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Evaluation of Students' Opinions Regarding Distance Learning Practices in Turkish Universities during the Covid-19 Pandemic

Covid-19 Pandemisi Sürecinde Türkiye'deki Üniversitelerde Uzaktan Öğretim Uygulamaları Hakkında Öğrenci Görüşlerinin Değerlendirilmesi

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Özet

Bu çalışmanın amacı, Türkiye'deki üniversitelerin öğrencilerinin uzaktan eğitim sürecinde zorluk yaşayıp yaşamadıklarını ve sistemle ilgili görüşlerinin neler olduğunu belirlemektir. Kesitsel tarama yöntemi kullanılarak, bu araştırmanın verileri 5052 üniversite öğrencisinden elde edilmiştir. Araştırmadan toplanan verilere göre öğrencilerin %58.5'inin üniversitelerinde asenkron uzaktan eğitim dersleri bulunmaktadır. Uzaktan eğitim sınıflarına erişimle ilgili olarak öğrencilerin kendilerine atfedilebilecek problemler bilgisayarlardan ve internetten kaynaklanırken, sistemle ilgili problemler çoğunlukla bağlantı sorunları ve derslerin çok erken veya çok geç olmasıydı. Katılımcıların %73.7'si öğretim elemanları tarafından uzaktan eğitim sistemlerine yüklenen ders materyallerini yeterli veya kısmen yeterli bulurken, %36.7'si ödevleriyle ilgili kaynaklara erişimde sorun yaşadıklarını belirtmiştir. Öğrencilerin uzaktan eğitim sisteminden memnuniyet düzeyi 10 puan üzerinden 4.4 olarak bulunmuştur. Katılımcıların memnuniyet düzeylerinin öğrenim gördükleri üniversitenin sahiplik türüne göre farklılaşıp farklılaşmadığına ilişkin değerlendirmeye göre öğrencilerin memnuniyet düzeyi genel olarak düşük olmakla birlikte vakıf üniversitelerinde (4.9 puan) devlet üniversitelerine göre (4.3 puan) daha yüksektir.

Anahtar sözcükler: Covid-19 süreci, lisans öğrencileri, uzaktan eğitim, yükseköğretim.

Abstract

The purpose of this study is to identify whether students at Turkish universities are having difficulties in the distance learning process and to reveal their opinions regarding the system. Using a cross-cultural survey design, data were collected from 5052 students. Based on the collected data, 58.5% of the students have asynchronous distance learning classes in their universities. Access to distance learning classes is one of the problems, and it is attributed to computers, internet, and connectivity issues as well as with starting the lessons too early or late. A majority of participants (73.7%) found class materials uploaded by lecturers to distance learning systems to be sufficient or partially sufficient, and 36.7% stated that they had problems accessing resources regarding their homework. Students' satisfaction level with the distance learning system scored 4.4 out of 10. According to the evaluation regarding whether the level of satisfaction of participants varied across the type of university, the satisfaction level of students in public universities is generally low (score of 4.3 out of 10) compared to satisfaction in foundation universities (4.9 out of 10).

Keywords: Covid-19 period, distance learning, higher education, student satisfaction, undergraduate students.

Having started in December 2019 in China and later turning into a global outbreak, the Covid-19 pandemic has deeply affected education as it did all other areas beyond health. One of the first measures adopted by many governments from the United States to Europe was to stop the conventional face-to-face learning system by enforcing social distancing rules to prevent the spread of the virus while protecting individuals. In this scope, digital or distance learning was seen as a saviour and an alternative to conventional education methods.

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Therefore, with the Covid-19 pandemic period, the dawning of the new millennium had witnessed the initial entry of the Next Generation into our higher education institutes, which required staff to brace themselves for a new generation of learners who had specific interests and dispositions. Their entry into the world was when technological expansion was ubiquitous and widely adopted worldwide (Ali, 2020).

Although criticised by many pedagogies that assert that it cannot be a substitute for conventional face-to-face education, distance education today is an education model experienced by many institutions despite all doubts (Zhou, 2016). Distance education by itself can be an alternative to face-to-face education for some fields, while in other areas, it can be complementary to face-to-face education. In this context, its advantages over face-to-face education and its weaknesses must be considered when making decisions about distance education.

