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**Resilience of Higher Education Students
during the COVID-19 Pandemic**

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Abstract

The coronavirus pandemic has caused unprecedented disruption to various sectors of the social systems around the world. The young population has faced important challenges not only in education, but also in their economic situation. The transition to online education, as well as the reduction of the workforce, changed the lives of young people in an unprecedented way. The current paper analyses micro-data collected from higher education students through a global survey during the coronavirus pandemic. Our results show that many young people have adapted well to the new teaching and learning experiences. On the other hand, a high number of higher education students experienced permanent or temporary job loss or salary cuts. The resilience of students has been fostered by the possession of digital skills. Moreover, negative experiences during the pandemic were associated with greater worries with respect to their future education and career. Our results highlight the importance of developing digital skills and providing support services in order to increase the resilience of young people facing crisis.

Keywords: higher education, COVID, pandemic, resilience, students.

JEL Classification: P46, O15.

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1. Introduction

The coronavirus pandemic has caused unprecedented disruption in various domains. Among the most significantly impacted by this crisis was the young population, who faced important challenges not only in education, but also in its economic situation. The rapid shift to online learning due to extensive school closure has generated considerable challenges for students, spanning from technological obstacles, given that they had to adapt to new platforms and technologies (often without access to necessary resources or adequate support) to the absence of face-to-face interactions with classmates and teachers. At the same time, the economic downturn triggered by the pandemic has resulted in extensive layoffs, leaving numerous young individuals uncertain about their job opportunities and financial security. The dual challenge of managing remote education and facing economic instability has reshaped the lives of young people, highlighting the necessity for comprehensive support to meet the challenges.

In this context, the objective of the paper is to assess the impacts of the COVID-19 pandemic on students' educational and professional life and to identify resilience factors that acted as protective mechanisms in front of such impacts.

This paper follows the structure: Section 1 introduces the topic and outlines the aim of the research. Section 2 presents literature review, providing findings from various studies that investigated the impact of the pandemic on young individuals with respect to education and labour market participation. Section 3 presents the research questions, while section 4 provides the data and the statistical methods that are used in this paper. Section 5 presents the empirical results of the analysis, while the concluding section summarises the most important findings of the study.

2. Problem Statement

The COVID-19 pandemic, a global health crisis of unprecedented scale, has impacted numerous countries, influencing various components of social systems. The younger population has faced the higher repercussions, encountering challenges in multiple domains. Unprecedented disruption of education systems, as well as job losses, income reduction, and a decline in the quality of employment, were the main ways through which this crisis impacted young individuals (Lee et al., 2020).

The COVID-19 pandemic has caused unprecedented disruption to education systems, impacting nearly 1.6 billion learners across over 190 countries, school closure and other learning spaces shutdown affecting 94% of the global student population, rising to 99% in low and lower middle-income countries (United Nations, 2020). Millions of students have been forced to study from home, but the shift to online education caused significant disruptions in academic activities due to several factors, such as unequal access to technology, network issues, inadequate facilities, digital divide, poor digital skills, and lack of training (Onyema et al., 2020). These challenges can be categorised into two main groups: technical issues, such as limited internet access, affecting less than 15% of students in western Europe and America, but up to approximately 80% in Africa, and skill-related problems,

including insufficient digital skills for both students and teachers (Buda & Czékmán, 2021). These issues favoured significant learning setbacks, exacerbating both intergenerational and intragenerational inequalities, while also worsening gender disparities in the labour market (ILO, 2022). Moreover, findings from a study investigating the career decision-making process revealed a lack of support from teachers or other school staff in terms of guidance and advice regarding career, during online education (Jemini-Gashi & Kadriu, 2022). A further consequence of the new way of learning has been discovered by another study which has shown that, during remote learning, young adults exhibited either increased independence or indifference, as the reduction or partial elimination of school structures and coordinated actions led to a lack of commitment (Egger & Huber, 2022).

