

WORKING DURING A PANDEMIC: ECONOMIC CONCERNS, DIGITALIZATION, AND PRODUCTIVITY

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Abstract

This paper aims to examine people's economic anxieties due to pandemic unpreparedness, recent digitization of work, and its effects on the perceptions of productivity of individuals working online. Although a pandemic threatens all individuals regardless of social class differences, not everyone is affected equally by this outbreak. A pandemic affects the poor, unemployed, low-educated, and women differently from those belonging to other class. During this situation, women and disadvantaged groups face more severe challenges than other social class. A total of 5338 people answered the questionnaire. Although majority of the respondents belonged to the middle and upper-middle-income group, approximately 40 percent are concerned about meeting their basic needs in the near future. Employees' job compatibility with the digitization process has adversely declined economic concerns. Data show that a significant part of society has experienced increased anxiousness and depression.

Keywords: Working during a pandemic, digitalization and productivity

Introduction

Certain future-oriented individuals have previously asserted that the greatest danger awaiting humanity is pandemics. However, experts have not expected a pandemic as severe as the novel corona virus (COVID-19) pandemic, which has alarmed humanity. If certain individuals have predicted the relative size of COVID-19 last year, then the current pandemic would probably have increased their wealth at present.

Today, certain sociologists refer to Ulrich Beck's concept of "risk society" (1992) to explain the pandemic. However, epidemics and pandemics are not mentioned in Beck's book. Nevertheless, he distinguished between risk and hazard in one of his other books and set natural disasters and epidemics as examples of dangers that people face in pre-modern societies (Sørensen and Christiansen, 2013). Moreover, Beck (2008) has discussed the SARS virus in two pages only in his book titled *World at Risk*, which was published after his book *Risk Society*.

Harari (2016) claimed in his popular book *Homo Deus* that humanity now has the potential to cope with pandemics. He stated that pandemics are one of the three most important issues through human history alongside famines and wars. Based on past experiences, the majority believe that the pandemic can be overcome through modern science.

The pandemic has startled organizations advising policymakers by predicting future trends, multinational companies, nation states, and, most adversely, ordinary citizens. This paper *examines people's economic anxieties due to pandemic unpreparedness, recent digitization of work, and its effects on perceptions of productivity of individuals working online.*

The vast majority of the world's population is under lockdown due to COVID-19, and several workplaces have become inconvenient. Existing jobs and education that are suitable for online work from home have been digitized to a great extent. Many people started to perform their jobs at home using new technologies. *Compliance with new technology and efficiency has become one of the most important challenges.*

When the epidemic started in China, the rest of the world witnessed their situation. They assumed that the problem that started in China would not spread. Necessary precautions were not taken, resulting in the worldwide spread of the pandemic.

Unprepared businesses faced serious economic difficulties. Numerous people have faced difficulty of *meeting* their basic needs in the future. Particularly, self-employed individuals and *private employees have started to fear losing their jobs.*

Alvin Toffler claimed in his book *The Third Wave* (1980) that people would work at home due to the development in information and communication technologies. He coined the term *electronic cottage* to describe this process. He further believed this would *revolutionize* labor and production.

Max Weber (1999) attributed a special meaning to the separation of the workplace from home to capitalism development. The separation of work and home has profoundly affected modern society's ways of living, working, and thinking. In the digital working phase of late capitalism, a significant part of work can be done at home. In other words, the workplace and home have started to converge again.

The COVID-19 pandemic has accelerated businesses' digitization thus far. In certain countries, more than one-third of jobs have been performed at home (Dingel and Neiman, 2020). The ideas of digitization of work have a 40-year history. However, this concept has incredibly emerged in the face of this abrupt compulsory digitization. Conspiracy theorists hold that COVID-19 is a laboratory-made virus by great powers to establish a digital world state.

Although the latest development of information technologies has driven online work (Erşen, 2020), digital transformation has extensively used these technologies today. New opportunities and threats to governments worldwide are created. The Internet of things, artificial intelligence, blockchain, big data, and Industry 4.0 have provided transformations far beyond the claims of *information society* theorists (Mello and Ter-Minassian, 2020).

Robots have become important again in production processes and in crucial sectors, such as healthcare, because they are invulnerable to viruses. The COVID-19 pandemic has put many people under lockdown and thus has profoundly affected intrafamilial relationships and individuals' moods and accelerated the digitization process.

Although the pandemic threatens the whole world regardless of class difference, not everyone is affected equally. The effects of the pandemic on the poor without savings, the unemployed, and women are not the same as the rest of the population (Sunar, 2020). Thus, women and other disadvantaged groups face more severe problems than others (Paz, Muller, Munoz Boudet, and Gaddis, 2020).