While distance education is defended for its benefits and advantages over formal education, it is not immune to criticism. The most widely discussed criticism of distance education is its inability in deliver face-to-face interaction between students and other students, and between students and teachers. This is quoted as the main reason for dissatisfaction with distance education in many studies (Durak, Çankaya, Yünkül, & Bozkurt, 2017). In a study from North America that compared formal education and online education in universities, the findings showed that participants believed that lecturer support was better in formal education, that academicians care about learning outputs more in formal education, and that they helped more in cases where students had any needs or problems (Després-Bedward, Avery, & Phirangee, 2018).

In Turkey, the Covid-19 measures started with the emergence of the first case on 10 March 2020. In this scope, the decision was made that all classes and events of elementary, secondary, and higher education that had been thus far carried out face-to-face would be carried out online via the distance education method. In Turkey, 7.9 million students receive instruction from 207 universities. Committees formed under the coordination of the Council of Higher Education during pandemics rapidly launched their activities. Education and learning that had ceased on 16 March 2020, continued as of 23 March 2020 in the form of distance learning over a digital education infrastructure. The Council of Higher Education and universities guaranteed that education would be provided by using synchronous and asynchronous classes, taking advantage of information and communication technologies (such as television and the internet). While some universities used their own infrastructure for this process, other universities with no or insufficient learning management systems made their plans to use other university capabilities. Some universities created virtual classroom environments via Zoom or MS Teams, using Learning Management Systems (LMSs) such as Moodle or Blackboard, and some used their own designed platforms. Regarding class materials, a "Council of Higher Education Classes Platform" was also formed under the Council of Higher Education[1] to enable joint use of universities' digital resources in an academic and cultural resource pool. Over two thousand open classroom materials can be accessed on this platform by anyone who desires access (Saraç, 2020).

In evaluating distance education during the pandemic period in Turkey's universities, the level of the teaching staff's integration with technology will shape the students' expectations and experience. This situation emerging worldwide will bring new paradigms in education processes (Karadağ & Yücel, 2020).

Previously presented as an alternative to face-to-face education in limited areas and dependent on users' preferences, the distance education method was rapidly implemented in this pandemic and has become mandatory. The rapid advancement of the process has been a unique, challenging, and unexpected experience for many students and instructors, thereby creating a new situation that must be examined and understood in terms of user experiences and perceptions. This study evaluates the distance education method in higher education, which was inevitably adopted due to the Covid-19 pandemic, and examines students' satisfaction levels across some variables.

Method

We used a cross-sectional survey design in this study. With the onset of Covid-19 pandemic, all education institutions switched to mandatory distance education systems. This study is descriptive, aiming to determine the opinions of students studying in universities in Turkey about the distance education system during the Covid-19 pandemic. Moreover, this study aims to determine whether students' level of satisfaction of distance education systems varies depending on various variables. For this purpose, the following questions were asked within the scope of the research:

- What opportunities do students have within the distance education system?
- What kind of problems do students experience within the scope of the distance education system?
- Do students' satisfaction levels with the distance education system differ depending on the type of university where they study (public or foundation)?
- Do students' satisfaction levels with the distance education system differ according to the field of study?

[1] *See* https://www.yok.gov.tr/Documents/Kurumsal/egitim_ogretim_dairesi/Uzaktan_ogretim/yuksekogretim_kurumlarinda_uzaktan_ogretime_iliskin_usul_ve_esaslar.pdf

Table 1. The universe and sample.

Universities	Total students	Layer weight	Minimum targeted students	Number of students participated in survey
Public university	7,320,449	0.92	3833	4341
Foundation university	619,684	0.08	325	711
Total	7,940,133	1.00	4158	5052

The population of this study consists of 7,940,133 students that receive higher education in Turkey's public and foundation universities. Approximately 38% of these students are studying for an associate degree, 57% in an undergraduate programme, and 5% in postgraduate programmes.[2] The sample of the research was selected from the public and foundation universities to obtain a nationwide sample. In calculating the sampling size, the formula proposed by Cochran (1977) was used. As a result of the calculation, the number of students included in the sampling with a confidence level of 99% and with an error margin of ±0.02 was determined as 4158. We collected data from 5052 students (Table 1). The fact that the number of questionnaires reached is more than the sample size calculated statistically, and the distribution of university students obtained from the sample is close to the distribution in the universe by state of education associate degree 31.9%, undergraduate 65.4%, and postgraduate programmes 2.7%) suggest that the study sample has a good representation power of the universe.

