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THE RELATIONSHIP BETWEEN INFORMATION LEVEL OF INDIVIDUALS REGARDING INFORMATION TECHNOLOGY AND THEIR PERCEPTIONS CONCERNING INFORMATION SECURITY: UNIVERSITY STUDENTS AS EXAMPLE

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ABSTRACT: As a result of the developments experienced in information technology, many such services as bill payment, shopping, e-government transactions, access to libraries and information sources, finding the routes to go are possible to find in virtual worlds. Transferring all these businesses and operations to the IT environments comes along with the security problems. Because the threats, which come to the information shared in these environments, increse rapidly and show great diversifications, the importance of works to be done on the security of information is increasing with each passing day.

Today, especially those information and communication devices having internet access are used extensively by individuals. Every day, many new threats, with which the individuals encounter while they are using these devices, and new measures to be taken against these threats can be added to the present ones. This situation requires users to keep up to date constantly their information on this subject. In this study, the data which is obtained by measuring the relationship between information level of university students concerninig information technologies and their perceptions about information security was shared, and measures which can be taken against information security threats and solution proposals were presented.

Key words: Information security, perception of information security, digital threats.

INTRODUCTION

Information security, sometimes shortened to InfoSec, is the practice of defending information from unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction. It is a general term that can be used regardless of the form of the data may take (e.g. electronic, physical). Information security, computer security and information insurance terms, often are used interchangeably. These fields are relevant and can be reached on the protection of the integrity and privacy of the information they share is common objectives with regard to (information security, n.d.).

When examined institutions and individuals, it is seen that the biggest reason why the mentioned ones experience problems related to the information security is that they do not have eduquate information regarding this delicate topic. Nowadays, there are a growing number of individuals who use information technologies. Some of these individuals use the information technology in a number of such ways like the penetration of other digital media , data theft, and therefore threatens the security information to damage. In the past this kind of threat was performed by a small number of professional attackers; today the number of attackers has grown rapidly; attackers profiles are changing and the number of the attacks is also increasing day by day. The software can be easily downloaded via the Internet by hackers to attack and thus more information about the individuals may also be attacked; information on this subject on the internet, as documents and videos would be easy to access by the hackers, so taking serious measures on personal and corporate information security have been essential for those using information security.

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In this study, the relationship between university students' information and communications technology(ICT) knowledge on the level of information security perceptions, which can be measured with a questionnaire findings and shared their information security measures to be taken against threats and solutions are presented.

Current Threats

In the Internet environment, our children, our young users and even unconscious users may face a number of unexpected and unwanted threats, dangers and situations. These are;

- Pornographic, hatred, anger and containing violence, illegal content, can be exposed on the internet to the users,
- In the online environment, the address will endanger themselves or their families and their credit card numbers when they share information like telling third parties through email or chat programs who was at house at that moment or how many people were there at home at that time,
- making purchases over the Internet without telling their parents with their parents' credit card (by children)
- They can communicate with issues such as the age of the great and evil people and criminal organizations as may be; in different ways and may also show itself in distress.

All these risks are sufficient to reveal the importance of the issue (Canbek & Sağıroğlu, 2007).

Individuals and organizations that use information technology, all information and document sharing to you move the digital environment, business dealings and transactions made in digital media is increasing, which, naturally, on current threats and hazards associated with data security leads to significant increases cost.

At the beginning of the most experienced areas of current threats and dangers that come mobile platforms and applications are running in a web environment. Web applications are the easiest communication ways for individuals and organizations to have easy access to all information they want, which appears to be the fastest and most effective medium as well. However, this information which is accessed via the web, during storage and sharing, it is necessary to take serious measures in terms of data security. The access to this web application on mobile platforms, reveals much more risky information security threats with it.

Attacks on the information shared on the web, in relation with the growth of the services provided on the web is increasing every day. That the security of web applications are not taken serious enough, secure software development techniques are not used and the individuals and institution have lack of sufficient knowledge about information security can be explained the major reasons for these attacks to increase.

Today, there are many studies related to web application security. One of these works, started to be developed in 2001 by Mark Curphey and still ongoing was OWASP (The Open Web Application Security Project) project. Free tools for improving web application security, standards, making forums regarding web applications security, writing the article are subject works of OWASP's. Another study conducted by Jeremiah Grossman and Robert Auger was founded in 2004 to develop open standards and web applications related to security issues such as dissemination and exploitation of workers and it is called as the Web Application Security Consortium (TheWeb Application Security Consortium-WASC). Determined by OWASP and WASC which are recognized in the world about web application security, the most common attacks on web applications are listed below. This attack methods were included in the list as the basis for current threats and developments (Vural & Sağıroğlu, 2008).

- Authentication
- Authorization Vulnerability
- Cross Site Script
- CommandExecution
- SQL Injection

When looking at this attack methods, it is clear that during the development of web and mobile applications, the necessary measures should be taken. Taking these measures is the responsibility of developers at most. In addition, all web and mobile application service users whom we describe as as end-users, should have to know what these threats are and what kind of measures they shall take. and that's what this is threatened by the need to take measures which are required to know.

