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Academic and postgraduate student awareness of digital product copyright issues

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Abstract

The presentation and sharing of information, especially in digital environments, have become significantly easier with information and communication technologies and this has caused an increase in copyright problems. The aim of this study is to reveal the levels of awareness of academic and postgraduate students of copyrights in relation to digital products. The survey model was used in research conducted with the participation of academicians working at different universities in Turkey and postgraduate students in the 2018-2019 academic year. According to the findings, the knowledge level of the participants regarding copyrights, license agreements and fair use is moderate, their knowledge level about open source software, free software and copyleft is low, and they do not commit copyright infringements apart from downloading computer programs. Those working in the field of informatics commit more copyright infringement than others (such as using unlicensed software, distributing license serial numbers, illegally downloading music, videos etc., using without reference), as also do those in the 20-25 age range. The majority of participants stated that policies to prevent infringement of copyright digital products were insufficient, there is a lack of information about enforcement and their reasons for the situation include the belief in not getting caught and no one getting hurt, as well as not seeing it as a crime.

Keywords

copyright, Internet, ethics, software piracy, copyright infringement, academics, postgraduate students, Turkey

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Introduction

With technology taking a larger place in our lives, access to information technologies has started to be seen as a fundamental right, presenting the opportunity for individuals to copy work not belonging to them in a way and time they choose. Since physical boundaries have disappeared with the help of the Internet, it is easier to access content and software. Since work can be downloaded without expending much effort and without payment, copyright is regularly/often/frequently infringed. Nowadays copyright is among the most infringed rights on the Internet (Gün and Partners, 2019). With ever-changing digital media, technology has greatly lowered the cost of both the reproduction of material and its distribution (Tonta, 2002).

Copyright is defined on the website published by the Turkey Directorate General for Copyright (2019) as rights assigned lawfully to an individual on all products they created with their intellectual labor. Progress is not possible in a society in which works of creative thinking are not sufficiently protected; this

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being the duty of the state, it is necessary to keep the balance between the owner of the product and society, national interest and external dynamics acting upon intellectual property. Among the types of work within the scope of copyrights are voice recordings and musical compositions, visual works such as drawings, posters and advertisements, dramatic works such as theatre plays and musicals, audio-visual works such as tv shows, films and online videos, video games and computer software and written works such as lessons, articles, books and musical compositions (Copyrights Help Center, 2019).

Use of original work or images without providing a reference and copying and sharing work such as books, music, cinema, photography, and software which are created with intellectual effort and without permission and using it for commercial purposes are among the copyright infringements found in the digital environment. It can be difficult to control these types of usages. According to Law no 5846 of the Intellectual Property Rights in Turkey, to share a work of fine arts, asking permission and paying royalties to the holder of the copyright is needed; however the insufficiency of laws regarding the Internet and the fact that the Internet is convenient for unauthorized sharing make royalty payments difficult (Dolunay and Boyraz, 2013).

Measures are being implemented for the regulation of copyright, which is a civil right. According to the Digital Millennium Copyright Act (DMCA) released in the year 1998 with support from the World Intellectual Property Organization, if an individual has submitted content onto the Internet without the necessary permission from the copyright holder, the service provider is obligated to remove the content immediately, or cease access to the content upon notification sent to the service provider by the copyright holder (DMCA Turkey, 2019). Content providers who violate someone else's rights on the Internet, including copyright, are subjected to three months to two years imprisonment under the Law of Intellectual Property Rights numbered 5846 item 71, and can be required to pay compensation as per item 68 of the same law (DMCA Turkey, 2019).

While copyright regarding digital products concerns all parts of society, it especially concerns university academics, whose primary job is to generate and share information constantly, and their graduate and postgraduate students, who are candidates to be future academics. These individuals, share the products they create with others via scientific periodicals which are now primarily presented in digital form. The Internet has begun to be used as the most basic source of data (Deveci Topal and Budak, 2019; Oliver and Goerke, 2007). Academics frequently use electronic periodicals, which they can access whenever and wherever they wish and which are more up-to-date than printed versions (Besimoğlu, 2007).

Copyright law includes certain exceptional cases which favor users. According to the Law on Intellectual Property Rights in Turkey (FSEK) (2001) a released work can be freely presented in all educational institutions for face-to-face education purposes without direct or indirect profit motives on condition that the names of the owner and the work are customarily stated. Such cases are defined as 'fair use' whereby the usage and duplication of copyrighted work in critical, commentary, informational, educational (including multiple copies to be used in a classroom) and scholarship and research purposes are accepted (Digital Media Law Project, 2019). However, this situation should not give financial losses to the author.

Begum and Sharma (2018) state that the book industry at a global scale will gradually face destruction if piracy is not avoided, that governments lose much income due to pirated publishing, and that it discourages creativity and decreases the enthusiasm of authors to write. Among the most widespread reasons encouraging piracy in academic fields is the high costs of books and magazines, legal protections for copyrighted works being either absent or poorly implemented, greed to earn money quickly, using tools such as photocopiers, lack of knowledge and education, and lack of awareness about piracy and its consequences (Begum and Sharma, 2018). Balestrino (2008) states that while consumers can be aware that using, copying, buying, sharing, uploading and downloading of materials protected under copyright is theft, they may not accept it as a crime. In another study, Jackman and Lorde (2014) stated that for policies for the prevention and control of digital piracy to be successfully implemented, factors including personal ethics, other socio-psychological traits and the age of users should be considered. According to the Social Sciences Research Council, high media prices, low incomes and cheap digital technologies are the main components of global media piracy in developing countries, and its increasing prevalence is a result of the neglect of legal support (Social Science Research Council, 2011).

