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## INNOVATIONS IN HEALTH CARE MANAGEMENT: THE EFFECT OF THE PANDEMIC ON THE LABOUR MARKET CHANGE

**Abstract.** The COVID-19 pandemic was identified in 17 days, and the related enormous economic and social impacts have mobilized the global scientific world in almost all areas of science. The leaders of individual countries have to face a challenge that has been unprecedented for many decades. The global pandemic could lead to profound changes in the balance of power, economical operations, and the labour market. In turn, the accompanying measures have brought a lot of changes to everyday life. Although the government of Romania had taken some measures to avoid the collapse of the economy. However, the experts did not regard these efficient enough. In this time two-thirds of the Hungarian population do not feel that the media exaggerates the severity of the COVID-19 outbreak and the economic consequences of the pandemic are undisputable for the Hungarian people, just like for the Italian and French people who were severely affected by the virus. People have been deprived of the joy of social gatherings, free movement, travel and many of them have even lost their jobs. The primary question at the moment is whether countries could finance the sectors in hardship and whether their inter-dependence regarding the exchange of goods imposes any kind of danger to their citizens. In terms of macro-economy, however, the long-term consequences are much more interesting, and it raises questions like how the countries will be able to handle the situation resulted by the increased unemployment and the different trade relations. This study presents a primary research with the age group of 18-30. The target group is leaders of student unions and academics of four universities. This questionnaire survey aims to examine how the Hungarian and Transylvanian respondents see the prospective economic effects of the current situation on the different sectors of the economy. In addition to the descriptive statistical analysis, the perception of economic impacts was examined with variance analysis concerning different demographic characteristics, and the currently studied subject area. Is the negative attitude prevailing or do the different groups react differently to the state of affairs? The greatest differences in the opinion of respondents could be observed in the area of lifestyle and healthcare. The experts think that the pandemic will result in great changes in the offices, homes, schools, and places of work. Negative aftereffects are not predicted in higher education, sales, and trade. It can be concluded that negative labour market trends are expected, therefore probably the young generation currently studying in higher education will be one of the biggest losers of the virus in the long run.

**Keywords:** COVID 19, pandemic, economic impact, changes in subject areas.

**Introduction.** Researchers everywhere are studying the impact of COVID 19 pandemic on countries, nations, inhabitants of the earth, economy, mental and physical health as well as lifestyle. The pandemic and the accompanying measures have brought a lot of changes to everyday life. People have been deprived of the joy of social gatherings, free movement, travel and many of them have even lost their jobs. That has caused a lot of tension among the layers of society, age groups and family members.

When the article was being written, more than 4 million people had been infected with the virus, and almost 300,000 people died all over the world – according to the Johns Hopkins University (COVID-19

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Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (13.05.2020). Due to the pandemic, many countries implemented lockdown measures. The experts agree that the pandemic has and will have a huge impact on the global economy. However, they can only guess the exact dimensions of the effect and its manifestation in individual countries. Considerable changes could already be observed even in the short term. The healthcare system, education, tourism and hospitality and the service sector have found themselves in a situation for which they have not been prepared. Air traffic has almost totally stopped compared to the previous operational activities, the related services have become redundant. Besides, the demand for fashion items, beauty products and durable consumer goods has declined. In addition to the mentioned above, public transport is hardly used, too. The primary question at the moment is whether countries could finance the sectors in hardship and whether their inter-dependence regarding the exchange of goods imposes any kind of danger to their citizens (Baldwin, 2020). However, in terms of macro-economy the long-term consequences are much more interesting, and it raises questions like how the countries will be able to handle the situation resulted by the increased unemployment and the different trade relations. The experts warn that the virus will affect millions of people and the rapid spread of the pandemic may result that the countries become economic islands in an integrated global economy (McKibbin and Fernando, 2020). That would affect the small and medium-sized enterprises, which play a significant role, have been severely affected due to a decline in social consumption and rigid expenditure on rents, wages and interests. Moreover, that could result in further affecting the stability of the banking system, too (Baldwin and Tomiura, 2020). The threat of future pandemics, the need has never been greater for economics to go beyond marginalism, to be able to focus on qualitative breaks and systemic change (Michie, 2020).

