School	5	.8	.8
	High School	45	7.6	8.4
	University Degree	545	91.6	100
	Total	595	100.0	

According to the Turkish Statistics Department 2009 ICT Usage Survey on Households and Individuals, the percentage of Turkish Internet users who fall into each education group is as follows: 37.2 % have only an an elementary school education, 40.2 % have only a high school education, and 22.4 % have a university level education. In this study, the sample consists mostly of Turkish Internet users who have a university level education. 5 participants, corresponding to 0.8 % of the sample, had an elementary school education only, 45 participants, corresponding to 7.6 % of the sample, had a high school education only, and 545 participants, corresponding to 91.6 % of the sample, had a university level education.

Based on the frequency distribution for education, it can be said that the education level of the Internet users participating in this study is considerably higher than that of the general population. Turkish Internet users with only an elementary school education were barely represented in the sample, and the percentage of participants with a high school education only is also very low compared to that of the general population. On the other hand, according to the One-Way ANOVA tests of education groups on the pirated software usage attitude, accessibility, motivation, social guardian and legal guardian factors, no significant differences were found between three educational groups (see Table 23). Based on these findings it was expected that the shortcoming of poor representation of educational levels would have minimal effect on the statistical findings of this study.

Frequencies of Dependent Variables

Pirated Software Usage Attitude: Frequencies for the dependent variables measuring pirated software usage attitude of Turkish Internet users are shown in Table 11.

Table 11 Distribution of Attitude Variables

		Attitude Item 1	Attitude Item 2	Attitude Item 3	Attitude Item 4
N	Valid	595	595	595	595
	Missing	0	0	0	0
	Mean	3.7277	3.5714	2.8773	3.8941

	Strongly Disagree		Disagree		Indifferent		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
1. I intend to use pirated software in the near future	48	8.1	60	10.1	42	7.1	301	50.6	144	24.2
2. I will try to use pirated software in the near future	50	8.4	83	13.9	59	9.9	283	47.6	120	20.2
3. I will make an effort to use pirated software in the near future	104	17.5	184	30.9	83	13.9	129	21.7	95	16.0
4. I have used pirated software in the past	45	7.6	42	7.1	57	9.6	238	40.0	213	35.8

Analysis of the findings gathered from the frequency distribution analysis for attitude indicates that;

- Most of the participants (75.8 %) had used pirated software in the past,
- Most of the participants (74.8 %) have an intention to use pirated software in the near future,
- Most of the participants (67.8 %) agreed or strongly agreed that they would try to find pirated software,

- A similar high level of intention to try to find pirated software cannot be seen (37.7%) if there an effort is needed.

Frequencies of Perception of Accessibility Variables

Perception of Accessibility to Pirated Software: The frequencies for the variables measuring perception of accessibility to pirated software of Turkish Internet users are shown in Table 12.

Table 12 Distribution of Accessibility Variables

		Accessibility Item 1	Accessibility Item 2	Accessibility Item 3	Accessibility Item 4
N	Valid	595	595	595	595
	Missing	0	0	0	0
	Mean	3.7916	3.7899	3.5664	3.6588

	Strongly Disagree		Disagree		Indifferent		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
1. For me to access pirated software is very easy	24	4.0	62	10.4	112	18.8	213	35.8	184	30.9
2. If I wanted to, I could easily access pirated software	34	5.7	62	10.4	100	16.8	198	33.3	201	33.8
3. I believe that I have the ability to access pirated software	47	7.9	85	14.3	110	18.5	190	31.9	163	27.4
4. I have the resources necessary to access pirated software	44	7.4	66	11.1	112	18.8	200	33.6	173	29.1

Analysis of the findings gathered from frequency distribution analysis of the accessibility variables indicates that;

- Most of the participants (66.7 %) believe that accessibility of pirated software is easy,

- Most of the participants (67.1 %) believe they can access pirated software if they want,
- Most of the participants (59.3 %) believe that they have the ability to access pirated software,
- Most of the participants (62.7 %) believe that they have the resources to accesss pirated software.

Frequencies of Motivation Variables

Motivations to Use Pirated Software: Frequencies for the variables measuring motivation among Turkish Internet users to use pirated software are shown in Table 13.

Table 13 Distribution of Motivation Variables

		Motivation Item 1	Motivation Item 2	Motivation Item 3	Motivation Item 4	Motivation Item 5	Motivation Item 6	Motivation Item 7	Motivation Item 8	Motivation Item 9	Motivation Item 10
N	Valid	595	595	595	595	595	595	595	595	595	595
	Missing	0	0	0	0	0	0	0	0	0	0
	Mean	3.4924	3.0588	3.0807	3.2588	2.9782	2.9513	3.3950	3.2151	3.2252	3.0050

	Strongly Disagree		Disagree		Indifferent		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
1. I think pirated software helps save money	42	7.1	107	18.0	77	12.9	254	42.7	115	19.3
2. I think it is okay to use pirated software to improve my productivity.	63	10.6	162	27.2	114	19.2	189	31.8	67	11.3
3. I see nothing wrong with giving friends copies of my software in order to foster friendship	80	13.4	144	24.2	87	14.6	216	36.3	68	11.4
4. I think it is okay to use pirated software if it improves my knowledge	61	10.3	119	20.0	113	19.0	209	35.1	93	15.6
5. I think it is okay to use pirated software because community at large eventually benefits	79	13.3	164	27.6	110	18.5	175	29.4	67	11.3
6. I believe that pirated software usage helps to increase my computer literacy	91	15.3	161	27.1	103	17.3	166	27.9	74	12.4
7. I think it is okay to use pirated games software for entertainment	46	7.7	122	20.5	76	12.8	253	42.5	98	16.5
8. I see nothing wrong withusing pirated software if it is badly needed for the success of a project	67	11.3	138	23.2	94	15.8	192	32.3	104	17.5
9. I think it is okay to use pirated software for research purpose, because everybody shares the benefits	67	11.3	130	21.8	120	20.2	158	26.6	120	20.2
10. I think pirated software usage is okay to punish software publishers who charge very high price	69	11.6	155	26.1	152	25.5	142	23.9	77	12.9

Analysis of the findings gathered from frequency distribution analysis of motivation variables indicates that;

- Most of the participants (more than 60%) thought pirated software usage saves money,
- This high level of agreement (58%) can also be seen on seventh motivation variable, which includes the statement that pirated software usage might be OK for games software,
- Clear difference between agreement and disagreement scores can also be seen on three motivation variables: "nothing wrong iwithgiving friends copies of software" (the third variable), "OK to use pirated software to improve knowledge" (the fourth variable), and "nothing wrong withusing pirated software if it is badly needed" (the eighth variable).

Frequencies of Social Guardian Variables

Social Guardians for pirated software usage: Frequencies for the variables measuring participants' perception of social guardians against pirated software usage are shown in Table 14.

Table 14 Distribution of Social Guardian Variables

		Social Guardian Item 1	Social Guardian Item 2	Social Guardian Item 3	Social Guardian Item 4	Social Guardian Item 5	Social Guardian Item 6	Social Guardian Item 7
N	Valid	595	595	595	595	595	595	595
	Missing	0	0	0	0	0	0	0
	Mean	3.3563	3.0370	2.4185	2.4252	2.0739	2.8034	2.7227

	Strongly Disagree		Disagree		Indifferent		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
1. If my family and friends are aware of whether I use legal software, I will choose authorized software	48	8.1	96	16.1	134	22.5	230	38.7	87	14.6
2. If my family and friends prefer using legal software, I will choose authorized software as well	60	10.1	153	25.7	136	22.9	197	33.1	49	8.2
3. My family and friends will have negative views on me if they find out that I use pirated software	124	20.8	233	39.2	133	22.4	75	12.6	30	5.0
4. My family and friends will believe that my behavior is against the social norm if they find out that I use pirated software	128	21.5	222	37.3	131	22.0	92	15.5	22	3.7
5. My family and friends will keep me at adistance if they find out that I use pirated software	203	34.1	220	37.0	114	19.2	41	6.9	17	2.9
6. My superiors will talk to me and ask me not to if they find out that I use pirated software	102	17.1	134	22.5	188	31.6	121	20.3	50	8.4
7. I will not let others know if I use pirated software	83	13.9	207	34.8	138	23.2	126	21.2	41	6.9

Analysis of the findings gathered from frequency distribution analysis of social guardian variables indicates that;

- Most Turkish Internet users do not want to be known as “pirated software users” by their families,

- The views of families and friends are important for Turkish Internet users, based on the high amount of agreement with two social guardian variables: “If my family and friends are aware of whether I use legal software, I will choose authorized software” (the first variable), and “If my family and friends prefer using legal software, I will choose authorized software as well” (the second variable)
- However, it can also be understood that there is a only a low level social guardian mechanism against pirated software usage in Turkish Internet users’ minds. This is based on the considerably high amount of disagreement with three social guardian variables: “My family and friends will have negative views on me if they find out that I use pirated software” (the third variable), “My family and friends will believe that my behavior is against the social norm if they find out that I use pirated software” (the fourth variable), and “My family and friends will keep me at a distance if they find out that I use pirated software” (the fifth variable).

Frequencies of Legal Guardian Variables

Legal Guardians for pirated software usage: Frequencies for the variables measuring perception level of Turkish Internet users about legal guardians against pirated software usage are shown in Table 15.

Table 15 Distribution of Legal Guardian Variables

		Legal Guardian Item 1	Legal Guardian Item 2	Legal Guardian Item 3	Legal Guardian Item 4
N	Valid	595	595	595	595
	Missing	0	0	0	0
	Mean	3.1429	3.2084	3.0218	3.2034
	Std. Deviation	1.14214	1.12827	1.20794	1.14914

	Strongly Disagree		Disagree		Indifferent		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
1. Those who use pirated software may be prosecuted	45	7.6	139	23.4	174	29.2	160	26.9	77	12.9
2. Those who use pirated software may be fined	41	6.9	128	21.5	170	28.6	178	29.9	78	13.1
3. Those who use pirated software may be arrested	68	11.4	144	24.2	169	28.4	135	22.7	79	13.3
4. Those who use pirated software may be punished according to laws and regulations	48	8.1	118	19.8	176	29.6	171	28.7	82	13.8

Analysis of the findings gathered from frequency distribution analysis of social guardian variables indicates that;

- The “indifferent” response was the most common response for three of the four legal guardian variables: “Those who use pirated software may be prosecuted” (the first), “Those who use pirated software may be fined” (the second), and “Those who use pirated software may be punished according to laws and regulations” (the fourth).
- The “indifferent” response for the second legal guardian variable was also the second most common response.

Based on these findings it seems that most of the participants do not have enough information about current copyright legislation to make clear decisions about the questions.

Comparing Means: T-Test and ANOVA

In this part of the study, the results of independent-means t-test of gender on the Attitude, Accessibility, Motivation, and Social and Legal Guardian factors will be presented. Additionally, one-way ANOVA tests were conducted to compare differences in the means of the pirated software usage attitude, accessibility, motivation, social guardianship and legal guardianship factors by age group and educational level. In addition to determining any differences in the means, the Tukey multiple comparison test, as a post hoc (after-the-fact) method, was performed to reveal the exact location of these differences.

T-Test Results

In this part of the study, the results of independent-means t-test of gender and pirated software usage attitude, accessibility, motivation, social guardian and legal guardian factors will be presented.

Table 16 Summary Statistics by Gender

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Attitude	Male	474	14.5105	4.12450	.18944
	Female	121	12.3471	4.32572	.39325
Accessibility	Male	474	15.1878	4.24321	.19490
	Female	121	13.3140	4.02292	.36572
Motivation	Male	474	32.1245	9.05698	.41600
	Female	121	29.8430	9.31576	.84689
Social Guardian	Male	474	18.6983	5.90658	.27130
	Female	121	19.3802	5.53512	.50319
Legal Guardian	Male	474	12.6139	4.35437	.20000
	Female	121	12.4298	4.30857	.39169

Table 17 T-Test Analysis Results by Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Attitude	Equal variances assumed	2.178	.140	5.099	593	.000	2.16344	.42432	1.33008	2.99680
	Equal variances not assumed			4.956	179.706	.000	2.16344	.43650	1.30212	3.02477
Accessibility	Equal variances assumed	.267	.606	4.380	593	.000	1.87371	.42774	1.03364	2.71379
	Equal variances not assumed			4.521	193.871	.000	1.87371	.41441	1.05638	2.69105
Motivation	Equal variances assumed	.356	.551	2.459	593	.014	2.28150	.92788	.45917	4.10383
	Equal variances not assumed			2.418	182.204	.017	2.28150	.94354	.41982	4.14318
Social Guardian	Equal variances assumed	.862	.353	-1.148	593	.252	-.68185	.59414	-1.84874	.48503
	Equal variances not assumed			-1.193	195.709	.234	-.68185	.57167	-1.80928	.44557
Legal Guardian	Equal variances assumed	.149	.699	.416	593	.677	.18417	.44257	-.68502	1.05336
	Equal variances not assumed			.419	187.499	.676	.18417	.43980	-.68341	1.05176

The t-test results provide two output tables. Table 16 presents summary statistics of two groups. Table 17 provides the t-test analysis results. There are two rows showing values for the test statistics: the first one assumes equal variance. In this row we can see the Levene's Test results. Levene's test is used to see whether variances are different between test groups. If Levene's test is significant at $p \leq .05$, we can be confident that variances are significantly different. For this study, Levene's test is not significant for

any results; all p values are greater than .05, so we should look the test statistics in the row Equal Variances Assumed row (Field, 2008; Agresti and Finlay, 2006).