A questionnaire was used as a data collection tool in this study. The questionnaire was prepared with the aid of the RedCap application (Research Electronic Data Capture), which consists of a digital data collection, management, and dissemination platform. The questionnaire includes statements (10 statements) to identify students' socio-demographic characteristics in addition to statements to establish their access to distance education (six statements), assessment of universities' distance education infrastructure (four statements), students' opinions of distance education (20 statements), and general level of satisfaction of students in relation to distance education. Because having questionnaires filled out face-to-face is not possible during the Covid-19 pandemic, the questionnaire was implemented via cell phones or computers with internet access by students in April 2020. Information about the survey was disseminated by means of student societies and social media. While evaluating these findings, it should be taken into account that the data of the study were collected online.

Data in the scope of this study were analysed using the SPSS (23) statistics programme. Descriptive statistics were used such as mean, standard deviation, frequency, and percentage to determine students' evaluation and satisfaction levels regarding distance education in the data analysis. Permit number 2486 was obtained from the Atılım University Human Research Ethics Board.

Results

Based on socio-demographic and descriptive data, 71.7% of the participants were women, 57.5% were from urban areas, and the great majority (94.9%) lived with their families. In this study, in which students of 109 universities participated, the great majority (85.9%) of students were from public universities, 65.4% were graduate students and 37.8% second-year students; 56.5% of participants were studying health sciences.

Opportunities Students Have Under the Distance Education System

Descriptive answers to questions regarding the possibilities of access to distance education is given in Table 2. Accordingly, 74.3% of students stated that they had access to the internet at home or at their workplace, 34.4% stated that their internet traffic quota was a maximum of 8 GB, and 55.9% stated that they connected to the internet using their mobile phones. While 51.5% of participants indicated that they had computer problems while taking their classes, 57.9% indicated that their siblings also participated in virtual classrooms over the internet in their household.

Table 3 shows the answers of university students participating in this study to questions regarding the distance education infrastructure of their universities and the functioning of distance education. Accordingly, 74.3% of students participating in this study do not have distance education classes in their universities, and 66.7% never had a distance education experience. While the most prevalent problems experienced by participants in their online courses were connection errors (26.1%), failure in downloading courses notes

[2] *See* https://istatistik.yok.gov.tr/

Table 2. Description of participants' answers to possibilities of access to distance education.

		n	%
Do you have access to the internet at home or at work?	Yes	3755	74.3
	No	1297	25.7
What is your monthly internet traffic quota?	≤8 GB	1740	34.4
	9–24 GB	584	11.6
	≥25 GB	1653	32.7
	I don't know	1075	21.3
What device do you use to connect to the internet?	Desktop computer	154	3.0
	Laptop	675	13.4
	Mobile phone	2824	55.9
	Tablet	29	0.6
	Multiple devices	1370	27.1
Do you have computer problems while following your classes?	Yes	2603	51.5
	No	2449	48.5
Do you have any siblings in your household that also follow their classes online?	Yes	2925	57.9
	No	2127	42.1

(14.1%), screen freezes (11.6%), and voice interruptions (9.5%), as little as 6.3% stated that they did not have any issues whatsoever. Distance education classes are delivered asynchronously at universities of 58.5% of students participating in this study. While the most widely used online tool for distance education is Zoom at 34%, it is followed by Google Meet at 26.2%, Perculus at 8.2%, and Adobe Connect and Skype.

Students' Evaluations of the Problems and Competencies in the Distance Education System

According to the opinions of the participants about the problems and competencies related to distance education, 42.7% of participants stated that the time of synchronous classes was partially convenient for their attendance to classes, and 70.5% stated that they were able to access class records if they missed a

Table 3. Participants answers to questions regarding distance education infrastructure.

		n	%
Do you have distance education centres at your university?	Yes	3483	74.3
	No	1299	25.7
Have you ever received a distance education?	Yes	1681	33.3
	No	3371	66.7
What problem do you have most typically during connecting to your classes?	Connection error	1321	26.1
	Failure in downloading class notes	710	14.1
	Screen freeze	588	11.6
	Audio interruption	480	9.5
	Insufficient quota	75	1.5
	I don't have any problems	317	6.3
	I experience all of these problems	1558	6.3
How do your distance education classes function?	Asynchronously	2954	58.5
	Synchronously	1997	39.5
	Both	101	2.0

