Developing an analytical database for the purpose of analyzing the impact of the COVID-19 pandemic on the labor market in Serbia

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Abstract: The COVID-19 pandemic has had a negative impact on economic growth rate and endangered many jobs. To consider the effects of the coronavirus pandemic in Serbia, the process of developing an analytical database is presented in this paper. Publicly available data from the Statistical Office of the Republic of Serbia were used in the analysis stage. The paper comprises three chapters. Chapter 1 discusses the impact of the pandemic on the global, and Serbian national economy. Chapter 2 provides theoretical assumptions referring to decision support systems and business intelligence. Chapter 3 presents the development of an analytical database for the purpose of analyzing the impact of the COVID-19 pandemic on the labor market in Serbia. This chapter also describes the process of data collection and transformation, as well as feeding the data into the analytical database, as well as data analyses that illustrate the impact of the coronavirus pandemic on the labor market in Serbia. Microsoft Excel and Microsoft Power BI software was used for the development and implementation of an analytical data model. Preparation of data for feeding it into the analytical database was performed

in Microsoft Excel, whereas Microsoft Power BI was used for the analytical part.

Keywords: analytical data model, COVID-19 pandemic, labor market, unemployment, industries

1. Introduction

The COVID-19 pandemic has led to a great decline in economic activity around the world and caused an economic crisis that affected all business segments. The industries most threatened by the pandemic are also those that employ the most workers, such as tourism and hospitality industry, transport, and many others.

The projection of the Organization for Economic Cooperation and Development (OECD) shows that the unemployment rate will be much higher than at the peak of the global economic crisis of 2008. Based on publicly available data, the most vulnerable groups are unskilled workers, younger population, and women. To avoid collapse in the moments when the global economy was at a complete standstill, many companies were forced to switch to the home office model, and perform many of their tasks online. To prevent the spreading of the virus, and preserve the health of their populations, many countries resorted to radical measures. Borders were closed, mobility was restricted, even curfews were introduced at certain periods; in some countries, the curfew is still in force. All this has forced companies to close down particular sectors, and consequently, to a large number of layoffs, salary cuts, and overall drop in production and availability of services. The crisis has not only affected large companies which closed temporarily, or operated at a minimum capacity, but smaller ones as well. At the end of the first trimester of 2020, when it was believed that the pandemic was in full swing, the whole country closed down, and everything stopped. Serbian industry operated at a minimum capacity, most international companies sent their employees to work from home, whereas production facilities were closed down completely. National governments had to find a way to save their industries, and thus the global economy, so in agreement with the companies, they paid financial aid for all employees in the public and private sector. That way, they managed to save a large number of jobs, and prevent a complete economic collapse.

2. Impact of the coronavirus pandemic on the global economy

Since the beginning of last year, the world economy has been facing the greatest challenge since the global crisis of 2008. It is predicted that the spread of the virus this year will seriously affect the economy and job security, although these consequences were felt in the previous year as well, in all segments. Industries that have been hit the hardest by the pandemic include global financial markets, air traffic, transport, industrial production, sales, investments, hospitality industry, etc. [1]
IMF Director Kristalina Georgieva stated that the economic growth would be lower by 0,5% in regard to the predicted 3,3% in 2020 (Figure 1). S&P estimates are even more dire. Namely, their predictions state that economic growth will fall to miniscule 0,4% compared to the expected 3.3%, which is the slowest recorded growth ever since the economic crisis of 1982. S&P believe that the measures adopted to combat the virus have pushed the global economy into recession [6].
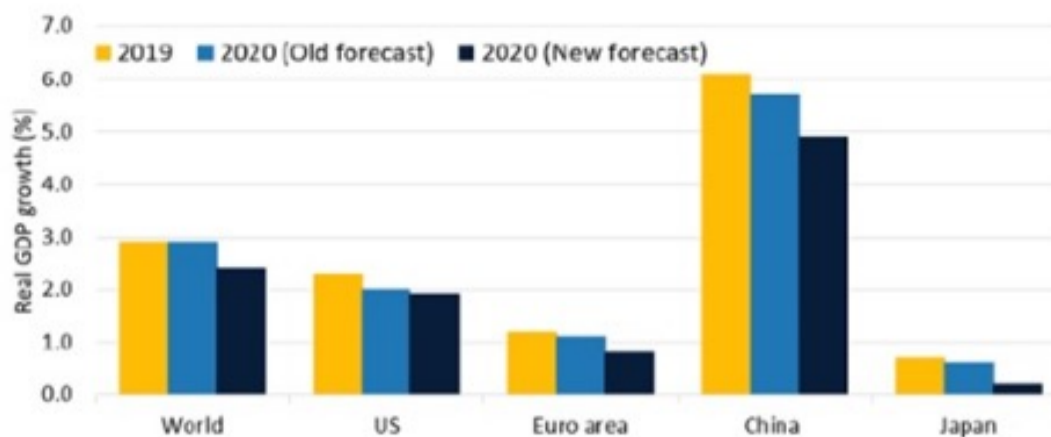
Figure 1. Global economic growth rate [8]

