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COVID-19 Pandemisi'nin Yükseköğretimdeki İz Düşümleri

Footprints of the COVID-19 Pandemic on Higher Education

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Özet

Bu araştırmada COVID-19 salgınının yükseköğretime etkileri ve yansımaları incelenmiştir. Araştırmaya, uygun örnekleme yöntemi ile belirlenen 1166 kişi (farklı bölümlerde öğrenim gören üniversite öğrencileri) katılmıştır. Araştırma sürecinde nicel araştırma desenlerinden biri olan tarama yöntemi kullanılmıştır. Veri toplama aracı olarak araştırmacılar tarafından 5 faktörlü ve 45 sorudan oluşan Likert tipi bir ölçek kullanılmıştır. Araştırma verileri IBM SPSS 24.0 ve IBM AMOS 24.0 kullanılarak analiz edilmiştir. Araştırma verilerinin analizinde betimsel ve çıkarımsal istatistikler kullanılmıştır. Çıkarımsal istatistik analizinde bağımsız örnekler T Testi, tek yönlü ANOVA testi ve korelasyon testi yapılmıştır. Ölçeğin yapı geçerliği için doğrulayıcı faktör analizi yapılmıştır. Ölçek boyutlarının aracılık etkisi, HAYES'in 6 numaralı modeli kullanılarak seri çoklu aracılık etkisi analizi ile test edilmiştir. Araştırma sonucunda üniversite öğrencilerinin görüşleri cinsiyet, sınıf düzeyi ve bölüm değişkenlerine göre anlamlı farklılık göstermiştir. Üniversite öğrencilerinin en yüksek tutum eğilimi COVID-19 aşısı ve eğitim süreci boyutunda, en düşük eğilimleri ise uzaktan eğitim boyutunda olduğu belirlenmiştir. Üniversite öğrencilerinin uzaktan eğitime yönelik tutumlarını öğretim üyelerinin faaliyetleri, teknik alt yapı, ölçme değerlendirme sistemi, Covid-19 aşısı ve eğitim süreci dolaylı olarak etkilemekte ve aracılık etkisi göstermektedir.

Anahtar Kelimeler: COVID-19 salgını, Yükseköğretimin yansımaları, Seri çoklu aracılık etkisi, Uzaktan eğitime yönelik tutum.

Abstract

This research examined the effects and reflections of the COVID-19 Pandemic in Higher Education were examined. Participants were 1166 university students studying in different departments were determined using convenient sampling method. The survey method, which is one of the quantitative research approaches, was used in the research process. As the data collection tool, a Likert-type scale with 5 factors and 45 questions was employed by the researchers. Research data were analyzed using IBM SPSS 24.0 and IBM AMOS 24.0. Descriptive and inferential statistical techniques were used in the analysis of the research data. Independent samples t-test, one-way ANOVA test, and correlation test were performed in inferential statistical analysis. Confirmatory factor analysis was carried out for the construct validity of the scale. The mediation effect for scale dimensions was tested with serial multiple mediation effect analysis using HAYES's model number 6. As a result of the research, the opinions of university students showed a significant difference apropos of gender, grade level, and department variables. The highest attitude tendency was in the CVEP (COVID-19 Vaccine and Education Process) dimension and the lowest in the ATDE (Attitude towards Distance Education) dimension. The attitudes of university students toward distance education indirectly affect the mediating impact of the variables viz. faculty members' activities, technical infrastructure as well as the variables of the measurement and evaluation system, the Covid-19 vaccine and the process.

Keywords: COVID-19 pandemic, Reflections on higher education, Serial multiple mediation effect, Attitude towards distance education.

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1. Introduction

Coronavirus Disease (COVID-19), which emerged in China in December 2019 and affected the whole world in a short time, seriously impacted human life (Erkut, 2020). Although it first brought a burden to people in the medical field, it soon became a pandemic due to its speed of infection and widespread effects (Sayan, 2020). It wasreported that as of 27 February 2022, 435,232,563 individuals worldwide had been infected with the disease and approximately 5,965,602 people had died (Google News, 2022). The COVID-19 pandemic has affected the dynamics of life in many areas, numerous fields of activity, namely, economic, health, transportation, cultural, social, and alike, which have been halted or disabled and had to be reshaped. Without doubt, an epidemic with such enormous effects has adversely affected education and teaching services (Boer, 2021). In the first place, schools were closed in a fair number of countries around the globe, and full isolation measures were put into effect for a certain period of time. In the process of combating coronavirus, countries have conducted a series of alternative studies and continue to do so with a view to ensuring continuity in education services as in all fields (Cicha et al., 2021). Higher education areas and universities have been affected by the COVID-19 process to the great extent (Ayyıldız & Yılmaz, 2021). Thousands of university students faced huge difficulties. In particular, dormitories were closed, and shelters were altered. Communication almost stopped and face-to-face course content became unavailable (Bao, 2020). Changes and innovations occurring on account of the COVID-19 outbreak in Turkey are dwelled upon in the current study.

The authoritative body to take decisions pertaining to higher education is the CoHE (The Council of Higher Education) in Turkey. Since the first day of the COVID-19 pandemic, many systematic and regular activities were implemented, and a superior effort was made, which continues to be effective to warrant that higher education has been the least affected sector. On March 11, 2020, upon the emergence of the first cases in Turkey a series of measures were initiated and all universities paused face to face education as of March 16, 2020 (Council of Higher Education [CoHE], 2020). From now on, a novel era began for higher education and a period has been entered into throughout which digital platforms were be used mainly. Even though this period is entitled "distance education period", it would be more appropriate to call it "emergency and compulsory distance education period". A set of precautions were taken by the CoHE during the emergency and compulsory distance education period. Within this very framework a road map for distance education has been designated, a great many face-to-face exams have been postponed, massive online open course applications have been launched, and a digital transformation project in higher education has been put into effect (Durak et al., 2020). These new applications brought some problems along with their advantages. In particular, during the delivery of educational services, learners situated in rural areas with relatively lower socio-economic levels had difficulties in resorting to the said services in an equal fashion (Yıldız & Seferoğlu, 2020). Withal, students who did not have sufficient technology literacy faced trouble that is of similar sort. This situation has been a challenge not only for students but also for academics (Khalili, 2020). Unlike what is valid for the traditional education approach, many undesired situations like the teaching of the lessons in the digital environment, not possessing enough information about preparing digital content, the level of digital literacy's not being at the same level for each and every academic, the scarcity of technological equipment are amongst the aforementioned odds (Kahraman, 2020).

A sizable number of dissimilar infrastructure services are offered at universities. There are buildings, faculties, parking lots, entertainment areas, cafeterias, sports fields, research centers and many other fields of activity that one cannot herein count (Bhagat & Kim, 2020). The areas in question were designed to fulfill specified services and specialized in certain disciplines. However, these fields

do not make much sense in the absence of students and academics. This indeed is a case that is basically against the ethos of higher education.

In the 21st century, with the help of science and technology, it is now possible to teach in any environment and under all conditions (Hall et al., 2020). At this point a question arises: Why does higher education have such adaptation and integration problems despite the availability of all the conveniences? The answer is simple: *There is no structure that is flexible and adaptable*. Today, it is known that plenty of developed countries of the world have adaptation and integration problems in higher education owing to the COVID-19 outbreak. In the line of literature, it is pinpointed that universities have a problem that bears commonality, especially when studies on COVID-19 are delved into (Chester & Allenby, 2019; Green et al., 2021), which is: 'The use of an educational infrastructure that is non-resilient, non-adaptable, inflexible and incompatible'. Have universities not projected this kind of epidemic or any other issue that could come out worldwide? Have they not cared about the preventive measures to cater to a similar scenario? Indeed, it would be fair to state that excessive reliance on science and technology causes humans to 'let go' and act more recklessly. The thing is mankind has not faced such a large epidemic for almost 100 years. Countless studies with the theme of COVID-19 are currently being worked on around the world (Abu Talip et al., 2021; Liao, 2021). The common aspect of all the work that is being done is to improve this negative process in the best conceivable way and to enhance the quality of education services. The CoHE has since been making efforts since the outbreak of the pandemic on March 11, 2020 in Turkey, and has been putting applications into effect to improve the situation. Online surveys, interviews, referring to stakeholder opinions, public opinion polls, statistical analyses, educational and instructive training programs are some of these (Özer, 2020).