Different digital products can be accessed with or without charge. Knowing which these products are and the copyright concepts related to them (Freeware, Licensed Software, Open source Software, Free Software, Shared Software, Open Access, License Agreement, Copyleft, Creative Commons) directs Internet users in terms of which product to use, for which purpose and in which way, and prevents them from legal and ethical problems.

Academics and postgraduate students constantly produce new information on various topics and use the information generated for various purposes. Presentation and sharing of information have become significantly easier with information and communication technologies and this has caused copyright problems to increase (Sert, 2008; Cimilli-Akaydın, 2005; Çelik, 2018; Türkekul, 2004; Ghazali, 2003; Haines and Leonard, 2007). If copyright problems are not solved, academics may create less output and this would cause development and progress to decrease. If academics are not sufficiently informed about copyright laws, they may use copyrighted resources incorrectly. The scarcity of scientific research on the perspectives of scientists about copyright related to digital products is now drawing attention (Işkın, 2018; Özen, 2002, Ahmadi and Sonkar, 2015). This study was needed to develop awareness of the issue and prepare ground for new research.

Research objectives

This study aims to reveal the awareness levels of academics working at universities and students at postgraduate level in Turkey of copyright on digital products, and to analyze the results according to a variety of impacting variables.

To achieve this objective, the following subproblems are examined:

1. What are the opinions of academics and students at postgraduate level on their extent of knowledge of copyright and copyright concepts?
2. What is the behavior of academics and graduate students toward copyright?
3. What is the state of differentiation of the behaviors of academics and students at postgraduate level regarding copyright in terms of: department, age, duration of daily Internet usage, Internet usage level, ways to obtain the digital product and the use to which illegally acquired software is put?
4. What are the opinions of academics and postgraduate students towards copyright infringements?
5. According to academics and postgraduate students, what are the reasons behind copyright infringements?

Method

Research model and working group

This study has employed a survey model. The study group was composed of academics and postgraduate students in the 2018-2019 academic year in various universities across Turkey (Kocaeli, Istanbul Technical, Marmara, Pamukkale, Sakarya, Bilecik Şeyh Edebali, Selçuk, Karadeniz Technical, Amasya, Munzur, Özyeğin, Dokuz Eylül, Çukurova, Sivas Cumhuriyet, Yıldız Technical, and Mersin). A random sampling method has been used in the designation of the study group and data was collected digitally. A total of 193 individuals were initially approached and, due to deficiencies in some of the responses, of these a total of 188 individuals participated in the study. Descriptive information of the study group is presented in Table 1.

Data collection tool

The implementation of the data collection tool was largely carried out online. The online questionnaire was sent to the participants via email. Prior to filling out the questionnaire, information was given stating that the survey was conducted on a voluntary basis and could be abandoned if desired. The participants were informed that a 15-20-minute period was sufficient for filling in the questionnaire.

To determine the general characteristics of the study group, a 'Personal Information Form' was prepared and a Copyright Awareness Survey tool developed by Çelik (2008) was used. The survey included four sections: 'State of Knowledge Level about Concepts' a 'Behaviors Related to Copyright' scale, 'Opinion of Copyright Infringements', and 'Opinion on the Reasons for Copyright Infringements.

State of knowledge level about concepts. On the section of the survey titled 'State of Knowledge Level about Concepts', we examined participants' opinions about their knowledge level regarding concepts such as

Table 1. The distribution of participants in terms of demographic characteristics.

Variables	Choices	F	%
Gender	Female	113	59.8
	Male	75	39.7
Department	Engineering	75	39.9
	Computer and Instructional Technologies-computer-data processing-informatics	*11*	*5.9*
	Health Sciences/ Nursing/midwifery/ occupational health/ medical genetics/ medical biology/ biology- Faculty of Medicine/ Thoracic Diseases/ hematology	23	12.2
	Mathematics/ Science Education/Chemistry	*18*	*9.6*
	Educational Sciences / psychological counseling and guidance/ Classroom Education/ Lifelong learning / women studies/ assessment and evaluation	48	25.5
	Turkish Language / English	*13*	*6.9*
Age	20-25	42	22.3
	26-31	41	21.8
	32-37	23	12.2
	38-43	31	16.5
	44-49	35	18.6
	50 and above	16	8.5
Service Durations	1-6 years	73	38.8
	7-12	22	11.7
	13-18 years	30	16.0
	19-24 years	21	11.2
	25-31 years	23	12.2
	32 and above	19	10.1
Titles	Professor	14	7.4
	Associate Professor	23	12.2
	Assistant Prof	19	10.1
	Lecturer	14	7.4
	PhD	17	9.0
	Research Assistant	19	10.1
	Postgraduate Students	82	43.6
Daily Internet usage duration	I do not use the Internet	-	-
	1-3 hours	84	44.7
	4-6 hours	73	38.8
	7 hours and more	31	16.5
Computer Usage Level	Beginner	4	2.1
	Moderate	108	57.4
	Advanced	76	40.4
Internet Usage Level	Beginner	7	3.7
	Moderate	107	56.9
	Advanced	74	39.4
State of receiving lessons on ethics	No, I have not received a lesson on ethics	69	36.7
	I have only received a lesson on business ethics	86	45.7
	I received lessons on business ethics and informatics ethics	33	17.6
Choice of Obtaining Digital Product	Purchasing the software (program)	67	35.6
	Pirating the software (program) from the Internet	31	16.5
	Both	90	47.9
Usage state of software obtained through illegal ways	I use	107	56.9
	I do not use	81	43.1