Another organization that has spoken about the new estimates of economic development rates for 2020 is OECD – Organization for Economic Cooperation and Development. The graph above shows their estimates. As we can see, OECD estimates say that the Chinese economy will only grow by 4,9% in regard to the previous estimate of 5,7%. The feature that characterizes the current crisis is that it is the first crisis in history that has managed to make things worse on a global level in such a short time. The crisis caused by the COVID-19 pandemic will hit the global economy hard, and the consequences will be felt by everyone, whether directly, or indirectly.

This epidemic has caused such severe economic consequences partly because of the drastic measures that countries around the world have taken to prevent the spread of the virus. For example, one of the more restrictive measures implemented by China was to close down companies across the country. This measure greatly affected economic activity on a global level, because a large portion of global production is dependent on importing parts from China.

The French Minister of Economy Bruno Le Maire believes that the epidemic is an event that will completely change the current development. The outbreak of the virus and its consequences have revealed the unreasonable dependence of the whole world on China. Many sectors have long depended on Chinese raw materials or products. For example, 95% of the supply of electric batteries and 80% of raw materials in the healthcare industry originate from China or Asia [8].

Another industry that has been hit particularly hard by the aforementioned measures is the automotive industry. Specifically, according to research conducted by He and Zill, the impact of stopping production facilities in China has spread as a domino effect to the rest of the world. Due to the imposed measures, China reduced car sales in the country by a staggering 92%. The Tesla company postponed the production of their new model 3, while Volkswagen had to postpone production in all their Chinese plants, which are partnered with SAIC Motors. In February 2020, the South Korean Hyundai became the first major car manufacturer to temporarily shut down production due to the lack of parts; on April 7, Nissan Motors announced that they had laid off 10,000 workers in the USA; Honda announced that half of their workers in America would go on temporary leave. The consequences are also being felt in the Japanese market. According to the Japan Automobile Manufacturers Association, the Japanese new-vehicle market has dropped by 9,2%. The European automobile market has not been spared either. Interruptions in production have hit the employees in Germany the hardest, followed by France, Italy and Spain. According to the research of the European Automobile Manufacturers Association (ACEA) on the impact of the crisis on the European automotive industry, which covered the countries of the EU and the UK, about 1,200,000 jobs in car production alone have been hit by factory shutdowns, and these temporary shutdowns have also led to the loss of 2,400,000 motor vehicles. Despite the gradual lifting of the restrictions regarding the pandemic and re-opening of certain factories across the EU, it will take a long time for the automotive industry to return to normal functioning. Like the automotive industry, all other branches of the global economy must expand their network of suppliers and must not allow themselves to be entirely dependent on a single country or a region [8].

The coronavirus pandemic caused a global health crisis that soon developed into a global economic crisis, which eventually led to a labor market crisis. As the pandemic continued to spread, and the predictions of the health organizations became more pessimistic, any assessment of the situation in the labor market has become uncertain, rendering any projections about ways to develop business impossible.