Research Method and Demographic Characteristics of Participants

The research was conducted through Google Forms during April 9–12, 2020. The Google Forms were distributed to a wide populace through the researcher's social networks. Social media sources, such as Twitter, Facebook, LinkedIn, Instagram, and WhatsApp, were mainly

used. The survey drew considerable interest that exceeded the researcher's expectation. Approximately 5700 respondents answered the questionnaire. After questionnaires with missing data were removed, **5338 of the remaining questionnaires** were evaluated. Table 1 below shows that the vast majority of respondents (92.3%) have university and higher education degrees (including students), 93.5% live in cities, 58% are females, and 42% are males. In terms of age distribution, 24.2%, 30.6%, 23.6%, 13.7%, and 7.9% are aged 24 years and under, 25–34 years, 35–44 years, 45–54 years, and 55 years and over, respectively.

Household income level is also concentrated in the middle and upper-middle-class groups. Approximately 50% of the respondents state that they do not concern about their jobs, whereas 25% state that they are afraid of losing their jobs in the future. The remaining respondents were unemployed or were unemployed after the pandemic.

Data collected through **convenience sampling** do not represent the general population. These data represent mainly *urban, educated, middle, and upper-middle classes*.

Variables	Parameters	Percentage (%) and Average
Gender (%)	Female	57.9
	Male	42.1
Average age (average)	SD: 29.21	35.12
Education (%)	Secondary education	7.7
	University	61.6
	Master and above	30.7
Marital status (%)	Single	48.3
	Married	46.1
	Divorced	4.5
	Other	1.1
What do you do? (%)	Self-employed	10.2
	Public employees	25.6
	Private employees	18.9
	Student	22.7
	Unemployed	7.3
	Housewife	4
	Retired	5.7
Other	5.7	

Household income status (%)	Lowest-income group	5.7
	Lower-middle income group	18.4
	Middle income group	51.1
	Upper-middle-income group	23.6
	Highest income group	1.1
Where do you live (%)	Big city	75.9
	City	17.3
	Town	4.1
	Village	2.3
Home (%)	Apartment	71.8
	Detached house	12.9
	Gated community	12.9
	Villa	1.3
	Other	1.1
A total of 5338 of questionnaires were included in the analysis		

The majority of the respondents (48.3%) are single, and the proportions of individuals with “married” and “divorced” or “other” status are 46.1% and 5.6%, respectively. In terms of household income status, the research participants are predominantly in the middle (51.1%) and upper-middle (23.6%) income groups. Lower-middle income, lowest income, and highest income groups are 18.4%, 5.7%, and 1.1%, respectively.

Based on residential type, the majority lives in apartments (71.8%), followed by those living either in a detached house or gated communities, villa residents, and “other” at 12.9%, 1.3%, and 1.1%, respectively. Those in the lowest-income group live in detached houses and apartments. As the household income level increases, the ratio of those living in gated communities and villas increases as expected (25.8%).

Approximately 25%, 22.7%, 18.9%, 10.2%, 7.3%, 5.7%, and 4% of the respondents are public employees, students, private employees, self-employed, unemployed, retired, and housewives, respectively. The rest marked the option “other.” Based on settlement, the vast majority lives in and cities (93.5). The rest live in villages and towns.

Anxiety of Not Meeting Basic Needs and Unemployment

According to the International Labour Organization (ILO, 2020), the COVID-19 pandemic has affected 2.7 billion employees, representing approximately 81% of labor worldwide. Moreover, various businesses (especially small businesses) are facing great difficulties. According to the ILO, the pandemic has deep, broad, and unprecedented effects on employment.

This study finds similar problems to those other countries. The majority of the respondents belonged to the middle and upper-middle-income groups. However, Table 2 below shows that 38.2% expressed anxiety about meeting their basic needs in the next two months. Females' concerns (39.3%) are slightly higher than those of males (36.4%) ($\chi^2 [1] = 4,680$; $p = .030$). On the contrary, as education level decreases, anxiety increases ($\chi^2 [3] = 60.150$, $p = .000$).

Table 2. Do You Feel Anxious About Meeting Your Basic Needs in the Next Two Months?

Status	Frequency	Percent (%)
No	3265	61.8
Yes	2014	38.2
Total	5279	100.0

As expected, the lower income groups (68.5%) had the highest concern about not meeting their basic needs. As household income rises, the anxiety of not meeting their basic needs declines steadily. However, in the top income group, 18% of the respondents experience this anxiety ($\chi^2 [4] = 354.523$, $p = .000$).