The extensive use of information technology has brought new security risks with it. Specifically, with the increasing use of mobile technology it is also seen that there are huge increases in crime in this area. The rapid development of technology and increasing skills of attackers increased the necessity of special staf raised in this area to detect the crime and criminals. In most of the smart phones, without the use of specialized hardware and software, it is almost impossible to detect malicious software. This hardware and software is expensive in terms

of cost, and they are also extremely complex and difficult in terms of use. The community should be informed about the threats the mobile devices are facing and thus a sufficient level of awareness should be created, and they should be informed about the measures to be taken as well. In addition, companies using these technologies in their infrastructures, must be provided with the necessary safety measures to take (Ekim, 2013).

Institutions and individuals who are aware of the threats that may occur on mobile devices and environments, should take the necessary protective measures, and they need to educate both their staff and users and raise awareness on this issue (Sağıroğlu & Bulut, 2009).

PURPOSE OF RESEARCH

In this study, to determine the level of awareness of users about information security are conducted with a survey according to individuals' Internet use years and to find their relationships if there were any. Survey on the results, examining the relationship between knowledge level of information security perceptions of university students on the use of information technology is intended to make several observations. The findings are shared, measures can be taken against information security threats and solutions are presented.

Students; the level of knowledge about information technology, access methods to the Internet, Internet usage frequency, internet habits (shopping, e-government, gaming, email, etc.), various survey questions to learn about the security measures they have software and implements they use directed and their answers to these questions on ICT compared with knowledge. Comparison results are examined in detail; mobile and web platforms using intensive information security perceptions of university students were measured, the results were analyzed and solutions were presented not only for students but also for all users who can all apply the online content while using.

Following sections focus on the outcomes obtained from the survey conducted between December 1, 2015 - February 1, 2016 through total of 300 students studying at the University of Süleyman Demirel.

THE METHOD USED IN RESEARCH

The Universe and Sample

The survey was administered to students at Süleyman Demirel University and the universe of research "Süleyman Demirel University Students" was determined due to measurement of the level of knowledge in information security matters based on internet usage. One of the questionnaire of the student was omitted from the evaluation. When taken into consideration of university students who are at the age of 299, it is seen that the demographic data ranges from 17 to 29.

Data Collection Tools

The IT security survey developed for this study was used as data collection tool. Including age and gender, there are two demographic parameters in the survey conducted. Information processes actions of the social networks that most crimes occur, internet banking, desktop software and the browser downloads are made, questions are used to measure the level of awareness on the issues.

Acquisition and Analysis of Data

Datas from Süleyman Demirel University in different sections of the main Information Technologies is collected in courses through students studying 2015-2016 school year and obtained from a survey applied in the fall semester. According to statistical data, it is encoded and transferred to computer environment properties. The data in the same environment analysis using the R package program has been made ready. Analysis are Kruskall Wallis tests, Chi-square and Anova tests.

RESULTS

The data in this study which was obtained by statistical findings was mentioned below. The findings are; gender, year of internet use, social networks are used by individuals, according to internet banking and e-commerce use, it contains results.

Investigation of Students According to Their Ages and Gender

The sample consisted of 300 people and the results of 299 persons were taken into consideration. The data on the gender distribution of the participants is given in Table 1. Accordingly, it is the 136 men and 163 women's research group.

Table 1. Respondents Gender Distributions

Gender	Rate (%)
Male	45.33
Woman	54.67

The age of the audience, min, max, average and standard deviation values are shown in Table 2.

Table 2. Participants Age Distributions

Variable	N.	Min	Max	Average	Standard Deviation
Age	299	17	30	19.3813	1.61633

The age of the participants who were surveyed between 17 and 30, and the average of the 19 can be seen in Table 2. The reliability analysis for the masses; Table 3 is providing 93% reliability and it can be seen.

Table 3. Reliability Statistics

Cronbach's Alpha	N of Items
, 931	98

Investigation of Distribution of Students According to Internet Usage Rates
Distribution of Students According to Internet use rate is shown in Table 4.

Table 4. Descriptive Statistics

Variable	N.	Min	Max	The mean	Std. Deviation
How many years do you use the internet?	300	1.00	18.00	6.7133	2.98455
Valid N (listwise)	300				

6 years the average mass of Internet users can be seen in Table 4. Using the internet at least 1 year to 18 years in mass and it has emerged as the people who use the internet.

Investigation of Use In The Daily Work of The Corporate E-Mail Address

Internet usage frequency of amount in hours per week (Table 5) and relational level between corporate e-mail address in response to those who declare using it in their daily work was measured by cross tabulation methods and results in Table 6 are also shown.