The present study, which was conducted complying with these efforts, aimed at determining the opinions of students, who are an integral part of higher education, towards the COVID-19 process and its reflections in higher education. In fact, students are at the very center of this process and are individuals who are capable of providing first-hand feedback in this sense. The research questions scrutinized within the scope of the research are presented below:

1. Do participant views differ significantly in view of gender, grade level, department, disability status, and the variables of contracting COVID-19 disease?
2. How are the general thinking tendencies of the participants regarding distance education, faculty members, technical infrastructure, measurement-evaluation system, the COVID-19 vaccine, and education process?

2. Methodology

In this study, through which the effects of the COVID-19 pandemic process on higher education were attempted to be examined, the survey method, one of the quantitative research approaches, was adopted in order to attain a large audience, a diversity of opinions, and thence to arrive at a healthy generalization. The survey method enables the convenience of working with large samples and allows for collecting data in a considerably short time (McMillan & Schumacher, 2009). For this reason, the relational survey method was resorted to in the research. Through the relational survey method, the relationships between the variables were examined in a more detailed manner. In the relevant literature, it is likely to encounter the survey method in a good deal of studies on the COVID-19 process (Atasoy et al., 2020; Karakuş et al., 2020; Kolcu et al., 2020).

2.1. Participants

This research data were collected in the Fall semester of 2021-2022. 1166 university students from diverse departments participated in the research process. Convenience sampling was used to determine the study sample. The main reason for using the convenience sampling method is that it provides convenience regarding time, cost and effort for researchers as well as the opportunity to reach out numerous participants in a relatively short time. Thus, university students from different faculties of a state university in the Western Black Sea Region of Turkey were included in the sample. The research sample was composed of a large number of diverse participants. Detailed information on participant characteristics and demographic variables is presented in Table 1.

Table 1. *Results Regarding Participant Characteristics and Demographic Variables*

Variables	*Sub-Variables*	*f*	*%*
Gender	Female	831	71.3
	Male	335	28.7
Grade Level	Preparatory Class	141	12.1
	1st Grade	340	29.2
	2nd Grade	195	16.7
	3rd Grade	286	24.5
	4th Grade	204	17.5
Department (Faculty)	Education	292	25.0
	Engineering	118	10.1
	Health Sciences	144	12.3
	Fine Arts	160	13.7
	Economics and Administrative Sciences	133	11.4
	Theology	158	13.6
	Sports Sciences	161	13.8
Disability Status	Exist	91	7.8
	None	1075	92.2
Contracting COVID-19 Disease	Yes	168	14.4
	No	998	85.6

SD: Std. Deviation

2.2. Data Collection Tool

In this study, a scale (Higher Education Amidst Covid-19 Scale [HEACS]) developed by the researchers consisting of two parts was used as the data collection tool. The first part includes questions about participant characteristics and demographic variables. In the second part, there is a scale consisting of five factors and 45 Likert type items. The dimensions of the scale are in the form of "*Attitude towards Distance Education (ATDE), Faculty Members Activities (FMA), Technical Infrastructure (TI), Measurement-Evaluation System (MES), COVID-19 Vaccine and Education Process (CVEP).* The rating of the scale is in the following pattern: *I disagree, partially disagree, undecided, generally agree, and completely agree*.

Although this research is not a scale development study, salient information pertaining to the development process of the scale is also included. During the scale development process, two different factor analyses were conducted, i.e., Exploratory (EFA) and Confirmatory (CFA). During the said

analyses, two different sample groups were studied, apart from the mentioned group composed of 1166 individuals who participated in the main application. 421 university students participated in the exploratory factor analysis, and 534 university students participated in the confirmatory factor analysis. During the scale development process, all samples were created from dissimilar individuals. Throughout the development of the scale, first, the literature was thoroughly examined, and a draft item pool consisting of 55 items was created. The draft item pool was submitted to the opinion of field experts, and feedback was received to ensure its content and face validity. The field experts decided to remove four items from the scale as they appeared to serve a similar purpose and two items were considered out of the subject area. The six items in question were not removed from the scale in the first place, as a result of the analyses made, they were removed from the scale as there existed low item loads due to a two-stage evaluation. Four items were removed from the scale at the end of the confirmatory factor analysis. Table 2 presents the results of the Kaiser-Mayer-Olkin (KMO) and Bartlett Sphericity tests performed within the scope of exploratory factor analysis.

Table 2. *KMO Analysis and Bartlett Sphericity Test Result*

KMO Coefficient		.869
Chi-square value		3256.175
Bartlett test	Df	990
p (p<0,05)		.000

Table 2 shows that the KMO coefficient was .869. The Bartlett test result was significant (p<.05). In the field of educational sciences, the KMO coefficient is expected to be .50 and above. The Bartlett test result is expected to be significant (Tabachnick & Fidel, 2007). These findings show that the scale items are suitable for factor analysis, and the sample size is sufficient. There are total variance and eigenvalue results explained in Table 3.

Table 3. *Total Variance and Eigenvalues Explained Results*

Factor	*Eigenvalue*	*Total Variance (%)*
1	7.211	20.125
2	5.327	16.354
3	4.569	11.123
4	2.174	9.356
5	1.139	7.126
6	.911	…
7	.877	…
	Total Variance	64.084

Table 3 shows the eigenvalue and variance ratio results as to how many factors the scale should have. In the literature, it is underpinned that the eigenvalue result must be 1 and above for a factor to be accepted (Büyüköztürk, 2010). Accordingly, with the help of the factor analysis of the scale, it was identified that it could consist of 5 factors. The explained total variance rate of the scale was found out to be 64.084%. This rate should be at least 40% and above on scales involving two or more categories (Brown, 2006). In Table 4, item factor loads and reliability values are presented.

Table 4. *Item Factor Loads and Reliability Values*

Factors	*Item No*	*Factor 1*	*Factor 2*	*Factor 3*	*Factor 4*	*Factor 5*	*Cronbach's Alpha*
Attitude towards Distance Education (ATDE)	I1	.815					.829
	I2	.809					
	I3	.778					
	I4	.763					
	I5	.702					
	I6	.674					
	I7	.634					
	I8	.539					
	I9	.486					
	I10	.471					
Faculty Members Activities (FMA)	I11		.742				.901
	I12		.733				
	I13		.685				
	I14		.632				
	I15		.624				
	I16		.603				
	I17		.599				
	I18		.557				
	I19		.546				
	I20		.498				
Technical Infrastructure (TI)	I21			.788			.850
	I22			.746			
	I23			.711			
	I24			.679			
	I25			.665			
	I26			.583			
	I27			.550			
	I28			.533			
	I29			.478			
	I30			.432			
Measurement-Evaluation System (MES)	I31				.841		.819
	I32				.826		
	I33				.799		
	I34				.751		
	I35				.696		
	I36				.665		
	I37				.617		
	I38				.584		
	I39				.543		
	I40				.503		
COVID-19 Vaccine and Education Process (CVEP)	I41					.901	.886
	I42					.842	
	I43					.804	
	I44					.788	
	I45					.743	
					Total Cronbach's Alpha		.897

Table 4 contains the final form of the scale. Accordingly, when the item factor loads were checked, it was figured out that the lowest factor load was .432, and the highest factor load was .901. In the field of educational sciences, it is accentuated that item factor loads should be at least .30 and above (Brown, 2006). In addition, reliability analyses are scrutinized, they seem to be working considering what is emphasized in the literature, namely, Cronbach's Alpha value should be .60 and above (Tabachnick & Fidell, 2007). Figure 1 shows the CFA results, and Table 5 shows the goodness of fit index results.

