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## **SOCIOLOGICAL AND PSYCHOLOGICAL EFFECTS OF THE TECHNOLOGY ON STATE EMPLOYEES<sup>2</sup>**

### **Abstract**

This study was made for investigating the sense of the employees in the educational establishments about the psychological and sociological effects of the technology; and submitting solution offers identifying the sociological and psychological problems. The research sample generates from 220 people incidentally among the teachers and administrators who got masters degree of Educational administration and inspection in Ahmet Yesevi University in 2013-2014 and who are still furthering their education in 2014-2015 academic year. The Cronbach Alpha scale value used in the study was computed as 0,96. For analysing the data it was benefited from the frequency (f), percentage (%), average (x), t test and ANOVA analysis statistics. At the result of the research, it was inferred that using technology reduced the communication and social interaction sociologically between teachers in the institutions; that the teachers became introverted; and psychologically that it caused mental fatigue; increased breakoff phenomenon; and reduced the senses of teachers. When it was evaluated binding with demographical factors, it was seen that the teachers and administrators who were between 31-40 years and had 1-2 years professional experience had much trouble perceptions. It was concluded that the teachers who were working in both private and state schools had the same level perception about the psychological and sociological effects of the technology.

**Key Words:** Technology, Sociological effects, Psychological effects.

### **INTRODUCTION**

Technology phenomenon ensued by globalization has come into almost all area of the life. Technology usage has been increased by leaps and bounds specially with the effect of the internet which increase the information sharing and interaction. Public sphere witnesses grand and radical revisions by technology. When it is thought on sectoral basis, it will be seen that technology effects almost all sectors horizontally and interrelatedly. According to Gokturk (2007), this situation shows that technology is in a fast and dynamic alteration; and that the public must obey this condition. Cuff, Sharrock and Francis (1990) explain that because of the

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mass production and intensive work sharing created by Industry Revolution, the workers have been dependent on technology.

### **Context and Elements of Technology**

The context of the technology is thought generally as equipment, computers and hardware (Taskin and Adali, 2004:10). When the body of literature is analysed, it will be seen that technology can not be degraded to a simple definition being stereotyped. For example, while technology means the methods of producing the materials for engineers, it means a context which defines the entries and outputs for economists (Ulguray, 1974:27). According to Durna (2002) technology was qualified as the total information which people apply for production to get a benefit from it. Briefly, technology can be described as the equipment which are born and developed throughout the human necessities and the production factors. Technology is integrated with three main systems.

According to Sevinc (2006), these systems are "hardware", "software" and "sense power". While "hardware" means physical equipment; "software" means the systematic substructure which supplies for the usage of the hardware; and the "sense power" means the usage of the methods and technology with known methods (Taskin and Adali, 2004:10).

### **Classification of Technology**

Sevinc (2006) classified the technology in five groups such as Analogue technology, Digital technology, Data technology, Information technology and Robot technology. While analogue technology means the technology used before Industry Revolution; digital technology means the used algorithm via mathematics (Ceylan and Caglayan; 2007:1). Connecting with the study, data and information technologies mean the systems which produce, save, store, attain and transfer the information (Saglam, 2007:8). Besides, robot technology placed in the classification has the equipment controlled automatically or with remote control such as industry field and war robots via programmable machines.

### **The Usage of Technology in Public Area and Establishments**

Habermas (2001) states that technology is used specially for producing information and rationalizing political power. And King (1997) remarks that technology integrated with science can be used as a power which can change the world. Nowadays, accompanied with the incorporating computers into our life, technology is used altering radically in various areas from personal life to family and social life, from public and establishments to work life, education and economy, even to all producing-consumption systems and employing (Kalay, 2009:48).

As it is seen, technology is regarded as a power both in public sphere and establishments; and committed plans and operations became technology-centric. Eventually in public spheres and establishments, data and information technologies are generally used. According to Kaleli and Sen (2002), mainly computers, smart phones, televisions, internet, social media, fax and other multimedia tools are used for data and information technologies.