Table 3. Respondents with Anxiety in Meeting their Basic Needs in the Next Two Months According to Occupation

What do you do?	Are you concerned about meeting your basic needs in the next two months?		Total
	No	Yes	
Self-employed	63.8	36.2	100.0
Public employees	76.0	24.0	100.0
Private employees	53.3	46.7	100.0
Student	54.2	45.8	100.0
I am unemployed	49.5	50.5	100.0
Housewife	69.3	30.7	100.0
Retired	64.5	35.5	100.0
Other	61.9	38.1	100.0
Total	61.8	38.2	100.0

($\chi^2 [7] 205.356$, $p < .000$)

Table 3 shows that anxiety of meeting basic needs is the highest among the unemployed (50.5%), followed by private-sector employees (46.7), self-employed people, retirees, and housewives. Public employees with employment security have the lowest concern in this regard.

The COVID-19 pandemic has significantly impacted the society's employment status. Thus, the importance of providing a livelihood has become one of the most important challenges for most of the population. As a result, livelihood anxiety was asked again using

a five-point Likert-scale. This question is similar to the results of the question at the end of the form and to the yes/no question included in the first group of questions. Table 4 shows that approximately 40% of the respondents stated that they are concerned about their livelihood.

Status	Frequency	Percent (%)
Strongly disagree	990	19.3
Disagree	1303	25.5
Neutral	791	15.5
Agree	1173	22.9
Strongly agree	861	16.8
Total	5118	100.0

Figure 1 shows that as the age decreases, the anxiety of providing for a living increases significantly. Moreover, anxiety is higher among those who live in villages and detached houses than the others.

Among the respondents, cities such as Muğla and Antalya, whose economies are largely based on tourism, have the highest anxiety. Furthermore, Batman, Osmaniye, Antalya Yalova, Mersin, Van, Adana are the cities with high anxiety. On the contrary, livelihood anxiety is low in Aksaray, Mardin, Erzurum, Balıkesir, Sakarya, Erzurum, and Niğde compared with the other provinces. Istanbul is mostly affected intensely and has the highest number of respondents. The city has moderate livelihood anxiety compared with other provinces. A study with a well-balanced representation of provinces based on a new analysis is needed to better explain the difference between provinces.

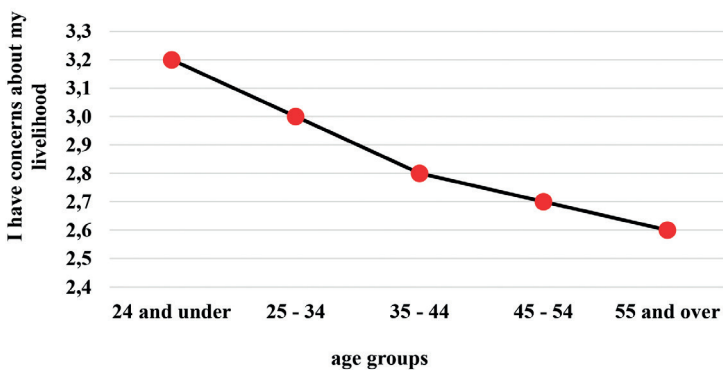


Figure 1. Livelihood Anxiety by Age
 $F(4,5041) = 27,645$; $p < 0.000$

As **state trust** increases ($r = .27$), concerns about ensuring a decent livelihood decline. Furthermore, although concerns on the **left of the** political spectrum significantly increase, they differ statistically between those who position to the **right** and those who say “**I believe and fulfill my religious obligations.**” *Those who say that they are on the right are mostly public employees and may be the reason for the difference between the political groups. Additionally, the two political groups watch different media sources and the content of the media they watch may have been effective in reducing or increasing economic anxieties. Moreover, those who do not find other people trustworthy, who claim that people do not think of anything other than their own interests, the lonely ($r = .21$), the young ($r = -.14$), and those with low social capitals ($r = -.20$) are more worried about their livelihood.*

After the pandemic, unemployment may increase among groups with low-education levels. As education increases, the rate of those who say, “I am concerned about my job” significantly declines. *Suitability for online work greatly reduces unemployment risk.* As the frequency of Internet usage increases, the rate of those who say they do not have anxiety about unemployment in the future increases ($\chi^2 [8] = 54.054, p < .000$). As the income level rises, the rates of those who say they are not concerned about unemployment increase steadily. **In terms of employment, this crisis mostly affects people with low income, low education, and working in the private sector or self-employed.**

Table 5, 40.5%, 2.8%, and 15.3% of the respondents said they had no job anxiety, lost their job during the pandemic, and had already been unemployed before the pandemic. A total of 19.2% say they are experiencing future unemployment anxiety. Most private employees are worried about losing their jobs (51.3%), and the rate of self-employed is approximately 32.8%.