Table 4. Participants' opinions of the competencies of distance education.

		n	%
Are times of synchronous classes offered suitable for your attendance?	Yes	1861	36.8
	Partially	2157	42.7
	No	1034	20.5
Do you have the possibility of accessing class records if you are to miss classes?	Yes	3561	70.5
	No	1491	29.5
In your opinion, are class materials (PDF, Word, PowerPoint class presentations, video, image, articles, URL links, etc.) uploaded by teaching personnel sufficient?	Yes	1746	34.6
	Partially	1977	39.1
	No	1329	26.3
Do you have any problem with your access to resources regarding classes and homework?	Yes	1742	34.5
	Partially	1454	28.8
	No	1856	36.7

class. Furthermore, 73.7% of participants found class materials uploaded by teaching personnel to the distance education system to be sufficient or partially sufficient, and 19.9% of those participants who did not find it to be sufficient stated that face-to-face education was more efficient. Additionally, 63.3% of participants stated that they had problems accessing resources in classes and their homework (Table 4).

Regarding class attendance, 32.4% of the participants stated that they attended their classes regularly, 41.5% partially, and 26.1% could not attend their classes. Among the reasons for not attending the classes was the internet and/or device-related problems. Other results showed that that distance education was not an effective learning method according to 67.3% of participants, 79.5% stated that distance teaching of classes adversely affected their motivation, and 73.8% attributed such decreased motivation to uncertainties associated with internships and practice issues; 55.3% of participants stated that no social support was provided to them by their respective universities (Table 5).

Table 5. Participants' opinions about the problems of distance education.

		n	%
Are you able to follow classes regularly?	Yes	1638	32.4
	Partially	2096	41.5
	No	1318	26.1
Is distance education an effective method of learning?	Yes	466	9.2
	Partially	1186	23.5
	No	3400	67.3
How does distance teaching of classes affect your motivation?	Positive	1034	20.5
	Negative	4018	79.5
Do uncertainties in internship and practical classes affect your motivation?	Yes	3730	73.8
	Partially	749	14.8
	No	573	11.3
Are you able to readily communicate your questions with and opinions of distance education to concerned parties?	Yes	1610	31.9
	Partially	1524	30.1
	No	1918	38.0
Would you be willing to receive education via distance education from now on?	Yes	757	15.0
	Partially	1139	22.5
	No	3156	62.5

Regarding the distance education process, 25.9% of participants stated that they were "unable to take advantage of life experiences and intellectual knowledge other than vocational knowledge of their lecturers" and that they "missed being in interaction and spending time with their peers." In comparison, 7.1% stated that they believed that the "inability in delivery of internship or vocational practice classes created a deficiency of knowledge," and 62.5% of participants stated that they did not want to have education via distance education in the future (Table 5).

Satisfaction Levels of Students in the Distance Education System

Participants were asked, "On a scale of 10, how would you assess your satisfaction with classes taught over the internet?" and the average score they gave was 4.4. Regarding whether participants' level of satisfaction varied depending on the type of the university where they study, the satisfaction level of the students is generally low. However, it is higher in foundation universities (score of 4.9) than in public universities (score of 4.3). Regarding whether the satisfaction level of participants varied depending on education level was lowest at 4.2 average scores about undergraduate education. Moreover, we found that for the field of study of the students, the students with the lowest level of satisfaction were students studying science (score of 4.0) (Figures 1–3).

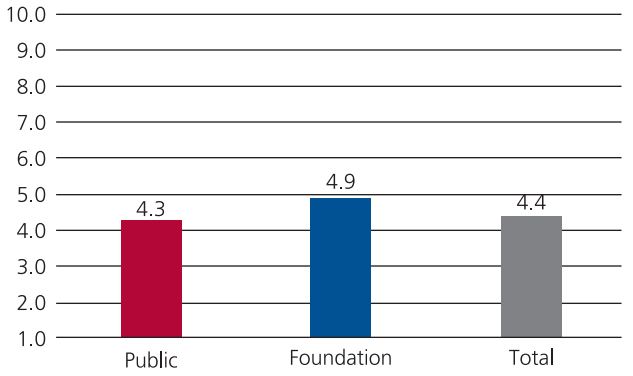

Figure 1. Comparison of satisfaction scores by public and foundation university (scale: 1–10).