On the other hand, the transition from school to work has been challenged during this period, as the pandemic impacted vulnerable groups such as students and graduates seeking employment. Early career workers have encountered difficulties in securing employment due to the scarcity of job opportunities amidst the pandemic (Konle-Seidl & Picarella, 2021). According to ILO (2021), entering the job market during a recession can have long-lasting effects on young people's employment prospects, that can lead to significant long-term earnings losses, but also to increase competition for fewer jobs in the years ahead. Moreover, a study conducted on this matter revealed that the transition from school to work in Italy has been significantly prolonged due to the COVID-19 pandemic (Fiaschi & Tealdi, 2022).

Likewise, young people who were employed at the onset of the COVID-19 pandemic also experienced greater hardships compared to other age groups due to the fact that they are predominantly employed in sectors that have been severely affected, notably accommodation, food services and personal care services (Wilson & Papoutsaki, 2021). In the EU-27 member states, job losses affected 1.1 million individuals aged 15-24 and 1.02 million aged 25-29 between the fourth quarter of 2019 and the first quarter of 2021, with youth employment declining by 2.2 percentage points compared to a 1.4 percentage point decrease in the overall employment rate for the age group 20-64 (Konle-Seidl & Picarella, 2021). Nevertheless, significant disparities emerged between individuals with different levels of education, primarily attributed to the capacity of educated individuals to work remotely, given that individuals with a college degree fared considerably better during the pandemic compared to those with no university education, largely due to their ability to work remotely (Goldin, 2022). Some studies suggest that increased participation in education has contributed to maintaining a stable number of young people outside education or work overall (Wilson & Papoutsaki, 2021; Williams et al., 2021). For example, youth participation in full-time education has risen in the UK to its highest rate on record (48%, compared with 43% before the crisis began), while the youth employment rate has fallen (53%, compared with 55% before the crisis began), being nearly 200,000 more young people in education and not looking for work than before pandemic (Williams et al., 2021).

However, while the pandemic had notably affected young people negatively, it had also brought some opportunities for them. One example is related to online

education, which has resulted in enhanced digital and problem-solving skills (Buda & Czékmán, 2021). Furthermore, the accelerated digitalisation prompted by this crisis has also led to increased job flexibility through remote or home-based work, a trend that has persisted beyond the pandemic-imposed restrictions. On the other hand, the emerging digital economy holds significant potential for enhancing youth employment, productivity, and the quality of job prospects, but effective policy interventions are essential to ensure the transformation of this potential into tangible opportunities for decent work, thereby addressing existing inequalities (ILO, 2022).

In this context, the present paper aims to explore the impacts of COVID-19 pandemic on students' educational and professional life, as well as resilience factors that acted as protective mechanisms in front of such impacts.

3. Research Questions

Addressing the objective of the paper, our research questions are as follows:

- Q1: Which is the profile of students who had been more resilient to changes in the teaching and learning environment amid the COVID-19 pandemic?
- Q2: Which students had their jobs affected by the pandemic?
- Q3: Have the difficulties experienced by students been associated with an increased level of concern with respect to their future education and career?

4. Research Methods

This research relies on the data gathered in May-June 2020 via a worldwide survey focusing on the impact of the COVID-19 pandemic on the life of university students. The questionnaire included inquiries regarding transition to online education, economic situation, and how students coped with experienced challenges. The database can be found on the data.mendeley website (Aristovnik et al., 2021). The current analysis covers 10 European countries (Bosnia and Herzegovina, Croatia, Germany, Greece, Hungary, Italy, Poland, Portugal, Romania and Slovenia), including a total of 10,432 higher education students (32% males and 68% females). Most of the students (around 70%) were enrolled in bachelor's degree programmes, while 26% pursued master's degrees and 4% were Ph.D. students. The average age of the participants was of 23 years.

After descriptive statistical analysis, we perform ordinal regression to identify predictors for well-adaptation of students to new teaching and learning experience. Independent variables are the characteristics of the students and their proficiency with respect to digital skills. No multicollinearity issues have been identified. Also, we apply multinomial logistic regression to reveal the profile of students affected by job loss or salary cuts. In addition, we conduct correspondence analysis to investigate the relation between well-adaptation in education and negative emotions with respect to future education or career.