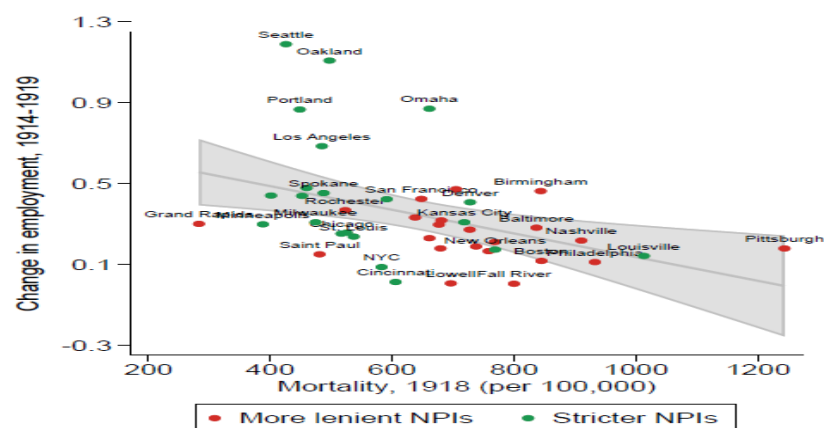
There had been several significant economic and public health losses before in several countries due to different epidemics. Although, none of them had grown into a pandemic, like COVID-19. The two most significant were the SARS (Severe Acute Respiratory Syndromes) and H7N9 (Influenza A Virus Subtype H7N9) in 2003. SARS infected more than 8000 people between November 2002 and July 2003 and resulted in nearly 700 fatalities (Pike et al., 2014). Its economic impact was also significant. The Asian countries lost 12-18 billion USD, that is approximately 3-10 million USD/case. Projecting this figure on the current (May 11, 2020) COVID-19 cases, which reached 4.1 million worldwide, the dimensions of the approaching economic crisis becomes closer. Although, it is still too early to make any estimates (McKibbin and Fernando, 2020b).

Despite, H7N9 was less significant than SARS, it is important to mention it as it was nonetheless a large-scale epidemic. The first infected person was registered in China in February 2013. According to WHO, there were 1223 proven cases by 2017, and the mortality rate was 40%. The global economic impact was negligible, but it took a toll on China, amounting to 40 billion RMB (Qiu et al., 2018).

**Literature Review.** Sharing the experiences and lessons learnt from the management of COVID-19 crisis, as well as the methods of advising the population through efficient channels, should have been made much easier among the countries. However, it has become obvious that although there are some so-called smart cities and some countries have enormous databases, they were not prepared to use their means and possibilities in cases like this. The study by Allam and Jones concludes that the development and efficient operation of a smart city network could be a massive help in slowing down the spread of an epidemic and preventing the collapse of the healthcare system. In the case of the current deadly virus, the stakeholders have used technological opportunities more successfully. While it took 5 months to identify and give a detailed description of SARS, it also took several months to identify Ebola, and the Zika virus emerging in 2014 could be identified only a year later. In turn, the COVID-19 was identified in 17 days, which – according to the researchers – was due to the efficient recording and sharing of information (Allam and Jones, 2020). In addition to sharing the information about the identification and treatment of the virus, the certified operation of smart networks also has an important role in the recovery of the economy.

Suppose the countries communicate authentically and honestly regarding the health situation of their citizens. In that case, the efficiency of their measures will manage to win the trust of the people and they will dare to travel again, to use the airport services, to visit touristic attractions and sights, to stay in hotels, etc. It is a fact that fear and distrust remains in the people even after the danger has passed. The long-lasting and high-stress level leads to unreal and exaggerated anxiety in the people, even when it has no real basis anymore (Hyams et al., 2002). According to some opinions, the United States should maintain social distancing until 2022 if an efficient vaccine is not discovered soon (Kissler et al., 2020).

Three economists from the American central bank (Fed) and the Massachusetts Institute of Technology (MIT Sloan School of Management) published a study about the economic impacts of the Spanish flu of 1918 by analyzing the timing and volume of restricting measures in the individual countries and regions. Their primary finding was that while pandemics slowed down the economy, the public health interventions did not. They discovered that the economic activity starts a steep and long fall due to a pandemic. Still, in those countries where strict public health measures are taken, both the mortality rate of the epidemic is decreasing and the permanent economic crisis can also be avoided. Indeed, that could be true in the economic and social situation at that time. Moreover, it is unknown for sure if the researchers' conclusions can be valid under the current conditions, too (Correia et al., 2020).