As shown in Table 16, there are 474 male participants and 121 female participants;

- The mean score of pirated software usage attitude for males is 14.51, with a standard deviation of 4.12; the mean score of pirated software usage attitude for females is 12.34, with a standard deviation of 4.32.
- The mean score of the accessibility factor for males is 15.18, with a standard deviation 4.24; the mean score of the accessibility factor for females is 13.31, with a standard deviation of 4.02.
- The mean score of the motivation factor for males is 32.12, with a standard deviation of 9.05; the mean score of the motivation factor for females is 29.84, with a standard deviation 4.31.
- The mean score of the social guardian factor for males is 18.69, with a standard deviation of 5.9; the mean score of the social guardian factor for females is 19.38, with a standard deviation 5.53.
- The mean score of the legal guardian factor for males is 12.61, with a standard deviation of 4.35; the mean score of the legal guardian factor for females is 12.42, with a standard deviation 4.30.

According to the results presented in Table 17:

- On average, males' pirated software usage attitude is greater than that of females. This difference is significant, with values of $t(593)= 5.09$, $p<0.05$. Although the

difference between the mean scores of males and females is small (1.98) we can say that male Turkish Internet users are using pirated software more than females.

- On average, males' perception of accessibility to pirated software is greater than females. This difference is significant, with values of $t(593)= 4.38$, $p<0.05$. Although the difference between the mean scores of males and females is small (1.87) we can say that male Turkish Internet users' degree of accessibility to pirated software is higher than that of females.
- On average, males' motivation to use pirated software is greater than that of females. This difference is significant, with values of $t(593)= 2.45$, $p<0.05$. Although the difference between the mean scores of males and females is small (2.26) we can say that male Turkish Internet users' motivation to use pirated software is higher than that of females.
- On average, females' perception of social guardians against pirated software usage is greater than that of males, but this difference is not significant, with values of $t(593)= -1.48$, $p>0.05$.
- On average males' perception of legal guardians against pirated software usage is greater than that of females, but this difference is not significant, with values of $t(593)= .416$, $p>0.05$.

Comparison and One-Way ANOVA Tests of Age on the Pirated Software Usage Attitude, Accessibility, Motivation, Social Guardian and Legal Guardian Factors

To determine whether or not any differences exist among the means of the pirated software usage attitude, accessibility, motivation, social guardian and legal guardian

factors based on age, a one-way ANOVA test with the Tukey multiple comparison method was performed.

Table 18 ANOVA Test on the Mean Responses on the Pirated Software Usage Attitude, Accessibility, Motivation, Social Guardian And Legal Guardian Factors among Turkish Internet Users of Different Ages

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Attitude	Between Groups	517.052	4	129.263	7.458	.000
	Within Groups	10225.984	590	17.332		
	Total	10743.035	594			
Accssblty	Between Groups	873.645	4	218.411	12.986	.000
	Within Groups	9923.128	590	16.819		
	Total	10796.773	594			
Motivation	Between Groups	2182.367	4	545.592	6.772	.000
	Within Groups	47533.055	590	80.565		
	Total	49715.422	594			
Socguard	Between Groups	1411.675	4	352.919	11.069	.000
	Within Groups	18811.511	590	31.884		
	Total	20223.187	594			
Legguard	Between Groups	120.193	4	30.048	1.600	.173
	Within Groups	11079.077	590	18.778		
	Total	11199.271	594			

Table 18 shows that at the 1% significance level, the data provide sufficient evidence to conclude that a difference exists in the mean responses on the factors of Attitude, Accessibility, Motivation, and Social Guardian between different age groups. This means that age affects Turkish Internet users' pirated software usage attitude, perception of accessibility to pirated software, motivation to use pirated software and perception of social guardians against pirated software usage. At least two of the age groups have significantly different mean values for these factors. The ANOVA results are not significant for the Legal Guardian factor; thus, a difference does not exist in the means of the Legal Guardian factor among Turkish Internet users of different ages. To

determine the exact location of the differences among the five different age groups, the pos hoc Tukey multiple comparison tests were conducted for further analysis.

Table 19 The Tukey Multiple Comparison in the Mean Responses on the Attitude Factor among Turkish Internet Users in Different Ages

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
15-24	25-34	-.31029	.46119	.962	-1.5722	.9516
	35-44	1.43522	.53452	.057	-.0274	2.8978
	45-54	**2.13368***	**.70661**	**.022**	**.2002**	**4.0672**
	55 and up	2.54511	1.17900	.197	-.6809	5.7711
25-34	15-24	.31029	.46119	.962	-.9516	1.5722
	35-44	**1.74551***	**.44040**	**.001**	**.5405**	**2.9506**
	45-54	**2.44397***	**.63839**	**.001**	**.6972**	**4.1908**
	55 and up	2.85540	1.13948	.091	-.2625	5.9733
35-44	15-24	-1.43522	.53452	.057	-2.8978	.0274
	25-34	**-1.74551***	**.44040**	**.001**	**-2.9506**	**-.5405**
	45-54	.69846	.69323	.852	-1.1984	2.5953
	55 and up	1.10989	1.17104	.878	-2.0944	4.3141
45-54	**15-24**	**-2.13368***	**.70661**	**.022**	**-4.0672**	**-.2002**
	25-34	**-2.44397***	**.63839**	**.001**	**-4.1908**	**-.6972**
	35-44	-.69846	.69323	.852	-2.5953	1.1984
	55 and up	.41143	1.25883	.998	-3.0330	3.8559
55 and up	15-24	-2.54511	1.17900	.197	-5.7711	.6809
	25-34	-2.85540	1.13948	.091	-5.9733	.2625
	35-44	-1.10989	1.17104	.878	-4.3141	2.0944
	45-54	-.41143	1.25883	.998	-3.8559	3.0330

The Tukey multiple comparison indicates that there are significant differences in the mean responses on the Attitude factor between Turkish Internet users in the following age groups:

- 15-24 and 45-54 (significant at .05 level),
- 25-34 and 35-44 (significant at .01 level), and
- 25-34 and 45-54 (significant at .01 level).

Table 20 The Tukey Multiple Comparison in the Mean Responses on the Accessibility Factor among Turkish Internet Users in Different Ages

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
15-24	25-34	.21792	.45416	.989	-1.0248	1.4606
	35-44	**2.24885***	**.52639**	**.000**	**.8085**	**3.6892**
	45-54	**3.57193***	**.69585**	**.000**	**1.6679**	**5.4760**
	55 and up	2.91479	1.16141	.090	-.2631	6.0927
25-34	15-24	-.21792	.45416	.989	-1.4606	1.0248
	35-44	**2.03093***	**.43370**	**.000**	**.8442**	**3.2176**
	45-54	**3.35401***	**.62867**	**.000**	**1.6338**	**5.0742**
	55 and up	2.69686	1.12247	.116	-.3745	5.7682
35-44	**15-24**	**-2.24885***	**.52639**	**.000**	**-3.6892**	**-.8085**
	25-34	**-2.03093***	**.43370**	**.000**	**-3.2176**	**-.8442**
	45-54	1.32308	.68267	.298	-.5449	3.1910
	55 and up	.66593	1.15357	.978	-2.4905	3.8224
45-54	**15-24**	**-3.57193***	**.69585**	**.000**	**-5.4760**	**-1.6679**
	25-34	**-3.35401***	**.62867**	**.000**	**-5.0742**	**-1.6338**
	35-44	-1.32308	.68267	.298	-3.1910	.5449
	55 and up	-.65714	1.24005	.984	-4.0502	2.7359
55 and up	15-24	-2.91479	1.16141	.090	-6.0927	.2631
	25-34	-2.69686	1.12247	.116	-5.7682	.3745
	35-44	-.66593	1.15357	.978	-3.8224	2.4905
	45-54	.65714	1.24005	.984	-2.7359	4.0502

The Tukey multiple comparison indicates that there are significant differences in the mean responses on the Accessibility factor between Turkish Internet users in the following age groups:

- 15-24 and 35-44 (significant at .01 level),
- 15-24 and 45-54 (significant at .01 level),
- 25-34 and 35-44 (significant at .01 level), and
- 25-34 and 45-54 (significant at .01 level).

Table 21 The Tukey Multiple Comparison in the Mean Responses on the Motivation Factor among Turkish Internet Users in Different Ages

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
15-24	25-34	.12929	.99348	1.000	-2.5891	2.8477
	35-44	**3.90648***	**1.15147**	**.007**	**.7558**	**7.0572**
	45-54	3.79263	1.52218	.094	-.3724	7.9577
	55 and up	6.69549	2.54191	.066	-.2598	13.6507
25-34	15-24	-.12929	.99348	1.000	-2.8477	2.5891
	35-44	**3.77719***	**.94872**	**.001**	**1.1813**	**6.3731**
	45-54	3.66334	1.37522	.061	-.0996	7.4263
	55 and up	6.56620	2.45669	.059	-.1559	13.2883
35-44	**15-24**	**-3.90648***	**1.15147**	**.007**	**-7.0572**	**-.7558**
	25-34	**-3.77719***	**.94872**	**.001**	**-6.3731**	**-1.1813**
	45-54	-.11385	1.49335	1.000	-4.2000	3.9723
	55 and up	2.78901	2.52474	.804	-4.1193	9.6973
45-54	15-24	-3.79263	1.52218	.094	-7.9577	.3724
	25-34	-3.66334	1.37522	.061	-7.4263	.0996
	35-44	.11385	1.49335	1.000	-3.9723	4.2000
	55 and up	2.90286	2.71402	.822	-4.5233	10.3290
55 and up	15-24	-6.69549	2.54191	.066	-13.6507	.2598
	25-34	-6.56620	2.45669	.059	-13.2883	.1559
	35-44	-2.78901	2.52474	.804	-9.6973	4.1193
	45-54	-2.90286	2.71402	.822	-10.3290	4.5233

The Tukey multiple comparison indicates that there are significant differences in the mean responses on the Motivation factor among Turkish Internet users in the following age groups

- 15-24 and 35-44 (significant at .01level), and
- 25-34 and 35-44 (significant at .01 level).

Table 22 The Tukey Multiple Comparison in the Mean Responses on the Motivation Factor among Turkish Internet Users in Different Ages

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
15-24	25-34	-.84510	.62512	.659	-2.5556	.8654
	35-44	**-3.35655***	**.72453**	**.000**	**-5.3390**	**-1.3741**
	45-54	**-3.79193***	**.95779**	**.001**	**-6.4127**	**-1.1712**
	55 and up	**-6.34336***	**1.59910**	**.001**	**-10.7189**	**-1.9679**
25-34	15-24	.84510	.62512	.659	-.8654	2.5556
	35-44	**-2.51144***	**.59695**	**.000**	**-4.1449**	**-.8780**
	45-54	**-2.94683***	**.86532**	**.006**	**-5.3145**	**-.5791**
	55 and up	**-5.49826***	**1.54548**	**.004**	**-9.7271**	**-1.2695**
35-44	**15-24**	**3.35655***	**.72453**	**.000**	**1.3741**	**5.3390**
	25-34	**2.51144***	**.59695**	**.000**	**.8780**	**4.1449**
	45-54	-.43538	.93965	.991	-3.0065	2.1357
	55 and up	-2.98681	1.58830	.329	-7.3328	1.3591
45-54	**15-24**	**3.79193***	**.95779**	**.001**	**1.1712**	**6.4127**
	25-34	**2.94683***	**.86532**	**.006**	**.5791**	**5.3145**
	35-44	.43538	.93965	.991	-2.1357	3.0065
	55 and up	-2.55143	1.70737	.567	-7.2232	2.1203
55 and up	**15-24**	**6.34336***	**1.59910**	**.001**	**1.9679**	**10.7189**
	25-34	**5.49826***	**1.54548**	**.004**	**1.2695**	**9.7271**
	35-44	2.98681	1.58830	.329	-1.3591	7.3328
	45-54	2.55143	1.70737	.567	-2.1203	7.2232

The Tukey multiple comparison indicates that there are significant differences in the mean responses on the Motivation factor among Turkish Internet users in the following age groups:

- 15-24 and 35-44 (significant at .01 level),
- 15-24 and 45-54 (significant at .01 level),
- 15-24 and 55 and up (significant at .01 level),
- 25-34 and 35-44 (significant at .01 level),

- 25-34 and 45-54 (significant at .01 level), and
- 25-34 and 55 and up (significant at .01 level).