Anxiety Status	Frequency	Percent (%)
I am not concerned about work.	2159	40.5
I lost my job during the COVID-19 pandemic.	151	2.8
I was already unemployed.	815	15.3
I am concerned about losing my job in the future.	1023	19.2
Others	1188	22.3
TOTAL	5336	100.0

Similar to the questions above, 39.2% of the respondents say they have anxiety about not meeting their needs in the next two months. Based on the results of this question, women, low income groups, and socio-economic-disadvantaged individuals are more concerned.

A total of 10.4%, 9.4%, 31.1%, and 33% of the respondents said they have no livelihood problem, their current savings could support them for more than a year, they had no savings, and their savings could support them only for a few months, respectively. Therefore, approximately two-thirds of the respondents “have no financial savings” or “can manage for a few months at most” (see Table 6).

<i>Current Savings' Estimated Duration</i>	Frequency	Percent (%)
I have no savings.	1646	31.3
A can manage few months at most.	1739	33.0
I can manage for about a year.	835	15.9
I can handle more than a year.	497	9.4
I do not think I will have a livelihood problem.	548	10.4
Total	5265	100.0

Those who say they have no savings are mostly 24 years old and under (45.2%) The rate of those who say they have no saving decreases as the age increases ($\chi^2 [16] = 482,203$; $p = .000$). Those among the secondary education level and below have the most livelihood problems. As education level increases, a relative feeling of relief sets in. A total of 23% of those with a master’s degree or above and 33.6% of those with bachelor or undergraduate degree stated that they had no savings ($\chi^2 [12] = 134,820$; $p = .000$).

Digital Work and Productivity

As stated, telework, online work, and work from home are a form of work that has been discussed worldwide for many years and have already been implemented by some businesses at present. The most significant impacts of the pandemic include the lockdown of most population worldwide, changes in ways of living and work, and imperative implementation of online working.

Table 7 shows that 81% of the respondents stated that their work system has significantly changed. Housewives and retirees have the least changes experienced in their jobs, whereas employees, self-employed individuals, and students had the most changes.

Status	Frequency	Percent (%)
No	986	18.9
Yes	4239	81.1
Total	5225	100.0

As income increases, those who say, “My way of doing business has changed” slightly increase. However, it is not statistically significant ($\chi^2 [4] = 6,218; p = .183$). In other words, all income groups’ *way of working* has changed drastically during the pandemic. Although the majority of the respondents are against to more robots in work, this objection is partially reduced among those who say their work system has changed ($\chi^2 [1] = 5,940; p = .015$).

Table 8 shows that a total of 57% of the participants, including students, stated that their jobs are suitable for online working. This finding is because the vast majority of the participants have a university degree and above. While the majority of public employees (61.4%) and students (61.9%) stated that their jobs are suitable for online work, this rate decreases to 50% among the self-employed. Similarly, the rates of those who said that their jobs were suitable for online work decreases from the highest (69%) to the lowest-income group (36.7%), ($\chi^2 [4] = 166,987; p = .000$).

Status	Frequency	Percent (%)
No	2160	42.9
Yes	2872	57.1
Total	5032	100.0

Those whose jobs are suitable to online working are much more amenable of this way of working. Livelihood anxiety decreases among those whose jobs are compatible with online working ($\chi^2 [1] = 35,045; p = .000$). The compatibility of **digitization of jobs** *significantly declines economic concerns*. The vast majority of those who stated their jobs are suitable for digitization live in cities.

Table 9 shows that 47% of the respondents answered, “I don’t work online.” A total of 56.2%, 14.4%, and 29.3% of those who work online said that their productivity decreased, increased, did not change, respectively.

Status	Frequency	Percent (%)
My efficiency has decreased.	1369	29.6
My efficiency has unchanged.	718	15.5
My efficiency has increased.	348	7.5
I do not work online.	2194	47.4
Total	4629	100.0

Most students (68.6%) claim that online working reduced their productivity, followed by public employees (56%), self-employed (52%), private employees (48.9%) ($\chi^2 [14] = 77,082$; $p = .000$).

Table 10 and Figure 2 shows that when we analyze only the differences between the employed and self-employed in the second stage, significant differences exist between the groups ($\chi^2 [4] = 9.958$; $p = .045$).