**Figure 1. 1918 Flu Pandemic depressed the economy, but public health interventions did not**  
Sources: developed by the authors on the basis of (Correia et al. 2020).

According to the survey carried out by HRfeed (2020) on a representative sample, nine out of ten companies are affected by the crisis following the pandemic. In turn, 50% of the Hungarian employees expect a further escalation of the situation in the next six months, while 30% do not expect any changes and 10% are unsure regarding the future prospects. Moreover, 40% of the interviewed employees think that their companies' situation will improve over the next six months (HRfeed, 2020).

For controlling the spread of COVID-19, the member states of the European Union have introduced border control again. Therefore those living in the settlements alongside the border and the seasonal workers cannot cross the borders or get to their workplaces. The otherwise justified pandemic-related restrictions obviously raise serious dilemmas because they hinder the flow of cross-border services and transport of goods, ultimately the operation of the EU internal market. The European Union supports the member states to develop harmonized regulations to ensure seamless border crossing for those who require this due to the nature of their work or employment. It is of utmost importance to maintain the free movement for those working in essential sectors, like for example the agriculture and food industry.

The members of the European Council held a meeting on March 26 2020. They committed themselves to do everything necessary to protect their citizens and overcome the crisis, while preserving the European values and way of life. In addition to highlighting the urgency of fighting the COVID-19 pandemic and its immediate consequences, they also urged to start to prepare the measures necessary to get back to normal functioning of the European societies and economies to sustainable growth, integrating inter alia the green transition and the digital transformation (Joint European Roadmap towards lifting COVID-19 containment measures 2020/C 126/01).

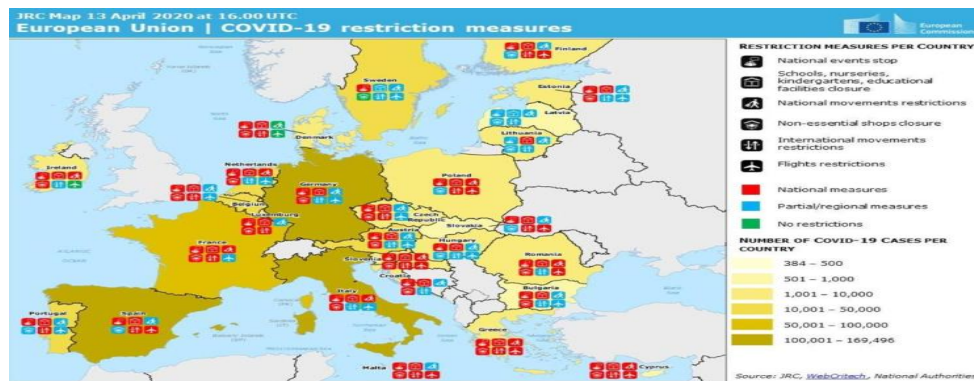


Figure 2. Restriction measures per country

Sources: developed by the authors on the basis of (Joint European Roadmap towards lifting COVID-19 containment measures, 2020).

Figure 3 demonstrates the spread of the virus in the EU-27 countries. Indeed, Italy and Spain show a critically high number of infections and the long-term restrictions impose severe dangers on the economies of these countries. Although there are less infected people in France and Germany, the curve is steeper than desired. Therefore the healthcare services have to face more significant challenges. The curve is flatter in the other countries, which ensures the even load on the healthcare system but depresses the economy for a longer time.