5. Findings

Students were asked to rate their agreement with the following statement: "I have adapted well to the new teaching and learning experience". More than half of the participants stated that they succeeded to adapt well to the new teaching and learning experience. Conversely, one in five respondents disagrees with this assertion (including those who responded with disagreement and full disagreement).

Table 1. Well adaptation to the new teaching and learning experience

Levels of agreement	Percent
Strongly disagree	5.2%
Disagree	14.7%
Neutral	23.7%
Agree	39.6%
Strongly agree	16.9%
Total	100%

Source: authors' own research results.

The results of the ordinal regression show that the older students have been more resilient in front of challenges of the new teaching and learning experience amid pandemic. On the other hand, no significant variation has been found in relation to the student status or the level of study. Concerning the field of education, we found that social sciences students adapted better to the new education reality than natural and life sciences students. Also, female students have been more well adapted in this matter than male students. In addition, our result shows that the lack of digital skills reduced the resilience of students in relation to the new teaching and learning experience. Of significance has been the proficiency in using online teaching platforms, using online collaboration platforms, using software and programmes, and applying advanced settings to some software and programmes.

Table 2. Ordinal regression on “Well adaptation to the new teaching and learning experience” (1= Strongly disagree...5= Strongly agree)

	Estimate	Std. Error	Wald	df	Sig.	95% Conf. Int.	
						LB	UB
Age	0.015	0.006	7.113	1	0.008	0.004	0.027
Citizen of the country in which you study (ref.=No)							
Yes	0.185	0.099	3.501	1	0.061	-0.009	0.38
Status (ref.=Part-time)							
Full-time	-0.054	0.105	0.267	1	0.605	-0.259	0.151
Level of study (ref.=PhD)							
Bachelor	-0.079	0.181	0.192	1	0.662	-0.434	0.276
Master	0.044	0.181	0.058	1	0.810	-0.312	0.399

	Estimate	Std. Error	Wald	df	Sig.	95% Conf. Int.	
						LB	UB
Field of study (ref.=Natural and life)							
Arts and humanities	-0.032	0.104	0.097	1	0.755	-0.235	0.171
Social sciences	0.216	0.071	9.366	1	0.002	0.078	0.355
Applied sciences	0.084	0.082	1.038	1	0.308	-0.077	0.245
Gender (ref.=Female)							
Male	-0.125	0.059	4.38	1	0.036	-0.241	-0.008
Skilled in browsing online information (ref.=Agree)							
Disagree	-0.388	0.21	3.417	1	0.065	-0.800	0.023
Neutral	-0.102	0.105	0.947	1	0.331	-0.307	0.103
Skilled in sharing digital content (ref.=Agree)							
Disagree	-0.283	0.15	3.572	1	0.059	-0.577	0.010
Neutral	-0.238	0.086	7.587	1	0.006	-0.408	-0.069
Skilled in using online teaching platforms (ref.=Agree)							
Disagree	-0.482	0.097	24.852	1	0.000	-0.671	-0.292
Neutral	-0.176	0.071	6.175	1	0.013	-0.314	-0.037
Skilled in using online collaboration platforms (ref.=Agree)							
Disagree	-0.421	0.145	8.435	1	0.004	-0.704	-0.137
Neutral	-0.200	0.09	4.978	1	0.026	-0.376	-0.024
Skilled in using online communication (ref.=Agree)							
Disagree	-0.365	0.231	2.495	1	0.114	-0.817	0.088
Neutral	-0.412	0.127	10.575	1	0.001	-0.661	-0.164
Skilled in using software and programs (ref.=Agree)							
Disagree	-0.672	0.133	25.358	1	0.000	-0.934	-0.410
Neutral	-0.317	0.082	14.864	1	0.000	-0.479	-0.156
Skilled in advanced settings to software and programs (ref.=Agree)							
Disagree	-0.455	0.088	26.626	1	0.000	-0.628	-0.282
Neutral	-0.140	0.068	4.21	1	0.040	-0.273	-0.006

Note: Model Fitting Information Chi-Square Sig.0.000; Goodness-of-Fit Pearson Sig. 0.310, Deviance Sig. 1.000; Pseudo R-Square Cox and Snell 0.107, Nagelkerke 0.114.