According to the overall multiple comparison results, the mean responses of younger Turkish Internet users, those within the 15-24 and 24-35 age groups, are significantly different on Attitude, Accessibility, Motivation and Social Guardian factors from the older participants, especially those within the 35-44 and 45-55 age groups. The two youngest age groups (15-24 and 24-35) have no significant differences on any of the five factors and they have very small differences between their mean scores. The two older age groups (35-44 and 44-55) also have no significant differences on any of the five factors. These findings mean:

- Younger Turkish Internet users use pirated software more than older Turkish Internet users (see Table 23).
- Younger Turkish Internet users report more capability to access pirated software easier than older Turkish Internet users (see Table 24).
- Younger Turkish Internet users report more motivation to use pirated software than do older Turkish Internet users (see Table 25).
- Younger Turkish Internet users perceive less social guardian care than do older Turkish Internet users (see Table 26).

Comparison of Education Level on the Pirated Software Usage Attitude, Accessibility, Motivation, Social Guardian and Legal Guardian Factors

To determine whether or not a difference exists among the means of four factors (the pirated software usage attitude, accessibility, motivation, social guardian and legal guardian) based on education level, a one-way ANOVA test was performed.

Table 23 ANOVA Test in the Mean Responses on the Attitude, Accessibility, Motivation, Social Guardian, and Legal Guardian Factors among Turkish Internet Users in Different Education Levels

		Sum of Squares	df	Mean Square	F	Sig.
Attitude	Between Groups	43.384	2	21.692	1.200	.302
	Within Groups	10699.652	592	18.074		
	Total	10743.035	594			
Accssblty	Between Groups	59.771	2	29.886	1.648	.193
	Within Groups	10737.002	592	18.137		
	Total	10796.773	594			
Motivation	Between Groups	104.948	2	52.474	.626	.535
	Within Groups	49610.474	592	83.801		
	Total	49715.422	594			
Socguard	Between Groups	192.933	2	96.466	2.851	.059
	Within Groups	20030.254	592	33.835		
	Total	20223.187	594			
Legguard	Between Groups	50.890	2	25.445	1.351	.260
	Within Groups	11148.381	592	18.832		
	Total	11199.271	594			

At the 5% significance level, the data provide evidence to conclude that no difference exists in the mean responses to the Attitude, Accessibility, Motivation, Social Guardian, and Legal Guardian factors for different education levels. As shown in Table 23, the ANOVA test result is not significant. This means that education level does not affect Turkish Internet users' pirated software usage, perception of accessibility to pirated software, motivation to use pirated software, and perception of social and legal guardian against pirated software usage.

Bivariate Analysis Results

In this part of the study, estimated correlations among the variables will be presented. The Pearson correlation coefficient was used to measure the strength of the relationship between the variables. Although the results in the tables show the level of

statistical relationship between two variables without controlling for the potential effect of other variables, these correlations still can provide a description of the relationships between the variables. A coefficient of +1 indicates a perfect positive correlation, and conversely a coefficient of -1 indicates that two variables are perfectly negatively correlated. The correlation coefficient is a standardized measure of an expected effect; values of ±0.1 represent a small effect, ±0.3 represent a medium effect and ± 5 represent a large effect (Field, 2008).

Correlations between Attitude Variables

Pirated software usage attitude of Turkish Internet users was operationalized using four variables:

1. I intend to use pirated software in the near future
2. I will try to use pirated software in the near future
3. I will make an effort to use pirated software in the near future
4. I have used pirated software in the past

Table 24 provides a depiction of the correlations between the dependent variables.

Table 24 Correlations between Attitude Variables

		Attitude Item 1	Attitude Item 2	Attitude Item 3	Attitude Item 4
Attitude Item 1	Pearson Correlation	1.000	.871**	.656**	.607**
	Sig. (2-tailed)		.000	.000	.000
	N	595.000	595	595	595
Attitude Item 2	Pearson Correlation	.871**	1.000	.719**	.637**
	Sig. (2-tailed)	.000		.000	.000
	N	595	595.000	595	595
Attitude Item 3	Pearson Correlation	.656**	.719**	1.000	.510**
	Sig. (2-tailed)	.000	.000		.000
	N	595	595	595.000	595
Attitude Item 4	Pearson Correlation	.607**	.637**	.510**	1.000
	Sig. (2-tailed)	.000	.000	.000	
	N	595	595	595	595.000

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

As shown in Table 24, each variable has a high positive correlation with the other three variables, and the significance value is less than .01 for all cases. This significance value tells us that the probability that there is no relationship between these variables is very low. According to the table, the highest correlation score is r=+.871 between the first and second attitude variables ("I intend to use pirated software in the near future" and "I will try to use pirated software in the near future"). The lowest correlation (r=+.51) is between the third and fourth attitude variables ("I will make an effort to use pirated software in the near future" and "I have use pirated software in the past").

Correlations between Perceptions of Accessibility Variables

Four variables were operationalized to measure the perception of accessibility of Turkish Internet users to pirated software:

1. For me to access pirated software is very easy

2. If I wanted to, I could easily access pirated software

3. I believe that I have the ability to access pirated software

4. I have the resources necessary to access pirated software

Table 25 presents the correlations between the independent variables representing the theoretical construct of target suitability.

Table 25 Correlations between Accessibility Variables

		Accessibility Item 1	Accessibility Item 2	Accessibility Item 3	Accessibility Item 4
Accessibility Item 1	Pearson Correlation	1.000	.796**	.684**	.636**
	Sig. (2-tailed)		.000	.000	.000
	N	595.000	595	595	595
Accessibility Item 2	Pearson Correlation	.796**	1.000	.778**	.743**
	Sig. (2-tailed)	.000		.000	.000
	N	595	595.000	595	595
Accessibility Item 3	Pearson Correlation	.684**	.778**	1.000	.788**
	Sig. (2-tailed)	.000	.000		.000
	N	595	595	595.000	595
Accessibility Item 4	Pearson Correlation	.636**	.743**	.788**	1.000
	Sig. (2-tailed)	.000	.000	.000	
	N	595	595	595	595.000

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

As shown in Table 25, each variable has a high positive correlation with the other three variables, and in all cases the relationships are significant at the .01 level. This significance value tells us that the probability that there is no relationship between these variables is very low. The highest correlation score (r=+.796) is between the first and second accessibility variables (“For me to access pirated software is very easy” and “If I wanted to, I could easily access pirated software”). The lowest correlation (r=+.636) is between the first and fourth accessibility variables (“For me to access pirated software is very easy” and “I have the resources necessary to access pirated software”).

Correlations between Motivation Variables

The motivation degree of Turkish Internet users to use pirated software was operationalized using 10 variables:

1. I think pirated software helps save money

2. I think it is okay to use pirated software to improve my productivity

3. I see nothing wrong with giving friends copies of my software in order to foster friendship

4. I think it is okay to use pirated software if it improves my knowledge

5. I think it is okay to use pirated software because community at large eventually benefits

6. I believe that pirated software usage helps to increase my computer literacy

7. I think it is okay to use pirated games software for entertainment

8. I see nothing wrong with using pirated software if it is badly needed for the success of a project

9. I think it is okay to use pirated software for research purposes, because everybody shares the benefits

10. I think pirated software usage is okay to punish software publishers who charge very high price

Table 26 presents the correlations between the independent variables representing the theoretical construct of a motivated offender.

Table 26 Correlations between Motivation Variables

		Motivation Item 1	Motivation Item 2	Motivation Item 3	Motivation Item 4	Motivation Item 5	Motivation Item 6	Motivation Item 7	Motivation Item 8	Motivation Item 9	Motivation Item 10
Motivation Item 1	Pearson	1.000	.482**	.388**	.395**	.390**	.326**	.429**	.368**	.320**	.323**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	595.000	595	595	595	595	595	595	595	595	595
Motivation Item 2	Pearson	.482**	1.000	.446**	.599**	.613**	.473**	.563**	.510**	.452**	.523**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000	.000
	N	595	595.000	595	595	595	595	595	595	595	595
Motivation Item 3	Pearson	.388**	.446**	1.000	.524**	.496**	.494**	.461**	.409**	.355**	.381**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000
	N	595	595	595.000	595	595	595	595	595	595	595
Motivation Item 4	Pearson	.395**	.599**	.524**	1.000	.791**	.594**	.613**	.639**	.466**	.547**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	595	595	595	595.000	595	595	595	595	595	595
Motivation Item 5	Pearson	.390**	.613**	.496**	.791**	1.000	.609**	.601**	.619**	.481**	.539**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000	.000
	N	595	595	595	595	595.000	595	595	595	595	595
Motivation Item 6	Pearson	.326**	.473**	.494**	.594**	.609**	1.000	.534**	.479**	.428**	.442**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000	.000
	N	595	595	595	595	595	595.000	595	595	595	595
Motivation Item 7	Pearson	.429**	.563**	.461**	.613**	.601**	.534**	1.000	.621**	.460**	.438**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000	.000
	N	595	595	595	595	595	595	595.000	595	595	595
Motivation Item 8	Pearson	.368**	.510**	.409**	.639**	.619**	.479**	.621**	1.000	.466**	.499**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000	.000
	N	595	595	595	595	595	595	595	595.000	595	595
Motivation Item 9	Pearson	.320**	.452**	.355**	.466**	.481**	.428**	.460**	.466**	1.000	.439**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000
	N	595	595	595	595	595	595	595	595	595.000	595
Motivation Item 10	Pearson	.323**	.523**	.381**	.547**	.539**	.442**	.438**	.499**	.439**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	595	595	595	595	595	595	595	595	595	595.000

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

As shown in Table 26, each variable has a moderate or strong positive correlation with the other nine variables, and all correlatios are significant at the .01 level. This significance value tells us that the probability of no relationship between these variables is very low. The highest correlation score (r=+.791) is between the fourth and fifth motivation variables ("I think it is okay to use pirated software if it improves my knowledge" and "I think it is okay to use pirated software because the community at large is eventually benefited"). The lowest correlation (r=+.32) is between the first and fourth motivation variables ("I think pirated software helps save money" and "I think it is okay to use pirated software if it improves my knowledge". All coefficient scores for the first ("I think pirated software helps save money") and ninth ("I think it is okay to use pirated software for research purpose, because everybody shares the benefits") variables are less than .5, which means the first and ninth variables have a moderate correlation with each of the other nine variables. The fourth ("I think it is okay to use pirated software if it improves my knowledge") and fifth ("I think it is okay to use pirated software because community at large is eventually benefited") variables have relatively strong correlations with each of the other nine variables compared to those of the remaining eight variables.

Correlations between Social Guardian Variables

Social guardian perception of Turkish Internet users against pirated software usage was operationalized using seven variables;

1. If my family and friends are aware of whether I use legal software, I will choose authorized software

2. If my family and friends prefer using legal software, I will choose authorized software as well

3. My family and friends will have negative views of me if they find out that I use pirated software

4. My family and friends will believe that my behavior is against the social norm if they find out that I use pirated software

5. My family and friends will keep me at a distance if they find out that I use pirated software

6. My superiors will talk to me and ask me not to if they find out that I use pirated software

7. I will not let others know if I use pirated software

Table 27 presents the correlations between the independent variables representing the theoretical construct of lack of capable guardianship.

Table 27 Correlations between Social Guardian Variables

		Social Guardian Item 1	Social Guardian Item 2	Social Guardian Item 3	Social Guardian Item 4	Social Guardian Item 5	Social Guardian Item 6	Social Guardian Item 7
Social Guardian Item 1	Pearson Correlation	1.000	.530**	.473**	.434**	.319**	.327**	.480**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	595.000	595	595	595	595	595	595
Social Guardian Item 2	Pearson Correlation	.530**	1.000	.394**	.341**	.307**	.255**	.366**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	595	595.000	595	595	595	595	595
Social Guardian Item 3	Pearson Correlation	.473**	.394**	1.000	.814**	.693**	.484**	.545**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	595	595	595.000	595	595	595	595
Social Guardian Item 4	Pearson Correlation	.434**	.341**	.814**	1.000	.754**	.533**	.554**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	595	595	595	595.000	595	595	595
Social Guardian Item 5	Pearson Correlation	.319**	.307**	.693**	.754**	1.000	.527**	.473**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	595	595	595	595	595.000	595	595
Social Guardian Item 6	Pearson Correlation	.327**	.255**	.484**	.533**	.527**	1.000	.431**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	595	595	595	595	595	595.000	595
Social Guardian Item 7	Pearson Correlation	.480**	.366**	.545**	.554**	.473**	.431**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	595	595	595	595	595	595	595.000

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

As shown in Table 27, each variable has a moderate or strong positive correlation with the other 6 variables, except the correlation between the second and sixth social guardian variables ("If my family and friends prefer using legal software, I will choose authorized software as well" and "My superiors will talk to me and ask me not to if they find out that I use pirated software"). The significance value is less than .01 for all cases. This significance value tells us that the probability of no relationship between these variables is very low. The highest correlation score (r=+.814) is between the third and fourth social guardian variables ("My family and friends will have negative views on me if they find out that I use pirated software" and "My family and friends will believe that my behavior is against the social norm if they find out that I use pirated software"). The lowest correlation (r=+.255) is between the second and sixth social guardian variables ("If my family and friends prefer using legal software, I will choose authorized software as well" and "My superiors will talk to me and ask me not to if they find out that I use pirated software").