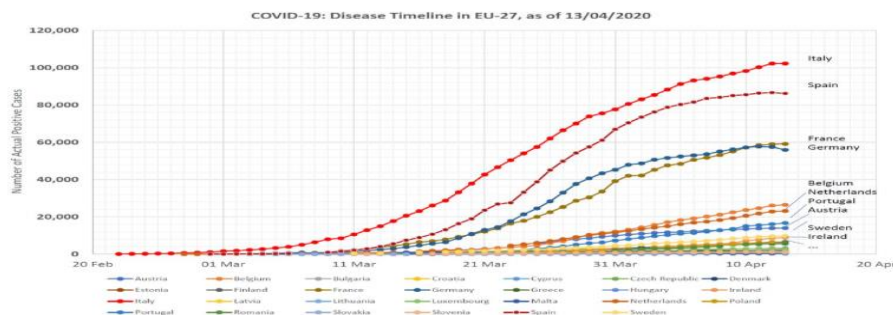
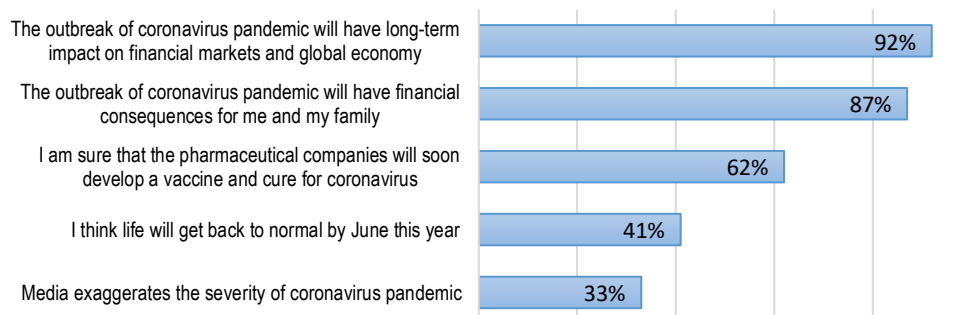


Figure 3. Rapid risk assessment Coronavirus disease 2019 (COVID-19) in the EU

Sources: developed by the authors on the basis of (European Centre for Disease Prevention and Control, 2020).

In light of this, it can be concluded that the free movement will probably be restricted for several more months. The logistics companies can restart transporting goods by observing certain rules if they had to stop working due to the pandemic. Still, for example, the revival of international tourism is yet to happen.

The result of the research concluded in April 2020 in Romania was that 63% of those employed in February still had a safe job in April. Those whose workplaces were secure did mostly intellectual jobs, and the majority of them work in the public sector and the basic services sector, as well as the communication and information technology sector (Erdelystat, 2020). The budget deficit of Romania will definitely exceed 4% or even 5% due to the falling demand and the extra expenditures related to the pandemic (Econ, 2020). Although the government has taken some measures to avoid the collapse of the economy, the experts do not regard these efficient enough. The most significant interventions are as follows: no legal enforcement is initiated for public debts during the state of emergency; bank accounts will not be blocked only in case of criminal convictions; tax fraud investigations will be made only remotely, the tax inspectors do not do onsite visits; the government subsidizes interest on corporate loans. Based on the results of representative research made by Ipsos in March 2020 it can be stated that two-thirds of the Hungarian population do not feel that the media exaggerates the severity of the COVID-19 outbreak (Ipsos.hu, 2020). At the same time, the economic consequences of the pandemic are undisputable for the Hungarian people, just like for the Italian and French people who were severely affected by the virus. However, it is true that approximately three-fourth of the latter two countries think that life will get back to normal by June, while the Hungarian population is much more pessimistic. The higher value purchases are postponed by the Hungarian people in all the examined age groups (64% majority).



**Figure 4. To what extent do you agree with the following statements?**

Sources: developed by the authors on the basis of (Ipsos.hu, 2020).

**Methodology and research methods** This research consist basically of two main parts. Several articles have been published recently on the theoretical possibilities of COVID-19 impacts. Therefore, a lot of experts have made announcements (often of very opposite views) about these impacts. The secondary research aimed to review the published scientific papers about the economic effects and research based on primary data. The references for the current paper were processed alongside these points. The questionnaire aimed deliberately on the age group of 18-30 was compiled in the second phase of this research, based on the areas described in the papers and the experiences of published research projects. The questionnaire could be circulated only online because of the emergency government measures due to the pandemic. The leaders of student unions and academics of four universities present the target group. The questionnaire survey was carried out between April 29 and May 17. In turn, 364 assessable responses were received.

In terms of structure, the questionnaire was divided into three main parts. The first part aimed to explore how the respondents perceive the virus situation in their own country, what changes they can observe in their subject area and some areas of the economy. The second part tried to find out their future expectations in the same areas. Finally, they were asked to provide some demographical data. In addition to the descriptive statistical analysis, the perception of economic impacts was examined with variance analysis concerning different demographic characteristics and the currently studied subject area.

Based on a review of the literature, the hypotheses of this research were formulated.