Figure 1. *CFA Analysis Result*

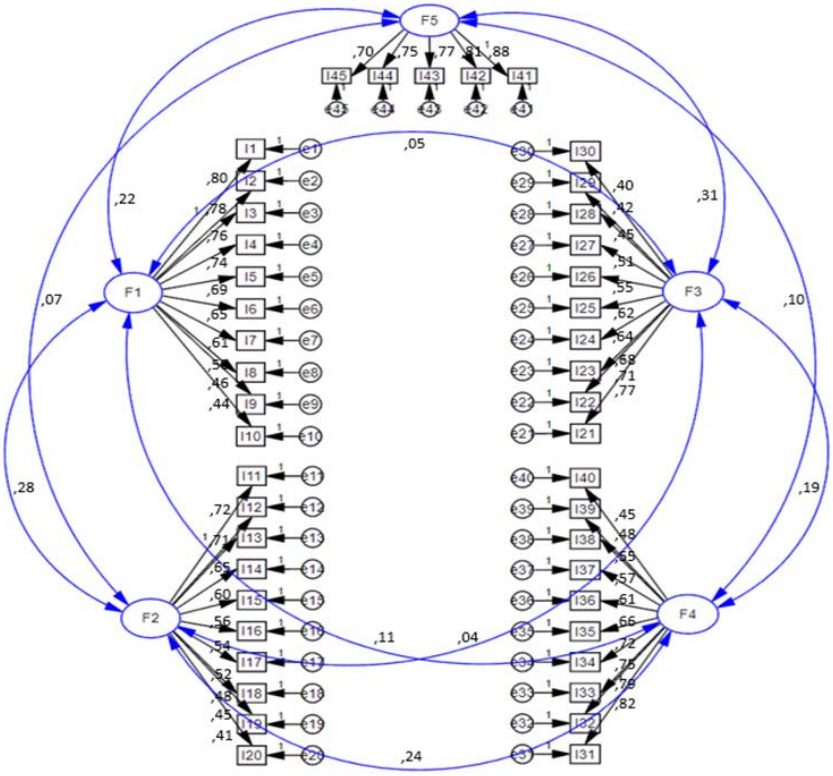


Table 5. *Goodness of Fit Index Values*

Fit Index	*Analysis Result*	*Eligibility Status*
CMIN	1.95	Suitable range of values
RMSEA	.04	Suitable range of values
NFI	.94	Suitable range of values
NNFI	.94	Suitable range of values
CFI	.92	Suitable range of values
RMR	.03	Suitable range of values
AGFI	.91	Suitable range of values
GFI	.93	Suitable range of values

When Table 5 is studied, it is understood that all the goodness of fit values obtained from the CFA analysis were in the appropriate range (Sümer, 2000; Brown, 2006).

2.3. Data Collection Process

Research data were received via internet-based applications on the grounds of the COVID-19 pandemic. In this context, Google Forms database was utilized. Google Forms were adjusted to enable each student to make only one response. Students were reached with the help of social media, e-mailing and distance education course sessions, and opinions were taken from those who voluntarily participated. During the research process, detailed information was given to the participants as regards the study, and they were requested to fill in the informed consent form. Research data were collected over approximately three months. This research has the ethics committee document issued number 1, dated 25.03.2021, with decision number 96 obtained from the Ethical Board of Kastamonu University.

2.4. Data Analysis

IBM SPSS 24.0 program was employed in the analysis of the research data. In this direction, descriptive and inferential statistics applications were undertaken. To present descriptive statistics, tables were created using an arithmetic mean, standard deviation, standard error, frequency, and percentage. First, the normal distribution of the data obtained during the research process was delved into. As the application data exhibited normal distribution, it was decided to utilize the parametric tests. In this frame of reference, variables with two categories were analyzed with independent samples t-test. Groups with more than two categories were analyzed with the ANOVA test. Confirmatory factor analysis was enacted using IBM AMOS 24.0 program to be able to check the construct validity of the data collection tool. The serial multiple mediational model was used to explain the relationships between the sub-factors in the scale. Participant views were subjected to the serial multiple regression analysis of HAYES in factor dimension, and model number 6 was preferred (Hayes, 2018).

2.5. Validity and Reliability Measures

The reliability coefficient of the data collection tool used in the study was calculated separately for both the factor level and the overall scale in general. In this frame, Cronbach's Alpha coefficients were identified as .86, .93, .88, .85, .89, respectively, and were determined as .939 for the overall scale. In addition to these, confirmatory factor analysis was performed to ensure the construct validity of the scale. Results for validity and reliability analysis are given in Table 6.

Table 6. *Results as for Validity and Reliability Analysis*

Validity Analysis (Confirmatory Factor Analysis)										
X^2/Df	*RMSEA*	*SRMR*	*RMR*	*AGFI*	*GFI*	*NFI*	*NNFI*	*CFI*	*AVE*	*CR*
3.26	.05	.05	.04	.89	.91	.92	.94	.91	.69	.82
Reliability Analysis (Cronbach's Alpha) Coefficients										
Factor 1		*Factor 2*		*Factor 3*		*Factor 4*		*Factor 5*		*Total*
.86		.93		.88		.85		.89		.93

X^2/Df, *RMSEA*, *SRMR*, *RMR*, *AGFI*, *GFI*, *NFI*, *NNFI*, *CFI*: Goodness of fit index values,
AVE: Average Variance Extracted, *CR*: Composite Reliability, *Factor 1*: Attitude towards Distance Education, *Factor 2*: Faculty Member Activities, *Factor 3*: Technical Infrastructure,
Factor 4: Measurement-Evaluation System, *Factor 5*: COVID-19 Vaccine and Education Process.

Findings in Table 6 reveal that the reliability coefficients of the scale are at a good level both at the factor level and for the scale in general. In the field of social sciences, it is aimed to have a Cronbach's Alpha coefficient of .70 and above (Fraenkel et al., 2011). In this context, it can be stated that the scale has a reliable structure. When validity analyses are studied, it is found that the results of the confirmatory factor analysis and the index values of the goodness of fit are within acceptable ranges (Creswell, 2014; Joreskog & Sörbom, 1996-2001). Consequently, it can be accentuated that a valid and reliable scale is used.

3. Results

Given the scope of the research, first, it was evaluated whether or not participant opinions differ respecting the fundamental variables. Thus, binary categorical variables independent samples were analyzed using the t-test. The variables with three or more categories, however, were analyzed with a one-way ANOVA test. Table 7 presents the independent samples t-test results.

Table 7. *Analysis of Participants' Views in Terms of Basic Variables Independent-Samples T-Test Results*

	Variables	*t*	*Df*	*p*	*Mean Diff.*	*Std. Error*	*95% CI for Mean*		*Diff.*
							Lower	*Upper*	
Independent-Samples T Test	Gender	-2.591	1164	.010*	-.100	.038	-.176	-.024	M>F
	Contracting COVID-19 Disease	.492	1164	.623	.024	.050	-.073	.122	-
	Disability Status	.342	1164	.987	-.001	.065	-.129	.127	-

*The mean difference is significant at the .05 level, *M*: Male, *F*: Female, *Diff:* Difference.

A glance at Table 7 shows that there are binary categorical variables such as gender, contracting COVID-19 disease and disability status. Of these variables, there is a significant difference solely concerning the gender variable [$t_{(1164)}$=-2.591, p<.05]. There is no significant difference for variables contracting COVID-19 disease [$t_{(1164)}$=.492, p>.05] and disability status [$t_{(1164)}$=.342, p>.05]. When the gender variable is reviewed, it is apparent that males (M=2.47, SD=.619) have higher mean values than females (M=2.37, SD=.589). This shows that the thoughts of the male participants differ significantly from the female participants. One-way ANOVA test results are shared in Table 8.

Table 8. *Analysis of Participants' Views with reference to Basic Variables One-Way ANOVA Test Results*

	Variables	*Sum of Squares*		*Df*	*Mean Square*	*F*	*p*	*Diff.*
One-Way ANOVA	Grade Level	Between Groups	34.732	4	8.683	26.258	.00*	1>2 5>2
		Within Groups	383.915	1161	.331			
		Total	418.647	1165				
	Department	Between Groups	34.039	6	5.673	17.096	.00*	b>a a>c a>d
		Within Groups	384.608	1159	.332			
		Total	418.647	1165				

*The mean difference is significant at the .05 level, *1*: 1st grade, *2*: 2nd grade, *5*: Preparatory class,
a: Education, *b*: Engineering, *c*: Health Sciences, *d*: Economics and Administrative Sciences, *Diff*: Difference.

When the results of the One-way ANOVA test were investigated, it was obvious that the participants' opinions differed significantly with respect to both the grade level [$F_{(4\text{-}1161)}$= 26.258, p<.05] and the department [$F_{(6\text{-}1159)}$=17.096, p<.05] variable. As for the grade level variable, it is seen that the university students in the first grade (*M*=2.48, *SD*=.554) have a higher average than the students in the second grade (*M*=2.23, *SD*=.617). Further, the students in the preparatory class (*M*=2.79, *SD*=.657) have more positive views than the students in the second grade (*M*=2.23, *SD*=.617).

Regarding the variable of the department, it can be underlined that the students in the faculty of Education (*M*=2.55, *SD*=.578) have a higher average than those in health sciences (*M*=2.15, *SD*=.636) and economic and administrative sciences (*M*=2.35, *SD*=.590) and their opinions differ. Moreover, students in the engineering department (*M*=2.75, *SD*=.653) have a higher mean and are the most inclined when compared to those in the education faculty (*M*=2.55, *SD*=.578). In Table 9, the correlational relationship of the scale dimensions was assessed within the scope of the participants' opinions.