Correlations between Legal Guardian Variables

Legal guardian perception of Turkish Internet users about pirated software usage was operationalized using four variables;

1. Those who use pirated software may be prosecuted
2. Those who use pirated software may be fined
3. Those who use pirated software may be arrested
4. Those who use pirated software may be punished according to laws and regulations

Table 28 shows the correlations between the independent variables representing the theoretical construct of lack of capable guardianship.

Table 28 Correlations between Legal Guardian Variables

		Legal Guardian Item 1	Legal Guardian Item 2	Legal Guardian Item 3	Legal Guardian Item 4
Legal Guardian Item 1	Pearson Correlation	1.000	.864**	.798**	.831**
	Sig. (2-tailed)		.000	.000	.000
	N	595.000	595	595	595
Legal Guardian Item 2	Pearson Correlation	.864**	1.000	.828**	.867**
	Sig. (2-tailed)	.000		.000	.000
	N	595	595.000	595	595
Legal Guardian Item 3	Pearson Correlation	.798**	.828**	1.000	.858**
	Sig. (2-tailed)	.000	.000		.000
	N	595	595	595.000	595
Legal Guardian Item 4	Pearson Correlation	.831**	.867**	.858**	1.000
	Sig. (2-tailed)	.000	.000	.000	
	N	595	595	595	595.000

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

As shown in Table 28, each variable has a high positive correlation with the other three variables, and the significance value is less than .01 for all cases. This significance value tells us that the probability of no relationship between these variables is very low. The highest correlation score (r=+.867) is between the second and fourth legal guardian variables (“Those who use pirated software may be fined” and “Those who use pirated software may be punished according to laws and regulations” The lowest correlation (r=+.798) is between the first and third legal guardian variables (“Those who use pirated software may be prosecuted” and “Those who use pirated software may be arrested”).

Correlations between Dependant and Independent Variables

Dependant Variable: Pirated Software Usage Attitude

The pirated software usage attitude of Turkish Internet users was operationalized using four variables. The Likert scale (5-point) was used to indicate level of satisfaction and agreement of respondents. The scores for degree of agreement for the responses were

as follows; 1= Strongly Disagree, 2 = Disagree, 3 = Indifferent, 4 =Agree, 5 = Strongly Agree. The scores gathered from these four variables were collapsed into one variable to produce the total score of Turkish Internet users' pirated software usage attitude.

Independent Variables

Perception of Accessibility Variables

Perception of Turkish Internet users about accessibility of pirated software, which represents the theoretical construct of target suitability, was operationalized using four variables. The Likert scale (5-point) was used to indicate level of satisfaction and agreement of respondents. The scores for degree of agreement for the responses were as follows; 1= Strongly Disagree, 2 = Disagree, 3 = Indifferent, 4 =Agree, 5 = Strongly Agree. The scores gathered from these four variables were collapsed into one variable to produce the total score of Turkish Internet users' perception about accessibility of pirated software.

Motivation Variables

Motivation of Turkish Internet users to use pirated software, which represents the theoretical construct of motivated offender, was operationalized using ten variables. The Likert scale (5-point) was used to indicate level of satisfaction and agreement of respondents. The scores for degree of agreement for the responses were as follows; 1= Strongly Disagree, 2 = Disagree, 3 = Indifferent, 4 =Agree, 5 = Strongly Agree. The scores gathered from these 10 variables were collapsed into one variable to produce the total score of Turkish Internet users' motivation degree to use pirated software.

Social Guardian Variables

Social guardian perception of Turkish Internet users about pirated software usage, which represents the theoretical construct of lack of capable guardianship, was operationalized using seven variables. The Likert scale (5-point) was used to indicate level of satisfaction and agreement of respondents. The scores for degree of agreement for the responses were as follows; 1= Strongly Disagree, 2 = Disagree, 3 = Indifferent, 4 =Agree, 5 = Strongly Agree. The scores gathered from these seven variables were collapsed into one variable to produce the total score of Turkish Internet users' perception of social guardian about the pirated software usage.

Legal Guardian Variables

Turkish Internet users' perception of legal guardians against pirated software usage, which represents the theoretical construct of lack of capable guardianship, was operationalized using four variables. The Likert scale (5-point) was used to indicate level of satisfaction and agreement of respondents. The scores for degree of agreement for the responses were as follows: 1= Strongly Disagree, 2 = Disagree, 3 = Indifferent, 4 =Agree, 5 = Strongly Agree. The scores gathered from these seven variables were collapsed into one variable to produce the total score of Turkish Internet users' perception of legal guardian against pirated software usage.

Correlations at Item Level

Correlations between Accessibility Variables and Attitude Factor

Table 29 shows the statistically significant correlations between the perception of accessibility factor items and pirated software usage attitude factor. As can be seen in the table, there are many significant correlations between the independent and dependent

variables. Overall, the second, third and fourth accessibility variables ("If I wanted to, I could easily access pirated software", "I believe that I have the ability to access pirated software", and "I have the resources necessary to access pirated software") are highly positively correlated with the dependent variable, with correlation coefficients scores of.506, .529, and .536 respectively. There is a moderate positive correlation between the first accessibility variable ("For me to access pirated software is very easy") and the dependent variable, with a correlation coefficients score of .439. All the correlations are significant at the .01 level. These findings indicate that when participants' accessibility to pirated software increases, so does pirated software usage attitude.

Table 29 Correlations between Accessibility Items and Attitude Factor

		Attitude Factor	Accessibility Item 1	Accessibility Item 2	Accessibility Item 3	Accessibility Item 4
Attitude Factor	Pearson Correlation	1.000	.439**	.506**	.529**	.536**
	Sig. (1-tailed)		.000	.000	.000	.000
	N	595.000	595	595	595	595

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations between Motivation Variables and Attitude Factor

Table 30 shows the statistically significant correlations between motivation factor items and the pirated software usage attitude factor. As can be seen in the table, there are many significant correlations between the independent and dependent variables. Overall, five motivation variables are highly positively correlated with the dependent variable: the second ("I think it is okay to use pirated software to improve my productivity"), fourth ("I think it is okay to use pirated software if it improves my knowledge"), fifth ("I think it is okay to use pirated software because community at large is eventually benefited"), seventh ("I think it is okay to use pirated games software for entertainment"), and tenth

("I think pirated software usage is okay to punish software publishers who charge very high price"). The correlation coefficient scores are .605, .579, .532, .529, and .517 respectively. There is moderate positive correlation between the other five motivation variables: the first ("I think pirated software helps save money"), third ("I see nothing wrong in giving friends copies of my software in order to foster friendship"), sixth ("I believe that pirated software usage helps to increase my computer literacy"), eighth ("I see nothing wrong in using pirated software if it is badly needed for the success of a project"), and ninth ("I think it is okay to use pirated software for research purpose, because everybody shares the benefits"). The correlation coefficient scores are.463, .373, .415, .497, and .432 respectively. All the correlations are significant at the .01 level.

These findings reveal that all the motivation variables have moderate or strong level relationships with the dependant variable. In this context, it can be said that an increase in motivational factors would result in an increase in pirated software usage attitude. It can also be seen that the second (I think it is okay to use pirated software to improve my productivity) and the fourth (I think it is okay to use pirated software if it improves my knowledge) variables have the highest correlation scores, which means the leading motivational factors for participants are improving productivity and knowledge.

Table 30 Correlations between Motivation Items and Attitude Factor

		Attitude Factor	Motivation Item 1	Motivation Item 2	Motivation Item 3	Motivation Item 4	Motivation Item 5	Motivation Item 6	Motivation Item 7	Motivation Item 8	Motivation Item 9	Motivation Item 10
Attitude Factor	Pearson Correlation	1.000	.463**	.605**	.373**	.579**	.532**	.415**	.529**	.497**	.432**	.517**
	Sig. (1-tailed)		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	595	595	595	595	595	595	595	595	595	595	595

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations between Social Guardian Variables and Attitude Factor

Table 31 shows the statistically significant correlations between social guardian factor items and pirated software usage attitude factor. Overall, no items are highly correlated with the dependent variable. There is a moderate negative correlation between four of the social guardian variables and the dependant variable: the first (If my family and friends are aware of whether I use legal software, I will choose authorized software), third (If my family and friends prefer using legal software, I will choose authorized software as well), fourth (My family and friends will believe that my behavior is against the social norm if they find out that I use pirated software), and fifth (My family and friends will keep me at a distance if they find out that I use pirated software). The correlation coefficients scores are .331, .344, .342, and .316 respectively . The other three social guardian variables have a weak negative correlation with the dependent variable: the second (If my family and friends prefer using legal software, I will choose authorized software as well), sixth (My superiors will talk to me and ask me not to if they find out that I use pirated software), and seventh (I will not let others know if I use pirated software).The correlation coefficients scores are .223, .219, and .214 respectively. All the correlations are significant at the .01 level. Based on these findings it can be said that there are weak or moderate relationships between all social guardian variables and the dependant variable.

Table 31 Correlations between Social Guardian Items and Attitude Factor

		Attitude Factor	Social Guardian Item 1	Social Guardian Item 2	Social Guardian Item 3	Social Guardian Item 4	Social Guardian Item 5	Social Guardian Item 6	Social Guardian Item 7
Attitude Factor	Pearson Correlation	1.000	-.331**	-.223**	-.344**	-.342**	-.316**	-.219**	-.214**
	Sig. (1-tailed)		.000	.000	.000	.000	.000	.000	.000
	N	595.000	595	595	595	595	595	595	595

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations between Legal Guardian Variables and Attitude Factor

Table 32 shows the statistically significant correlations between legal guardian factor items and the pirated software usage attitude factor. Overall, there aren't any moderate or strong correlations between dependent and independent variables. Two legal guardian variables have weak correlations with the dependent variable at the .01 significance level: the first (Those who use pirated software may be prosecuted) and second (Those who use pirated software may be fined). The other two variables have weak correlations with the dependent variable at the .05 significance level: the third (Those who use pirated software may be arrested) and fourth (Those who use pirated software may be punished according to laws and regulations). Based on these findings it can be said that there are weak negative relationships or no relationships between the legal guardian variables and the dependant variable.

Table 32 Correlations between Legal Guardian Items and Attitude Factor

		Attitude Factor	Legal Guardian Item 1	Legal Guardian Item 2	Legal Guardian Item 3	Legal Guardian Item 4
Attitude Factor	Pearson Correlation	1.000	-.113**	-.101**	-.087*	-.089*
	Sig. (1-tailed)		.003	.007	.016	.015
	N	595.000	595	595	595	595

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Correlations at Factor Level

Table 33 presents the statistically significant correlations between the independent and dependent variables. The table shows that there are many significant correlations between the independent and dependent variables. Overall, the independent variables that are highly positively correlated with the dependent variable were the measure of motivation, with a correlation coefficient of .671, and the measure of accessibility, with a correlation coefficient of .562 at the .01 significance level. There is a moderate level negative correlation between pirated software usage attitude and the social guardian perception variable, with a coefficient score of -.381 at the .01 significance level. Unexpectedly, there is weak negative correlation between the dependant variable and legal guardian perception, with a coefficient score of -.104 at the .01 significance level.

Based on the findings at this significance level, we can be confident that there is a genuine positive relationship between pirated software usage attitude and motivation degree. We can also be confident that the positive relationship between pirated software usage attitude and perception of accessibility perception is genuine. The output shows that pirated software usage attitude is negatively related to social guardian perception.

The correlation between pirated software usage attitude and legal guardian perception is also weak or non-existent.

Table 33 Correlations between Dependent and Independent Variables at Factor Level

		Attitude Factor	Accessibility Factor	Motivation Factor	Social Guardian Factor	Legal Guardian Factor
Attitude Factor	Pearson Correlation	1.000	.562**	.671**	-.381**	-.104**
	Sig. (1-tailed)		.000	.000	.000	.006
	N	595.000	595	595	595	595

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Multivariate Analysis Results

In this part of the study, a stepwise multiple regressions analysis was performed to examine further the relationships between the independent variables and the dependent variable. In stepwise regression, method criteria about the order in which predictor variables are entered into the model are based on a statistical test result. Each time an additional predictor variable is added to the model, a removal test is made of the least effective variable (Field, 2008).

The developed models were based on the theoretical constructs of Routine Activities Theory and were employed to analyze the effects of independent variables on the occurrence of the dependent variable. In this analysis the perception of accessibility, motivation, social guardian and legal guardian factors and items were treated as predictor variables, and the pirated software usage attitude was treated as a dependent variable.

The output in Table 34 shows the model summary, which contained three models. Model 1 refers to the first stage in the stepwise regression, where only the Motivation factor was used as a predictor variable. Model 2 refers to the second step, where the

Motivation and the Accessibility factors were used as predictors. Model 3 refers to the final step, where the factors of Motivation, Accessibility, and Social Guardian were used as predictor variables. Only these factors were included; the legal guardian factor did not meet the requirements for entry into the models.