Table 10. Change in Productivity by Work Type

Productivity of online workers	Self-employed	Public employees	Private employees	Total
Decreased	52.1	56	48.9	52.9
Unchanged	34.9	30	32.7	31.7
Increased	13	14.1	18.4	15.4
Total	100	100	100	100

($\chi^2 [4] = 9.958$; $p = .045$)

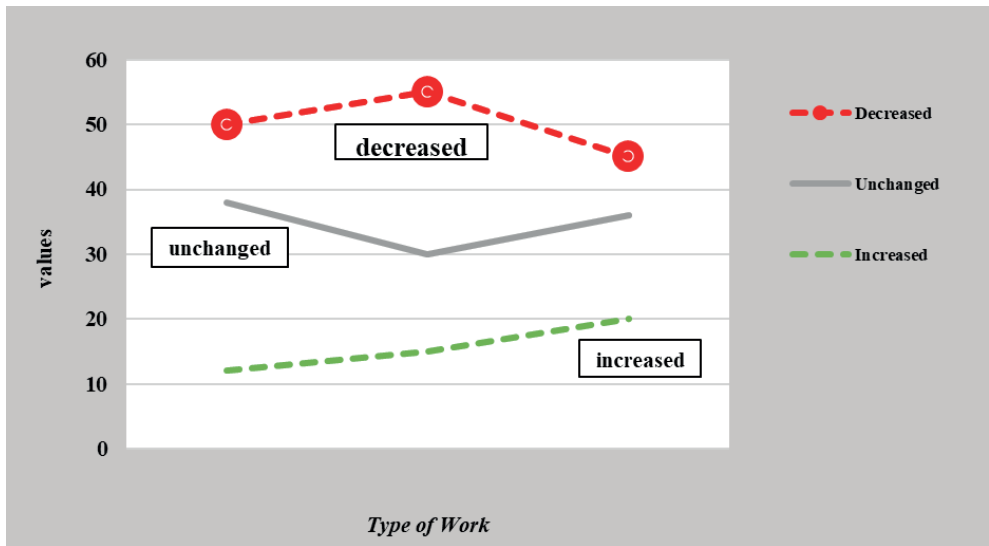


Figure 2. Change in Productivity by Type of Work ($\chi^2 [4] = 9.958$; $p = .045$)

Productivity had decreased the most among public employees (56%), followed by self-employed (52.1%), and private employees (48.9%). Auditing and appraisals in the private sector are more effective than those in the public sector and thus may have led to the partially higher increase in productivity of private employees (18.4%) than those of public employees (14.1%).

The graph in Figure 2 above shows the change in efficiency according to household’s income status; all income groups said that their productivity has decreased. However, the greatest decrease is observed in the lowest-income group (72.2%). As income increases, productivity loss decreases. This rate is expressed at 40.5% in the highest income group. Those who said that their productivity has increased remains limited in all income groups. As income increases, the rate of those who said their productivity has increased raises. This rate is 10% in the lowest-income group and raises to 21.6% n the highest income group.

Table 11. Productivity Changes by Income Groups

Productivity of online workers	What is the income status of the household?					Total
	Lowest-income group	Lower-middle income group	Middle income group	Upper-middle-income group	Highest income group	
Decreased	72.2	62.6	55.7	52.9	40.5	56.2
Unchanged	17.8	25.5	29.5	32.4	37.8	29.5
Increased	10.0	11.9	14.8	14.7	21.6	14.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

($\chi^2 [8] = 22,890; p = .004$)

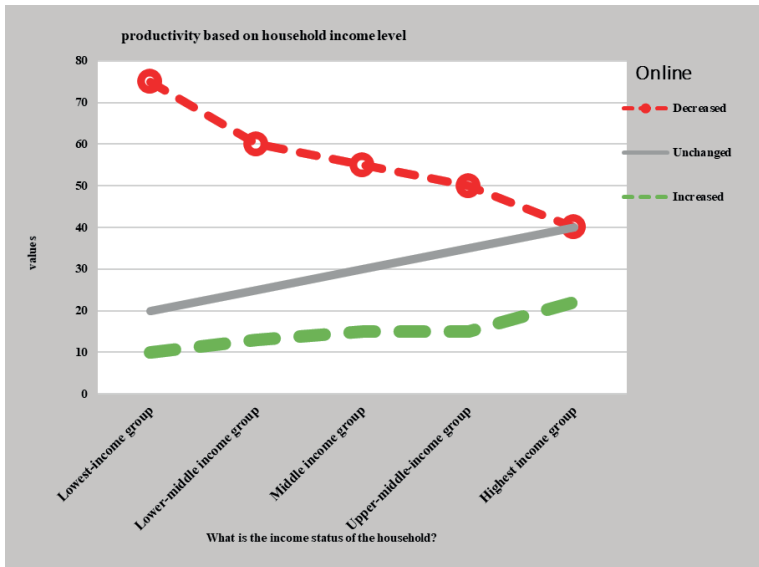


Figure 3. Productivity Changes of Online Employees by Income Status
($\chi^2 [8] = 22,890; p = .004$)

These data show that digitization and **online working**, as a part of it, is a lifesaver during the pandemic, *but it does not serve efficiently*. This finding may *be* because some jobs are not suitable for online working or *employees are not used to the system*.