In such situations, we can only rely on the data from the great economic crisis of 2008–2009. The employment recovery back then was even slower and more painful, which hindered economic development and growth of productivity in the long run. It took more than a decade for the unemployment rate to return to the pre-crisis level, where the younger population has never fully recovered. It could be argued that economy and employment have separated from each other, so while labor productivity continues to grow, salaries and labor incomes have fallen behind. As a result, we have inequality that continues to grow. The conclusion that arose is that the previously widely-accepted "trickle-down economics", i.e. the principle "Don't let it pour, let it trickle", was a great failure, and that such mistakes must not be repeated in the current labor market crisis [8].

According to some data [6], it is estimated that the current number of employed is 3,3 billion, whereby 2 billion work in the informal, or the "gray" economy, i.e. approximately 62%. It is estimated that 1,6 billion among these 2 billion will be greatly affected by the crisis, due to lockdown measures or work in high-risk sectors.

A large number of young people are affected by the current situation. Unemployment has hit 67,6 million of young people around the world, which is equivalent to 13,7% of the total youth workforce. A much greater percent of the youth workforce did not even have a job when the pandemic broke out, and more than three quarters worked in the informal economy which makes them even more vulnerable in these situations [6].

Therefore, it can be concluded that the crisis caused by the coronavirus affects young people in three ways:
» interruptions in education, training and work-based learning;
» greater difficulties for new entrants into the labor market;
» loss of employment and income.

At the beginning of the crisis, 178 million young people were employed in the sectors, such as accommodation, food and catering, and retail. Measures to combat the virus have led to a reduction in the working hours, lay-offs and a major loss of income, according to the global survey conducted by ILO - International Labor Organization, not to mention 30 million that have lost their jobs since the outbreak of the pandemic [7] .

The pandemic has also revealed a great gender inequality in the labor market in pandemic conditions. Although there has been some progress over the past decades, gender disparities have been significant in the labor markets around the world even before the crisis. They include differences in gender participation in the workforce, income and employment quality. And now, the crisis caused by COVID-19 disproportionately affects women in the business world in the following four ways [7]:

» Almost 510 million, or 40% of women around the world work in the sectors that have been hit the hardest (as opposed to 36,6% men);
» 55 million, or 73,2% of employed registered as domestic workers are at risk of losing their job and income due to blockades and lack of social security coverage;
» Women make up more than 70% of healthcare and social workers. Although they are a majority in the sectors most exposed to the virus, many of them are in unskilled or low-paid positions;
» Finally, the closing of education centers, care services and schools, as well as the need to support older relatives have additionally exacerbated inequality.

According to a report by the International Labor Organization [1], the crisis sparked by the coronavirus pandemic has caused the greatest decline in accommodation and food services, manufacturing, trade, real estate, administration and business, as well as other business activities and services, thus putting 38% of the workforce at risk. In 2019, there were 1,297,400 employees in these sectors in Serbia (47,5% of the total number of employed), whereas sectors for which the decline was estimated as moderately high employed 201,400 people.

According to the report of the World Bank [2], and starting from the number of employees by sector, it is predicted that the impact of the coronavirus in Serbia will be most keenly felt in the production of durable goods, because 19% of the workforce in Serbia is employed in the manufacturing industry. According to the same report, manufacturers-exporters employ the largest number of workers compared to other sectors that might be affected by the crisis. Due to a decline in exports and increasingly complex imports of raw materials during the pandemic, the demand for durable goods drops in times of great crisis.