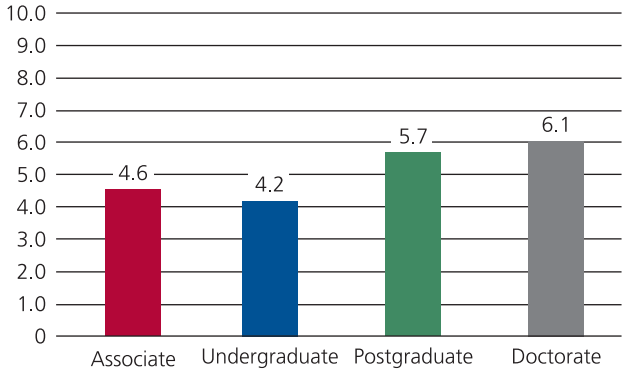

Figure 2. Comparison of satisfaction scores by education level (scala:1–10).

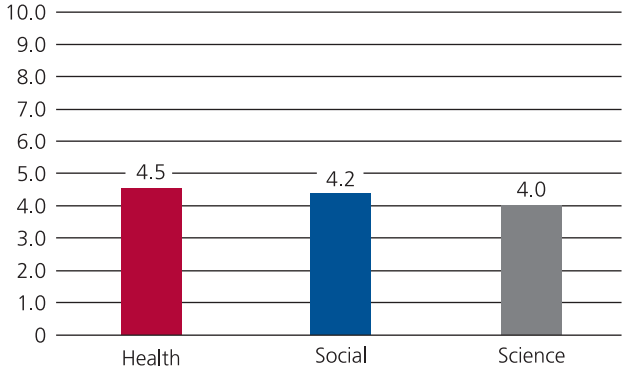

Figure 3. Comparison of satisfaction scores according to the students' education field (scala: 1–10).

Discussion and Conclusion

The Council of Higher Education and universities began to take necessary precautions to fight the pandemic in Turkey, as was the case worldwide upon the emergence of the first case in China. In this study, the opportunities students had in the distance education system, what kinds of problems they faced, and their level of satisfaction are discussed, and it is aimed to raise awareness about improving the system in the future.

This study collected data from 5052 students enrolled in 109 universities out of a total of 207 universities in Turkey. This study contributes to the literature with valuable data that enable us to understand the pandemic from students' eyes. It provides crucial results for significant steps to be taken to reveal the effects of the decisions and strategies implemented by the Council of Higher Education on students at the beginning of the pandemic.

According to this study, although many students have internet access, they still lack the technical infrastructure to follow up on their classes. Technically, the great majority of students that have a computer or similar devices have to share these capabilities with other family members in their households. This is due to parents' working from home or siblings also receiving distance education in their household. Having a suitable internet connection and technical infrastructure and the ability to use it at the same time are prerequisites for effec-

tive implementation of distance learning. A similar study conducted by Karadağ and Yücel (2020) on 17,939 students stated that only 63% of undergraduate students had an internet connection at home, and students did not have a computer or tablet. In synchronous and asynchronous attendance in classes, hardware and internet connection speed considerably affect the efficiency. However, results indicate that the great majority of students cannot meet this prerequisite. The study conducted by Karadağ and Yücel (2020) reported that one-fourth of the students within the scope of the study could not continue their education due to the lack of internet or a computer/tablet.

Distance education is a technology-based education method. Accordingly, the process is directly affected by issues such as either the students' or teachers' inability to make good or proper use of the internet or technology, and/or internet or power shortages (Ameen, Willis, Abdullah, & Shah, 2019; Davidson, 2019; İnce, Kabul, & Diler, 2020; Saeid & Goodarzi, 2019). Even in the information age, it is evident that many individuals prove incompetent in terms of education technologies. Similar research carried out around the world indicates that although the young, in particular, are very efficient in internet and information technology use, they fail to demonstrate the same level of success when they use such capabilities for educational purposes (Tai, Bellingham, Lang, & Dawson, 2019). For synchronous and asynchronous attendance in classes, hardware and internet connection speed considerably affect efficiency. However, results indicate that the great majority of students cannot meet this prerequisite. Similarly, a study conducted with chemistry students found that students were unequal in distance education due to their technical background (Danjou, 2020).