Table 9. *Examining the Relationship of Participant Views on the Subject of Scale Dimensions*

Dimensions	*1*	*2*	*3*	*4*	*5*
1. ATDE	-				
2. FMA	.470**	-			
3. TI	.605**	.649**	-		
4. MES	.510**	.678**	.660**	-	
5. CVEP	.171**	.101**	.035	.072*	-

ATDE: Attitude towards Distance Education, *FMA*: Faculty Member Activities, *TI*: Technical Infrastructure, *MES*: Measurement-Evaluation System, *CVEP*: COVID-19 Vaccine and Education Process,
**Correlation is significant at the .01 level, *Correlation is significant at the .05 level

As can be seen in Table 9, the highest correlation is between the FMA and MES dimensions (*r*=.678). The lowest correlation occurred between TI and CVEP (*r*=.035) dimensions. Generally, all dimensions have a good level of correlation with each other. The CVEP dimension is the least correlated dimension compared to the other dimensions. There could be many reasons for this though thinking that this dimension is the one that affects other dimensions indirectly. Since ATDE, FMA, TI, and MES dimensions are directly related dimensions, correlational relationship levels were also found to be high for this reason. In Table 10, the level of participant views for each dimension is displayed.

Table 10. *Examining Participants' Views in Terms of Scale Dimensions*

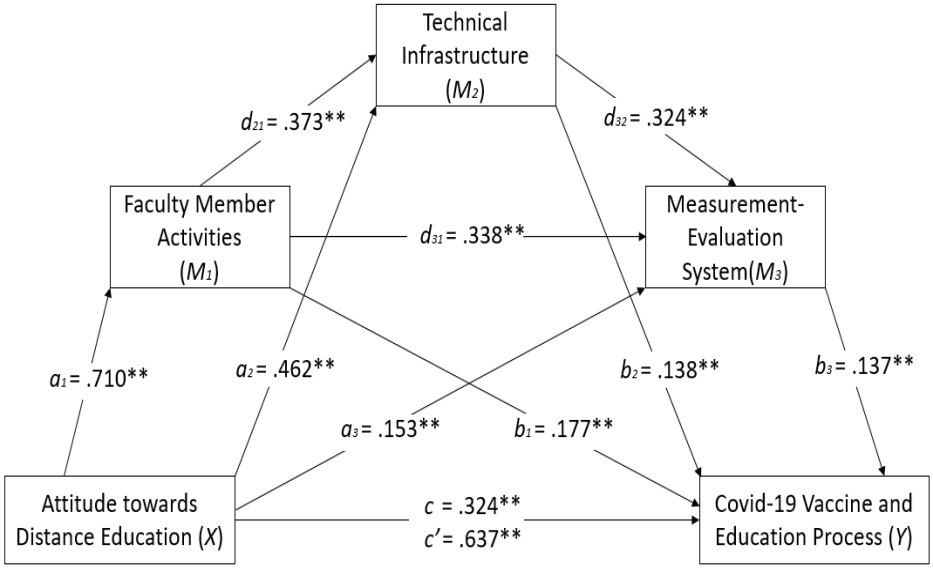
Dimensions	$\bar{X}$	*SD*	*SE*
1. ATDE	1.798	.629	.018
2. FMA	2.795	.950	.027
3. TI	2.134	.757	.022
4. MES	2.578	.778	.022
5. CVEP	3.012	1.193	.034
Total	2.403	.599	.017

SD: Std. Deviation, *SE*: Std. Error

The highest mean in the participants' opinions can be observed in CVEP (*M*=3.012, *SD*=1.193) dimension. This is followed by FMA (*M*=2.795, *SD*=.950), MES (*M*=2.578, *SD*=.778), TI (*M*=2.134,

SD=.757) and ATDE (*M*=1.798, *SD*=.629) dimensions, sequentially. The ATDE dimension was the dimension with the lowest mean. Furthermore, the participants' opinions about the whole scale were realized at the *M*=2.403, *SD*=.599 level. The serial multiple mediational model and unstandardized coefficients are presented in Figure 2. In addition, Table 11 shows the effect of participants' views on distance education on Covid-19 vaccine and education process with the mediation of faculty members' activities, technical infrastructure and measurement evaluation system.

Figure 2. *Serial Multiple Mediational Model*



**p<.01, Unstandardized coefficients are used.

Table 11. *The Indirect Effect of Attitude towards Distance Education on COVID-19 Vaccine and Education Process via Faculty Member Activities, Technical Infrastructure and Measurement-Evaluation System*

Path	*Coefficient*	*95%CI*	
		LL	*UL*
ATDE→FMA→CVEP	.126	.049	.206
ATDE→TI→CVEP	.063	.003	.127
ATDE→MES→CVEP	.021	.001	.044
ATDE→FMA→TI→CVEP	.036	.001	.072
ATDE→FMA→MES→CVEP	.033	.001	.065
ATDE→TI→MES→CVEP	.020	.001	.042
ATDE→FMA→TI→MES→CVEP	.011	.000	.023
Total effect	.324	.216	.431
Direct effect	.637	.503	.771
Total indirect effect	.313	.230	.400

CI: Confidence Interval; *LL*: Lower Limit; *UL*: Upper Limit

The results of serial multiple mediation analyses are allowed for in Table 11. First, it is clearly seen that the participants' attitudes towards distance education affect the COVID-19 vaccine and the education process (Total Effect; *B*=.324, 95%CI=.216-.431). The total effect ratio is lower than the direct

effect ratio, but it signifies that it is exposed to mediation effect (Direct Effect; *B*=.637, 95%CI=.503-771). Although the mediator variables affect the process indirectly, all of them show a significant and positive mediation effect. The total indirect effect rate is satisfactory and at a considerable rate (Total Indirect Effect; *B*=.313, 95%CI=.230-.400). In conclusion, participants' attitudes towards the distance education process affect the COVID-19 vaccine and their tendencies towards the education process indirectly and positively through mediator variables.

4. Discussion and Conclusion

The current study has presented findings of research aimed at addressing the reflections of the COVID-19 pandemic on higher education were addressed. The participants were composed of university students studying in different departments. The research primarily investigated the variables of gender, grade level, department of education, state of being infected with COVID-19, and having a physical disability. Subsequently, with the help of a 5-factor and 45-question scale developed by the researchers, the opinions and disposition levels of the university students were surveyed. On this basis, five different dimensions emerged. These dimensions are the attitude towards the distance education process, the activities of the faculty members, the technical infrastructure, the measurement-evaluation system, the COVID-19 vaccine, and the education process.

First, the basic variables were viewed. Considering the gender variable, the average of male students' views was higher than the mean of female students. In the literature, studies on the gender variable italicize that women have a higher attitude and average (Aschwanden et al., 2021). Even though this finding differs from the literature, it can be said that few studies declare similar results (Moussa & Ali, 2021). There may be numerous reasons behind male students' having a higher attitude than female students. During university years, men can act more freely than women, men are more dominant as part of societal aspects of the culture, and men's social activities constitute a wider spectrum than women (Robinson et al., 2021).

Another variable scrutinated is the grade level. Students studying in the preparatory class, 1st grade, 2nd grade, 3rd grade, and 4th grade participated in the study. At the end, it was ascertained that there was no significant difference at the level of 3rd and 4th grades. This situation may be a negative reflection of the distance education process that has lasted at least for two years (Rashid & Yadav, 2020) since these students have become graduates and do not expect much from their universities anymore. Students from the preparatory class have the highest attitude as studying at university and attending higher education is a dream of many young people. Therefore, it may be natural for them to have a higher attitude than other grade levels. Again, the attitudes of the students in the first grade are higher than those in the second grade. This result denotes the following: Expectations and attitudes of the students are quite high during the admission years, for the first 2 years fort he most part. This level of attitude gradually dimminishes over time and begins to be stable (Ashri & Sahoo, 2021).