### **The Problem of this Study**

At the result of the researches and body of the literature, due to the known physical, economical, social and psychological disadvantages of the technology, performance decreasing on workers and in productivity and work satisfaction were observed (Oznur and others; 2008:19). It can be

said that compensation of the economical and physical damages arisen from technology are easier than social and psychological ones. Thereby, investigation of the bad conditions occurred psychologically and socially generates the problem of this study. Within this context, the identified problem sentence of the study was designated as "what are the psychological and sociological effects of the technology on the institution employees?"

### **Sub Problems**

It will be sought answers for the below sub problems throughout the problem of the study:

1. How advanced are the senses of the institution employees about technology?
2. What is the psychological effects of the technology on the institution employees?
3. What is the psychological effects of the technology on the institution employees?
4. Are the sense of the institution employees about psychological and sociological damages of the technology changeable according to their:
  - a) Ages
  - b) Genders
  - c) Educational status
  - d) Professional Seniority
  - e) Status in institutions and the conditions of their school where they work?

### **The Purpose of this Study:**

Savci (2001) remarks that the psychological problems of the workers can be controlled with determining the problems and health controls. Predetermining to make provisions against the problems that people live personally will undoubtedly show itself also as socially. The main purpose of this study is to investigate the senses of the institution employees about the psychological and sociological damages of the technology; and to submit solution offers designating the psychological and sociological problems.

### **Importance of this Study:**

When the importance of technology is dealt, it can be said that it facilitates the social life. According to Gokturk (2007), forming of some damages is inevitable although nevertheless are there its advantages. As Kalay (2009) remarks at the result of his study, because of the bad results of the technology, work stress increases and work satisfactions decreases. The results of this study have importance by virtue of the contribution for designation and preventing psychological and sociological disadvantages arisen from technology in this time.

## **METHODS**

In this study, screening model was used due to simplifying the psychological and sociological effects of technology on the institution employees. According to Karasar (1999), screening model is an approach that states how a position which was in past or are at present exists. While the survey was organized, literature screening was made and similar researches were

investigated. At the result of the research, it was benefited from the studies of Terlik (2010) for psychological effects and of Sevinc (2006) for sociological effects. Among the scales used by researchers in their studies, Cronbach Alpha value of "sociological effects" scale was computed as 0,944; and the Cronbach Alpha value of "psychological effects" scale was as 0,916.

At the result of the study, the Cronbach Alpha value of the scale was recounted and its Cronbach Alpha value was found as 0,926. Ozdamar (2002) states that if the Cronbach Alpha value of a scale is between  $0,80 \leq \alpha < 1,00$ , it shows the "high level reliable" of the scale. So it can be said that the scale used in the study is "high level reliable". As a scale instrument, it was demanded to evaluate with five point likert scale.

The population consists of the teachers and administrators who got masters degree of educational administration and inspection in Ahmet Yesevi University in 2013-2014 and who are still furthering their education in 2014-2015 academic year. There are 450 people in the population. Arbitrary sampling method was chosen for this study. An online survey was generated for operating; and sent to 250 people by e-mail. Feedbacks about the survey were taken by 220 people. The recycle ratio of the survey is 88%.

When the sample range of the study was investigated, it was seen as 220 teachers and school administrators, 76 (35,5%) men, 144(64,5%) women, 142 (64,5%) married, 78 (35,5%) single. When the sample range of the study was investigated according to the school types, it was seen that 24 (10,9%) of them worked in private schools and 196 (89,1%) of them worked in the state school; and according to their task type, 174 (89,1%) of them were teachers and 46 (20,9) of them were administrators. When the sample was investigated according to the ages, it was seen that 74 (33,6%) of them were between 21-30 years; 102 (46,6%) of them were between 31-40 years; 42 (19,1%) of them were between 41-50 years; and 2 (0,9%) of them were over 50 years old. When the sample was investigated according to the professional seniority, it was seen that 20 (9,1%) of them had 1-2 years, 34 (15,5%) of them had 3-5 years, 48 (21,8%) of them had 6-8 years, 70 (31,8%) of them had 9-15 years and 48 (21,8%) of them had 16 and over years professional seniority. When the sample was investigated according to the educational status, it was seen that 88 (40,0%) of them had bachelors degree; 122 (55,5%) of them had masters degree; and 10 (4,5%) of them had doctoral degree.