Table 34 Model Summary of Stepwise Multiple Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.671[a]	.450	.449	3.15754	.450	484.531	1	593	.000	
2	.733[b]	.538	.536	2.89702	.088	112.447	1	592	.000	
3	.746[c]	.557	.555	2.83808	.019	25.845	1	591	.000	1.826

a. Predictors: (Constant), Motivation

b. Predictors: (Constant), Motivation, Accssblty

c. Predictors: (Constant), Motivation, Accssblty, Socguard

d. Dependent Variable: Attitude

According to the results of the stepwise multiple regression analysis, there were three significant predictors: Motivation, Accessibility, and Social Guardian. The Motivation factor was found to be the most statistically significant predictor of pirated software usage attitude. This factor also has the highest correlation with attitude. The second most important predictor of overall pirated software usage attitude is the Accessibility factor. The third most important predictor of commitment is the Social Guardian factor.

For the first model, the R^2 value is .45, which means that the motivation factor accounts for 45% of the variation in pirated software usage attitude. For the second model, where the accessibility factor included, this value increases to .538, and for the third model, where the social guardian factor was included, this value increases to .557.

Therefore, if the motivation factor accounts for 45% of the variance in pirated software usage attitude, it can be deduced that the accessibility factor accounts for an additional 8.8%, and the social guardian factor accounts for 1.9% of the variance in pirated software usage attitude.

The question of "how well the model generalizes" can be determined from the adjusted R^2 value. The closer the value of adjusted R^2 to the value of R^2 is the better. In this study the difference between R^2 values for the last model is 0.002. This means that if the data had been gathered from the population rather than a sample, there would be approximately 0.2% less variance in the results.

Table 35 Results of Stepwise Multiple Regression Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4830.795	1	4830.795	484.531	.000[a]
	Residual	5912.240	593	9.970		
	Total	10743.035	594			
2	Regression	5774.537	2	2887.268	344.020	.000[b]
	Residual	4968.499	592	8.393		
	Total	10743.035	594			
3	Regression	5982.707	3	1994.236	247.587	.000[c]
	Residual	4760.328	591	8.055		
	Total	10743.035	594			

a. Predictors: (Constant), Motivation

b. Predictors: (Constant), Motivation, Accssblty

c. Predictors: (Constant), Motivation, Accssblty, Socguard

d. Dependent Variable: Attitude

The ANOVA table allows us to test whether or not our multiple regression model is significantly good at predicting pirated software usage attitude (Field, 2008). The output shows that the values of P (Sig) are 0.000 for all of the three models. The level of

0.000 of P is much less than the significance level of 0.05 ($\alpha = 0.05$), so it can be concluded that the final model is significantly good at predicting the level of Turkish Internet users' pirated software usage attitude.

Table 36 Coefficient Results of Stepwise Multiple Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.201	.467		9.003	.000	3.285	5.118					
	Motivation	.312	.014	.671	22.012	.000	.284	.340	.671	.671	.671	1.000	1.000
2	(Constant)	1.470	.500		2.943	.003	.489	2.452					
	Motivation	.244	.014	.525	16.835	.000	.215	.272	.671	.569	.471	.805	1.243
	Accssblty	.330	.031	.330	10.604	.000	.269	.391	.562	.400	.296	.805	1.243
3	(Constant)	4.372	.752		5.815	.000	2.895	5.848					
	Motivation	.227	.015	.488	15.539	.000	.198	.255	.671	.539	.425	.761	1.313
	Accssblty	.308	.031	.308	10.007	.000	.247	.368	.562	.381	.274	.789	1.268
	Socguard	-.108	.021	-.148	-5.084	.000	-.150	-.066	-.381	-.205	-.139	.883	1.132

a. Dependent Variable: Attitude

In multiple regression the model takes the form of an equation. The first part of the table titled "Unstandardized Coefficients" gives us estimates for b-values, which indicate each factor's contribution to the model. The b-values provide information about the relationship between pirated software usage attitude and each factor. A positive value represents a positive relationship between predictor and outcome, whereas a negative indicates a negative relationship (Field, 2008; Agresti and Finlay, 2006). In this study for the third model, two constants have a positive value and one has a negative value. This indicates that as degree of motivation increases, so does pirated software usage attitude;

and as degree of accessibility increases, so does pirated software usage attitude. As social guardian degree increase, pirated software usage attitude decreases.

For model three, the constants is: 4.372;

The partial slope of the regression line b-value for the Motivation factor: 0.227,

The partial slope of the regression line b-value for the Accessibility factor: 0.308,

The partial slope of the regression line b-value for the Social Guardian factor: -0.108,

Therefore, the multiple regression equation is:

$Y = \alpha + \beta 1\ X1 + \beta 2\ X2 + \beta 3\ X3$

$Y = 4.372 + (0.227\ X1) + (308\ X2) + (-0.108\ X3)$

The β values also tell us to what degree each variable affects the outcome if the remaining variables are held constant;

- For the motivation factor, β is 0.227, which indicates that as motivation increases by one unit, pirated software usage attitude increases by 0.227 units.
- For the accessibility factor, β is 0.308, which indicates that as accessibility increases by one unit, pirated software usage attitude increases by 0.308 units.
- For the social guardian factor, β is 0.108, which indicates that as accessibility increases by one unit, pirated software usage attitude decrease by 0.108 units.

In a good regression model, there should be a strong relationship between independent and dependant variables, and also a weak relationship among independent variables. That independent variables are uncorrelated with one another is an important assumption in multiple regression. Multicollinearity is tested through the Variance Inflation Factor (VIF) and tolerance scores. If VIF is greater than 10 then there is cause

for concern for high collinearity; a VIF around 5 indicates moderate collinearity, and a VIF very close to 1 confirms that collinearity is not a problem. Tolerance scores below 0.1 indicate a serious problem, and scores below 0.2 indicate a potential problem (Field, 2008). In this study the VIF scores for all variables are no more than 1.4, which can be interpreted to mean that collinearity is not a problem, and all the tolerance scores are over 0.7.

Answers for the Research Questions and Hypotheses

Research Questions and Answers

Main Research Question and Answer

What is the relationship between Turkish Internet users' pirated software usage attitude and their perceptions of accessibility of pirated software, their perceptions of social and legal guardians and their motivation degree?

Answer: This research question analyzes if there is a measurable relationship between pirated software usage and availability of software, lack of capable guardian, and user motivation. Based on the stepwise regression analysis and the Pearson correlation coefficient computation it appears that motivation, accessibility of pirated software, and perception of social guardians have an impact on pirated software usage. The legal guardian items and factor had a weak relationship with software piracy attiude, and was not included multiple regression model because it did not met the requirements. Overall, three factors explain 55.7% of the variation in pirated software usage, with a R^2 value of .557. Among these factors, motivation was found to have the most effect, with a R^2 value of 0.45, which means that the motivation factor accounts for 45% of the variation in pirated software usage attitude. The accessibility factor accounts for 8.8%, and the

social guardian factor accounts for 1.9% of the variance in pirated software usage attitude.

Subsidiary Research Questions and Answers:

Question 1: Is there any relationship between Turkish Internet users' pirated software usage attitude and their perception about the accessibility of pirated software?

Answer: The correlation coefficient provides information about the degree of relationship between the two variables. Correlation coefficient scores vary between 0 and 1, and a coefficient of +1 indicates a perfect positive correlation. Based on the Pearson correlation coefficient ($r=.562$, $p <. 01$); we can say that there is a strong positive relationship between pirated software usage attitude and perception of accessibility; as degree of accessibility increases so does pirated software usage.

Question 2: Is there any relationship between Turkish Internet users' pirated software usage attitude and their degree of motivation to use pirated software?

Answer: Based on the Pearson correlation coefficient computation ($r = .671$, $p < .01$), we can say that there is a strong positive relationship between pirated software usage attitude and degree of motivation; as the degree of motivational factors increase so do pirated software usage.

Question 3: Is there any relationship between Turkish Internet users' pirated software usage attitude and their perceptions of social guardians?

Answer: Based on the Pearson correlation coefficient computation ($r = -.381$, $p < .01$), there is a moderate negative relationship between pirated software usage attitude and social guardian perception; as the degree of social guardian perception increases, pirated software usage decreases.

Question 4: Is there any relationship between Turkish Internet users' pirated software usage attitude and their perceptions about legal guardians?

Answer: Based on the Pearson correlation coefficient computation ($r = -.104$, $p < .01$) there is a weak negative relationship between pirated software usage attitude and legal guardian perception; as the degree of legal guardian perception increases, pirated software usage decreases.

Question 5: What is the impact of Turkish Internet users' perceptions of the availability of pirated software on their pirated software usage attitude?

Answer: Based on the stepwise regression analysis, accessibility of pirated software has an impact on pirated software usage. Overall, the model explains 55.7 % of the variation in pirated software usage attitude, with a R^2 value of .557. Among the three factors in the model, accessibility degree was found to be the second most effective factor with a R^2 value of 0.088, which means that the accessibility degree factor accounts for 8.8% of the variance in pirated software usage attitude.

Question 6: What is the impact of Turkish Internet users' motivation degree on their pirated software usage attitude?

Answer: Based on the stepwise regression analysis, motivation degree to use pirated software has an impact on pirated software usage. Overall, this model explains 55.7 % of the variation in pirated software usage with a R^2 value of .557. Among the three factors, motivation degree was found to be the most effective factor with an R^2value of 0.45, which means that the motivation factor accounts for 45 % of the variance in pirated software usage attitude.

Question 7: What is the impact of Turkish Internet users' perceptions of social guardians on their pirated software usage attitude?

Answer: Based on the stepwise regression analysis, social guardian perception has an impact on pirated software usage as expected. Overall, the model explains 55.7 % of the variation in pirated software usage with a R^2 value of .557. Among the three factors in the model, social guardian degree was found to be the least effective factor, with a R^2 value of 0.019, which means that the accessibility degree factor accounts for 1.9 % of the variance in pirated software usage attitude.

Question 8: What is the impact of Turkish Internet users' perceptions of the legal guardian on their pirated software usage attitude?

Answer: Based on the stepwise regression analysis, legal guardian perception does not have an impact on pirated software usage as expected. Overall, the model explains 55.7 % of the variation in pirated software usage attitude with three factors, not including the legal guardian factor.

Question 9: Are there any relationship between the Attitude, Accessibility, Motivation, Social Guardian and Legal Guardian factors and gender?

Answer 9: Based on the independent T-Test analysis results,

- On average, males' pirated software usage attitude is greater than that of females. This difference is significant, with values of $t(593)= 5.09$, $p<0.05$.
- On average, males' perception of accessibility to pirated software is greater than that of females. This difference is significant, with values of $t(593)= 4.38$, $p<0.05$.
- On average, males' motivations to use pirated software is greater than that of females. This difference is significant, with values of $t(593)= 2.45$, $p<0.05$.

- On average, females' perceptions of social guardians against pirated software usage is greater than that of males, but this difference is not significant, with values of t(593)= -1.48, p>0.05.
- On average, males' perceptions of legal guardians against pirated software usage is greater than that of females, but this difference is not significant, with values of t(593)= .416, p>0.05.

Answers for the Hypothesis

Based on the above analysis and explanations, the answer to all research hypotheses can be given. The following research hypotheses are tested in this research project:

Hypothesis 1

The first hypothesis of the study is based on the target suitability component of the Routine Activities Theory and is stated as following: Turkish Internet users' ability to access pirated software is positively related to their pirated software usage attitude.

Based on the stepwise regression analysis and the Pearson correlation coefficient computation, *Research Hypothesis 1 is accepted*. Stepwise regression analysis indicated that degree of accessibility to pirated software is one of the three predictors of pirated software usage attitude of Turkish Internet users. With a R^2 value of 0.088, accessibility degree accounts for 8.8% of the variance in pirated software usage attitude. The Pearson correlation coefficient also revealed that the degree of accessibility to pirated software and Turkish Internet users' pirated software usage attitude are significantly related to each other, with a correlation coefficient of 0.562 at the 0.01 significance level.

Hypothesis 2

The second hypothesis of study is based on the motivated offender component of the Routine Activities Theory and is stated as following: Turkish Internet users' motivation to use pirated software is positively related to their pirated software usage attitude.

Based on stepwise regression analysis and the Pearson correlation coefficient computation, *Research Hypothesis 2 is strongly accepted*. The stepwise regression analysis indicated that motivation to use pirated software is one of the three predictors of pirated software usage attitude of Turkish Internet users. With a R^2 value of 0.45, motivation to use pirated software is the factor that accounts for the most variance in pirated software usage attitude. The Pearson correlation coefficient also revealed that degree of motivation to use pirated software and Turkish Internet users' pirated software usage attitude are significantly related to each other, with a correlation coefficient score of 0.671 and significance at the 0.01 level.

Hypothesis 3

The third hypothesis of the study is based on the lack of capable guardian component of the Routine Activities Theory and is stated as following: Turkish Internet users' perceptions of social guardians are negatively related to their pirated software usage attitude.

Based on the stepwise regression analysis and the Pearson correlation coefficient computation, *Research Hypothesis 3 is moderately accepted.* Stepwise regression analysis indicated that perception of social guardians against pirated software usage is one of the three predictors of pirated software usage attitude of Turkish Internet users.

But with a R^2 value of 1.9%, social guardian perception has a very small effect on the variance. The Pearson correlation coefficient also revealed that social guardian perception and Turkish Internet users' pirated software usage attitude are moderately related to each other, with a correlation coefficient score of -0.381 at the 0.01 significance level.