Another critical finding obtained from the research is the students' evaluation about problems and competencies related to the distance education system. Approximately 7 out of 10 students who participated in this research believe that distance learning is not an effective method. One of the factors that contributes to this opinion is the issue of uncertainties throughout the pandemic. Students are concerned that practical and internship classes cannot be delivered, although theoretical courses are online. Also, they did not know how long this pandemic would prevail. Approximately half of the participants of this study were students in health sciences. Internship and practical classes constitute the most crucial part of their education. Accordingly, in our opinion, uncertainty is a source of anxiety for students. A study conducted with students studying in different fields such as biology, nursing, business, and mathematics concluded that students were worried about distance learning being different from standard in-class learning (Unger & Meian, 2020). A study conducted with students studying health sciences in Brazil concluded that the quality of clinical practice and professional education in distance education would be impaired, and students were worried about failing during the academic year (Peloso et al., 2020). In a study carried out in Ukraine, the students stated that the lack of live communication, limited access to a computer, and the inadequacy of practice lessons were disadvantages of distance education (Prokopenko & Berezhna, 2020).

It is evident that students experience problems in their journey with distance education, and some of these problems are associated with their technical infrastructure or internet capabilities, while others are related to the learning management system. Based on these issues, students state their dissatisfaction with the efficiency of distance education. The fact that classes are mostly delivered in an asynchronous manner, with teachers and students being in different settings, deprives the students of student-teacher interaction that is usually a component of conventional teaching. The fact that the most widely criticised aspect of distance education in literature is the low level of student-teacher interaction (Durak et al., 2017) further affirms the findings of this study. In a study conducted in Pakistan, students emphasised that a low level of teacher-student interaction and the lack of socialisation in the classroom is the most critical deficiency of distance education (Adnan & Anwar, 2020). According to the results of a qualitative study conducted with students on the advantages and disadvantages of distance education during the pandemic, students stated that distance education was valuable but not as much as classroom learning (Hebebci, Bertiz, & Alan, 2020).

Although the Council of Higher Education's open class platform was established in this system, it is evident that students do not have sufficient motivation to use class materials developed by various teaching personnel. We believe that asynchronous classes that consist of merely video recordings coupled with the class and class material that are incompatible, adversely affect the learning process. A study conducted in Iran showed that Iranian medical students faced some challenges with e-learning, such as high volume of content, lack of interaction with professors, weak support system, weak management of the e-learning system, and low motivation (Afshari et al., 2020).

Teachers and students are two critical components of distance education. The teacher must be able to make effective use of teaching techniques and technologies and have the information and skills required for traditional education as well as the vision and capabilities to continuously develop these skills (Adnan, Kalelioglu, & Gulbahar, 2017). This aspect of

the teacher emerges as one factor that affects the students' satisfaction in distance education. In this process, students and teachers are responsible for the learning process more than in the conventional method. Techniques of teaching and learning go through a rapid change in parallel to distance learning. The success of the process depends on both parties' compatibilities with the process and their interaction (Kırık, 2014).

In this context, individual and cultural differences are essential factors from the students' perspective about distance education. A study conducted in Pakistan showed that students of different ethnic origins had difficulties adapting to an online system and that they tended to do their homework at the last minute (Jayatilleke & Gunawardena, 2016). From the students' point of view, the achievement of desired success in distance education depends on students being sufficiently ready and competent for online learning and the learning style (Gülbahar & Alper, 2014; Ilgaz & Gülbahar, 2015).

Chaney and others (2007) examined 160 articles and 20 books in a systematic analysis and found 14 quality indicators in the literature for distance education. These were student-teacher interaction, instant feedback, technical support service, class programme, technology, institutional support and institution resources, structured class guide, active learning techniques, supervision of various learning methods, faculty support services, institutions' current distance education missions, suitable tools and environment, reliability and technology, course development, and guidance practices for review of learning materials.

One of the crucial findings of this study is that student satisfaction is very low in distance learning. The above findings obtained from students in the scope of this study explain why the level is so low. Although there is a difference between the levels of satisfaction in public universities (4.3) and foundation universities (4.9), the overall satisfaction (4.4) is very low. The difference in ownership status may have made a difference in terms of administrative differences, the number of students, and compliance with the process. The education setting and the number of students present in the environment also affect the education efficiency of online education. Online education studies conducted with small groups indicate that students can get to know each other more closely, and the compliance is higher within the group compared to smaller groups (Akcaoglu & Lee, 2016). Karadağ and Yücel (2020) revealed that the mean scores of the factors indicating student satisfaction ranged from 3.73 to 2.63. The dimension students are most satisfied with is "Satisfaction with the Council of Higher Education," and the two dimensions students are the least satisfied with are "Satisfaction with the University and Faculty Management" and "Satisfaction with the Digital Content/Instructional Materials."

