

# University life during pandemic COVID-19: Attitudes of staff and students towards distance education

Aida Guliyeva<sup>1</sup>, Ulviyya Rzayeva<sup>1,\*</sup>, and Gunay Guliyeva<sup>2</sup>

<sup>1</sup>Azerbaijan State University of Economics, Department of Digital Economy and ICT, Istiglaliyyat 6, AZ1001 Baku, Azerbaijan

<sup>2</sup>Azerbaijan State University of Economics, Department of Economic Regulation, Istiglaliyyat 6, AZ1001 Baku, Azerbaijan

## Abstract

**Research background:** The analysis of the problem was carried out according to the standard scheme: collection of information - description of the received data - generalization of data - recommendations. All the information available on this subject was obtained by questioning teachers, administrative staff and students.

**Purpose of the article:** This case study is aimed at studying social objects and relationships in the process of transition from traditional to remote education methods to obtain new information and identify relevant patterns that depend on gender and position at the university.

**Methods:** An online survey was conducted among 1792 people from March 15 to April 15, 2020 through an electronic questionnaire. The sample included academic and administrative staff, and UNEC's students. Using the SPSS statistical software package, the Chi Square test is calculated.

**Findings & Value added:** The advantage of this study is the creation of a model that can be used not only to interpret the results of a sociological survey in real time, but also to make decisions and develop strategies for future developments.

**Keywords:** *Coronavirus infection; hypotheses; Pearson Chi Square test; gender; position*

**JEL Classification:** *I230; C112; C130*

## 1 Introduction

Coronavirus infection COVID-19 (abbreviation for the English CORonaVirus Disease 2019) is a potentially severe critical respiratory infection caused by the coronavirus SARS-

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\* Corresponding author: [ulviyya.rzayeva@unec.edu.az](mailto:ulviyya.rzayeva@unec.edu.az)

CoV-2 (2019-nCoV) [2], a dangerous disease that can occur in the form of an acute respiratory viral infection of the lung [3].

Akan [1] pays particular attention to the possibility of turning universities into serious outbreaks during an influenza pandemic. The article studies the awareness and attitude of students to the A/H1N1 pandemic flu, as well as vaccination and other preventive measures.

Morens devotes his research to the 2009 pandemic. The author states that most influenza researchers rewrite the “rules” of pandemic behavior. Therefore, this manuscript generally illuminates the concept of a pandemic and considers diseases of various etiologies and epidemiological features for many centuries [4].

Simonds focuses on emergencies arising as a result of medical, ethical and organizational problems in an acute pandemic [5]. To such situations, the author includes managing medical facilities, setting priorities, allocating limited resources and personal freedom in the interests of public health [6, 7]. The article details the responsibilities of a healthcare professional in the fight against virulent infectious diseases.

The paper studies the process of transition from traditional education to remote teaching methods and mastering educational material; a model is proposed according to which qualitative (categorical) data obtained as a result of a sociological study are analyzed and interpreted [8, 9, 10].

The analysis of the problem was carried out according to the standard scheme: collection of information - description of the received data - generalization of data - recommendations. All the information available on this subject was obtained by questioning teachers, administrative staff and students. Thus, the information collection process helps finding out facts that are logically interconnected [11, 12].

## **2 Research methodology**

An online survey was conducted among 1792 people from March 15 to April 15, 2020 through an electronic questionnaire. The sample included academic and administrative staff, and UNEC’s students. Using the SPSS statistical software package, the Chi Square test is calculated, which checks how significantly the observed and hypothetical frequencies of variables related to the categorical scale differ from each other [13, 14].

The object of statistical analysis is the data obtained in the process of interviewing a certain UNEC contingent. The subject of this article is the identification of patterns between the selected dependent and independent variables [15]; the analysis of these patterns is described in detail in the Data Analysis section. This case study is aimed at studying social objects and gender relationships in the process of transition from traditional to remote education methods to obtain new information and identify relevant patterns that depend on gender and position at the university.

All questions of the questionnaire have been checked using the Pearson Chi Square test; gender and position held at the university (student, academic or administrative staff) served as dependent variables.

## **3 Data Analysis. Suggested Hypotheses and Statistics**

1792 people, related to UNEC, participated in the online survey from March 15 to April 15, 2020. All respondents expressed their readiness to adequately assess and respond to an extreme situation, although 59% (1057/1792) of respondents, both young and old, “do not believe in the existence of a pandemic”.