Hypothesis 4

The fourth hypothesis of the study is based on the lack of capable guardian component of the Routine Activities Theory and is stated following: Turkish Internet users' perception of legal guardian is negatively related to their pirated software usage attitude.

Based on the stepwise regression analysis and the Pearson correlation coefficient computation, there was very little support found for *Research Hypothesis 4* and therefore it is *rejected*. The three factors found by stepwise regression analysis as the best predictors of pirated software usage attitude of Turkish Internet users did not include the legal guardian factor in the model. The Pearson correlation coefficient also revealed that there is a weak relationship between legal guardian perception and Turkish Internet users' pirated software usage attitude, with a correlation coefficient score of -0.104 at the 0.01 significance level.

Brief Summary

The purpose of this chapter was to provide the results of the statistical analysis of the findings gathered from the survey questionnaire. The summary description of the survey results includes the reliability test and univariate, bivariate, and multivariate results from the analysis of the quantitative data collected from 595 Turkish Internet

users. The data was gathered from surveys administered to the respondents between September 2009 and January 2010. The survey questions were structured based on the theoretical constructs of Routine Activities Theory.

As the first part of the chapter, after the data collection process, Cronbach's Alpha coefficients were calculated to determine the internal consistency and reliability of each survey instrument separately. The Cronbach's Alphas for internal consistency and reliability of the 5 factors of the survey were acceptable, ranging from .5431 for Motivation to .9138 for Legal Guardian. This means that the questions for the same factor on the survey were related to each other. Cronbach's Alpha coefficient confirmed that there was high internal consistency of the items in the survey factors.

In the second part of this chapter, univariate results were separated by dependent variables and each component of theoretical construct. With this approach, the frequency and descriptive statistics for each survey item were described.

In the third part of this chapter, independent T-Tests and one-way ANOVA tests were implemented to analyze the effect of the demographic variables (gender, age, and education) on Attitude, Accessibility, Motivation, Social Guardian, and Legal Guardian factors. According to the independent T-Test analysis results, there are significant differences in the pirated software usage attitude, perception of accessibility to pirated software and motivation to use pirated software between male and female participants in the survey. Although the differences between mean scores is small, it can be said that:

- Male Turkish Internet users more favorable on pirated software usage attitude than females.

- Male Turkish Internet users can access pirated software more easily than females.
- Male Turkish Internet users have more motivation to use pirated software than do females.

The one-way ANOVA test results indicate that the mean responses of younger Turkish Internet users (those 15-24 and 24-35) for the Attitude, Accessibility, Motivation and Social Guardian factors are significantly different from those of older Turkish Interent users, especially the older ones (35-44 and 45-55). These findings mean:

- Younger Turkish Internet users are using pirated software more than the older Turkish Internet users.
- Younger Turkish Internet users are using pirated software more than older Turkish Internet users.
- Younger Turkish Internet users have more motivation to use pirated software than do older Turkish Internet users.
- Younger Turkish Internet users perceive social guardian care less than older Turkish Internet users.

The next section of this chapter includes bivariate correlation analysis among the independent and dependent factors and items. The findings indicate that there is a genuine positive relationship between pirated software usage attitude and motivation, with a correlation coefficient score of .671 at the .01 significance level. It was also found that the relationship between pirated software usage attitude and perception of accessibility is genuine, with a correlation coefficient score of .562 at the .01 significance level. The output shows that there is a moderate negative relationship between pirated

software usage attitude and social guardian perceptions, with a correlation coefficient score of .381 at the.01 significance level. There is also a very weak negative relationship between pirated software usage attitude and legal guardian perception, with a correlation coefficient score of .104 at the .01 significance level.

The last section of Chapter IV explored the multivariate regression analysis results between independent and dependent variables. A stepwise multiple regression procedure was performed to examine the effects of the independent variables on the dependent variable. The output generated a model summary that contained three models. The last model refers to the final step where the factors of Motivation, Accessibility, and Social Guardian were used as predictor variables. Only these factors were included, as the legal guardian factor did not meet the requirements for entry into the models. In multiple regressions, the model takes the form of an equation. The multiple regression equation is as follows:

The partial slope of the regression line b-value for the Motivation factor: 0.227,

The partial slope of the regression line b-value for the Accessibility factor: 0.308,

The partial slope of the regression line b-value for the Social Guardian factor: -0.108,

$Y = \alpha + \beta 1\ X1 + \beta 2\ X2 + \beta 3\ X3$

$Y = 4.372 + (0.227\ X1) + (0.308\ X2) + (-0.108\ X3)$

In this study, for the final model, two constants have a positive value and one has a negative value. This means that as motivation degree increases, so does pirated software usage attitude; as accessibility degree increases, so does pirated software usage attitude. As degree of social guardian perception increases, pirated software usage decreases.

CHAPTER V

Qualitative Analysis Results and Findings

Introduction

This chapter includes the results and analysis of the interview forms. Due to target populations' characteristics, online interview research was administered in this study via www.surveymonkey.com. The interview form was provided after the completion of the survey questionnaire. Qualitative data gathered from the online interview forms was used as a validation tool for the quantitative data gathered from the survey questionnaire. The qualitative data analysis process consisted of the following steps (Creswell, 2009):

1. Interview answers were sorted by topic to prepare the data for analysis.
2. All the answers were read to obtain general information about participants' ideas.
3. A detailed analysis was conducted in which general topics were listed and responses were categorized based on the listed topics.
4. Answers were transferred into a qualitative narrative.
5. As a final step, an interpretation was made about the qualitative data.

Demographic Characteristics of Participants

There were 399 respondents participating in this part of the project. The key demographic characteristics of the Turkish Internet users participating in this part of the study are described in the descriptive frequency tables below.

Table 37 Distribution of Participants by Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	319	79.9	79.9	79.9
	Female	80	20.1	20.1	100.0
	Total	399	100.0	100.0	

There were 399 participants in this study; 319 of the participants, corresponding to 79.9 % of the sample, were male, and 80 of the participants, corresponding to 20.1 % of the sample, were female. Frequency distribution analysis of gender groups shows that the sample consisted of mostly male participants, as does the real population; howerver, the percentage of female particapants in the sample is lower than percentage of females in the real population of Turkish Internet users.

Table 38 Distribution of Participants by Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15-24	78	19.5	19.5	19.5
	25-34	160	40.1	40.1	59.6
	35-44	113	28.3	28.3	88.0
	45-54	39	9.8	9.8	97.7
	55 and up	9	2.3	2.3	100.0
	Total	399	100.0	100.0	

In this study, the sample covers Internet users from different age groups. 78 participants, corresponding to 19.5 % of the sample, were aged 15-24,, 160 participants, corresponding to 40.1 % of the sample, were aged 25-34, 113 participants, corresponding to 28.3 % of the sample, were aged 35-44, 39 participants, corresponding to 9.8 % of the sample, were aged 45-54, and 9 participants, corresponding to 2.3 % of the sample, were

aged 55 and up. Based on the frequency distribution of age groups, it can be said that youngest age group (15-24) was underrepresented in the sample in relation to its proportion of the overall population. The other issue is that the second youngest age group (24-34) was overrepresented in the sample relative to its proportion of the overall population. The other age groups have a very similar distribution to those in the real population.

Table 39 Distribution of Participants by Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Elementary	3	.8	.8	.8
	High School	28	7.0	7.0	7.8
	University Degree	368	92.2	92.2	100.0
	Total	399	100.0	100.0	

The education level of the Internet users participating in this study is considerably high. 3 participants, corresponding to 0.8 % of the sample, had only an elementary school education, 28 participants, corresponding to 7.0 % of the sample, had a high school education, and 368 participants, corresponding to 92.2 % of the sample, had a university degree. Frequency distribution analysis of education groups indicates that the education level of the Internet users participating in this part of the study is considerably higher than that of the real population. Those with only an elementary school education were barely represented in the sample population, and the percentage of participants with only a high school education in the sample is also very low compared to real population.

Analysis of Responses to Question 1

Question 1: How easy or hard is it to find and access pirated software? What makes it easy or hard?

Responses to the first question include the following categories.

Easy: Most of the respondents participating in this part of the study considered accessibility to the pirated software easy because of Internet and its features. According to these respondents, accessibility of pirated software became easier after the Internet. Buying hard copies of pirated software or getting it from friends were considered secondary alternatives after the Internet option. Accessing pirated software on the Internet is the first choice for most of the participants because it is free and easy to access. The following points were mentioned as reasons why accessibility of pirated software is easy:

- Everybody uses pirated software and this makes accessibility of pirated software easy,
- Controlling the Internet is so difficult,
- The Internet provides international pirated software resources,
- The connection speed of the Internet is getting faster, which makes accessibility easier,
- Free online storage options exist,
- Forum websites provide consultation services,
- There are diverse mediums to access pirated software, such as P2P file sharing mediums and file sharing websites (Rapidshare etc.).

Difficult: A small portion of the participants think that accessibility of pirated software is difficult. Participants who believe accessibility of pirated software's difficulty gave different reasons;

- Finding clean software (without viruses) is difficult,
- Finding appropriate pirated software requires high technological knowledge,
- Accessing pirated software requires highly specialized technological resources (high speed Internet, high model computers etc.),
- The Internet is too complicated,
- Various options provided on the Internet make it difficult to find the correct one,
- Finding the software "key" is difficult,
- It is too time consuming.

It is Getting Difficult: According to the participants, accessing pirated software is getting difficult because of technological regulations and/or security issues. Technological regulations include online registration of software. Currently most of the software companies require online registration. As a result of technological precautions, participant thought that "it is easy to access pirated software but it is getting difficult to use it." The other issue that makes use of pirated software difficult is virus problems. According to participants, most pirated software has virus problem, which makes it difficult to find clean versions.

Depends on Users' Knowledge: For some of the participants, accessibility of pirated software is easy for advanced computer users, but finding correct, clean and usable software is complicated for amateur users.

Depends on Software Type: According to participants, the type of software is another factor that affects easy accessibility of pirated software. To participants, pirated versions of popular software can be obtained easily but pirated versions of rarely used software cannot be obtained, especially on the Internet.

Indifferent: Some of the users don't have any idea about the accessibility of pirated software for the following reasons,

- They have low computer literacy,
- They have never used pirated software,
- Their family members or friends take care of it.

The distribution of responses for the first question is shown in Table 40.

Table 40 Distribution of Responses to the First Interview Question

	Frequency
Easy	220
Difficult	29
Getting Difficult	24
Depends on Users' Knowledge	35
Depends on Software Type	30
Indifferent	73

Analysis of Responses to Question 2

Question 2: Why do you think people choose to use pirated software? Are there any other reasons people choose pirated software besides cost?

Responses to the second question include the following categories.

High Software Prices: Almost all of the Turkish Internet users mentioned high software prices as the most important reason behind software piracy. According to the Turkish Internet users, software prices are higher than computer prices, and users think that the

total cost of required basic software for a personal computer is almost three or four times more expensive than the computer itself.

Economic Problems: In connection with high software prices, Turkish Internet users mentioned economic problems as the other important factor behind software piracy usage. Although economic conditions of countries vary, software prices are the same in all countries and according to Internet users, this creates inequality. Software prices have been set based on the economic trends in the U.S., and Turkish users cannot afford this.

Pirated Software is Cheap or Free: According to some of the participants, people use pirated software because it is so cheap or free. To participants, even if software companies decreased the prices, some of the users would continue to use pirated software.

Tentative License Period: "Tentative License Period" was another reason mentioned for software piracy. Internet users do not want to pay every year to renew their software. According to participants, this practice makes them slaves of big software companies.

Lack of Knowledge: To some of the participants, lack of knowledge about software piracy is also a reason behind software piracy. Some participants reported using pirated software without knowing that it was pirated. Installation of pirated product on computers by some computer companies in Turkey agitates this issue.

Easy Access: Easy accessibility of pirated software was also a commonly mentioned reason for software piracy. According to participants, pirated software can be found on the piracy market for 1/10 of its real price, or can be obtained online for free with some searching. Sharing with friends was also mentioned as another option that makes accessibility of pirated software easy.

Author's Remoteness: Another reason behind software piracy stems from the author's remoteness, an issue that assumedly makes software piracy a clean "digital transaction" in the user's mind. According to participants, individuals feel less guilty due to an author's remoteness.

Sign of Prestige: According to participants, some of the people use new versions of software as a prestige tool. In order to keep their respectability among their friends, they are using pirated products.

Ethical Problems: To participants, ethical issues are another key reason behind piracy. According to users, everybody uses pirated software and software piracy is still not considered an ethical problem in Turkey.

Foreign Product: Some participant thinks that using pirated products of local companies might be considered software piracy, but using pirated products of foreign companies is not.

Habit: To participants, using pirated software happens out of habit. Because switching to other software takes time and effort in learning how to use the new product, users find and use pirated software.

Difficulty Accessing Authorized Software: According to participants, it is difficult to access new versions of software, but pirate products can be accessed very easily. To participants, it is very difficult to find current versions of software from local companies. Current versions of legal software can only be obtained through the Internet, and users do not want to use their credit card information on the Internet to make a purchase for security reasons.

Lack of Punishment: Lack of punishment is considered another reason behind software piracy for participants. According to the Turkish Internet users, police can only identify pirated software usage through Internet-based channels, but there aren't enough legal regulation on the Internet, and this makes it easy to access pirated software without risk.