copyright regarding digital products, software with open source code, free software, copyleft, license agreement, and fair use. Items found in the survey represent: 1, 'I have no idea'; 2, 'low level of information', 3, 'moderate level of information', 4, 'high level of information' and 5, 'very high level of information'.

Behaviors related to copyright. With this scale, the aim is to determine the behaviors of participants to copyright. The scale is made up of 11 items. In this section, the participants were asked to state their agreement levels to the statements with ratings of 'never', 'rarely', 'occasionally', 'frequently' and 'always'. In the results, the exploratory factor analysis was calculated as a single factor in this study. At the end of the analysis, it was observed that the articles of the scale represented 42.91% or the total variance. The

Cronbach Alpha level calculated to test the dependability of the scale was found to be 0.861. According to Kılıç (2016) the reliability of the scale is accepted as good if the coefficient is found equal to or greater than 0.70.

Opinion about copyright infringements. The section on copyright infringements of the usage of digital products was made up of eight items. Participants were asked to rate their agreement with the following statements: 'I do not agree at all', 'I do not agree', 'I agree at a moderate level', 'I agree', 'I totally agree'. At the end of the exploratory factor analysis performed in this study, it was observed that the articles of the scale represent 44.15% of the total variance. The Cronbach Alpha level calculated to test the dependability of the scale was found to be 0.701.

Opinion on the reasons for copyright infringements. The section of the survey prepared to determine opinions about the reasons for copyright infringements is made up of six items in total. Participants were asked to state their agreement with statements employing the following ratings: 'I do not agree at all', 'I do not agree', 'I agree at a moderate level', 'I agree', 'I totally agree'. At the end of the exploratory factor analysis performed, it was observed that the items of the scale represent 42.25% of the total variance. Reliability of the scale is 0.716. Reliability of all sections were accepted as good.

Results

Knowledge levels of respondents on copyright and concepts

Frequency and percentage analysis were performed to find the knowledge levels of academics and postgraduate students in terms of copyright and concepts on this topic. Results of analysis regarding knowledge levels are presented in Table 2.

Knowledge levels were found to be moderate on "Copyright in general", "Copyright regarding digital products", "License Agreement" and "Fair Use". Knowledge levels on "Open Source Software", "Free Software" and "Copyleft" were at a low level. Regarding "Copyleft", especially, most of participants replied, "I have no idea". This result shows a lack of available information on the "Copyleft" concept.

Table 2. Knowledge levels of respondents on copyrights and concepts.

Knowledge Levels on Concepts Regarding Copyright		1	2	3	4	5
Copyright in general	f	13	28	67	57	23
	%	6.9	14.9	35.6	30.3	12.2
Copyrights regarding digital products	f	20	36	72	43	16
	%	10.6	19.1	38.3	22.9	8.5
Open Source Software	f	53	38	45	27	25
	%	28.2	20.2	23.9	14.4	13.3
Free Software	f	57	41	45	28	17
	%	30.3	21.8	23.9	14.9	9.0
Copyleft	f	100	41	28	13	6
	%	53.2	21.8	14.9	6.9	3.2
License Agreement	f	28	39	50	44	27
	%	14.9	20.7	26.6	23.4	14.4
Fair Use	f	28	43	48	43	26
	%	14.9	22.9	25.5	22.9	13.8

1 = I have no idea. 2 = Low level of Information. 3 = Moderate level of information. 4 = High level of information. 5 = Very high level of information.

Behaviors of respondents in terms of copyright

Frequency and percentages were calculated for the behaviors of academics and postgraduate students regarding copyright. Results of analysis are presented in Table 3.

When the behaviors towards copyright are examined, it can be concluded that the majority of participants in the study agreed with the statement "I use software downloaded from the Internet without paying its price" (78.7%) and "I use programs with serial numbers I obtained from my friends/Internet" (66%). Furthermore, in the responses regarding this statement, it can be observed that the rate of participants who have performed this behavior is high. The percentage with the following statements are: "I use elements such as licensed photographs, pictures and animations without the owners' permission" (63.8%), "I download license cracking software from the Internet and use them." (63.8%), "I distribute serial numbers (license information) of programs online."(88.8%), "I duplicate licensed software belonging to me and share them with my friends."(67.0%), "I share works protected with copyrights such as music, film, photography on the Internet." (76.6%), "I use information and studies, which were obtained from the Internet and do not belong to me, on assignments and projects without referencing

Table 3. Results on the behaviors of academicians and students at postgraduate level in terms of copyrights.