UNEC students in English and Russian were more likely ( $p < 0.001$ ) to be better informed about the trends and patterns of the disease, namely the spread, vulnerable age groups, risk factors, virus characteristics, the extent and severity of the epidemic compared to previous ones pandemic seasonal flu. Most respondents recognized that there were a significant need to change working methods and lifestyles, but only 71% (1272/1792) of respondents were ready to change their habits and acquired skills. Only 28% (503/1792) of the respondents significantly changed their lifestyle; 65% (1164/1792) of students complained about the absence of a role model of behaviour from elders. Less than half of the respondents 48% (858/1792) as the main measure confirmed only the effectiveness of hand hygiene and social distance. The majority of 89% (200/225) teachers and 83% (1018/1227) students spoke positively about the benefits of online resources for teaching and learning.

The response rate of the total number of students and the entire academic and administrative staff of the university was 8% (1792/20031), and the majority of respondents were young – 18-24 years old - 67% (1199/1792), nationality Azerbaijani (100%, 1792/1792).

As a statistical data analysis program, we limited ourselves to the SPSS package, which is widespread in socio-economic data analysis. For analysis, the program randomly selected as a sample 50 respondents from 1792 respondents.

In accordance with the dependent variables, we put forward the group of our hypotheses:

H1<sub>0</sub>: The gender of the respondents is not related to the perception of a viral disease.

H1<sub>1</sub>: Gender is related to the perception of a viral disease.

H2<sub>0</sub>: Gender affiliation does not affect respondents' attitudes toward replacing the traditional form with the distant format.

H2<sub>1</sub>: Gender affiliation affects the attitude of respondents to replacing the traditional form with the distant format.

H3<sub>0</sub>: The gender of the respondents does not affect the perception of difficulties that are inevitable when conducting distance lessons.

H3<sub>1</sub>: The gender of the respondents influences the perception of difficulties that are inevitable when conducting distance lessons.

H4<sub>0</sub>: The gender of the respondents does not affect the perception of the degree of distance education effectiveness.

H4<sub>1</sub>: The gender of the respondents affects the perception of the degree of distance education effectiveness.

Table 1 below shows the gender differences in relation to a pandemic. The observed inequality in the numbers between the Count and Expected Count indicators for men and women demonstrates that there is a difference in the attitude of the sexes to the considering issue and their perception, and subsequent tests only prove this statement. We also see that the difference between the indicators in the relations of men and women is quite high and the figures clearly show that women are more seriously afraid of the consequences of the disease (15 against the expected 11.8) than men (16 against the expected 19.2).

**Table 1.** Gender \* COVID\_19 Crosstabulation

			COVID_19		Total
			Who does not take the coronavirus seriously	Who takes the coronavirus seriously	
<b>Gender</b>	<b>male</b>	Count	15	16	31
		Expected Count	11.8	19.2	31,0
	<b>female</b>	Count	4	15	19
		Expected Count	7.2	11.8	19,0
<b>Total</b>		Count	19	31	50
		Expected Count	19,0	31,0	50,0

We will interpret the following Table 2. As is known, a low value for Pearson Chi Square means a high correlation between the two datasets. Using the value from the Chi Square table (3.841) for degree of freedom 1 and significance 0.05, we summarize that our Chi Square value of 3,736 is not much more than the critical value. Therefore, there is no significant difference in the relations of sex to disease, especially if taking into account sizes of our sample (it is quite possible that large samples will show slightly different values). Thus, the null hypothesis  $H_{1_0}$  is accepted. The calculated value for Continuity Correction indicator is also represented by a rather low number equal to 0.02666%, that is, the probability of error in our sample is quite low.

The calculated value for the Likelihood Ratio is 3.907, which is based on the observed/expected frequency ratio, is fairly close to the Pearson Chi Square value and can be interpreted as well.

**Table 2.** Chi Square Test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi Square	3.736 <sup>a</sup>	1	.053		
Continuity Correction <sup>b</sup>	2.666	1	.103		
Likelihood Ratio	3.907	1	.048		
Fisher's Exact Test				.074	.050
Linear-by-Linear Association	3.661	1	.056		
N of Valid Cases <sup>b</sup>	50				
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7,22.					
b. Computed only for a 2x2 table					

The following Table 3 shows the data processing in SPSS and the response on the Chi Square test:

**Table 3.** Chi Square Test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi Square	1.776 <sup>a</sup>	1	.183		
Continuity Correction <sup>b</sup>	1.066	1	.302		
Likelihood Ratio	1.821	1	.177		
Fisher's Exact Test				.237	.151
Linear-by-Linear Association	1.740	1	.187		
N of Valid Cases <sup>b</sup>	50				
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.22.					
b. Computed only for a 2x2 table					

The Pearson Chi Square indicator does not exceed the critical value (1.776), but is higher than one, that is, there is a slight difference between the distributions, and the null hypothesis must be rejected. Thus, the null hypothesis  $H_{20}$  is not accepted.