## FINDINGS

**Table 1. Findings about the senses of teachers for Technology**

How many hours do you use computers in your organization a day?				
Less than 1 hour	106	48,2	48,2	48,2
1-3 hour	62	28,2	28,2	76,4
4-6 saat	48	21,8	21,8	98,2
7 hours Over	4	1,8	1,8	100,0
Total	220	100,0	100,0	
Do you find it necessary to use technology in your organization?				
Very Necessary	4	1,8	1,8	1,8
Less Necessary	34	15,5	15,5	17,3
Unnecessary	182	82,7	82,7	100,0
Total	220	100,0	100,0	
What is the first concept you think of Mentioned Technology?				
Quality	36	16,4	16,4	16,4

Speed	100	45,5	45,5	61,8
Reliability	16	7,3	7,3	69,1
Multitude of Transactions	16	7,3	7,3	76,4
Complexity	4	1,8	1,8	78,2
Globalization	48	21,8	21,8	100,0
Total	220	100,0	100,0	
What is the first vehicle you think of Mentioned Technology?				
Smart Phone	68	30,9	30,9	30,9
Computer	70	31,8	31,8	62,7
Tablet	24	10,9	10,9	73,6
Television	12	5,5	5,5	79,1
Social Media	24	10,9	10,9	90,0
e-mail	22	10,0	10,0	100,0
Total	220	100,0	100,0	

When the daily computer usage levels of the findings about the attitudes of the samples for technology were investigated, it was seen that among 220 teachers and administrators 106 (48,2%) of them used computer less than 1 hour; 62 (28,2%) of them used between 1-3 hours; 48 (21,8%) of them used 4-6 hours; and 4 (1,8%) of them used 7 hours and over in a day. When the sample was investigated according to the senses of the employees about the necessity of the technology in the institutions where they worked, it was seen that only 4 (1,8%) of them found it essential; but 34 (15,5%) of them found it less essential; and 182 (82,7%) of them found it nonessential. Consequently, it can be said that teachers and administrators don't find essential the technology usage at schools. When the findings of the sample about the attitudes of the participants for what they thought when they had heard the name of technology were investigated , it was seen that 36 (16,4%) of the words were quality; 100 (45,5%) of them were speed; 16 (7,3%) of them were reliability and in the same level multiplicity of the transactions, 4 (1,8%) of them were complexity; and 48 (21,8%) of them were the globalization contexts.

When technology is said the first three contexts that come back can be prioritized respectively as speed, globalization and quality contexts. When the findings of the sample was investigated according to which instrument they thought when they had been said technology, it was seen that 68 (30,9%) of the instruments were smartphones; 70 (31,8%) of them were computers; 24 (10,9%) of them were tablets and social media in the same level; 12 (5,5%) of them were TV; and 22 (10,0%) of them were e-mail tools. So when technology is said, the first three instruments can be prioritized respectively as computers, smart phones and social media (tablets in the same level).

**Table 2. Findings about the sociological effects of the technology usage in institutions on the employees.**

	N	Min.	Max	Mean	Std. Deviation
<i>Using Technology reduces social interaction between teachers in my institution</i>	220	1	5	2,93	1,26
<i>Using Technology to reduce the communication of between teaches in my institution</i>	220	1	5	2,83	1,22
<i>Using Technology leads to getting introverted mood of the teacher in my institution</i>	220	1	5	2,49	1,18
Using Technology to make teachers lazy in my institution	220	1	5	2,29	1,10
Using Technology is caused neglect by the teachers' work in my organization	220	1	5	2,24	0,97
Using Technology take thoughts and feelings of the teachers and makes them a robot in my institution	220	1	5	2,17	1,02
Using Technology to reduce respect teachers each other in my organization	220	1	5	2,11	1,01
Using Technology reduces the flow rate to work in my institution	220	1	5	2,07	0,94
<i>Using Technology reduce their trust of teachers each other Agency in my institution</i>	220	1	5	2,02	0,95
<i>Using Technology reduces the teachers' job performance in my institution</i>	220	1	5	1,99	1,01
<i>Using Technology to prevent the research of teachers in my institution</i>	220	1	5	1,87	0,92

When the findings about the sociological effects of the technology usage in institutions on employees were investigated, it was seen that it decreased the social interaction ( $\bar{x}=2,93$ ) and communication ( $\bar{x} = 2,83$ ); and the idea that technology caused teachers to become introverted got the highest ratio ( $\bar{x} = 2,49$ ).