Copyrights in the Usage of Digital Products		1	2	3	4	5
I use software downloaded from the Internet without paying its price	f	40	56	48	34	10
	%	21.3	29.8	25.5	18.1	5.3
I use programs with serial numbers of software I obtained from my friends/ Internet	f	64	50	39	27	7
	%	34.0	26.6	20.7	14.4	3.7
I use unlicensed software	f	50	56	41	35	6
	%	26.6	29.8	21.8	18.6	3.2
I use elements such as licensed photographs, pictures, and animations without the owners' permission	f	120	28	24	12	4
	%	63.8	14.9	12.8	6.4	2.1
I download license cracking software from the Internet and use it	f	120	26	20	15	7
	%	63.8	13.8	10.6	8.0	3.7
I download mp3s, films, programs or games from illegal websites	f	73	47	25	31	10
	%	38.8	25.0	13.3	16.5	5.3
When I need a software/ program, I ask a copy from a friend	f	45	42	53	38	9
	%	24.1	22.5	28.3	20.3	4.8
I distribute serial numbers (license information) of programs online	f	167	11	5	1	3
	%	88.8	5.9	2.7	0.5	1.6
I duplicate licensed software belonging to me and share them with my friends	f	126	30	18	7	6
	%	67.0	16.0	9.6	3.7	3.2
I share works protected with copyrights such as music, film, photography on the Internet	f	144	21	10	6	5
	%	76.6	11.2	5.3	3.2	2.7
I use information and studies, which were obtained from the Internet and do not belong to me, on assignments and projects without referencing them	f	159	15	10	1	3
	%	84.6	8.0	5.3	0.5	1.6

1-Never 2-Rarely 3-Occasionally 4- Frequently 5- Always.

them" (84.6%) When these responses are examined, it is observed that the large majority of participants responded to them with "never". When academics and graduate student knowledge of the concept of copyleft is examined, presented in Table 2, 75% (I have no idea 53.2% + Low level of Information 21.8%) of respondents do not know this ratio when the rates on the low level of information are collected. Because participants have low awareness about the concept of copyleft, it is natural to draw such a conclusion. Copyleft refers to (GNU, 2017) the individuals distributing the software with or without changes, to others who wish to copy or alter the software, are required to pass on this freedom and guarantee that each user has this freedom.

Thirty-eight point eight percent of participants responded to the statement, "I download mp3s, films, programs or games from illegal websites" with "never". On the other hand, a high percentage of respondents stated that they engaged in this behavior at least once. Twenty-four point one percent of the participants responded to the statement, "When I need a software/program, I ask for a copy from a friend." with "never". When other responses to this statement are examined, it can be observed that the rate of participants who have performed this behavior at least once is high. This shows that participants can easily obtain software in illegal ways.

Examination of copyright behaviors of academics and postgraduate students according to impacting variables

The analyses performed to determine the differentiation of behaviors of academics and postgraduate students in regard to copyright according to department, age, title, service durations, daily Internet usage time, Internet usage levels, methods of obtaining digital products, and usage of illegally obtained software are presented below in separate sections.

When differentiating behaviors of academics and postgraduate students to copyright according to gender, the question of whether they had received lessons on ethics was examined. No significant difference was found between groups, and these variables have therefore been excluded from the study.

Normality premise is commonly performed to implement parametric tests in research data. Therefore, the Kolmogorov-Smirnov test was performed for the examination of the state of the normal distribution of the total score according to participants' behaviors regarding copyright. According to the data obtained, it is observed that the data does not show normal distribution. The Kruskal Wallis test and Mann Whitney U test, which are not parametric, were performed on data without normal distribution.

Table 4. Kruskal Wallis test results for department variable.

Area	Department	N	Mean Rank	Sd	X2	p
Engineering	Departments besides Computer,	75	99.90	5	15.859	.007
Informatics	Computer Education and Instructional Technologies-Computer engineering-data processing-informatics	11	134.27			
Health	Health Sciences/nursing/midwifery/ work health/medical genetics/ medical biology/biology- faculty of medicine/ thoracic diseases/ hematology	23	72.57			
Natural Sciences	Mathematics/Natural Sciences education/chemistry	18	73.50			
Education	Educational Sciences / psychological counseling and guidance/ class education/ lifelong learning/ women studies/ education measurement and assessment	48	101.20			
Language Programs	Turkish language/ English	13	72.85			

Behaviors of academics and postgraduate students to copyright in terms of departments

At the end of the analysis performed, it is seen that the behaviors of academics and postgraduate students regarding copyright illustrate a significant difference according to the departments in which they are teaching or studying ($X^2 = 15.859$; sd = 5; $p < .01$). Analysis results regarding this test are presented in Table 4.

To determine in which departments the difference is present, a Mann Whitney U test was performed. A significant difference was found in informatics departments engineering (departments besides computer), education health, science and language programs. When mean ranks are examined, this difference is observed in most informatics departments. This data shows that academics and postgraduate students in Computer Education and Instructional Technologies-Computer-Data Processing-Informatics departments show a greater number of copyright infringements.

Behaviors of academics and postgraduate students to copyright in terms of age

A Kruskal Wallis test, which is not parametric, was performed on data without normal distribution. At the end of the analysis, a significant difference in behaviors of academics and postgraduate students regarding copyright was found according to age ($X^2 = 24.419$; s.d = 5; $p < .001$). Analysis results regarding this test are presented in Table 5.