Urgent Need: According to participants, some Internet users use pirated software because they need it and they don't have enough money to buy it. Users falling in this category are mostly students. To participants, universities do not provide enough software options for students and they choose pirated software usage to improve themselves.

Temporary Usage: To the participants, people do not want to pay for software for temporary usage. They need the software once or twice for a specific project. It is too expensive and absurd for them to pay high prices for temporary usage.

Curiosity: A small portion of the participants thought that people use pirated software out of curiosity.

The distribution of the responses to the second question is shown in Table 41.

Table 41 Distribution of Responses to the Second Interview Question

	Frequency
High Software Prices	211
Economic Problems	42
Pirated Software is Cheap or Free	64
Tentative License Period	21
Lack of Knowledge	10
Easy Access	70
Author's Remoteness	2
Sign of Prestige	3
Ethical Problems	16
Foreign Product	11
Habit	3
Difficult to Access Legal Software	24
Lack of Punishment	7
Urgent Need	11
Temporary Usage	12
Curiosity	8

Analysis of Responses to Question 3

Question 3: If you were to use pirated software, how do you think your family or friends would feel about your decision? Why would they feel that way?

Responses to the third question include the following categories:

Negative: According to some participants, their families view using pirated software as a problem. The following reasons were mentioned for families' or friends' negative views;

- Families or friends consider using pirated software to be stealing knowledge.
- Religion is the other reason for families' negative views. According to participants, using pirated software is against Islamic values.
- Families don't want them to be punished.

Positive: Most of the users thought that their families do not see using pirated software as a problem. Most of the participant used the same sentence to explain the lack of social risk: "My family congratulates me instead of getting angry for finding high priced software without payment." According to participants, families think pirated software usage is not a problem for the following reasons;

- Everybody uses it,
- It is a secondary issue,
- Users do not make money from it.

Families Don't Care: Some of the users thought that their families do not care about their pirated software usage. According to users, people in Turkey see pirated software usage as a problem of only secondary importance.

Lack of Information: According to a small portion of participants, their families would not say anything, because they do not have any idea about software or software piracy.

Indifferent: Some of the participants do not have any idea about this question. This lack of knowledge is because they haven't used pirated software before or their families do not have any knowledge about this issue.

The distribution of responses to the third question is shown in Table 42.

Table 42. Distribution of Responses to the Third Interview Question

Table 42 Distribution of Responses to the Third Interview Question

	Frequency
Negative	61
Positive	173
Families Don't Care	29
Lack of Information	72
Indifferent	66

Analysis of Responses to Question 4

Question 4: Do you think that copyright protection is effective or is not effective in preventing software piracy? Why?

Responses to the fourth question include the following categories.

Not Effective: Most of the participants thought that protection is not effective both on the Internet and on the software piracy market. Anyone who wants to obtain software can do so easily. The leading argument for this statement is "everybody uses it".

Effective: According to participants, software protection is locally effective, but because of high software prices, it cannot be prevented. An Internet user who wants to obtain pirated software can find a way on the Internet because there are global resources.

Effective for Companies: Users thought that software protection is effective in Turkey, but only for companies. There are strict controls against software piracy for companies, but that regulation is not effective at the individual level.

Law Enforcement Problem: According to participants, this issue is not a legislation problem. To participants, Turkish copyright law is effective enough to prevent software piracy, but law enforcement agencies can not implement it. The primary reasons for this statement that copyright law cannot be implemented are the following;

- Everybody uses pirated software, even law enforcement officers,
- People cannot pay high prices for legal software,
- Sellers or up-loaders should be punished, not users.

Indifferent: Some of the Internet users participating in this study do not have any idea about legal regulations.

The distribution of responses to the fourth question is shown in Table 43.

Table 43 Distribution of Responses to the Fourth Interview Question

	Frequency
Not Effective	228
Effective	27
Effective for Companies	15
Law Enforcement	26
Indifferent	103

Analysis of Responses to Question 5

Question 5: If someone were to use pirated software, how likely is it that he or she would face legal penalties? Why?

Responses to the fifth question include the following categories:

It is not possible: Some of the participant thought that prosecution of individuals for use of pirated software is not possible. According to participants, use of pirated software can only be identified through the Internet. Millions of people use pirated software and the police and judicial system cannot handle it.

Low possibility: Most of the users think that prosecution of an individual for pirated software usage is very low. Most of the users support their belief with the following arguments;

- "Everybody uses it".
- No individuals have been punished for using pirated software.
- All users of pirated software cannot be punished, but there might be some symbolic punishments.
- Law enforcement only cares about companies and pirated software providers (sellers or uploaders), but not individual users.

Possible: Some of the users think that it is always possible to face legal penalties because legislation enables this and law enforcement agencies have capabilities to enforce it.

High Possibility: A low number of users think that it is highly possible to face legal penalties due to amended legislations based on EU standards.

Police only Care About Pirated Software Providers: According to participants, individual pirated software users are not of primary importance for law enforcement agencies. To participants, police currently only try to stop pirated software sellers or uploaders.

Indifferent: Some of the participants do not have any idea about the issue.

The distribution of responses to the fifth question is shown in Table 44.

Table 44 Distribution of Responses to the Fifth Interview Question

	Frequency
It is Not Possible	84
Low Possibility	150
Possible	62
High Possibility	11
Police only Care About Sellers or Uploaders	13
Indifferent	92

Brief Summary

The purpose of this chapter was to provide analysis of the data gathered from interview forms. The qualitative data collected from 399 Turkish Internet users. Data was gathered from interview forms administered to the respondents between September 2009 and January 2010. In this part of the chapter, a brief summary of findings gathered from the interview forms will be presented.

The first question of the interview was, "How easy or hard is it to find and access pirated software? What makes it easy or hard?" This question was based on the target suitability component of the Routine Activities Theory. As a summary of responses to the first question, most of the participants thought that accessibility of pirated software is easy. Only a small portion of participants (n=29) thought it is difficult. According to participants, the Internet and its unique characteristics are the leading factor that makes accessibility of pirated software easy. Participants who thought accessibility of pirated software is difficult have interrelated reasons for that: computer illiteracy, virus problems and complex structure of the Internet.

The second question of the interview was, "Why do you think people choose to use pirated software? Are there any other reasons people choose pirated software besides cost?" This question was based on the motivated offender component of the Routine Activities Theory. As a summary of responses to the second question, most of the participants thought that money and monetary factors are the basic reasons behind pirated software usage, mentioning "high software prices", "same software prices in all countries without considering economic instability", and "pirated software is cheap or free". The other leading factor that most of the users mentioned is easy accessibility of pirated

software. According to participants, getting access especially to the latest versions of software is very difficult from local software sellers and it is only available on the Internet. Participants who don't feel secure making online purchases choose pirated software usage as an alternative.

The third question of the interview was, "If you were to use pirated software, how do you think your family or friends would feel about your decision? Why would they feel that way?" This question was based on the lack of capable guardian component of the Routine Activities Theory. As a summary of responses to the third question, most of the participants thought that their families' reaction would be positive if they were to use pirated software. Money or cost was the main reason participants gave to explain their families' positive views. The other leading point that was gathered from the responses is their families would not care about this issue because it is a problem only of secondary importance for Turkish people. According to participants, people living in Turkey have more serious problem than pirated software usage. Only a small number of participants thought their families would have a negative reaction if they were to use pirated software.

The fourth question of the interview was, "Do you think that copyright protection is effective or is not effective in preventing software piracy? Why?" This question was based on the lack of capable guardian component of the Routine Activities Theory. As a summary of responses to the fourth question, most of the participants thought that copyright protection is not effective in preventing software piracy and gave tbe same reason: "because everybody uses it". A considerable number of users do not have any idea about copyright protection. The number of users who believe copyright protection is effective is very low. In general participants have very little information about

legislation; their comments about copyright protection are mostly based on pirated software usage generally.

The fifth question of the interview was, “If someone were to use pirated software, how likely is it that he or she would face legal penalties? Why?” This question was based on the lack of capable guardian component of the Routine Activities Theory. As a summary of responses to the fifth question, most of the participants thought that there is little or no possibility of prosecution. According to participants, it is impossible to prosecute millions of pirated software users. Participant who thought it was possible to be prosecuted give the Internet as a reason. To participants, the Internet provides facilities for the prosecution of pirated software usage and it is always possible be prosecuted. A considerable number of participants do not have any idea about prosecution of pirated software usage.

CHAPTER VI

Conclusion and Recommendations

This research project aimed at exploring pirated software usage attitude, accessibility of pirated software, motivations behind pirated software usage, and legal and social guardians against pirated software usage of Turkish Internet users. This part of the chapter presents the general conclusions based on the quantitative and qualitative findings and computations in Chapter IV and Chapter V.

Conclusions

1) Pirated software usage:

According to frequency analysis of survey questions, it was found that:

- More than 75% of the survey participants used pirated software,
- More than 70% of the participants have an intention to use pirated software in the near future,
- When asked about their intention degree to use pirated software in the second and third questions ("I will try to use pirated software in the near future" and "I will make an effort to use pirated software in the near future", the third question) most of the participants expressed their intention to try it, with 47.6% agreeing and 20.2 % strongly agreeing. However, the same level of intention cannot be seen if an effort is required to use pirated software; in this case only 21.7% agreed that they would try pirated software and 16% strongly agreed.

Based on these analyses, it appears that Turkish Internet users use pirated software at a high degree. About 70% of Turkish Internet users used pirated software and they are planning to use it in the future as well. However, it seems they access pirated

software easily, without using much effort. Only about 37% of the participant expressed an intention to try harder to access pirated software if it becomes more difficult to reach.

2) Accessibility of pirated software,

Analaysis of the findings of the frequency distribution of survey questions indicates that:

- Most of the users consider accessing pirated software to be easy (the total of those who agree and strongly agree with all accessibility items is more than 59% for each item).
- Most of the users also indicate they have the abilities and resources to access pirated software.
- The correlation analysis results indicate that both at the item and factor level:
- There was a strong relationship between accessibility degree and pirated software usage attitude.
- Regression analysis also indicates that:
- The accessibility factor was the second most effective variable in the final regression model.

These findings were also supported by the qualitative data gathered from interview forms:

- Most of the participants' responses to the first question show that accessibility of pirated software is easy.
- Easy accessibility of pirated software was also mentioned as a motivation for pirated software usage in the responses of the second interview question; according to participants, accessibility, especially of the latest versions of

software is very difficult from local software sellers, and these versions are only available on the Internet. Participants who don't feel secure making purchases online choose pirated software usage as an alternative way.

These results indicate that, for most Turkish Internet users, finding pirated software is an easy task. Internet is mentioned as a leading medium to access pirated software because it is free and easier than other options. Finding pirated software from pirated software market was also mentioned as an option within interview answers.

3) Motivations to use pirated software:

The findings gathered from frequency distribution analysis of the motivation variables indicate that:

- Most of the participants (more than 60%) thought pirated software usage saves money,
- High agreement (58%) can be seen on the seventh motivation variable, which includes the statement that pirated software usage might be OK for games software.
- High agreement can also be seen on the frequency distribution of the responses to the third motivation variable ("nothing wrong with giving friends copies of software"), the fourth motivation variable ("OK to use pirated software to improve knowledge") and the eighth motivation variable ("nothing wrong with using pirated software if it is badly needed").
- Responses to the other items of the motivation factor were almost evenly distributed along the agreement and disagreement scales.

According to correlation analysis at the item level:

- All the motivation items have either moderate or strong relationships with the dependent variable.

According to correlation analysis at the factor level:

- The motivation factor has the strongest relationship with pirated software usage attitude.

Regression analysis also shows that:

- The motivation factor has the strongest effect on pirated software usage attitude.

Money or cost as the most common motivation factor behind pirated software usage was also supported by the responses to interview questions. The responses to all five interview questions indicate that:

- Most of the users thought money, or cost, is the main factor that highly affects pirated software usage issue. As an example, within the responses to the third question, a considerable number of participants believe that although using pirated software is unethical, their families would be persuaded to accept it, because of high software prices. As another example, within the responses to the fourth question, participants believe that copyright protection is effective, but also indicated that users would find a way to obtain pirated software because of high software prices and monetary problems.

These analyses show that a basic motivation to use pirated software is monetary problems, such as:

- High software prices,
- Turkish people's low income,

- Students' low income, and
- Free pirated software option on the Internet.

In addition to these problems, it should be also considered that people, and especially students, need software for their education. They cannot afford to pay high software prices and this makes using pirated software an indispensable option. They easy accessibility of pirated software compared to the difficulty of accessing legal software in local markets are also mentioned as reasons behind pirated software usage.