But however it can be said that the thoughts about the technology usage decreases the confidence between teachers ( $\bar{x} = 2,02$ ), their productivity ( $\bar{x} = 1,99$ ) and preventing their researches are among the less supported ones in my institution. When the average value of the sociological effects of the technology usage in institutions on employees was investigated, it would be stated that this effect was in a low level ( $\bar{x} = 2,17$ ).

**Table 3. Findings about the psychological effects of the technology usage in institutions on employees**

	N	Min.	Max.	Mean	Std. Deviation
<i>Using technology is creating me mental fatigue in my institution</i>	220	1	5	2,45	1,19
<i>Using technology makes me desire of Loneliness in my institution</i>	220	1	5	2,15	1,07
<i>Using technology brings me to the reduction in the sense in my institution</i>	220	1	5	2,14	1,01
Using technology brings me to the reduction in the perception in my institution	220	1	5	2,01	0,96
Using technology is dulling my creativity in my institution	220	1	5	1,96	0,95
Using technology makes me jealous and irritable in my institution	220	1	5	1,94	0,92
Using technology makes me creates stress and nervous me in my institution	220	1	5	1,93	1,04
Using technology is reducing my thinking orphans in my institution	220	1	5	1,90	0,95
<i>Using technology disturbs me my motivation in my institution</i>	220	1	5	1,84	0,90
<i>Using technology let me obstruction to adopt my job in my institution</i>	220	1	5	1,75	0,83
<i>Using technology is reducing trust myself in my institution</i>	220	1	5	1,73	0,84

When the findings about the psychological effects of the technology usage in institutions on employees are investigated, it can be seen that the thoughts that it creates fatigue ( $\bar{x} = 2,45$ ), breakoff phenomenon ( $\bar{x} = 2,15$ ) on teachers; and decreases the sense of them have the highest ratio. In the same case, it can be said that the thoughts that the technology usage in institutions break their motivation ( $\bar{x} = 1,84$ ), prevent their work adaptation ( $\bar{x} = 1,75$ ), and decrease their self-confidence ( $\bar{x} = 1,73$ ) are among the less supported ideas. When the average value of the psychological effects of the technology usage in institutions on employees is investigated, it can be stated that this effect is in a "low" level ( $\bar{x} = 1,96$ ). When the sociological and psychological effects of the technology usage in institutions on employees were compared, it was designated that the sociological negative effects ( $\bar{x} = 2,17$ ) were much than psychological negative effects ( $\bar{x} = 1,96$ ). The results of the free sample test and ANOVA analyse that were made for if the sociological and psychological effects of the technology usage in institutions on employees are changeable are given below.

**Table 4. The differentiation of the sociological and psychological effects of the technology according to the ages.**

ANOVA		Sum of Squares	df	Mean Square	F	Sig.	Significance Level
<i>Sociological Effects</i>	<i>Between Groups</i>	13,467	3	13,466	10,44	0,023	(**) $P < 0,05$
	<i>Within Groups</i>	278,951	216	3,877			SIGNIFICANT
	<i>Total</i>	292,418	219				
<i>Psychological Effects</i>	<i>Between Groups</i>	18,673	3	6,224	5,405	0,004	(**) $P < 0,05$
	<i>Within Groups</i>	243,060	216	1,125			SIGNIFICANT
	<i>Total</i>	261,733	219				

Free sample t test was made for investigating if the thoughts of the institution employees about the sociological and psychological effects of technology changed or not according to the ages. When the table which arisen from the result of the analyse is investigated, it is seen that there is a meaningful difference in  $p < 0,05$  level according to the ages.