Online Working, Gender, and Productivity

Regardless of gender difference, the majority of respondents (56.2%) stated that their efficiency decreased. However, a comparison by gender in Table 12 shows that **efficiency decline among women (60.5%) is much higher than among men (50.15%)**. Productivity decreases as household members increase ($r = -0.097$; $n = 2421$; $p = 000$). The more the household members, the more is women’s productivity working online negatively affected ($r = -0.144$; $n = 1405$; $p = 000$). However, no statistically significant relationship was found between the number of household members and men’s productivity decrease ($r = -0.025$; $n = 435$; $p = .435$).

Table 12. Productivity Changes by Gender

Productivity of online workers	Gender		Total
	Female	Male	
Decreased	60.5	50.1	56.2
Unchanged	26.0	34.5	29.5
Increased	13.6	15.4	14.3
Total	100.0	100.0	100.0

($\chi^2 [2] = 26,918$; $p = .004$)

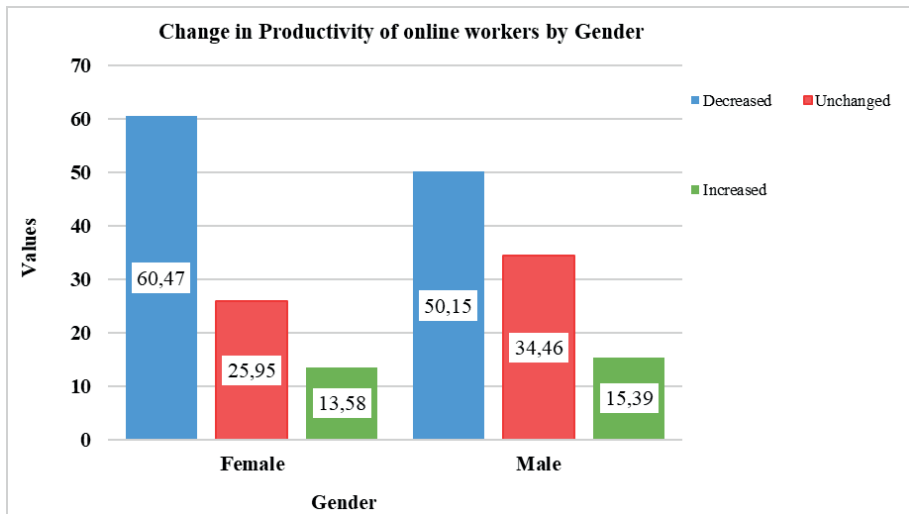


Figure 4: Productivity Changes by Gender

The lockdown caused by the pandemic **has** eliminated the possibility of outsourcing childcare, cleaning, and food services, **for women working online**. This condition greatly increased the burden of the working females. The rate of women who said that they constantly feel exhausted ($r = -.18$) is higher than that of males. This finding is associated with women's *stress resistance* compared with men and increased **workload**. Particularly, among women working online, the rate of those who said they *constantly feel fatigue and burnout is increasing in the private sector*, compared with those in the public sector and self-employed.

Table 13. Online Working Has to Be Promoted in Turkey

Status	Frequency	Percent (%)
No	1469	28.0
Yes	3783	72.0
Total	5252	100.0

Table 13 shows that most of the respondents support the endorsement of online working (72%). Only few respondents oppose the idea. Table 14 shows that those who support online working said that productivity has increased, albeit partially (See). Productivity level remains at 9.2% among those who opposed online working. This rate increases to 16.2% among those who want to promote online working. Productivity decrease is much higher among those who oppose online working (69.5%). No significant differences exist between men and women in promoting online work.

Table 14. Efficiency Increase and Endorsement of Online Working in Turkey

Productivity of online workers	Online working should be endorsed in Turkey		Total
	No	Yes	
Decreased	69.5	51.6	56.3
Unchanged	21.4	32.2	29.4
Increased	9.2	16.2	14.3
Total	100.0	100.0	100.0

($\chi^2 [2] = 61,122; p = .000$)

Relationship between Psychosocial Problems after The Pandemic and Employee Productivity

Global pandemics, wars, and natural disasters create profound social traumas and increase in stress-related illnesses (Ûosiü, Popoviü, Šarlija, and Kesedžiü, 2020). This research substantially confirms claims of the academic literature for increased stress and anxiety during pandemics. **Data show that anxiety and depression increases among most societies.**

For example, approximately 65%, 42%, 31%, 53%, 41%, and 39% of the respondents said the pandemic has increased their restlessness, were unable to work, lost their sense of control over their lives, lost their sleep quality, said they were constantly afraid of getting infected, and said they constantly felt fatigue and exhaustion, respectively.