Source: authors' own research results.

The impacts on employment have been investigated through the following question: “If you have been working or plan to work, has this paid job been affected by the COVID-19 pandemic?”. On the one hand, 11.9% and 10.4% of the students reported being permanently laid off or experiencing a reduction in their wage. 30.8% of the students have been affected by temporary job loss and 30.6% of students remained unaffected and continued to work.

Table 3. Have you been affected by the pandemic at work?

	Percent
Yes, I have lost the job permanently	11.9%
Yes, I have lost the job temporarily	30.8%
Yes, I have had a salary cut	10.4%
No, the job ended before the COVID-19 crisis	16.3%
No, I am still working	30.6%
Total	100%

Source: authors' own research results.

The results of the multinomial logit regression suggest that older students have been less affected by job loss, while full-time students had higher chances to lose their job (permanently or temporarily) than part-time students. Also, bachelor and master students had much higher chances to be affected by job loss than PhD students. Concerning the field of education, we found that arts and humanities students have lost more their jobs than natural and life sciences students. No significant differences have been found between male and female students. On the other hand, students who were not proficient in using online communication and in applying advanced settings to some software and programmes registered higher chances of losing their jobs than skilled students. Conversely, students who were skilled in using software and programmes were more affected by job loss than non-skilled students. With respect to the chances of being affected by salary cuts, we found that full-time students were less vulnerable, while arts and humanities students were more exposed to this negative impact. Digital skills register a lower power of prediction in this case. However, we found that students skilled in sharing digital content were more exposed to salary cuts than non-skilled students.

Table 4. Multinomial logit regression on “Have you been affected by the pandemic at work?” (reference category = no change)

	Job loss (permanently or temporarily)		Salary cut	
	Sig.	Exp(B)	Sig.	Exp(B)
Age	0.000	0.936	0.822	1.002
Citizen of the country in which you study (ref.=No)				
Yes	0.730	0.944	0.725	1.097
Student status (ref.=Part-time)				
Full-time	0.009	1.492	0.010	0.628

	Job loss (permanently or temporarily)		Salary cut	
	Sig.	Exp(B)	Sig.	Exp(B)
Level of study (ref.=PhD)				
Bachelor	0.000	4.815	0.313	1.45
Master	0.000	4.452	0.225	1.567
Field of study (ref.=Natural and life)				
Arts and humanities	0.001	1.770	0.043	1.724
Social sciences	0.115	1.198	0.124	1.336
Applied sciences	0.946	0.991	0.508	1.157
Gender (ref.=Female)				
Male	0.063	0.836	0.953	1.009
Skilled in browsing online information (ref.=Agree)				
Disagree	0.825	1.076	0.123	2.089
Neutral	0.454	1.142	0.080	1.557
Skilled in sharing digital content (ref.=Agree)				
Disagree	0.864	1.042	0.048	0.435
Neutral	0.609	0.928	0.638	0.903
Skilled in using online teaching platforms (ref.=Agree)				
Disagree	0.384	0.868	0.548	1.154
Neutral	0.559	0.934	0.751	1.058
Skilled in using online collaboration platforms (ref.=Agree)				
Disagree	0.805	1.058	0.880	1.049
Neutral	0.023	1.395	0.896	0.971
Skilled in using online communication (ref.=Agree)				
Disagree	0.050	2.073	0.478	1.461
Neutral	0.176	0.756	0.236	0.692
Skilled in using software and programs (ref.=Agree)				
Disagree	0.022	0.608	0.126	1.618
Neutral	0.077	0.785	0.014	1.643
Skilled in advanced settings to software and programs (ref.=Agree)				
Disagree	0.000	1.845	0.945	0.983
Neutral	0.003	1.382	0.301	1.197

Note: Model Fitting Information Chi-Square Sig.0.000;
Pseudo R-Square Cox and Snell 0.098, Nagelkerke 0.115.