At the result of the Tukey test made for simplifying for which group was the differentiation realized positively, it can be said that the differentiation is in good taste; and the 31-40 years old teachers and school administrators have less negative sense about the sociological and psychological effects of the technology.

**Table 5. The differentiation of the sociological and psychological effects of the technology according to the genders.**

Group Statistics	GENDER	N	Mean	Std. Deviation	Std. Error Mean	t	p	Significance Level
<i>Sociological Effects</i>	<i>Male</i>	76,000	2,316	1,133	0,130	2,497	0,019	(**) $P < 0,05$
	<i>Female</i>	144,000	1,958	0,917	0,076	2,340		SIGNIFICANT
<i>Psychological Effects</i>	<i>Male</i>	76,000	8,211	4,051	0,465	9,416	0,030	(**) $P < 0,05$
	<i>Female</i>	144,000	6,987	3,373	0,282	8,914		SIGNIFICANT

Free sample t test was made for investigating if the thoughts of the institution employees about the sociological and psychological effects of technology changed or not according to the genders. When the significance columns are investigated for simplifying in which group is the differentiation, it is seen that the men have much problem sense.

**Table 6. The differentiation of the sociological and psychological effects of the technology according to the professional seniority.**

ANOVA		Sum of Squares	df	Mean Square	F	Sig.	Significance Level
<i>Sociological Effects</i>	<i>Between Groups</i>	11,024	4,000	2,756	3,013	0,019	(**) $P < 0,05$ SIGNIFICANT
	<i>Within Groups</i>	196,685	215,000	0,915			
	<i>Total</i>	207,709	219,000				
<i>Psychological Effects</i>	<i>Between Groups</i>	18,486	4,000	4,063	3,392	0,022	(**) $P < 0,05$ SIGNIFICANT
	<i>Within Groups</i>	234,260	215,000	1,234			
	<i>Total</i>	252,745	219,000				

Free sample t test was made for investigating if the thoughts of the institution employees about the sociological and psychological effects of technology changed or not according to the ages. When the table which arisen from the result of the analyse is investigated, it is seen that there is a meaningful difference in  $p < 0,05$  level according to the professional seniority.

At the result of the Tukey test made for simplifying for which group was the differentiation realized positively, it can be said that the differentiation is in good taste; and the teachers and school administrators who have 1-2 years experience have much negative sense about the sociological and psychological effects of the technology.

**Table 7. The differentiation of the sociological and psychological effects of the technology according to the status in at school.**

Group Statistics	POSITION	N	Mean	Std. Deviation	Std. Error Mean	t	p	Significance Level
<i>Sociological Effects</i>	<i>Teacher</i>	174,000	1,851	1,037	0,079	-	0,032	(**) $P < 0,05$ SIGNIFICANT
	<i>Director</i>	46,000	2,217	0,987	0,146	-	2,18	
<i>Psychological Effects</i>	<i>Teacher</i>	174,000	1,943	0,954	0,072	-	0,045	(**) $P < 0,05$ SIGNIFICANT
	<i>Director</i>	46,000	2,261	0,953	0,141	-	2,01	

Free sample t test was made for investigating if the thoughts of the institution employees about the sociological and psychological effects of technology changed or not according to the status at school. When the table which arisen from the result of the analyse is investigated, it is seen that there is a meaningful difference in  $p < 0,05$  level according to the status at school. When the significance columns are investigated for simplifying in which group is the differentiation, it is seen that the administrators have much problem sense.

Free sample t test was made for investigating if the thoughts of the institution employees about the sociological and psychological effects of technology changed or not according to the school types. When the table which arisen from the result of the analyse is investigated, it is seen that there is not a meaningful difference in  $p < 0,05$  level according to the school types. So it can be said that the teachers who work in both private and state schools have the same level sense about the psychological and sociological effects of the technology.

## RESULT AND DISCUSSION

Nowadays, at the result of the big alteration and developments, technology usage shows increase. Today it can be said that technology has come into all area of the life. Even, it can not be any operation without technology in some sectors and entities such as banking, finance and production. So it has become inevitable to avoid from both the positive and negative effects of the technology. It must be taken provisions against technology simplifying its bad effects.