Furthermore, the research reveals the existence of a *close relationship between efficiency changes* and increased stress and anxiety levels during the pandemic. As the fear of death and being infected, livelihood anxiety, and other **psychosocial problems increase**, online workers' *productivity* decreases significantly.

Table 15. Productivity Increase Among Online Employees and Psychosocial Problems		
Spearman Correlation Coefficient		
	Productivity of online workers	
Productivity of online workers	Correlation coefficient	1.000
	p-value	
	Number of samples	2435
What is your gender? (0: female, 1: male)	Correlation coefficient	0.092 **
	p-value	0.000
	Number of samples	2421
What is your education level?	Correlation coefficient	0.079 **
	p-value	0.000
	Number of samples	2422
How often do you use the Internet?	Correlation coefficient	0.059 **
	p-value	0.003
	Number of samples	2424
I have a hard time doing my daily tasks.	Correlation coefficient	-0,260 **
	p-value	0.000
	Number of samples	2373
I have started to lose my sense of control over my life.	Correlation coefficient	-0,239 **
	p-value	0.000
	Number of samples	2372
My sleep quality deteriorated.	Correlation coefficient	-0,215 **
	p-value	0.000
	Number of samples	2383
I am constantly afraid of getting infected.	Correlation coefficient	-0,137 **
	p-value	0.000
	Number of samples	2374

My fear of death increased.	Correlation coefficient	-0,128 **
	p-value	0.000
	Number of samples	2378
My sense of loneliness increased.	Correlation coefficient	-0,148 **
	p-value	0.000
	Number of samples	2368
I am constantly feeling tired and exhausted.	Correlation coefficient	-0,236 **
	p-value	0.000
	Number of samples	2366
I have concerns about making a living.	Correlation coefficient	-0,115 **
	p-value	0.000
	Number of samples	2373
My communication problems increased in the family.	Correlation coefficient	-0,119 **
	p-value	0.000
	Number of samples	2351
** is significant at the 0.01 correlation level (2-tailed).		
* is significant at the 0.05 correlation level (2-tailed).		

The Spearman correlation analysis reveals the relationship between mood changes and productivity. Data in Table 15 suggest that productivity decreases much more among those who said, “I have a hard time doing my daily tasks” ($r = -.260$), “I have started to lose my sense of control over my life” ($r = -.239$), “My sleep quality has deteriorated” ($r = -.215$), “I am constantly afraid of getting infected” ($r = -.137$), “My fear of death has increased” ($r = -.128$), “My sense of loneliness has increased” ($r = -.148$), “I am constantly feeling tired” ($r = -.236$), “I am concerned about earning a living” ($r = -.115$), and “My communication problems in the family increased” ($r = -.119$).

Using More Robots in Work

Before the pandemic, the use of industrial robots was increasing at an incredible rate, whose prices were decreasing. Data from the World Robot Federation (WRF, 2019) reveal that industrial robot orders increased fivefold between 2001 and 2017. This trend is expected to increase after the pandemic. Experts working in this field expect that competition based on low-cost labor cannot be sustained against robots that are constantly decreasing in prices and increasingly becoming more skillful.

Previous industrial transformations substituted works that were mainly based on manpower with motor power. Nowadays, algorithmic thinking jobs have also become substitutable. Hence, this change will negatively affect the workforce performing routine jobs. According to

the International Robotic Federation, the global sales of industrial robots increased by 60% between 2000 and 2012. As of 2018, the number of robots involved in industrial production is over 400 thousand annually. A total of 74% of world robot use is in five countries. Australian and Asian markets, where China is located, are the leaders in robot use.

Automation technology has increasingly competed with production costs in countries with the lowest wages as evidenced by one of the best-selling books today, that is, *Rise of the Robots* (Ford, 2018). Ford states that new technologies will reduce labor in the production, slow down wages, and reduce employment.

For example, as the population ages and the workforce shrinks in Japan, robots have been used in nursing homes, offices, and schools (Lufkin, 2020). Thus, this pandemic may further expand the use of robots in the industrial production processes and services, such as patient care.