The service sector is one of the most affected sectors in the world. Serbia is no exception, because the service sectors and small businesses have been hit the hardest by the crisis. According to a survey conducted by the Chamber of Commerce of Serbia and USAID (Figure 2), 22% of the respondents temporarily suspended their business, while 26,6% partially suspended their business activity. Of the total number of respondents, half stated that their income in March 2020 dropped by more than 50% compared to 2019, whereas one third experienced a drop of income of 80% [2].
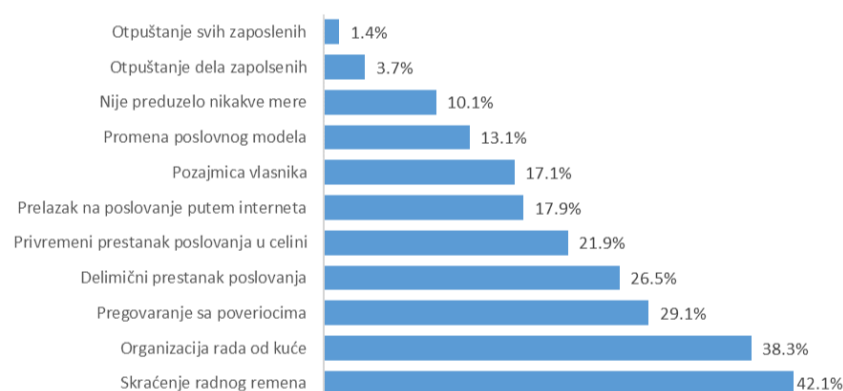

Figure 2. Steps taken by businesses in Serbia due to reduced business activity caused by COVID-19 pandemic in % [1]

According to the same survey, about 35% of self-employed entrepreneurs and micro enterprises expressed concern over the 80% drop in income compared to 2019; about 7% of medium-sized enterprises and 15% of large companies stated that they expected a drop in revenue on the same scale. Although a significant number of respondents keenly felt the consequences of the pandemic, only 5,1% of the respondents stated that they laid off all, or part of the workers (Figure 2). Of that number, 13,2% were companies in the sector of tourism and hospitality, 10,1% were expert, scientific, innovative, technical and administrative companies, 7,5% were from the sector of trade, and 7,7% from the construction industry [3].

The drop in the number of employees arose as a consequence of the reduced volume of business. The greatest decline in the volume of business was recorded in the sector of trade and hospitality (94,9%), followed by a 65,6% drop in trade. Food and drink companies experienced a 64% drop. There was also a drastic decline in the volume of business in 83,6% of companies in the creative industry, 44.8% in expert, scientific, innovative and technical activities, as well as 36,4% in the IT sector [4]. According to the data of the Serbian National Employment Service, the recorded decline in labor market demand in April and March can lead to increased unemployment [5].

In order to analyze the impact of the coronavirus pandemic on the labor market in Serbia, the following chapters will present the theoretical foundations of analytical and relational databases, and describe the process of building an analytical database for the purposes of this paper.

3. Business decision support systems and business intelligence (BI)

3. A decision support system (DSS) is an information system that aids a business in decision-making

Activities that require judgment, determination, and a sequence of actions [18]. The purpose of a decision support system is to create detailed informative reports by collecting and analyzing data, which distinguishes them from common operational applications used for data collection, but not data analysis. Decision support systems are highly applicable in all sectors of a company. One of their main applications in the organization is real-time reporting. This is best seen when planning inventory and managing

stock minute by minute. In such an inventory system, the organization demands data on the stock level in real time so that they could be replenished "just in time", thus preventing delays in production, and avoiding the so-called domino effect [16].

Decision support systems (DSS) and business intelligence (BI) often go hand-in-hand. Experts consider BI the successor of DSS, since DSS systems are known to be one of the integral elements of business intelligence systems, together with data mining [19, 20, 21]. While BI covers a broad category of applications, services and technologies for collecting, mining, analyzing and accessing decision-making data [22], DSS applications are more specialized, and designed to support certain decisions. For example a business DSS can help the company project revenue over a period of time by analyzing data on the past sales and current variables [19].