This study was made for investigating the senses of the employees in educational institutions about the psychological and sociological damages of the technology; and submitting solution offers simplifying the social and psychological problems.

When the approaches of the teachers and administrators in the sample about the technology are evaluated, it is seen that they use computer between 1-3 hours in a day; and think technology usage is not so essential in the educational institutions. It can be said that it is not given much importance to technology due to the fact that there are students in the educational institutions and teachers and administrators must spare time to them. The result of this study shows that when it is said technology, the first contexts and instruments that come back are respectively speed, globalization and quality contexts; and smart phones, social media and tablet (in the same level) instruments. When the findings about the sociological effects of the technology usage in the institutions on employees are investigated, it is seen that technology usage decreases the interaction and communication between teachers in my institution; and causes their being introverted. And when the findings about the psychological effects of the technology usage in the institutions on employees are investigated, it is seen that it creates fatigue, breakoff phenomenon; and decreases the emotions.

When the sociological and psychological effects of the technology usage in the institutions on employees are compared, it is concluded that the negative sociological effects are more than psychological negative effects. At the result of the analyses made for designating if the comments of the employees about the sociological and psychological effects of the technology usage show a meaningful differentiation according to the demographic factors, it is seen that the effects of both the sociological and the psychological effects almost are in the same ratio. Within this context, it is seen that the employees who are in the 31-40 years group; who have 1-2 year experience; who are teachers, administrators, men have much problem senses. Also it is concluded that the teachers who work bot in private and state school have senses about the sociological and psychological effects of the technology in the same level.

It has been become an ideal of the countries to produce and use the technology in this globalized world. Technology appoints the development levels of the countries and give very big-sized advantages (Terlik, 2010:38). According to Erdal (2008), by means of the technology, the increasing of the alteration, innovations, non-stop development, flexibility and speed have been provided. Also by means of technology usage in the establishments, the work are made quickly and flexible; and they keep up with technology. Unfortunately although the technology has so much advantages, some kind of its disadvantages are also known. According to Ipcioglu and his friends (2009), it creates generally psychological, sociological, economical and physical effects on employees. It can be said that these effects are seen definitely at the researches investigated with literature screening results. For example, in his research named " *The Effects of the Usage of the Information Technologies*" and which was made in Konya with 353 institution

employees, Sevinc (2006), designated that high level physical and psychological negative situations were happened on employees after the result of the technology usage. He stated that the problems were arisen specially as stress, eye disorder, less speaking and job satisfaction.

Besides, Terlik (2010) states in his study named "A study about the effection levels of the technologies used in the office managements on the work-power psychology and social relationships" that technology causes people to be introverted; decreases the faith of people with each other for themselves and the interactions; isolates people; changes people into robots taking their emotions and thoughts from them.

In the study of Kalay (2009) which was made on 432 people sampling the banking sector for investigating the effects of the information technologies on the job stress and satisfaction, it was seen that the workers in the Turkish banking sector had problems mainly with work overload, responsibility and were not able to quit the work; and that the other dimensions were in the medium and low level. Tekin and his friends (2000) describe that technological alterations create effects on the attitudes, behaviours and mental structures of the institution employees. These psychological effects can be summarized as monotony, boredom, tiredness, stress and concern (Emin, 2002:14).

By the way, the social effects of the technology on the institution employees can be ordered as alienation, becoming inadequate, dissatisfaction of the education and work, obligation of shift working- flexible working and decreasing of the communication and social relationship (Iplikcioglu and others, 2009:1). It is known that except from the sociological and psychological negative effects of the technology, there are physical effects such as physical health problems and work accidents (Serpil and Askin, 2004:34); and economical effects such as employment termination and job precarity (Sebahattin, 2005:51).

The below offers are brought in accordance with the results of this study:

- ✓ The institution employees should be given possible to be socialized.
- ✓ It should be provided that the institution employees don't attribute every performance with technology.
- ✓ It should not be given possible to the institution employees to neglect the work because of the overload technology usage.
- ✓ Psychological support unions should be established for the institution employees; and periodical meetings should be provided.
- ✓ Specially the institution employees who must use the computer should take a pause once 2-3 hours.

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