To determine between which age groups the difference is present, a Mann Whitney U test was performed. It has been observed that the difference is between the 32-37, 38-43, 44-49 age groups. When mean averages are observed, this difference is highest among the 20-25 age group. This finding shows that individuals in the 20-25 age group show a greater tendency to infringe copyright. At the end of the analysis, a significant difference was not found between other age groups.

Table 5. Kruskal Wallis test results for the age variable.

Age	N	Mean Rank	Sd	X2	p
20-25	42	120.94			
26-31	41	101.40	5	24.419	.000
32-37	23	106.89			
38-43	31	74.87			
44-49	35	78.60			
50 and above	16	62.41			

Behaviors of academics and postgraduate students to copyright in terms of titles

At the end of the analysis, a significant difference in behaviors of academics and postgraduate students regarding copyright was found according to their titles ($X^2 = 26.990$; sd = 6; $p < .001$). Analysis results regarding this test are presented in Table 6.

To determine between which titles a difference was present, a Mann Whitney U test was performed. A difference was found between professor-postgraduate students; associate professor-postgraduate students; assistant professor-postgraduate students; and lecturer-postgraduate students. When mean averages were examined, copyright infringement behaviors are most often performed by postgraduate students, while the group with the most ethical behavior towards

Table 6. Kruskal Wallis test results for title variable.

Title	N	Mean Rank	Sd	X2	p
Professor	14	63.14			
Associate Professor	23	71.52	6	26.990	.001
Assistant Professor	19	79.37			
Lecturer	14	77.11			
PhD	17	88.26			
Research Assistant	19	81.84			
Postgraduate Students	82	117.00			

Table 7. Kruskal Wallis test results for average daily Internet usage duration variable.

Daily Usage Durations	N	Mean Rank	Sd	X2	p
I do not use	–	–	2	5.854	.05
1-3 hours	84	85.92			
4-6 hours	73	106.42			
7 hours and more	31	89.68			

copyright was seen in individuals with the title of Professor.

Behaviors of academics and postgraduate students towards copyright in terms of average duration of daily Internet usage

At the end of the analysis, a significant difference in behaviors of academics and postgraduate students regarding copyright was found according to their daily average Internet usage duration ($X^2 = 5.854$; S.d = 2; $p < .05$). Results of analysis regarding this test are presented in Table 7.

To determine between the groups where the difference is present, a Mann Whitney U test was performed. A difference was found between groups using the Internet for 1-3 hours daily and 4-6 hours. When mean averages are examined, this difference is found to be highest among the group using the Internet for 4-6 hour daily. The finding shows that individuals found in the group using the Internet daily for 4-6 hours show a higher likelihood of infringing copyright.

Behaviors of academics and postgraduate students towards copyright in terms of Internet usage level

A Kruskal Wallis test was performed on data without normal distribution. At the end of the analysis, a significant difference in behaviors of academics and postgraduate students regarding copyright was found according to their Internet usage levels ($X^2 = 7.483$; sd = 2; $p < .05$). Analysis results regarding this test are presented in Table 8.

Table 8. Kruskal Wallis test results for Internet usage level variable.

Internet Usage Level	N	Mean Rank	Sd	X2	p
Beginning	7	77.0	2	7.483	.02
Moderate	107	86.46			
Advanced	74	107.78			

Table 9. Kruskal Wallis test results for the ways of obtaining digital products variable.

Ways of Obtaining Digital Product	N	Mean Rank	sd	X2	p
Purchasing the software (programs)	67	49.10	2	88.77	.001
Pirating the software (programs) from Internet	31	153.45			
Both	90	107.99			

To determine in which groups a difference is present, a Mann Whitney U test was performed. A difference is found between moderate and advanced level groups. When mean averages are examined, a difference is found in the advanced level group. The finding illustrates that individuals in the group using the Internet at an advanced level show a greater tendency towards copyright infringement.

Behaviors of academics and postgraduate students to copyright in terms of methods of obtaining digital products

A Kruskal Wallis test was performed on data without normal distribution. Analysis showed that a significant difference in behaviors of academics and postgraduate students regarding copyright was found according to their methods of obtaining digital products ($X^2 = 88.770$; S.d = 2; $p < .001$). Results of analysis regarding this test are presented in Table 9.

To determine in which groups a difference is present, a Mann Whitney U test was performed. A difference was found between "Purchasing software (programs)", "Pirating software (program) from the Internet" and "both" groups. When mean averages are examined, this difference is found to be highest

Table 10. Mann Whitney U test results for state of usage of software obtained through illegal methods variable.

Usage Status of Software Obtained by Illegal ways	N	Mean Rank	Sd	U	p
I use	107	127.45	2	808.000	.001
I do not use	81	50.98			

among the group pirating software (programs) from the Internet. The finding shows that individuals among the group pirating software (programs) from the Internet show a greater tendency to infringe copyright.

Behaviors of academics and postgraduate students towards copyright in terms of software obtained through illegal methods

A Mann Whitney U was performed on data without normal distribution. Analysis showed a significant difference in behaviors of academics and postgraduate students regarding copyright was found depending on their state of using software obtained through illegal methods ($U = 808.000$; $sd = 2$; $p < .001$). Results of analysis regarding this test are presented in Table 10.

When mean average levels are examined, it can be observed that the participants who responded with "I use software obtained through illegal methods" infringe copyrights more than the participants who responded with "I do not use".