Table 5. DescriptiveStatistics

Variable	N.	Min	Max	The mean	Std. Deviation
Weekly frequency of internet usage?(h)	300	1.00	24.00	.0867	2.10410
Valid N (listwise)	300				

Table 6. Crosstab data

Count		Corporate e-mail address I use in daily business.					Total
		Never	Rarely	Sometimes	Frequently	All The Time	
Weekly frequency of internet usage? (h)	1.00	4	0	2	0	2	8
	2.00	10	0	2	1	0	13
	3.00	2	5	2	2	3	14
	4.00	6	4	7	2	3	22
	5.00	9	3	9	4	7	32

	6.00	2	2	3	1	0	8
	7.00	78	46	34	24	17	199
	8.00	0	1	0	0	0	1
	14.00	0	0	1	0	0	1
	15.00	1	0	0	0	0	1
	24.00	0	1	0	0	0	1
Total		112	62	60	34	32	300

Internet usage frequency of responses to the question when Anova test was done, and the Sig. level 0.123 and 1.83 F value stands out. Results can be seen in Table 7.

Table 7. Anova Test Results

	Sum of Squares	DF	MeanSquare	F	SIGs.
BetweenGroups	32.060	4	8.015	1.830	, 123
WithinGroups	1291.687	295	4.379		
Total	1323.747	299			

In respect to corporate e-mail addresses for use in their daily work of students, it is observed that more data loss suffered conditions such as viruses and has been observed to increase the level of awareness of safe internet use which increases the frequency of corporate e-mail usage. This significantly reduces the probability of encounters with particular file viruses that cause financial losses.

The Investigation of Those According to Their Ages Who Transmit Information Crimes to Relevant Authorities

It is tested that the age groups of those transmitting Information Crimes to the relevant authorities whether they are suitable for the normal distribution. Kolmogorov-Smirnov test in all of the significant level was seen as below 0.05 in the group and that has shown us that the distribution is not normal. Here, some comments were made by using Kruskal-Wallis H test, which is a non-parametric one, as a comparison would be performed among the the groups.

Kruskal-Wallis test included a sample of more than 3 groups and assumptions which are necessary for the single-factor analysis of variance and thus it was applied. Accordingly, the value of the variable age which is observed increases the possibility of transmission to the relevant authorities cyber crimes and it decreased, therefore.

In respect to the test results, it is observed that the significance level is of 0,131. The level of significance appears to show differences between the groups and it is greater than 0.05. It is observed that the more age increases the more likely it is to transmit Information Crimes to the authorities.

Rates of Students Making Internet Shopping

People using Internet banking and e-commerce platforms seem to be more consistent audience about information security and basic IT skills. According to analysis, standard deviation between people in terms of internet usage time is 2.98 including students starting 1 year before the mass use of the Internet and has experienced students that use the Internet is for 18 years. According to internet shopping statistics; while not any shopping is 1 and shopping always is 5 in score; average is 2.67, while the standard deviation of 1.3763. Statistical relationship between Internet usage years with no action on the internet shopping can be explained by the cross-table method. Accordingly, it is increasing the action of making purchases over the Internet by increases in year of Internet usage.

The Relationship Between Age and Internet Banking

According to analysis, the use of internet banking has been seen mostly in 18,19 and 20 years old. In respect to the correlation matrix; it is seen that there is a strong correlation between age and Internet banking. By using social networking sites like Facebook and Twitter, it is seen that accepting invitations sent between applications in social networking has emerged as a strong bond. It has been reached there that there is a relation between age and negative evidence at downloading music over the internet, downloading movies, programs to download and downloading files. The Anova test done; and F value of 5.243 was found. Kuruskal-Wallis test was applied to the siglevel 0.0. According to the test results, the hypothesis which says that ‘’there is a relationship between age and the use of internet banking’’ was rejected.

The Comparability of application invitations, which were sent on social networks, by age

In order to analyze the relationship between age and the adoption of state of the invitation sent applications on social network, it is primarily need to examine the relationship between normality group. The decision to Anova test or Kolmogorov-Smirnov tests were decided to be applied for the application.
While observing the relationship between age groups for normality, Kolmogorov-Smirnov test is able to comment on the significance level. Here, the p-value at the 95% confidence level value in all age groups seems to be under 0.05. In this case, it is determined that one-way Anova, which is not following normal distribution, is given. As the values are not in normal distribution, non-parametric Kruskal-Wallis H test was conducted. The distribution of responses between the two groups was observed in the test results. . As we see the significance level is higher than 0.05 in relation between age and acceptance of invitations through social networks, it is considered that there is a difference. In other words, acceptance of invitations increase by decreasing of the age.

CONCLUSIONS and RECOMMENDATIONS

In the analysis, parameters of year in internet usage and age has significant difference on information levels about informatics security. As increasing of year in internet usage and age, decrease is observed in possibilities of transmitting crimes to relevant authorities. By increase in year of internet usage, knowledge increases in social nets, desktop softwares and digital file sites which are the platforms that crimes are faced mostly. Relevant with increase in age, knowledge in informatics security increases and shopping decreases through internet. As the year in internet usage increases, users become more informative but not sensitive for transmitting the crimes and it is the same for the increase in age parameter as well. Internet banking users are more careful against to troubles in social nets, chat softwares, file share sites. There should be some actions for informing society about informatics security, adding info security courses to elementary, middle , high education and thus there should be urgent action plans for governmental structures to take precautions. All users who use informatics technology should care about precautions against treats and they should be updated.

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