Perception of satisfaction was found to be higher with students that had prior distance education experience. It may be that their prior experiences with and expectations from the process affected their satisfaction and helped them to adapt quickly. Contrary to what would be expected, the level of satisfaction did not differ based on whether universities have a distance education centre (DEC). It would typically be expected that universities that have distance education centres can manage the process more effectively and adapt more quickly, which would, in turn, affect the level of satisfaction of students. However, this study did not yield the expected result. This can be explained as the Council of Higher Education's making available the knowledge, experience, infrastructure, and resources for common use in inclusive coordination (Saraç, 2020) and aligning all universities together regardless of such universities' having a DEC or not. This may be the reason why levels of student satisfaction were not affected by this variable. As a result of the study carried out by Karadağ and Yücel (2020), 63% of the students were satisfied with the decisions taken by the Council of Higher Education during the pandemic at a "good" and "very good" level.

Another important finding that is noteworthy in this study is that many students did not exercise their right to suspend registration despite the low level of satisfaction and many problems encountered in the process. Students wanted to continue their education despite all the negativities that they mentioned.

Education and learning of all levels were affected by Covid-19 in all countries, inevitably creating alternative solutions. In this scope, many programmes offering instruction in health and social and life sciences have developed many innovative methods, although they cannot fully substitute face-to-face education (Plancher, Shanmugam, & Petterson, 2020). For instance, reverse education method practices, teleconference, and telemedicine-based simulations can mitigate learning losses in types of practical education such as surgery education (Connor et al., 2020).

In conclusion, whether we like it or not, the world will not revert to pre-Covid-19 days. For this reason, distance education has to be a part of the universities' education processes. Based on this reality, many responsibilities await us all as students, educators, and institutions. Students must develop their individual and technical infrastructures, learning behaviours, and strategies towards adapting to change. Teachers must follow up on technological advancements that align with their teaching achievements and develop new teaching strategies as alternatives to conventional methods. On the other hand, insti-

tutions must establish an infrastructure that can address new needs to facilitate technology compliance and switch to new operation methods. There will be a world that is constructed by those who can adapt rapidly to these changing and challenging effects in the future.

It would be beneficial if universities rapidly identified issues originating from distance education methods to increase students' satisfaction while the government offered discounts and incentives targeting students and teaching personnel concerning the internet infrastructure and access to the internet. Moreover, universities must complete infrastructural preparations and take measures needed for switching to synchronous education and research systems that can increase the security of exam systems.

Yazar Katkıları / Author Contributions: OI: Tasarım, danışmanlık/denetleme, kaynak taraması, makalenin yazılması, veri analizi, bulguların yorumlanması, eleştirel inceleme ve makalenin son kontrolü; DT: Fikir, danışmanlık/denetleme, bulguların yorumlanması, kaynak taraması, makalenin yazılması, eleştirel inceleme ve makalenin son kontrolü; PŞT: Danışmanlık/denetleme, kaynak taraması, makalenin yazılması, eleştirel inceleme ve makalenin son kontrolü; NT: Danışmanlık/denetleme, veri toplanması, kaynak taraması, makalenin yazılması, eleştirel inceleme ve makalenin son kontrolü; AZ: Danışmanlık/denetleme, bulguların yorumlanması, kaynak taraması, makalenin yazılması, eleştirel inceleme ve makalenin son kontrolü. / *OI: Conceiving and designing the study, study monitoring, literature search, writing manuscript, data analysis, interpreting the results, critical reading and final check of the manuscript; DT: Project idea, study monitoring, interpreting the results, literature search, writing manuscript, critical reading and final check of the manuscript; PŞT: Study monitoring, literature search, writing manuscript, critical reading and final check of the manuscript; NT: Study monitoring, data collection, literature search, writing manuscript, critical reading and final check of the manuscript; AZ: Study monitoring, interpreting the results, literature search, writing manuscript, critical reading and final check of the manuscript.*

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