Opinions of academics and postgraduate students regarding copyright infringements

The fourth sub-problem of this research was stated to be "What are the opinions of academics and postgraduate students regarding copyright infringements?" To answer this, frequency and percentage calculations were performed on the statistics. Analyses results are presented in Table 11.

Among the common opinions expressed, many participants believe that downloading digital content from the Internet in violation of copyright harms the socio-economic system, others that it should be free to download over the Internet, or that downloading music or movies in violation of copyright from the Internet is no different than playing CDs / DVDs from a convenience store; some participants, however, stated that they felt guilty when they downloaded content in violation of copyright.

Table 11. Distribution of academicians and postgraduate students according to their opinions on copyrights infringements.

Copyright Infringements		1	2	3	4	5
Downloading digital content (via infringing copyrights) from Internet damages socioeconomic system. (Persons/ Institutions are subjected to loss of income and the state is subjected to loss of tax income)	f	9	18	40	55	66
	%	4.8	9.6	21.3	29.3	35.1
Downloading digital content (via infringing copyrights) should be free.	f	71	40	42	20	15
	%	37.8	21.3	22.3	10.6	8.0
There is no difference between downloading music or film by infringing copyrights on the Internet and stealing a CD/DVD from a store	f	29	38	36	36	49
	%	15.4	20.2	19.1	19.1	26.1
I feel guilty when I download digital content from the Internet by infringing copyrights	f	19	37	53	29	50
	%	10.1	19.7	28.2	15.4	26.6
I feel afraid that someone will catch me when I download content from the Internet by infringing copyrights	f	27	45	62	27	27
	%	14.4	23.9	33.0	14.4	14.4
I am knowledgeable about enforcements about programs used without a license.	f	24	44	70	35	15
	%	12.8	23.4	37.2	18.6	8.0
Policies implemented for the prevention of copyright infringements of digital products are insufficient.	f	5	14	66	59	44
	%	2.7	7.4	35.1	31.4	23.4
If someone commits a copyright infringement, that person does not care about social responsibilities.	f	20	41	54	40	33
	%	10.6	21.8	28.7	21.3	17.6

1- I do not agree at all 2- I do not agree 3- I agree at a moderate level 4- I agree 5- I totally agree.

On the other hand, one significant finding is that the majority of participants feared being caught when the content was downloaded in violation of the

Table 12. Analysis results of behaviors of academics and students at postgraduate level towards copyright infringements according to their methods of obtaining digital product.

Ways to Obtain Digital Product	*x*	S.d.	F	p	Difference
Purchasing the Software (Program) (1)	30.20	5.70	21.732	.001	1-2; 1-3;
Pirating the software (program) from the Internet (2)	23.12	4.73			
Both (3)	24.98	6.25			

copyright, and have information about sanctions for unlicensed programs. A large number of respondents think that policies to prevent infringement of the copyright of digital products are inadequate.

Behaviors of academics and postgraduate students towards copyright infringements

The analyses performed to determine the state of differentiation in behaviors of academics and postgraduate students towards copyright infringements in terms of various variables (e.g., gender, department, age, title, service duration, etc.) are presented below in separate sections.

The differentiation of the behaviors of academics and students at postgraduate level in terms of copyright infringements was examined according to: gender, service duration, titles, daily Internet usage durations, departments, computer usage levels; state of Internet usage and whether or not ethics courses or lessons had been taken. No significant difference was found between groups.

Behaviors of academics and postgraduate students regarding copyright infringements in terms of methods of obtaining digital products

The state of the normal distribution of the total score in participants' methods of obtaining digital products according to participants' behaviors regarding copyright was examined, and the data was found to have a normal distribution. From parametric tests, one-way analysis of variance was performed on the data with a normal distribution. Analysis results regarding this test are presented in Table 12.

Table 13. Analysis results of participants' behaviors regarding copyright infringements regarding their state of usage of digital products obtained through illegal means.

Usage Status of Software Obtained via Illegal Ways	n	$\bar{x}$	S.d.	t	p
I use	107	24.30	5.42	5.940	.001
I do not use	81	29.49	6.53		

A significant difference was observed in behaviors regarding copyright infringements according to methods of obtaining digital products ($F(2\text{-}185) = 16.340$; $p < .001$). When the means are observed, it can be observed that the ratio of participants who show the behavior of purchasing the software (program) is higher than the other participants. It can be stated that individuals using purchased software are more sensitive to copyright.

Behaviors of academics and postgraduate students regarding copyright infringements in terms of usage of digital products obtained through illegal means

The state of the normal distribution of the total score according to participants' usage of digital products obtained through illegal means was examined, and the data was found to have a normal distribution. A T-test was performed on the data with a normal distribution. Analysis results regarding this test are presented in Table 13.

When Table 13 is examined, a significant difference was found in the participants' state of usage of digital products obtained through illegal means ($t(186) = 5.940$, $p < 0.001$). The arithmetic mean of the participants who responded with "I do not use" is higher. It can be stated that individuals who do not use software obtained through illegal means are more sensitive about copyright.

Behaviors of academics and postgraduate students regarding copyright infringements in terms of age

The state of the normal distribution of the total score of the participants according to their behaviors regarding copyright infringements in terms of age was examined, the data was found to have a normal distribution. One-way analysis of variance was performed because of normal distribution. Analysis results for this test are presented in Table 14.