The department of education is another variable that is handled. According to the results of the research, the department with the highest level of attitude was perceived as the faculty of engineering and later education. There are some important factors in the higher altitudes of these departments compared to the other departments. Substantially for the departments of engineering and education faculties, the fact that the practical courses are predominant, the fact that the profession is quite interactive, the decrease in productivity with distance education may be the parameter that explains that students in these departments are affected by distance education activities more (Kurth et al., 2021). In truth, it is discovered that similar results have been achieved in studies considering the aforementioned sections (Jamalpur et al., 2021). The difference of this study

comes to the fore at the following point: Whereas the students in the education faculty generally have a high level of attitude, the students in the engineering department were unfolded in this study, unlike the literature. The attitude level of students in the faculty of health sciences is lower than those of the ones in other departments for these students partially attend school and do their internship actively. It may then be natural that their aspirations for university are slightly lower than other student groups. Another result reached through this study that is distinct is for students studying in the department of sports sciences. It was recognized that the students have a very low level of attitude in this department where the applied courses are intensive. The main reason for this is that they can do sports in many environments and different areas in daily life. Their longing for university and educational environments has been measured lower than the other departments.

Other variables catched on within the scope of the research are disability and COVID-19 disease. University students' views and attitude levels regarding these variables did not make a significant difference. This result is frequently mentioned in the literature and predicted in this research (Meleo-Erwin et al., 2021). Disabled individuals face various problems and disabilities in their lives. This way, they may have a healthy and patient stance toward not having access to some opportunities towards being educated in limited environments within the frame of reference of mental health and well-being. In the literature, it is stressed that in studies based on the condition of getting COVID-19 disease, there is a standard change in the participants' opinions about the education process (Jones et al., 2021; Okoro et al., 2021). That being said, in this study, contrasting the literature, it was shown that there was not much change in the views of people with COVID-19 disease.

In the second part of the study, five different dimensions are discussed. These dimensions were gone thorugh both in general and by taking into account the items that materialize from time to time. In the first place, the dimension of attitude towards distance education has been targetted. University students participated the least in this dimension. The reason is the students have been deprived of face-to-face education for about 2 years. This situation significantly affected their attitudes and disclosed that they were not satisfied with the distance education process (Bdair, 2021). The item that students were most dissatisfied with vis-à the distance education process was *"I think all students receive education under equal conditions in distance education."* This is followed by the item *"I don't think there is any difference between distance education and face-to-face education."* These results are supported by many studies in the literature (Daumiller et al., 2021). As can be seen, although the distance education process is supported by technological infrastructure and multiple opportunities are mobilized, it still does not replace face-to-face education. The item most satisfied by the students in the distance education process was *"I am satisfied with the measures taken and the education services provided during the pandemic process."* This situation implies that higher education institutions and decision-makers manage the process well and take the necessary measures on time.

The other dimension dealt with is the activities of the faculty members. After the COVID-19 vaccine and the education process dimension, university students expressed the most positive opinion in this dimension. The item *"I think the faculty members come to the lessons with enough preparation."* has been the item of greatest interest. One reason for this is that the faculty members understand the lessons, support is given to students in many subjects during the pandemic process, and easier completion of the lessons at certain rates is possible (Sayan, 2020). The lowest contribution of the students was *"I think the pandemic process did not affect the teaching skills of the faculty members."* The pandemic process has brought with it many additional skills and literacy areas. Computer use, technology use, and digital literacy manifest themselves. Of course, not all academics are equally competent at these. Whence, it is a possible result that the participation level of the students in this

sense is low. It is often mentioned in the literature that faculty members do not have sufficient knowledge of some skills in the distance education process (Menchaca & Bekele, 2008; Tuncer & Tanaş, 2011).

Another aspect that stands out in the research is the technical infrastructure. In the early stages of the COVID-19 process, there was an intense criticism of the technical infrastructure by both students and other stakeholders. Nonetheless, it is acknowledged that this is getting better day by day as distance education has become a part of our lives. The item with the lowest participation of the students was *"I think all students have equal opportunities regarding technical opportunities."* This finding is a situation that has been insistently emphasized in several studies in the literature (Croft & Brown, 2020; Maina et al., 2020). Not all segments of society have similar socioeconomic levels. To that end, it cannot be stated that full equality is achieved (Hood & Littlejohn, 2018). Nevertheless, initiatives and government support have been provided to improve this situation. Notably, the Ministry of National Education (MoNE) and the Council of Higher Education (CoHE) supported university students on scores of issues. Addedly, private institutions and organizations have supported this process too. The item with the highest participation of the students was *"I think distance education systems are accessible from all media [computer, mobile phone, tablet]."* This shows that distance education learning systems work harmoniously and necessary precautions are taken toward accessibility.

One dimension that attracts attention during the COVID-19 pandemic process is measurement-evaluation systems. Measurement-evaluation systems are expressed as the most criticized and challenging area in the literature (Fish & Gill, 2009). The item with the lowest participation of the students was *"I think there is no difference between face-to-face training in measurement and evaluation."* This is a situation that is frequently reported in the literature (Coşkun & Mardikyan, 2016). A great majority of the students emphasize that the assessment-evaluation procedures are not completed correctly, and no differentiation is encountered between those who show the necessary care and those who do not (Yueh et al., 2014). This result supports the literature. As another reason for this situation, educators who already experience difficulties in the classroom environment cannot fully fulfill what instruction entails in the distance education process in which digital applications are predominant in unconventional settings (Bakioglu & Çevik, 2020). This is ineviatbely echoed in the opinions of the students. The item that supported the research results and the students who participated the most was *"During the pandemic process, I want only exams not to be graded and all activities related to the process to be scored."* Students generally tend to take fewer exams or do less activity to do well in class. Notwithstanding, during the pandemic process, this situation helped the students approach the process differently and objectively. Basically, it is an appreciatable situation that they want an equal and fair assessment and evaluation system to be constructed. Many students pass their courses and become successful in the distance education process. Nevertheless, this caused them to feel the inner feeling of becoming successful in a fairer way rather than taking delight in being successful.

The last dimension of the research and the highest level of participation of the students is the COVID-19 vaccine and the education process. The great interest in this dimension is that it is the dimension in which the expectations of students with difficulties and difficulties in distance education are met. The items that were striking in this dimension and that the students participated at a high rate were *"As a result of the vaccination process, I want universities to be opened."* and *"I think all students and faculty should be vaccinated and education should turn to face to face."*

The pandemic process deeply affected students, families, educators, and many stakeholders involved in the process and caused them to wear out psychologically (Kuniya, 2020). In COVID-19-themed studies, it is detected that students intensely want to be vaccinated and demand an improvement in the education process (Billah et al., 2020). On the other hand, it can be stated as surprising that although students intensely want to be vaccinated, they do not trust the vaccines developed for COVID-19. In studies that measure the situation with COVID-19 vaccine and the tendencies of society on this issue, it has been frequently shown that individuals are willing to be vaccinated, but they do not agree to be a subject or to volunteer in this process (Sallam et al., 2021). From this point of view, the results of the research show similarities with the literature.

Finally, serial multiple mediation effect analyses of the research dimensions were assessed. Model number 6, which examines the triple mediating effect of HAYES, was used. According to the results of the analysis, students' views on distance education directly affect their attitudes towards vaccination and continuing the education process. This result again creates a significant difference when the variables of FMA, TI, MES are used as the mediation effect. Students' views are influenced by the FMA, TI, and MES factors, and this makes the process meaningful at a positive level. There is no study with similar results in the literature. This aspect of the research is expected to contribute to the literature.

5. Limitations, Implications, and Research Directions

This research is limited by the impact of the COVID-19 pandemic on higher education. The opinions of 1166 students were taken within the scope of the research. The research is limited to university students studying in 7 different faculties. Therefore, it can be expanded to include larger samples and all departments in universities. Moreover, the research scope can be detailed to encompass all stakeholders, i.e., faculty members, senior management, and families. The salient points obtained as a result of the application are as follows:

1. Student views on the reflections of the COVID-19 epidemic in higher education differ significantly as to gender, grade level, and department variables. Male participants' views tend to be higher than women participants. At the class level, the higher the level, the lower the trend was. Preparatory class students have the highest inclination. For the department variable, engineering and education faculty students have higher average values compared to those studying in other departments.
2. The dimension where university students showed the greatest interest was the COVID-19 vaccine and the education process. The part they show the least interest in is the category of attitude towards the distance education process.
3. It was found that the attitudes of university students toward distance education indirectly affect the mediating impact of the variables, that is, faculty members' activities, technical infrastructure as well as the variables of measurement evaluation system, Covid-19 vaccine, and education process.