4) Conclusions on social guardians against pirated software usage:

The findings gathered from frequency distribution analysis of the social guardian variables indicate that:

- Most of the Turkish Internet users do not want to be known as "pirated software users" by their families;
- The views of families and friends are important for Turkish Internet users. Evidence for this is the high agreement expressed in the first and second social guardian variables ("If my family and friends are aware of whether I use legal software, I will choose authorized software" and "If my family and friends prefer using legal software, I will choose authorized software as well").
- There is only a low level social guardian mechanism against pirated software usage in Turkish Internet users' minds. Evidence for this is the considerably high disagreement for the third, fourth, and fifth social guardian variables ("My family and friends will have negative views on me if they find out that I use pirated software", "My family and friends will believe that my behavior is against the

social norm if they find out that I use pirated software", and "My family and friends will keep me at a distance if they find out that I use pirated software"). According to correlation analysis at the item level;

- All the social guardian variables have either a weak or moderate negative relationship with the dependant variable.
- According to correlation analysis at the factor level;
- The social guardian factor has a moderate negative relationship with pirated software usage attitude.
- According to the regression analysis;
- Perception of social guardian has a very small affect on pirated software usage.

These findings were also supported by the responses to the third interview question. According to the responses:

- Most of the participants thought that their families would react positively if they were to use pirated software.
- The main reason for this positive view is monetary issues.
- The other answer code for the third question is that users' families do not care about pirated software usage because it is a problem of only secondary importance in Turkey.

These analyses and results indicate that there isn't enough social consensus against pirated software usage, and that social guardians have only a weak negative affect on pirated software usage. There are different reasons behind this lack of control. Some of the reasons include:

- Low level knowledge about ICTs,
- Lack of knowledge about pirated software,
- High software prices,
- Turkish people have economic problems more important than pirated software usage, and
- Pirated software usage is not considered as an ethical problem.

5) Conclusions on legal guardians against pirated software usage:

The findings gathered from the frequency distribution analysis of the legal guardian variables indicate that:

- The "indifferent" response is the most common response for the first, second, and fourth legal guardian variables ("Those who use pirated software may be prosecuted", "Those who use pirated software may be fined," and "Those who use pirated software may be punished according to laws and regulations"). The "indifferent" response was also the second most common response for the third legal guardian variable.

According to correlation analysis at the item level:

- All the legal guardian variables have either a weak negative relationship or no relationship with pirated software usage.
- According to correlation analysis at the factor level;
- The legal guardian factor has a weak negative relationship with pirated software usage attitude.

In relation to these findings, stepwise regression analysis indicates that:

- Perception of legal guardian does not have the expected impact on pirated software usage.

These finding were also supported by the answers for the fourth and fifth interview questions;:

- In general, participants have very little information about legislation; their comments about copyright protection are mostly based on pirated software usage generally.

These analyses indicate that Turkish Internet users do not have enough knowledge about current legislation, nor do they need to learn due to lack of control. Most participants' responses to interview questions were based on their own experiences and cases around them. It is also important to note that some of the users do not think using pirated software is illegal, and to them pirated software sellers and uploaders should be stopped and prosecuted at the first level, not pirated software users. It can be also understood that legal precautions against widespread pirated software usage within Turkish society cannot solve the problem and nor do they address the root of the problem.

Recommendations

Suggestions for Software Producers

- *Lowering and/or Balancing Software Prices:* Based on the findings from both the quantitative and qualitative analysis, it appears that money-related issues are the basic problem behind pirated software usage among Turkish Internet users. In this context, in order to decrease pirated software usage, the first steps should relate to adjusting software prices to individuals' income level in specific countries. According to Turkish internet users, current prices in Turkey are much higher

than individuals can afford. Participants do not want to spend half of their salary or their whole salary for software expenses. The other issue, according to participants, is that the total price of basic software for a regular personal computer is more than the computer itself. Software users do not want to pay more for software than for hardware.

- *Short Term Licenses:* Short term software licenses (one or two years) were the other problem mentioned in interview forms. In participants' views, this is an endless expense and they don't want pay for the same software every year. Software companies might address this problem by removing short term fees and providing an option for users such as very low rate annual update fees.
- *Special Options for Students:* According to participants, students cannot afford these high software prices, and for this reason, pirated software usage has become an indispensable solution for them. The policy of providing student users lower rate software prices is used in the U.S. but it is not being implemented in Turkey. This practice should be implemented in Turkey, but as mentioned earlier, prices should be adjusted based on the income level of Turkish people.
- *Providing Current Versions of Software in Local Markets:* It was mentioned as a problem in interviews that Turkish users cannot obtain current versions of software products in their local market. According to participants, current versions of software are only available for online purchase, and most of the Turkish Internet users do not think this is a safe way to make payments. Software companies should also consider this problem.

- *Online Registration Prevents Pirated Software Usage:* According to participants, after online registration of software has become the norm, pirated software usage has become more difficult. It seems this is an effective way to prevent pirated software usage and software companies should put more energy on implementing this piracy prevention option in more effective way.
- *Temporary License Option:* To participants, software users and especially students do not want to pay for software that they would use only once or twice for a project. Providing full mode, low priced and short term (one or two month) licenses might be an option for these kinds of users.

Suggestions for Universities

- *Providing Legal Software at University Campuses:* Due to the need for software to complete a project and unaffordable software prices, using pirated software becomes an indispensable option for students. Considering these issues, universities should provide required software tools on their university campuses to prevent their student from using pirated software products.
- *Providing Free Software Options:* Basic software options, such as operation systems, anti-virus software, or office tools might be provided to students for free for the duration of their education.
- *Informing Students about Open Source Software:* Most of the Turkish users still are not aware of open source software options. Universities should also support and inform their students about accessibility and usability of open source software. Open source software options might be provided in a list with a

counterpart from paid software, and in this way, students might see options other than using pirated software.

Suggestions for Governments

- *Not only Legal Precautions:* According to most of the participants, legal action is not a solution for the problem of software piracy. It also emerged from the qualitative analysis that perception of legal guardians has no effect on pirated software usage. It can be understood that the basic problem in this issue is not the lack of control. Other strategies, such as lowering software prices and public information campaigns should be implemented as first steps, and legal action should taken only as a last step.
- *Informing Citizens about Software Piracy:* It can be understood from the interviews that Turkish users do not have enough information about copyright legislation or even software piracy itself. According to participants, even some of the computer companies in Turkey upload pirated software for free on their computers without informing users about its illegality. Considering these issues, the Turkish government should develop public information campaigns against pirated software usage and inform their citizens about copyright legislation. It is also well known that most pirated software brings security problems with itself. This issue was also mentioned in interview forms by participants who mentioned it as a barrier to accessing clean pirated software. Governments should also consider this issue and put a special emphasis on it during educational campaigns.
- *Informing Citizens about Free Software Options*: Most of the open source software tools have options similar to those of paid software. One problem due to

the rare usage of open source tools is that software users do not know much about them. Governmental organizations may put an emphasis on open source software as a strategy against pirated software usage, and inform their citizens about free open source software options.

- *Supporting the Use of Open Sources Software:* Users choose to use paid products due to lack of support from governmental organizations. Most employers require knowledge of paid software, but open source software is never considered. Governments might support open source software use with educational campaigns or with other programs to make open source software usage common it society. In this way, citizens do not need to get involved in illegal software usage.
- *Legal software should be protected on the Internet:* As mentioned earlier, in Turkish copyright law, all kinds of online piracy are still not under the investigative responsibilities of law enforcement. A complaint is required from copyright owners to investigate specific piracy problems. The Turkish government should also consider this issue because, according to participants, currently most of the piracy occurs on the Internet.

Suggestions for Companies

- *Special Options for Employees:* The policy of providing employees of specific companies lower rate software prices is used in the U.S. but it is not being implemented in Turkey. With this policy, employees used basic software tools for a very low price. This practice should also be implemented in Turkey, but again, prices should be adjusted based on the income level of Turkish people.

Limitations of the study

The main limitation of this study is that the sample used cannot be considered completely representative of all Turkish Internet users, and the findings of the study cannot be generalized to the population. Participants were recruited for the study by email. However, participants who volunteered for the study may not be representative of the general population, or participants with certain characteristics may not have been willing to participate in the study due to security concerns.

Also related to the sampling, the correlation and stepwise multiple regression analysis results need to be interpreted carefully. The interpretations of these test results can be used to make logical inferences, and the results can be regarded as logical assessments of the problem. Readers are urged, however, to be careful and not to take the test results as population estimates. The findings presented in this report can be used in logical inferences about Turkish Internet users.

Closing Remarks

Despite the shortcoming of the study, the findings of this research are still valuable and represent a significant contribution to the literature. By asking questions about participants' attitudes toward the usage of pirated software, accessibility to pirated software, motivational factors and guardian factors, the study provides an analysis of the Turkish Internet users through the views of about six hundred participants in the survey study and about four hundred members in the interview study, of different gender, age and educational levels. Therefore, the study is not only an observation of these participants, but an exploration of Turkish Internet society through those members. It

makes a valuable contribution to the literature as a unique study of pirated software usage among Turkish Internet users.

Appendix A: Survey Instrument and Informed Consent

The Usage of Pirated Software Study Questionnaire Components

Before agreeing to participate in this research study, it is important to read the following explanation of this study. You are being invited to participate in a survey about pirated software usage. This research project is being conducted by Musa Karakaya, doctorate student at University of Baltimore.

Title: Analysis of the Reasons behind the Usage of Pirated Software among Turkish Internet Users

Objective: The objective of this research project is to explore the factors that contribute to pirated software usage among Turkish Internet users in order to define the dynamics behind the software piracy problem from the Internet users' perspective.

Definition: Business Software Alliance defined software piracy as the illegal copying, downloading, sharing, selling or installing of copyrighted software.

Voluntary Participation: Your participation in this survey which will take 20-25 minutes of your time is totally voluntary and you are free to withdraw from the study at any time. If you decide to participate, please, do not skip any questions.

Confidentiality: This survey is anonymous. If you choose to participate, **do not** write your name, address, or any contact information on the questionnaire. Any information that is obtained in this study will remain confidential and will be kept in a secure place. Nothing you say on the questionnaire will in any way influence your life.

Benefits and Risks: There are no known risks if you decide to participate in this research study, nor are there any costs for participating in the study. The information you provide will help researcher to understand factors behind the software piracy problem and develop solutions for current issues.

Contact Information: If you have any questions or concerns about completing the questionnaire or about being in this study, you may contact me at at musakarakaya@yahoo.com or musa.karakaya@ubalt.edu.

A. Demographic Questions

Please provide the following background information:

1. Age: _____ 2. Sex: Male Female

3. Education Level: Primary Education Highschool University Graduate

B. Attitude toward Pirated Software

		(1) Strongly Disagree	(2) Disagree	(3) Neither Agree nor Disagree	(4) Agree	(5) Strongly Agree
4.	I intend to use pirated software in the near future					
5.	I will try to use pirated software in the near future					
6.	I will make an effort to use pirated software in the near future					
7.	I have used pirated software in the past					

C. Availability of Pirated Software

		(1) Strongly Disagree	(2) Disagree	(3) Neither Agree nor Disagree	(4) Agree	(5) Strongly Agree
8.	For me to access pirated software is very easy,					
9.	If I wanted to, I could easily access pirated software					
10.	I believe that I have the ability to access pirated software					
11.	I have the resources necessary to access pirated software					

D. Motivations behind the Usage of Pirated Software

		(1) Strongly Disagree	(2) Disagree	(3) Neither Agree nor Disagree	(4) Agree	(5) Strongly Agree
12.	I think pirated software helps save money					
13.	I think it is okay to use pirated software to improve my productivity.					
14.	I see nothing wrong in giving friends copies of my software in order to foster friendship					
15.	I think it is okay to use pirated software if it improves my knowledge					
16.	I think it is okay to use pirated software because community at large is eventually benefited					
17.	I believe that software piracy helps to increase my computer literacy					
18.	I think it is okay to use pirated games software for entertainment					
19.	I see nothing wrong in using pirated software if it is badly needed for the success of a project					
20.	I think it is okay to use pirated software for research purpose, because everybody shares the benefits					
21.	I think software piracy is okay to punish software publishers who charge very high price					

E. Perception of Internet Users about Legal and Social Guardian

		(1) Strongly Disagree	(2) Disagree	(3) Neither Agree nor Disagree	(4) Agree	(5) Strongly Agree
22.	If my family and friends are aware of whether I use legal software, I will choose authorized software					
23.	If my family and friends prefer using legal software, I will choose authorized software as well					
24.	My family and friends will have negative views on me if they find out that I use pirated software					
25.	My family and friends will believe that my behavior is against the social norm if they find out that I use pirated software					
26.	My family and friends will keep me in distance if they find out that I use pirated software					
27.	My superiors will talk to me and ask me not to if they find out that I use pirated software					
28.	I will not let others know if I use pirated software					
29.	Those who use pirated software may be prosecuted					
30.	Those who use pirated software may be fined					
31.	Those who use pirated software may be arrested					
32.	Those who use pirated software may be punished according to laws and regulations					

Appendix B: Interview Questions

Question 1: How easy or hard is it to find and access pirated software? What makes it easy or hard?

Question 2: Why do you think people choose to use pirated software? Are there any other reasons people choose pirated software besides cost?

Question 3: If you were to use pirated software, how do you think your family or friends would feel about your decision? Why would they feel that way?

Question 4: Do you think that copyright protection is effective or is not effective in preventing software piracy? Why?

Question 5: If someone were to use pirated software, how likely is it that he or she would face legal penalties? Why?

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