A significant difference in behaviors regarding copyright infringements was found according to

Table 14. Analysis results of behaviors of academics and postgraduate students regarding copyright infringements according to ages.

Age	*x*	S.d	F	p	Difference
20-25 (1)	25.23	5.80			1-6; 2-6; 3-6; 5-6
26-31 (2)	26.17	6.54	2.431	.037	
32-37 (3)	25.00	6.49			
38-43 (4)	27.48	6.50			
44-49 (5)	26.65	6.73			
50 and above(6)	31.06	5.49			

Table 15. Distribution of academics and postgraduate students in terms of their opinions about the reasons behind copyright infringements.

Reasons for Copyright Infringements		1	2	3	4	5
Lack of information on enforcements	f	10	16	53	68	41
	%	5.3	8.5	28.2	36.2	21.8
Laws/ legal legislation not being implemented sufficiently	f	8	12	56	69	43
	%	4.3	6.4	29.8	36.7	22.9
Effect of economic reasons	f	2	3	12	51	120
	%	1.1	1.6	6.4	27.1	63.8
The belief that they will not be caught	f	10	12	59	69	38
	%	5.3	6.4	31.4	36.7	20.2
The belief that no one will be harmed	f	2	16	41	66	63
	%	1.1	8.5	21.8	35.1	33.5
Not seeing it as a crime	f	5	13	38	63	69
	%	2.7	6.9	20.2	33.5	36.7

1-I do not agree at all 2- I do not agree 3- I agree at a moderate level 4-I agree 5-I totally agree.

participants' ages (F(5-182) = 2,431; p < 0,037). When the averages are examined, it can be seen that the averages of participants at and above the age of 50 are higher in comparison with the other participants. It can be stated that the group which acted more ethically toward copyright infringement are 50 years and above.

Opinions of academics and postgraduate students regarding reasons behind copyright infringements

The fifth sub-problem of this study was determined to be: "According to academics and postgraduate students, what are the reasons behind copyright infringements?" Results of analysis are presented in Table 15.

The majority of participants stated that "Lack of information on enforcement" would be a reason for copyright infringements. However, about half of the participants also identified "Laws/legal legislation not being implemented" as one of the reasons behind copyright infringements. Almost all of the participants stated the opinion that economic reasons are a cause for copyright infringements. The high number of replies given regarding the effect of "the belief that they will not be caught" confirms the fact that this factor is a significant reason for copyright infringements. A large majority of participants stated that the belief that they would not be caught plays a part in these behaviors and "the belief that no one will be harmed" may act as a reason for copyright infringements. A large majority of participants also saw "not seeing it as a crime" as one of the reasons for copyright infringements.

Behaviors of academics and postgraduate students regarding the causes of copyright infringements according to various variables

The analyses performed to determine the state of differentiation of behaviors of academics and postgraduate students regarding the causes of copyright infringements according to a variety of variables (e.g., gender, department, age, title, service duration, etc.) is presented in separate sections below.

The differentiation of the behaviors of academics and postgraduate students in terms of reasons behind copyright infringements was examined according to departments, service durations, titles, duration of daily Internet usage, computer competencies, Internet competencies, age, methods of obtaining digital products usage of illegally obtained software and whether lessons on ethics had been taken. No significant difference was observed. Therefore excluded from this study.

Behaviors of academics and postgraduate students regarding the causes of copyright infringements according to gender

The state of the normal distribution of the total score of the duration of participants' daily average Internet usage according to their behaviors about copyrights was examined, and the data was found to not have a normal distribution. A Mann Whitney U test, which is not parametric, was performed on data without normal distribution. Analysis showed a significant difference in behaviors of academics and postgraduate students regarding the reasons behind copyright infringements according to gender (U = 2637.500;

Table 16. Mann Whitney U Test results for the gender variable.

Gender	N	Mean Rank	S.d	U	p
Female	113	108.66	2	2637.500	.001
Male	75	73.17			

S.d = 2; $p < .001$). Analysis results regarding this test are presented in Table 16.

When mean average levels are examined, it can be observed that women agree more with certain statements (e.g. lack of information on enforcements, laws/legal legislation not being implemented sufficiently, effect of economic reasons, belief that they will not get caught, belief that no one will be harmed, and not seeing it as a crime) about the reasons behind copyright infringements than men.

Conclusion and discussion

In this study the awareness of academics and postgraduate students on digital product copyright was examined. From the literature it can be observed that research concerning academics and postgraduate students is very limited. Association has been performed with existing studies and some findings were evaluated in themselves.

Generally, it is observed that participants' knowledge of digital product copyright, license agreements, and fair use topics are at a moderate level. Similar results to this study's finding are present in the literature. For example, in the studies performed by Vasudevan and Suchithra (2013) and that of Ahmadi and Sonkar (2015), the awareness of postgraduate students was observed to be high. Again in another study, the majority of the lecturers interviewed stated that they had information on copyrights. (Korletey, 2014). Unlike these findings, in the studies by Fermandez-Molina, Karlos and Chaves (2010), findings showed that professors were very significantly lacking information on copyright. It can be stated that their knowledge levels of the concepts of software with open source code, free software, and copyleft were low. It is especially observed that half of the participants replied to the free distribution concept with the statement of "I have no information". This result shows the lack of information among academics and postgraduate students regarding free distribution, software with open source code, and free software concepts.