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Geniş Özet

1.Giriş

2019 yılının Aralık ayında Çin'de ortaya çıkan ve kısa sürede bütün dünyayı etkisi altına alan *Koronavirüs* hastalığı (Covid-19) insan yaşamını ciddi oranda etkilemiştir (Erkut, 2020). İnsanlara ilk olarak tıbbi alanda bir yük getirmesine rağmen yayılma hızı ve etkileri bakımından kısa sürede tüm dünyayı sarmış ve küresel düzeyde bir pandemi hâline gelmiştir (Sayan, 2020). Covid-19 pandemisi küresel çapta ekonomik, sağlık, ulaşım, kültürel, sosyal birçok alanda yaşam dinamiklerini etkilemiş, sayısız faaliyet alanı kapanmış ya da iş göremez hâle gelmiş ve yeniden şekillenmek zorunda kalmıştır. Bu denli büyük etkileri olan bir salgın şüphesiz eğitim ve öğretim hizmetlerini de olumsuz etkilemiştir (Boer, 2021). İlk etapta dünyanın birçok ülkesinde okullar kapatılmış, belirli bir süre tam izolasyon tedbirleri devreye alınmıştır. Koronavirüsle mücadele sürecinde ülkeler, tüm alanlarda olduğu gibi eğitim hizmetlerinde de devamlılık sağlayabilmek amacıyla bir dizi alternatif çalışmalar yapmış ve hâlen de yapmaya devam etmektedir (Cicha vd., 2021). Covid-19 sürecinden yükseköğretim alanları ve üniversitelerde oldukça etkilenmiştir. Binlerce üniversite öğrencisi büyük zorluklarla karşılaşmıştır. Özellikle yurtlar kapatılmış ve barınma yerleri değiştirilmiştir. İletişim adeta durmuş ve yüz yüze ders içerikleri kullanılamaz hâle gelmiştir (Bao, 2020). Bu araştırmada Türkiye'de Covid-19 salgını nedeniyle yükseköğretim meydana gelen değişim ve yenilikler ele alınmıştır.

Türkiye'de Yükseköğretim konusunda karar almaya yetkili olan kurum Yükseköğretim Kuruludur (YÖK). Covid-19 pandemisinin ilk gününden itibaren sistemli ve düzenli birçok faaliyet uygulamaya geçirilmiş ve yükseköğretimin bu sıkıntılı süreçten en az şekilde etkilenmesi için üstün bir çaba gösterilmiş ve gösterilmeye de devam edilmektedir. 11 Mart 2020 tarihinde Türkiye'de ilk vakanın görülmesiyle birlikte bir dizi önlem alınmaya başlanmış ve 16 Mart 2020 tarihi itibariyle tüm üniversiteler yüz yüze eğitime ara vermiştir (YÖK [CoHe], 2020). Artık yükseköğretim için yeni bir çağ açılmış ve dijital platformların ağırlıklı olarak kullanılacağı bir döneme girilmiştir. Bu döneme "uzaktan eğitim dönemi" adı verilmiş olsa da "acil ve zorunlu uzaktan eğitim dönemi" demek daha doğru olacaktır. Acil ve zorunlu uzaktan eğitim döneminde YÖK tarafından bir dizi tedbirler alınmıştır. Bu kapsamda; uzaktan eğitimde yol haritası oluşturulmuş, yüz yüze yapılması gereken birçok sınav ertelenmiş, kitlesel çevrimiçi açık ders uygulamaları başlatılmış ve yükseköğretimde dijital dönüşüm projesi hayata geçirilmiştir (Durak vd., 2020). Covid-19 süreci nedeniyle devreye alınan bu yeni uygulamalar sağladığı avantajların yanında birtakım problemleri de getirmiştir. Özellikle eğitim hizmetlerinin sunumu aşamasında, kırsal alanlarda bulunan ve sosyoekonomik düzeyi düşük olan öğrenciler bu hizmetlerden eşit bir şekilde yararlanma konusunda zorlanmışlardır (Yildiz ve Seferoglu, 2020). Ayrıca yeterli teknoloji okuryazarlığı bulunmayan öğrenciler de benzer şekilde zorluklarla karşı karşıya kalmıştır. Bu durum yalnızca öğrencileri değil, akademisyenleri de oldukça zorlamıştır (Khalili, 2020).

Geleneksel eğitim anlayışından farklı olarak dijital ortamda derslerin işlenilmesi, dijital içerik hazırlama konusunda yeterince bilgi sahibi olunmaması, dijital okuryazarlık düzeyinin her akademisyende eşit düzeyde bulunmaması, yeterli teknolojik ekipmanların mevcut olmaması gibi birçok olumsuz durum bu zorluklar arasında yer almaktadır (Kahraman, 2020). Üniversitelerde birçok farklı altyapı hizmetleri sunulmaktadır. Binalar, fakülteler, otoparklar, eğlence alanları, kafeteryalar, spor alanları, araştırma merkezleri ve burada sayılamayan birçok faaliyet alanı bulunmaktadır. Bu alanlar belirli hizmetleri yerine getirmek amacıyla kurulmuş ve belirli disiplinlerde ihtisaslaşmıştır (Bhagat ve Kim, 2020). Fakat bu alanlar öğrenciler ve akademisyenler olmadığında pek fazla bir anlam ifade etmemektedir. Bu temelde yükseköğretimin ruhuna da aykırı bir durumdur. 21.yüzyılda bilim ve

teknolojinin de yardımıyla artık her ortamda ve her koşulda eğitim yapılması mümkün olabilmektedir (Hall vd., 2020). Burada bir soru ortaya çıkmaktadır: *"Bu denli imkânın mevcudiyetine rağmen yükseköğretim neden böylesine adaptasyon ve uyum sorunu yaşıyor?*" Bunun yanıtı ise çok açık: *"Esnek ve uyarlanabilir bir yapının olmaması"*. Bugün Türkiye dâhil olmak üzere dünyanın birçok gelişmiş ülkesinde Covid-19 salgını nedeniyle yükseköğretimde adaptasyon ve uyum sorunu yaşandığı bilinmektedir. Alanyazında özellikle Covid-19 temalı araştırmalar incelendiğinde üniversitelerin ortak bir sorununun bulunduğu ifade edilmektedir (Chester ve Allenby, 2019; Green vd., 2021).

Aslında bilim ve teknolojiye olan aşırı güvenin insanların bu konuda biraz tedbiri elden bırakmasına ve daha rahat davranmasına neden olduğu söylenebilir. Esasında neredeyse 100 yıldır bu denli büyük bir salgınla insanoğlu karşı karşıya kalmamıştır. Dünya genelinde şu an Covid-19 temalı birçok çalışma yapılmaktadır (Abu Talip vd., 2021; Liao, 2021). Yapılan bütün çalışmaların ortak yönü, bu olumsuz süreci en iyi şekilde iyileştirmek ve eğitim hizmetlerinin kalitesini arttırmaktır. Covid-19 sürecinin Türkiye'de görüldüğü 11 Mart 2020 tarihinden itibaren YÖK, üstün bir çaba göstermekte ve süreci iyileştirmek için sık sık uygulamalar gerçekleştirmektedir. Çevrimiçi anketler, görüşmeler, paydaş görüşlerine başvurulması, kamuoyu yoklamaları, istatiksel analizler, eğitici ve öğretici eğitimler bunlardan bazılarıdır (Ozer, 2020). Anılan çabalar doğrultusunda gerçekleştirilen bu çalışmada, yükseköğrenimin ayrılmaz bir parçası olan öğrencilerin, Covid-19 sürecine ve yükseköğretimdeki yansımalarına yönelik düşüncelerini belirleyebilmek amaçlanmıştır. Esasen öğrenciler, bu sürecin tam merkezinde bulunmakta ve birincil derece dönüt verme yetisine sahip bireylerdir.

2.Yöntem

Covid-19 pandemi sürecinin yükseköğretimdeki etkilerinin incelendiği bu çalışmada, geniş bir katılımcı kitlesine ulaşılması, fikir çeşitliliğinin gözetilmesi ve sağlıklı bir genelleme yapılabilmesi amacıyla nicel araştırma desenlerinden olan tarama yöntemi kullanılmıştır. Tarama yöntemi, geniş örneklemlerde çalışma kolaylığı sağlamakla birlikte oldukça kısa sürede veri toplanmasına imkân tanımaktadır (McMillan ve Schumacher, 2009). Bu nedenle araştırmada ilişkisel tarama yöntemine başvurulmuştur. İlişkisel tarama yöntemi ile değişkenler arasındaki ilişkiler daha detaylı bir şekilde incelenmiştir. Alanyazında Covid-19 sürecine yönelik yapılan birçok çalışmada tarama yöntemine rastlamak mümkündür (Atasoy vd., 2020; Karakuş vd., 2020; Kolcu vd., 2020).