H1. As the epidemic situation intensified, professional areas split into successful and losing groups.

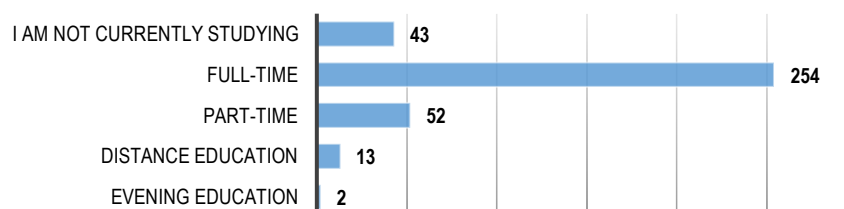
H2. Members of the successful group expect the development of the given sector in the future as well.

H3. Women experience the situation caused by the epidemic more negatively than men.

H4. The negative impact of international tourism is perceived more strongly by city dwellers.

After data cleaning and checking the measurement level of variables, the research evaluation was made using SPSS version 23.0. In turn, the figures were made with Ms Excel 10. In addition to the descriptive statistical analysis, correlation studies were performed for the calculations. As these data did not follow the rules of the normal distribution, non-parametrical methods allowed obtaining the results.

**Results.** The introduction of research results starts with the description of the sample. Those who filled out and sent back the questionnaires were mainly university students from two countries. 57% of the respondents are Transylvanian Hungarians people from Romania, while 43% are Hungarian citizens from Hungary. Only 8% of them did not belong to the 18-30-year-old age group, but these respondents did not change the results of analyses later. There were more female respondents. Therefore, they are a bit over-represented (by 8%). However, this is not distorting considering that currently, the ratio of women in Hungary is 54%, and it is 51,2% in Romania. 45% of the participants were undergraduate university students with baccalaureate, and 55% were graduates. As regards their place of residence, 20% live in the capital, while 18% – in a county seat, 30% – in town and 30% – in the villages. Figure 5 demonstrates that the majority of respondents (almost 70%) are full-time students. They were the first to lose their student jobs when the epidemic started, and they will suffer the most from the long-term consequences because they will step into the labour market when the impact of the crisis is probably the strongest.

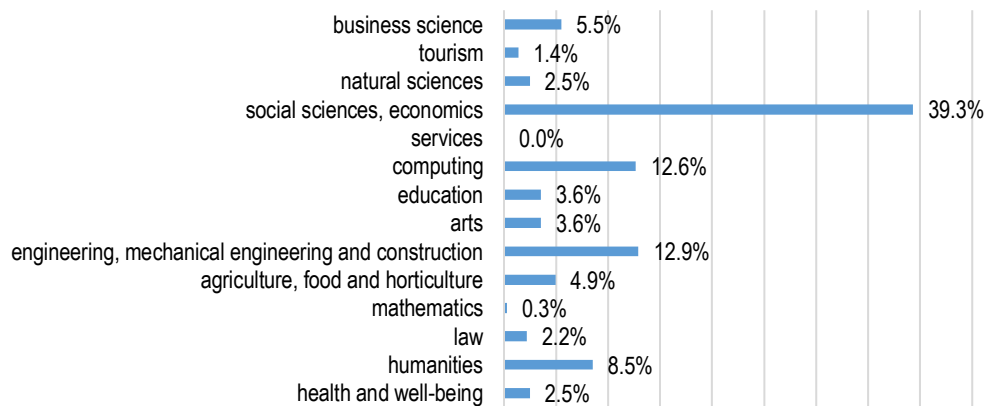


**Figure 5. Student status**

Sources: developed by the authors.

It should note that 30% of respondents currently still work full-time, but 50% of them do not have any job at all. 13% have part-time or remote-working jobs to ensure their livelihood. The students in internships were also furloughed by the companies in the early stage of the outbreak of the pandemic. Therefore they are represented in the survey only in minimal numbers, a total of 3% because only a tiny proportion of students can participate in internships at the moment. Considering the general education subject areas determined by OECD, the respondents were requested to specify in which professional area they will get (or have got if they already graduated) their degree based on their university course. According to this, it can be concluded (Figure 6) that none of them studied hospitality or veterinary sciences. In contrast, most