DSS comprises three main components [19] (Figure 3):
» Model Management System – this component stores models that can be used in decision-making. The models are used in decision-making when forecasting demand for a good or service. Models can be classified according to application:
  » Statistical models – These models are used to establish relationships between the occurrences of an event and various factors related to that event. For example, they are used to analyze changes in the market by category.
  » Sensitivity analysis models – Used to provide answers to what-if situations in the organization, i.e. they are used for analyses that predict the end result of an activity/process.
  » Optimization analysis models – Used to find optimum value.
  » Forecasting models – Include regression models, time series analysis, and other models for business plan analysis.
» User Interface – component that includes tools that help the end-user of a DSS to navigate through the system.
» Knowledge Base – includes information from internal sources (information collected in a transaction process) and external sources (online databases) [16].
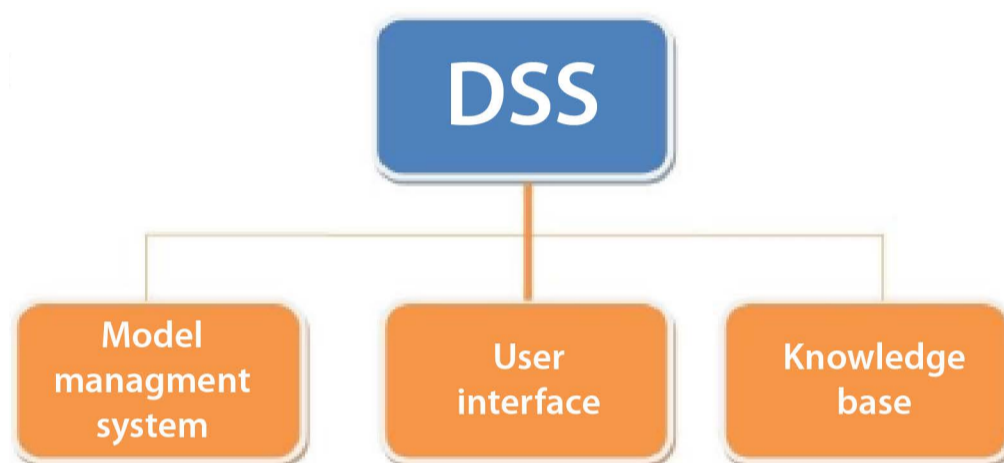

Figure 3. The main components of the decision support system

Decision support systems have their advantages and disadvantages. Advantages of DSS are:
» A decision support system increases the speed and efficiency of decision-making activities. It is possible, as a DSS can collect and analyze real-time data.
» It promotes training within the organization, as specific skills must be developed to implement and run a DSS within an organization.
» It automates monotonous managerial processes, which means more of the manager's time can be spent on decision-making.
» It improves interpersonal communication within the organization.
Disadvantages of DSS are:
» The cost to develop and implement a DSS is a huge capital investment, which makes it less accessible to smaller organizations.
» A company can develop a dependence on a DSS, as it is integrated into daily decision-making processes to improve efficiency and speed. However, managers tend to rely on the system too much, which takes away the subjectivity aspect of decision-making.
» A DSS may lead to information overload because an information system tends to consider all aspects of a problem. It creates a dilemma for end-users, as they are left with multiple choices.
» Implementation of a DSS can cause fear and backlash from lower-level employees. Many of them are not comfortable with new technology and are afraid of losing their jobs to technology [16].

On the other hand, business intelligence (BI) is a combination of processes, architecture and technology for transforming collected data into useful information for the end-user [20]. This term from the field of business analytics often refers to a range of tools that provide quick and easy insight into the current state of the company as an organization based on available data [17]. Business intelligence is descriptive and tells us what is happening now, as well as what has happened in the past that led to the current state. In the past, business intelligence systems could only be used by information technology experts, however, as BI tools have become more intuitive and easier to use, they can now be used by a large number of users from various organizational domains. There are two types of business intelligence - traditional BI in which IT experts use internal transactional data to create reports, and modern BI in which business users use intuitive systems to analyze data much faster than before.

Organizations still mostly opt for traditional BI for certain types of report. For example, periodic financial statements, since data sets are mostly standardized and predictable. When it comes to modern BI, organizations use this type when real-time insight is needed, as it is constantly changing. The reason is the speed of response needed to obtain as accurate results as possible.