Source: authors' own research results.

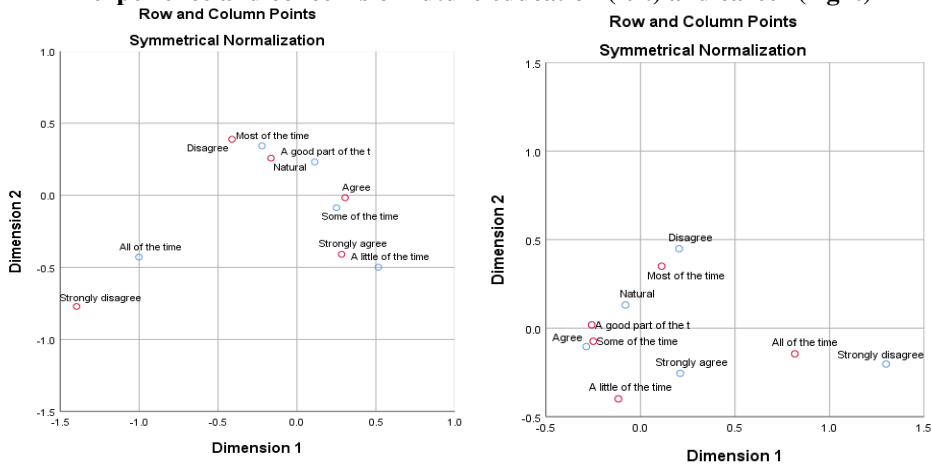
The emotional well-being of students has been investigated through the following question: "How often do you have worries about the following personal circumstances?" Data indicate that there were similar levels of concern for either future education or professional career. Most students worried "a good part of the time", followed by "some of the time" and "most of the time". Overall, the students were quite concerned about their future education and professional career. In fact, results of correspondence analysis suggest that the poor resilience to new learning experience is associated with a higher level of worries on future education and professional career.

Table 5. How often do you worry about your future education, respectively your future professional career?

	Future education (%)	Future career (%)
A little of the time	13.6%	11.7%
Some of the time	25.8%	22.4%
A good part of the time	27.2%	27.9%
Most of the time	21.9%	23.2%
All of the time	11.5%	14.7%
Total	100%	100%

Source: authors' own research results.

Figure 1. Correspondence analysis between well adjustment to new educational experience and concerns on future education (left) and career (right)



Source: authors' own research results.

6. Conclusions

Our results show that most higher education students have adapted well to the new teaching and learning experiences amid the pandemic. On the other hand, a high number of students experienced permanent or temporary job loss or salary cuts. The

resilience of students has been fostered by the possession of digital skills. Our results highlight the importance of developing digital skills and providing support services in order to enhance resilience and emotional well-being of young people facing crisis.

Based on our findings, several policy recommendations for educational institutions and governments can be formulated. First, the objectives of developing basic digital skills need to be embedded in primary and secondary educational programmes. Second, optional courses for skills of using online teaching platforms, online collaboration platforms, and applying advanced settings to specialised software and programs can be provided to higher education students or adult learners. Thus, the development of digital skills has to be targeted by higher education programmes across all study fields. Third, support and counselling services for students facing difficulties and anxiety during challenging periods are essential for enhancing resilience and coping mechanisms that are needed in increasingly changing environments.

The limitations of the study are related to the cross-sectional design of our data and to the fact the sample was based on the availability and willingness of the students to participate in the survey. Therefore, our results must be understood as an association relation between digital skills and the resilience of students. Future work will employ a multilevel model, exploring supportive factors at national or institutional level.

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