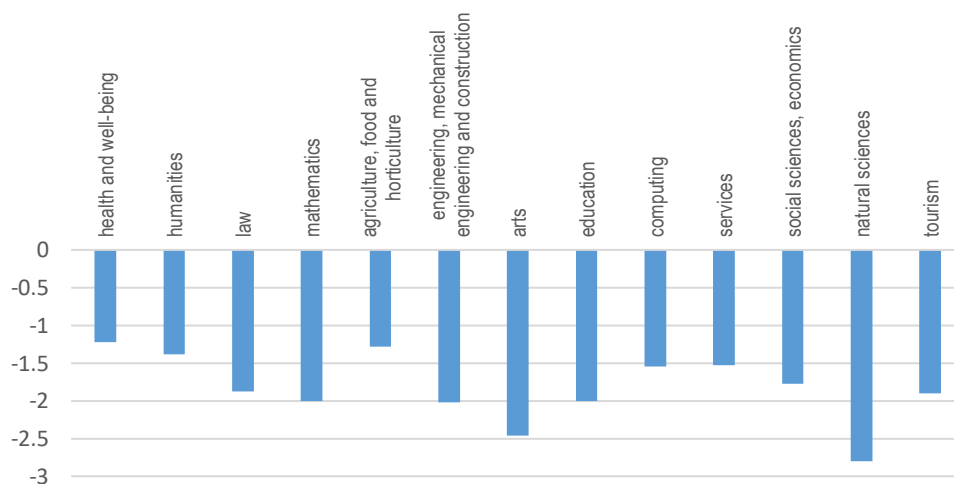
of them (almost 40%) studied or graduated in the field of social and economic sciences while 5% of them – in business sciences. Therefore, more than half of the respondents had basic economic knowledge, and 24% of them belonged to the IT sector and engineering sciences. The number of those coming from the healthcare and pedagogy areas was strongly underrepresented. It was probably due mostly to the fact that none of the selected universities has courses in pedagogy or healthcare.



**Figure 6. Subject area of studies**

Sources: developed by the authors.

The first question in the questionnaire aimed to find out how, in their opinion, the pandemic affected the subject area they were currently studying. The responses could be given on a scale of 7, between -3 and +3, depending on whether they expect positive or negative impacts. In contrary to the expectations, they indicated negative trends on average in all the areas (Figure 7).

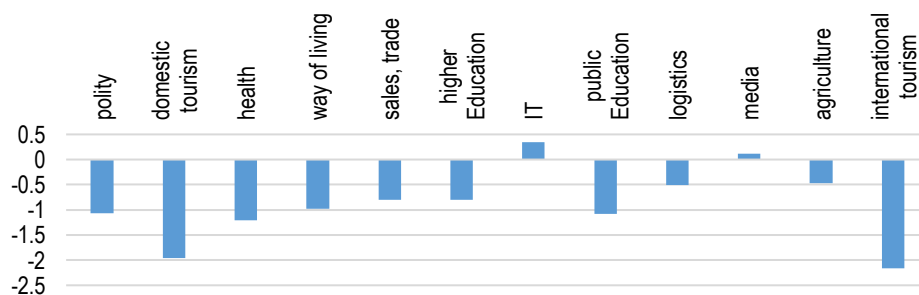


**Figure 7. Average evaluation of subject areas**

Sources: developed by the authors.



The strongest negative impact was perceived in the area of hospitality and arts. The former was probably due to the global travel restrictions and the significant limitations on domestic travels;. At the same time, the latter group felt this because the state subsidies dropped radically and almost immediately after the outbreak. However, those areas which were regarded «winners» during the pandemic, for example, the information technology, also received negative evaluation. In turn, those studying in this area think that the current boom would not last long and the general economic downturn would not avoid IT sector, either. Students from the healthcare courses did not expect positive changes either, despite the increasing attention towards them and the special emphasis which has been recently given to the problems in the healthcare sector. A lot of publications report about the necessity of developments in this area. Even law, which can be regarded as a neutral area, received only -2 out of the three values on the negative scale. There is some controversy in the evaluation of the areas of the economy. There are positive average values in the expected areas, like IT (Figure 8). The respondents expect that the pandemic will have a positive impact on media, too, although to a lesser degree than on IT. It is well-known that the different types of media have had a great role in helping to share information in connection with the virus. Millions of people started to follow news sites, government portals and other online sources to get to the latest information about the situation globally and/or in their immediate environment or country, the number of infected with the virus and the state measures. It was surprising that the lifestyle received a negative average value. However, there is supposed that due to the virus, a significant proportion of people would try to protect their health more consciously, eat healthier and start to exercise more. Based on this, hypothesis H1 is rejected.