Table 16. Increased Robot Use at Be Work Should Encouraged

Status	Frequency	Percent (%)
No	3379	64.5
Yes	1862	35.5
Total	5241	100.0

We asked the participants for their opinions on increasing robots a work, which is a part of the digital transformation in the research. Table 16 shows that although most respondents favor online working, they oppose the use of additional robots at work (64.5 %). Only 35.5% favor the endorsement of using additional robots.

Table 17. Those Who Say That More Robots Should Be Used According to Occupation

Robot use should be encouraged	What do you do?							TOTAL	
	Self-employed	I work in the public sector	I work in the private sector	I am a student	I am unemployed	Housewife	Retired		Other
No	61.1	62.3	60.2	67.9	67.1	80.5	67.8	61.8	64.4
Yes	38.9	37.7	39.8	32.1	32.9	19.5	32.2	38.2	35.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

($\chi^2 [7] = 45,090; p = .000$)

Unemployment is one of the most crucial social problems worldwide. The majority of people are concerned that the use of more robots will lead to unemployment. Hence, they are skeptical about robot use. If we exclude housewives, then most protesters are students, retirees, and unemployed.

Table 18. Robot Use and Current Savings

More robots should be encouraged in working life	How much longer will your current saving help you to survive without working?					TOTAL
	I have no savings	A few months at most	I can manage for about a year	I can handle more than a year	I do not think I will have a livelihood problem	
No	70.3	65.5	58.9	56.0	59.5	64.5
Yes	29.7	34.5	41.1	44.0	40.5	35.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Table 18 shows that those have no savings (70.3%) comprise the most objections to robot use, followed by those who can manage for a few months (65.5%), for a year (58.9%), and for more than a year (56%). Women, low-educated individuals, low-income individuals (i.e., those with a low chance of competing against technology), and believers in conspiracy theories are more skeptical about robot use.

Conclusion and Evaluation

The world has become more fluid due to globalization. A commodity or virus that emerges in a place can reach the rest of the world at an unprecedented rate. The novel COVID-19 that originally troubled China has instantly turned into a global problem.

A relationship exists between population density and pandemic risk (Loon, 2020), and the population is concentrated in big cities in many countries. This condition greatly accelerates the spread of outbreaks. For example, the globalized city of Istanbul has become the epicenter of the pandemic in Turkey.

This research has revealed that Turkey’s society is unprepared for the pandemic similar to many countries. Study participants are mostly characterized by urban, higher education, and middle and upper-middle income backgrounds. Nevertheless, approximately 40% of the

respondents stated that they are anxious about meeting their basic needs. The ratio of those who are worried about their livelihoods is particularly higher for the young among the low income and low-education levels. Nearly two-thirds of the respondents stated that they had no financial savings or can manage for several months.

Although the COVID-19 pandemic has affected everyone, the data revealed its impacts are more negative on people whose jobs are unsuitable for online working, private employees or self-employed, and low income, low education, the poor, and women groups. The majority of those who answered the survey stated that their productivity decreased, regardless of gender. However, when we make a comparison by gender, women's productivity decline is much higher than that of men's. As the number of household member increases, women's productivity decreases. The quarantine caused by the pandemic has eliminated the possibility of outsourcing for childcare, cleaning, and food for women working online. This phenomenon greatly increased the burden of working women.

The rate of women who constantly feel exhausted is higher than that of men. This finding is associated with increased workload and women's stress resistance. Particularly, the proportion of those who said they have a feeling of fatigue and burnout is increasing among female private employees compared with public employees and self-employed.

As discussed, telework, online working, work from home are a form of work that have been discussed all worldwide for many years and have already been implemented by some businesses. The capacity of the digitization of employees' jobs significantly declines economic concerns.

Conversely, students, public employees, and self-employed believe that online education reduces the efficiency of the learning outcomes. Although all income groups' productivity decreased, the lowest-income group experienced the largest productivity decline.

Moreover, this research revealed efficiency changes and increased stress and anxiety during the pandemic are closely related. As the fear of death or getting infected and losing livelihood and other psychosocial problems increase, online workers' productivity decreases significantly.

This research is one of the first comprehensive studies on Turkish society during the pandemic. Data show that digitization and online working, as a part of it, is a lifesaver during the pandemic, though it does not work as efficiently.

Furthermore, the pandemic increased anxiety and stress levels in society. Data revealed that psychosocial problems have also increased. People's lifestyles and work systems have

changed during the pandemic. Their sense of trust has been seriously shaken, and they feel the need not only for money but also for psychological support. If Turkey's policymakers support those with insufficient income or little savings and develop necessary strategies to help those with intrafamilial communication and mental health problems, then the pandemic can be overcome with the least damage. We are going through a process in which we feel the need for social solidarity and particularly a protective government.

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