Araştırma sürecine farklı bölümlerde bulunan 1166 üniversite öğrencisi katılım sağlamıştır. Örneklem belirlenirken uygun örnekleme ve kartopu örnekleme yöntemleri dikkate alınmıştır. Araştırma örnekleminin geniş ve farklı katılımcılardan oluşturulmasına dikkat edilmiştir.

Bu çalışmada veri toplama aracı olarak araştırmacılar tarafından geliştirilen ve iki bölümden oluşan bir ölçek (Covid-19 Pandemisinde Yükseköğretim Ölçeği [CPYÖ]) kullanılmıştır. Birinci bölümde katılımcı özelliklerine ve demografik değişkenlere yönelik sorular bulunmaktadır. İkinci bölümde ise Likert türünde hazırlanmış 5 faktör ve 45 sorudan oluşan bir ölçek bulunmaktadır. Ölçeğin boyutları uzaktan eğitim, öğretim üyeleri, teknik altyapı, ölçme-değerlendirme ve Covid-19 aşısı ve eğitim sürecine yönelik görüşler şeklindedir. Ölçekten alınabilecek en düşün puan 45 en yüksek puan ise 225 şeklindedir. Ölçeğin derecelendirmesi hiç katılmıyorum, kısmen katılmıyorum, kararsızım, genellikle katılıyorum ve tamamen katılıyorum şeklindedir.

Araştırma verileri Covid-19 pandemisi nedeniyle internet tabanlı uygulamalar kullanılarak gerçekleştirilmiştir. Bu kapsamda Google Forms veritabanı kullanılmıştır. Öğrencilere sosyal medya, mail ve uzaktan eğitim dersleri aracılığıyla ulaşılmış ve tamamen gönüllü katılım sağlayan kişilerden görüş alınmıştır. Araştırma sürecinde katılımcılara, çalışma ile ilgili olarak detaylı bilgilendirme yapılmış ve aydınlatılmış onam formunu doldurmaları istenilmiştir.

Araştırma verilerinin analizinde betimsel ve çıkarımsal istatistik yöntemleri birlikte kullanılmıştır. Betimsel istatistiklerin sunumunda aritmetik ortalama, standart sapma, standart hata, frekans ve yüzde kullanılarak tablolar oluşturulmuştur. Çıkarımsal istatistikler yapılırken bağımsız örneklemler T testi, ANOVA testi ve korelasyon testi kullanılmıştır. Veri toplama aracının yapı geçerliğinin kontrol edilebilmesi için AMOS 24.0 programı kullanılarak doğrulayıcı faktör analizi yapılmıştır. Katılımcı görüşleri faktör boyutunda HAYES'in sıralı çoklu regresyon analizine tabi tutulmuş ve 6 numaralı modeli tercih edilmiştir (Hayes, 2018).

3. Bulgular, Sonuç ve Tartışma

COVID-19 pandemisinin yükseköğrenime yansımalarının ele alındığı bu çalışmada birçok farklı sonuç elde edilmiştir. Katılımcılar farklı bölümlerde okuyan üniversite öğrencilerinden oluşmaktadır. Araştırma sürecinde temel olarak cinsiyet, sınıf düzeyi, öğrenim görülen bölüm, COVID-19 hastalığına yakalanma durumu ve engelli olma durumu değişkenleri incelenmiştir. Daha sonra araştırmacılar tarafından geliştirilen 5 faktörlü ve 45 sorudan oluşan bir ölçek yardımıyla üniversite öğrencilerinin görüşleri ve eğilim düzeyleri incelenmiştir. Bu kapsamda beş farklı boyut ele alınmıştır. Uzaktan eğitim sürecine yönelik tutum, öğretim üyelerinin aktiviteleri, teknik altyapı, ölçme-değerlendirme sistemi, COVID-19 aşısı ve eğitim süreci bu boyutları oluşturmaktadır.

İlk olarak temel değişkenler incelenmiştir. Cinsiyet değişkeni dikkate alındığında erkek öğrencilerin görüşlerinin ortalaması kadın öğrencilerin ortalamalarına göre daha üst düzeyde çıkmıştır. Alanyazında cinsiyet değişkenine yönelik yapılan çalışmalarda yoğun olarak kadınların daha yüksek tutuma ve ortalamaya sahip olduğu belirtilmektedir (Aschwanden vd., 2021). Bu sonuç alanyazın ile farklılık göstermekle birlikte benzer sonuçlara ulaşan az sayıda çalışma olduğu da görülmektedir (Moussa ve Ali, 2021). Erkek öğrencilerin kadın öğrencilere göre daha yüksek tutuma sahip olmalarının birçok nedeni olabilir. Özellikle üniversite yıllarında erkeklerin kadınlara göre daha özgür hareket edebildiği, Türkiye'deki bazı toplumlardaki toplumsal kültürün bir özelliği olarak erkeklerin daha baskın olması, erkeklerin sosyal faaliyet alanlarının kadınlara göre daha geniş olması bu nedenler arasında sayılabilir (Robinson vd., 2021).

İncelenen diğer bir değişken ise sınıf düzeyidir. Araştırmaya hazırlık sınıfı, 1., 2., 3. ve 4.sınıfta öğrenim gören öğrenciler katılım sağlamıştır. Araştırma sonucunda 3. ve 4. sınıflar düzeyinde anlamlı bir farklılık oluşmadığı gözlemlenmiştir. Bu durum yaklaşık 2 yıldır süren uzaktan eğitim sürecinin olumsuz bir yansıması olabilir (Rashid ve Yadav, 2020). Çünkü bu öğrenciler mezun olma duruma gelmiş ve üniversitelerinden artık pek fazla beklenti içerisinde olmamaktadır. Hazırlık sınıfından bulunan öğrenciler ise en yüksek tutuma sahiptir. Çünkü üniversite okumak ve yükseköğrenime katılmak birçok genç insanın hayalidir. Bu nedenle diğer sınıf düzeylerine göre yüksek tutuma sahip olmaları doğal karşılanabilir. Yine 1.sınıfta bulunan öğrencilerin 2.sınıfta bulunanlara göre tutumları daha yüksektir. Bu sonuç şunu göstermektedir: Üniversiteye giriş yıllarında özellikle ilk 2 yılda öğrencilerin beklentileri ve tutumları oldukça yüksek düzeydedir. Bu tutum düzeyi sonraları gittikçe azalmakta ve durağan olmaya başlamaktadır (Ashri ve Sahoo, 2021).

Öğrenim görülen bölüm ele alınan diğer bir değişkendir. Araştırma sonuçlarına göre en yüksek düzeyde tutuma sahip olan bölüm mühendislik ve daha sonra eğitim fakültesi olarak belirlenmiştir. Bu bölümlerin diğer bölümlere göre tutumlarının yüksek olmasında birtakım önemli faktörler bulunmaktadır. Özellikle mühendislik ve eğitim fakültesinde bulunan bölümlerde uygulama derslerinin ağırlıklı olması, etkileşimli bir meslek alanı olması, uzaktan eğitim aracılığıyla verimin düşüyor olması bu bölümlerde okuyan öğrencilerin uzaktan eğitimden daha çok etkilenmesini açıklayan faktörler olabilir (Kurth vd., 2021).

Araştırma kapsamında incelenen diğer değişkenler engelli olma durumu ve COVID-19 hastalığına yakalanma durumudur. Üniversite öğrencilerinin bu değişkenler açısından görüşleri ve tutum düzeyleri anlamlı farklılık oluşturmamıştır. Bu durum aslında alanyazında sıklıkla yer verilen ve bu araştırmanında öngörülen bir sonucudur (Meleo-Erwin vd., 2021). Engelli olan bireyler hayatlarında birçok problem ve engel durumu ile karşı karşıya kalmaktadır. Dolayısıyla bazı imkânlara erişememe, kısıtlı ortamlarda eğitim görme gibi durumlar karşısında hem düşünüş olarak hem iyi oluş hâli bağlamında daha sağlıklı ve sabırlı bir şekilde düşünebilmektedirler. Alanyazında COVID-19 hastalığına yakalanma durumunu temel alan çalışmalarda yaygın olarak katılımcıların eğitim sürecine yönelik düşüncelerinde değişiklik olduğu belirtilmektedir (Jones vd., 2021; Okoro vd., 2021).