**Figure 8. Average evaluation of economic sectors**

Sources: developed by the authors.

It is interesting that regarding the way of life, the female respondents predicted – although not significantly - greater negative impact on average (-1,1) than males (-0,8).

Regarding healthcare, however, there was a significant difference in terms of perception ( $p=0,03$ ) between the genders. Women expected a stronger negative effect on average than men, with an integer value. Based on this, Hypothesis H3 is considered partially acceptable. There was no deviation in opinions between the different levels of school qualifications. The respondents with secondary school qualifications or university degrees evaluated the individual economic sectors similarly. There was again a significant difference ( $p=0,017$ ) regarding the logistical services according to the place of residence. The urban people living in cities or the capital had the same opinion about these, while the people living in villages typically expected a twice as strong negative impact.

The average evaluation of residents in county seats was between the two extremes. The variation in opinions was similarly significant ( $p=0,04$ ) in the area of international tourism. Residents in the capital were more pessimistic about the aftermath of the pandemic and had stronger negative expectations for the



future. The reason for this might be that the residents of the capital tend to travel abroad more. Therefore the effect of the virus on tourism would bring more significant changes in their life. The people of both countries had a very similar opinion about almost all the areas. Based on this, the hypothesis H4 is accepted. The only exception is the prediction in connection with the IT sector, in which case the Hungarian respondents gave significantly more positive values ( $p=0,00$ ) than the citizens of Romania. While the Transylvanian Hungarian people envisaged no changes in the sector, the Hungarian respondents banked on changes in a definitely positive direction. The opinion of the people of the two countries was significantly divergent in the area of logistics ( $p=0,013$ ) and healthcare ( $p=0,032$ ). While in the case of the former, the Hungarian people did not forecast a strong negative impact, this group expects much stronger negative consequences in the healthcare sector after the pandemic. It might be due to the numerous articles published in the Hungarian press about the unsatisfactory state of affairs in the healthcare sector.

Students gave the IT sector significantly more positive evaluation ( $p=0,046$ ) at correspondence courses, those who had already found their place in the labour market, than the other groups of respondents. The average expectation of correspondence students is many times higher than the average expectation of full-time or distance learning students and the total group of respondents. Based on this, although the group formation was only partially justified. Thus, the hypothesis H3 is accepted because the respondents in the IT sector were the least negative, and they forecast development for the future.

Regarding the expected impact on the way of life ( $p=0,027$ ) and healthcare ( $p=0,026$ ), the students in the different subject areas had significantly divergent opinions. Table 1 summarizes what kind of changes and to what extent the students in each subject area expect in the individual sectors of the economy following the COVID-19 pandemic. Those with stances above and below the group average can be clearly separable from each other. Only the students in the business studies courses changed their position, probably because these students are doing almost exclusively full-time courses, who typically expect more positive changes in terms of a lifestyle than the students studying in other modes of education.

**Table 1. Expected degree of economic changes based on groupings by subject areas of studies**

Economic sector	Subject area	Mean	Economic sector	Subject area	Mean
Healthcare	arts	-2,69	Way of life	tourism	-2,40
	tourism	-2,60		arts	-2,15
	education	-1,85		law	-1,88
	business studies	-1,65		engineering, mechanical and construction engineering	-1,36
	engineering, mechanical and construction engineering	-1,55		education	-1,15
	law	-1,50		social sciences, economics	-1,01
	social sciences, economics	-1,22		information technology	-,98
	information technology	-,98		business studies	-,80
	agricultural, food and horticultural sciences	-,56		natural sciences	-,44
	humanities	-,55		humanities	-,35
	natural sciences	-,33		healthcare and welfare	0,00
	healthcare and welfare	,56		agricultural, food and horticultural sciences	0,00
	<b>Total Mean</b>	<b>-1,21</b>		<b>Total Mean</b>	<b>-,98</b>

Sources: developed by the authors.