When behaviors towards copyrights are examined, it can be observed that the majority of participants in the study had downloaded and used unpaid-for software at least once and the rate of participants who stated that they use programs with serial codes obtained from friends/the Internet is high. It can be concluded that the majority of participants have used unlicensed software at least once. On the other hand, a large majority of participants stated that they do not use materials such as licensed photographs, images and animations without receiving the owner's permission, use license cracking software, download mp3, film, programs or games from illegal websites, share serial numbers (license information) of programs on Internet, share licensed software with their friends by copying them, share works protected under copyrights such as music, film, photography on Internet, use information and works which do not belong to them and are obtained from Internet without reference on assignments and projects. These results show that participants do not generally commit copyright infringements besides computer programs. The reason for downloading unpaid-for software from the Internet may be the high prices. On the other hand, materials published as copyleft give the person the right to use and change the material. It is important to increase awareness of the concept of copyleft in order to make better use of the products in digital environments.

Analysis pointed to no statistically significant difference in the behaviors of male and female participants regarding copyright. Different findings are present in literature. In the study by Ahmadi and Sonkar (2015), men's awareness of copyright was higher than that of the women.

It was observed that students and academics of Computer Education and Instructional Technologies-Computer-Data Processing-Informatics departments show a greater tendency towards copyright infringement. Individuals within the group using the Internet at a more advanced level show more inclination towards copyright infringement. Individuals who use software by purchasing it, and thus use it legally (e.g., freeware and free software) can be said to be more sensitive about copyright.

It is observed that individuals in the 20-25 age group are more likely to infringe copyright. Similar findings have been made in the literature. In one study, out of postgraduate students, those in the 23-25 and 26-28 age group were observed to have a greater tendency towards copyright infringement than

other groups (Ahmadi and Sonkar, 2015). Kariithi (2011), states that one of the main reasons why students are the group who commit digital piracy the most is the fact that they find product prices expensive. It is determined that the group who act most ethically toward copyright infringement is the age group of 50 years and more. The reason for this may stem from this age group's low duration of Internet usage and low Internet competence. Morris and Higgins (2010) reveal that there is a relationship between digital piracy and age, and young individuals are more inclined to piracy. Furthermore, according to the results of the analysis regarding titles, it was determined that copyright infringements are committed most by postgraduate students and the group which acts with most ethical in behaviors regarding copyright are individuals with the title of Professor. In one of the studies which supports this finding, Akçayır and Akçayır (2017) determined that university students use the Internet actively for educational purposes; however, they do not pay attention and attach importance to copyright. Lau and Yuen (2014) state that to combat this situation, educators must take responsibility and encourage students to obey copyright laws. The findings of this study regarding the more ethical behaviors of professors are interesting, and the reasons for this can inspire further research.

Almost half of the participants stated that when they download content by infringing copyright, they feel guilty, and a few more than this state that this situation harms the socio-economic system, that there is no difference between downloading music or film from Internet and stealing a CD/DVD from a supermarket, that they fear getting caught and that they have information about law enforcement for programs used without licenses. A large majority of participants state that the reasons for the situation are that they find policies implemented for the prevention of infringement of copyright for digital products insufficient, there is a lack of information about enforcements in society, the belief that no one will get caught and no one will get hurt, and not seeing it as a crime. Almost half of the participants stated the opinion that the laws/legal legislation was not being implemented sufficiently and almost all stated economic reasons for copyright infringement. In research performed in Indonesia, Arli and Tjiptona (2016) state that individuals are influenced by the perceived benefits, moral difficulties and perceived behavior control rather than fear legal outcomes and the penalty they may receive. However, Yoo et al. (2014) indicate that in Vietnam and South Korea, there are severe penalties in effect regarding copyright. Akçayır and Akçayır (2017) indicate that people might believe that nothing will change if they infringe copyright due to having friends who commit copyright infringements but are not persecuted/subject to punishment. Peace, Galletta, and Thong (2003) on the other hand, state that personal attitudes, subjective norms and perceived behavioral control are important premises for the intent to illegally copy software and that the uncertainty of and perceived leniency of any punishment, along with the cost of the software have a direct effect on an individual's attitude towards software piracy. Based on these results, copyright infringements may be decreased by improving the awareness of the copyright on digital products, increasing the severity of penalties and product prices being determined according to the countries' economic conditions. More so than men, women agree with statements such as lack of information on enforcement, laws/legal legislation not being implemented sufficiently, the effect of economic reasons, the belief in not being caught, the belief of no one getting harmed, and not seeing the case as a crime. Workshops and seminars on copyrights regarding digital products can be arranged in various faculties and departments for students and academics to decrease and possibly prevent copyright infringements. Copyright units, which can provide service for all disciplines, can be established within university libraries and adaptive training can be given to students to increase copyright awareness. Furthermore, software and scientific publications necessary for scientific study that require copyright can be supplied by universities or software can be developed. Educational institutions can encourage the use of free software with some rights reserved as an alternative to licensed software.

In the future, mixed studies which focus on the reasons for infringement of copyright are recommended. Furthermore, it can be recommended that there is a need for studies that seek to generate solutions based on the detection of the reasons for copyright infringement.

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