An interesting result is given by the analysis of data regarding the difficulties associated with distance education.

**Table 4.** Crosstab

			Difficulties_onl_edu			Total
			No difficulty	Quality of materials	Lack of a PC. the Internet	
Gender	male	Count	9	6	16	31
		Expected Count	10.5	5.6	14.9	31.0
	female	Count	8	3	8	19
		Expected Count	6.5	3.4	9.1	19.0
Total		Count	17	9	24	50
		Expected Count	17.0	9.0	24.0	50.0

Table 4 shows a clear difference in the gender attitude to the difficulties with the introduction of distance learning. It was intuitively expected that women would be unhappy with the disturbance of the traditional work order. And this turned out to be true - the results show that 8 of the expected 6 women still experience inconvenience with the introduction of online education.

Similarly, women over men are unhappy with the quality of the materials offered. But, it is interesting that with regard to purely technical problems associated with hardware or communication networks, men show great dissatisfaction - 16 against the expected 14, which is understandable, given the “masculinity” of IT specialties.

We'll present the following Table 5 on this set of issues, namely Chi Square Test:

**Table 5.** Chi Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi Square	.897 <sup>a</sup>	2	.639
Likelihood Ratio	.888	2	.641
Linear-by-Linear Association	.735	1	.391
N of Valid Cases	50		
a. 1 cells (16,7%) have expected count less than 5. The minimum expected count is 3,42.			

The value of Pearson Chi Square is much lower than the critical value of 3.736 (Table 12), namely, there is a significant difference in the sex relations to online education. Closeness to unity (0.897) indicates that our sample data does not meet expected if the null hypothesis is not true. Our Chi Square does not cross the limit, so we can reject the null hypothesis  $H_3$  and conclude that the variables are independent.

We present the following set of tables regarding the difference in gender views on the degree of effectiveness of online education.

**Table 6.** Crosstab

			Effectiveness_onl_edu		Total
			No	Yes	
<b>Gender</b>	<b>male</b>	Count	7	24	31
		Expected Count	5.6	25.4	31.0
	<b>female</b>	Count	2	17	19
		Expected Count	3.4	15.6	19.0
<b>Total</b>		Count	9	41	50
		Expected Count	9.0	41.0	50.0

Table 6 is interpreted as follows: men do not see a special return on the introduction of online classes; women tend to be more positive than negatively perceive changes that are dictated by necessity. Again, as in the previous case, this may be due to the gender psychological characteristics of the perception of emergency situations.

Let's see in what numbers the statistics processes this data:

**Table 7.** Chi Square Test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.160 <sup>a</sup>	1	.282		
Continuity Correction <sup>b</sup>	.487	1	.485		
Likelihood Ratio	1.235	1	.267		
Fisher's Exact Test				.452	.247
Linear-by-Linear Association	1.137	1	.286		
N of Valid Cases <sup>b</sup>	50				
a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.42.					
b. Computed only for a 2x2 table					

The Pearson Chi Square indicator is again far from its critical value, but still greater than one (1.16), therefore, there is a correlation between the perception of online education and the gender of the respondent (Table 7). Again, the null hypothesis  $H_4$  is rejected.

#### 4 Discussion and conclusion

The crisis, caused by the reaction of states to information on the coronavirus, have inevitably affected the field of higher education. One of the scenarios for universities suffering from mobility restrictions and forced isolation of education has become a more intensive expansion in online.

The transition to distance learning should not lead to a drop in the quality of education. Since mid-March, UNEC has switched to distance learning in force majeure mode. It was not easy at all. However, despite the unusual situation and the novelty of the technology, the task that the university administration was to solve has not changed - the university should get the best students and meet their needs and expectations.

In this article, based on the UNEC example, an analysis of the attitude of gender to distance learning of three categories of people related to the educational process is conducted. The study is based on the statistical method Pearson Chi Square for the correct interpretation of the results. In accordance with the two selected dependent variables (gender and position), two groups of hypotheses were put forward. The analysis of the tables demonstrates a rather high gender difference in relation to the pandemic, namely to the difficulties with the introduction of distance learning. Belonging to the gender also affects the attitude of respondents to the replacement of the traditional form of education with distance form and the perception of difficulties that are inevitable when conducting distance learning. Despite the fact that men do not see a special return on the introduction of online classes, and women tend to perceive changes more positively, still membership in one or another gender of the respondents does not affect the perception of the degree of distance education effectiveness.

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