**Conclusions.** In general, it can be concluded that the greatest differences in the opinion of respondents could be observed in the area of lifestyle and healthcare. Due to the unavoidable shutdown

of the economy and the government restrictions, the future of tourism is uniformly considered negative. Moreover, the difficulties in travel and decreasing supply are expected even after the pandemic and lifting the restrictions. Negative aftereffects are not predicted in higher education, sales and trade. However, that more considerable decline is envisaged in the area of public education. The respondents regarded the IT sector and media as clear winners in this situation. Based on the responses, it can be concluded that negative labour market trends are expected. Therefore probably the young generation currently studying in higher education will be one of the biggest losers of the virus in the long run. They have to enter and adapt to a weaker economic situation and a labour market with a changed balance of power.

The Harvard Business School have requested several experts to review how the world of work can change following the pandemic. In their opinion, more emphasis will be given to trust in the corporate culture. The quick spread of the epidemic allows realizing that the individual's wellbeing is closely related to others. The companies using remote working solutions should have a proven practice to ensure that the staff members can stay in meaningful personal contact with each other and nobody feel isolated or alienated within the company or just left out from the life of the organization.

The experts think that the pandemic will result in great changes in the offices, homes, schools and places of work. The protocol (health check), which has been widely implemented at the airports in Asia, will be introduced everywhere in the office buildings, schools and major travel hubs.

However, it is still unknown what expects companies, small enterprises, service provider and manufacturing firms, which had to cut back or totally shut down their production due to the pandemic. If they would be able to restart after the pandemic and their products will be in demand again on the consumer market, the workload will be enormous. Therefore, their employees can expect long hours in overtime working to fulfil the market demands. In the meantime, new employees should probably be hired to solve the crisis, who will start at the companies in a very challenging time without any experiences. Nevertheless, many recruits will definitely be scared and leave the "boat". Therefore, the fluctuation in staff may render the operation of companies even more difficult.

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#### **Інновації у системі охорони здоров'я: зміни на ринку праці внаслідок пандемії**

Пандемія COVID-19 мобілізувала наукову спільноту до дослідження питань економічних та соціальних наслідків її дії на глобальному рівні. Пандемія обумовила виникнення незворотніх змін в політичній, економічній стабільності, а також структурних змін на ринку праці. Авторами зазначено, що попри прийняті урядом Угорщини заходи протидії економічному колапсу, пандемія значно трансформувала суспільний устрій. Так, низка експертів наголошують на неефективності прийнятих заходів. Суспільство було позбавлено соціальної комунікації, вільного пересування, що обмежило можливості туризму та відпочинку. Крім цього, значна частка населення втратила роботу. Економічні наслідки пандемії є незаперечними для угорського народу, так само як для італійців та французів, які серйозно постраждали від дії пандемії. Авторами доведено, що дві третини населення Угорщини не відчуває перебільшення зі сторони засобів масової інформації щодо тяжкості спалаху COVID-19. Метою статті є аналіз можливих напрямів фінансової підтримки економічних секторів, які найбільше постраждали від впливу пандемії, забезпечуючи повну безпеку громадян. З іншої сторони, на макроекономічному рівні постає питання щодо довгострокових наслідків впливу пандемії COVID-19, тобто яким чином країни зможуть подолати зростання безробіття та зміни в торгових відносинах між країнами. Підґрунтям дослідження стали результати анкетування лідерів студентських спілок та вчених чотирьох університетів. Вікова група респондентів – від 18 до 30 років. Метою опитування було визначення ставлення респондентів до економічних наслідків, спричинених пандемією. Методологія дисперсійного аналізу дозволила визначити, як різні соціальні групи, сгруповані за демографічними характеристиками та предметними сферами, сприймають економічні наслідки COVID-19. Емпіричні результати дослідження свідчать про наявність найбільших розбіжностей в ставленні респондентів до змін у способі життя та охорони здоров'я. Встановлено, що пандемія значно змінила умови праці (перехід від роботи в офісі до віддаленого робочого місця), навчання у школах та закладах вищої освіти. У статті доведено, що найбільш значущі негативні тенденції очікуються на ринку праці. Таким чином, молоде покоління, яке нині навчається у закладах вищої освіти, стане одним із найбільших постраждалих від вірусу в довгостроковій перспективі.

Ключові слова: COVID 19, пандемія, економічний вплив, зміни тематики.

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