Araştırmanın ikinci bölümünde beş farklı boyut ele alınmıştır. İlk olarak uzaktan eğitime yönelik tutum boyutu ele alınmıştır. Üniversite öğrencileri en az bu boyuta katılım göstermişlerdir. Çünkü öğrenciler yaklaşık 2 yıldır yüz yüze eğitimden mahrum kalmıştır. Bu durum onların tutumlarını oldukça etkilemiş ve uzaktan eğitim sürecinden memnun olmadıklarını açıkça göstermiştir (Bdair, 2021). Uzaktan eğitim sürecine yönelik öğrencilerin en memnuniyetsiz olduğu madde *"Uzaktan eğitimde tüm öğrencilerin eşit şartlarda eğitim aldığını düşünüyorum"* olmuştur. Bu durumu *"Uzaktan eğitim ile yüz yüze eğitim arasında herhangi bir farklılık olmadığını düşünüyorum"* maddesi takip etmektedir.

Uzaktan eğitim süreci her ne kadar teknolojik altyapı ile destekleniyor ve birçok imkân seferber ediliyor olsa da yine de yüz yüze eğitimin yerini tutmamaktadır. Öğrencilerin uzaktan eğitim sürecinde en memnun oldukları madde ise *"Pandemi sürecinde alınan tedbirler ve sağlanan eğitim hizmetlerinden memnunum"* olmuştur. Bu durum yükseköğretim kurumlarının ve karar vericilerin süreci iyi yönettiğini ve gerekli tedbirleri zamanında aldığının bir yansıması olarak değerlendirilebilir.

İncelenen diğer boyut ise öğretim üyelerinin aktiviteleridir. Üniversite öğrencileri COVID-19 aşısı ve eğitim süreci boyutundan sonra en çok bu boyutta olumlu görüş belirtmiştir. *"Öğretim üyelerinin derslere yeterince hazırlık yaparak geldiğini düşünüyorum"* maddesi en yoğun ilginin gösterildiği madde olmuştur. Bunun nedenleri arasında öğretim üyelerinin derslerde anlayışlı olması, pandemi sürecinde birçok konuda öğrencilere destek verilmesi ve derslerin belirli oranlarda daha kolay bir şekilde tamamlanıyor olması gerekçe olarak ifade edilebilir (Sayan, 2020). Öğrencilerin en düşük katılım sağladığı madde ise *"Pandemi sürecinin öğretim üyelerinin ders işleme becerilerini etkilemediğini düşünüyorum"* olmuştur. Pandemi süreci beraberinde birçok ek beceriyi ve okuryazarlık alanlarını da gündeme getirmiştir. Bilgisayar kullanımı, teknoloji kullanımı ve dijital okuryazarlık oldukça ön plana çıkmıştır. Elbette ki tüm akademisyenler eşit düzeyde bu becerilere sahip olamamaktadır. Bu nedenle öğrencilerin bu konuda katılım düzeylerinin düşük olması muhtemel bir sonuçtur.

Araştırmada öne çıkan diğer bir boyut ise teknik altyapıdır. Teknik altyapı konusunda COVID-19 sürecinin başlarında gerek öğrenciler gerekse de diğer paydaşlar tarafından yoğun bir eleştiri söz konusu olmuştur. Ancak bu durum uzaktan eğitimin hayatımızın bir parçası hâline gelmiş olmasıyla gün geçtikçe daha iyi bir duruma geldiği de bilinmektedir. Öğrencilerin en düşük katılım gösterdiği madde *"Teknik imkânlar konusunda tüm öğrencilerin eşit fırsatlara sahip olduğunu düşünüyorum"* olmuştur. Bu sonuç alanyazında birçok çalışmada da ısrarla vurgulanan bir durumdur (Croft ve Brown, 2020; Maina vd., 2020).

COVID-19 pandemi sürecinde oldukça ön plana çıkan bir boyut ise ölçme-değerlendirme sistemleridir. Ölçme-değerlendirme sistemleri alanyazında uzaktan eğitimde genel olarak en çok eleştirilen ve zorluklar yaşanan alan olarak ifade edilmektedir (Fish ve Gill, 2009). Öğrencilerin en düşük katılım gösterdiği madde *"Ölçme ve değerlendirme konusunda yüz yüze eğitimle hiçbir farkının olmadığını düşünüyorum"* olmuştur. Bu durum alanyazında sıklıkla şikâyet edilen bir durumdur (Coşkun

ve Mardikyan, 2016). Öğrencilerin büyük bir çoğunluğu ölçme-değerlendirme işlemlerinin sağlıklı yapılmadığını ve gerekli özeni gösteren kişiler ile göstermeyen kişilerin ayırt edilmediğini vurgulamaktadır (Yueh vd., 2014).

Araştırmanın en son ve öğrencilerin en yüksek düzeyde katılım sağladığı boyutu COVID-19 aşısı ve eğitim süreci boyutudur. Bu boyutun büyük ilgi görmesi uzaktan eğitimde zorlanan ve sıkıntı yaşayan öğrencilerin beklentilerine yanıt bulabildiği boyut olmasıdır. Bu boyutta öne çıkan ve öğrencilerin yüksek oranda katılım sağladığı maddeler *"Aşının bulunması sonucunda üniversitelerin açılmasını istiyorum"* ve *"Tüm öğrencilerin ve öğretim üyelerinin aşı olması gerektiğini ve eğitimin yüz yüze dönmesi gerektiğini düşünüyorum"* olmuştur. Pandemi süreci öğrencileri, aileleri, eğitimcileri ve sürece dâhil olan birçok paydaşı derinden etkilemiş ve psikolojik olarak da yıpranmasına neden olmuştur (Kuniya, 2020). COVID-19 temalı çalışmalarda öğrencilerin yoğun olarak aşı olmak istedikleri ve eğitim sürecinin düzelmesini talep ettikleri görülmektedir (Billah vd., 2020). Ancak öğrencilerin yoğun bir şekilde aşı olmak istemelerine rağmen COVID-19 için geliştirilen aşılara güvenmiyor olmaları şaşırtıcı bir durum olarak ifade edilebilir.

Son olarak araştırma boyutlarının seri çoklu aracılık etkisi analizleri incelenmiştir. HAYES'in üçlü aracılık etkisinin incelendiği 6 numaralı modeli kullanılmıştır. Analiz sonuçlarına göre öğrencilerin uzaktan eğitime yönelik görüşleri aşı olma ve eğitim sürecine devam etme tutumlarını doğrudan etkilemektedir. Aracılık etkisi olarak FMA, TI, MES değişkenleri kullanıldığında bu sonuç yine anlamlı farklılık oluşturmaktadır. Öğrencilerin görüşleri FMA, TI ve MES faktörlerinden etkilenmekte ve bu süreci olumlu düzeyde anlamlı hale getirmektedir. Alanyazında bu sonuçlara benzer bir çalışmaya rastlanılmamıştır. Araştırmanın bu yönüyle alanyazına katkı sağlaması beklenmektedir. Bu araştırma, COVID-19 pandemisinin yükseköğretim üzerindeki etkisiyle sınırlıdır. Araştırma kapsamında 1166 öğrencinin görüşü alınmıştır. Araştırma 7 farklı fakültede öğrenim gören üniversite öğrencileri ile sınırlıdır. Bu nedenle daha büyük örneklemleri ve üniversitelerdeki tüm bölümleri kapsayacak şekilde genişletilebilir. Ayrıca araştırmanın kapsamı tüm paydaşları, yani öğretim üyelerini, üst yönetimi ve aileleri kapsayacak şekilde detaylandırılabilir.

Yayın Etiği Beyanı

Bu araştırmanın, Kastamonu Üniversitesi tarafından 25.03.2021 tarihinde 96 sayılı kararıyla verilen etik kurul izni bulunmaktadır. Bu araştırmanın planlanmasından, uygulanmasına, verilerin toplanmasından verilerin analizine kadar olan tüm süreçte "Yükseköğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi" kapsamında uyulması belirtilen tüm kurallara uyulmuştur. Yönergenin ikinci bölümü olan "Bilimsel Araştırma ve Yayın Etiğine Aykırı Eylemler" başlığı altında belirtilen eylemlerden hiçbiri gerçekleştirilmemiştir. Bu araştırmanın yazım sürecinde bilimsel, etik ve alıntı kurallarına uyulmuş; toplanan veriler üzerinde herhangi bir tahrifat yapılmamıştır. Bu çalışma herhangi başka bir akademik yayın ortamına değerlendirme için gönderilmemiştir.

Araştırmacıların Katkı Oranı Beyanı

Makale yazarlarının katkıları eşit miktardadır.

Çatışma Beyanı

Araştırmanın yazarları herhangi bir çıkar/çatışma beyanı olmadığını ifade etmektedir.