There are business intelligence techniques that can be used by companies to obtain useful data that will be later used in decision-making.

The following BI techniques are the most common:

» Analytics – This technique involves the study of available data to gain insight into market trends and conditions. Companies use analytics to make sense of the data they possess and make better business decisions based on them.

» Predictive modeling is a technique that utilizes statistical parameters to create models that could be used in forecasting probabilities and trends. With predictive modeling, it is possible to predict the value for a particular data item as well as the attributes.

» OLAP, or online analytical processing is a technique for solving analytical problems with different dimensions. The most important value in OLAP is its multidimensional aspect that lets users identify problems from different perspectives. OLAP could be used to complete tasks such as client management, budgeting, financial forecasting, etc.

» Data mining is a technique for discovering patterns in huge datasets and often incorporates database systems, statistics, and machine learning to find these patterns. Data mining is an integral process for data management as well as the pre-processing of data since it ensures appropriate data structuring.

» Model visualization – this technique is used to transform the discovered facts into histograms, plots, charts and other visuals that aid [17].

BI tools are all about helping you better understand data, because understanding data correctly helps one make better business decisions. Here's a rundown of a few popular business intelligence tools.

» SISENSE – this software, i.e. BI tool is very user-friendly and allows everyone within an organization to manage, analyze and visualize complex datasets without involving the IT department. Since this tool uses in-chip technology, data processing is faster compared to other BI tools.

» SAP Business Intelligence provides an array of advanced analytics solutions including machine learning, BI predictive analytics, and planning and analysis. This enterprise-level applications for client/server systems offers data visualization and analytics applications, reporting and analysis, mobile analytics and office integration. SAP is intended for higher company sectors.

» Dundas BI is a BI tool that allows users to connect to multiple data sources in real-time. It provides great visualizations in tables, charts and charts that could be customized and viewed from mobile devices and desktops.

» Power BI – this tool provides cloud-based BI services. In combination with the Power BI Desktop application, Power BI Services offer the possibility of storing and linking data from different sources, in addition to data analyzing and processing. The key components of this tool, in addition to the above, include Power BI Mobile Apps, Power BI Gateway, Power BI Embedded, Power BI Report Server and Power BI Visuals Marketplace. [17]

For the purpose of analyzing the impact of the coronavirus pandemic on the labor market in Serbia, Power BI and Microsoft Excel tools were used in the paper, as described in the next chapter.

4. Developing an analytical database

4.1 Collecting data to analyze the impact of COVID-19 on the labor market

For the purpose of analyzing the impact of coronavirus on the labor market in Serbia, data available on the official website of the Statistical Office of the Republic of Serbia, as well as websites that cover data about the number of new cases and deaths from COVID-19 were used [9, 10, 14]. Monthly statistical bulletins containing data on the number of employed persons per month, as well as records on the number of unemployed were downloaded from the website of the Statistical Office of the Republic of Serbia [5, 12]. The analysis of the impact of the COVID-19 pandemic on the labor market in Serbia was done for the period between January 2019 and September 2020.

The most important step in the development of an analytical model is the preparation process, and data transformation for further analysis. Accordingly, available data was fed into MS Excel, transformed using the Power Query tool, and finally prepared for loading into MS Power BI software. All dimension and fact tables were created in this way. Each table was assigned an adequate name in line with its content.

4.2 Developing an analytical data model

In order to consider the impact of the COVID-19 pandemic on the labor market in Serbia, an analytical data model was created. Due to the structure of input data, two fact tables were created for the purpose of analyzing the impact of the pandemic on the labor market in Serbia, one for analysis by activity (EmployeeByActivity), and the other for analysis by employment status (StatusEmployee) (Figure 4). In addition, based on available data, the following dimension tables were also created: Employer type, Business activity name, and Date table. Figure 4 shows the analytical data model created in the Power BI software, which was the basis for further analysis.
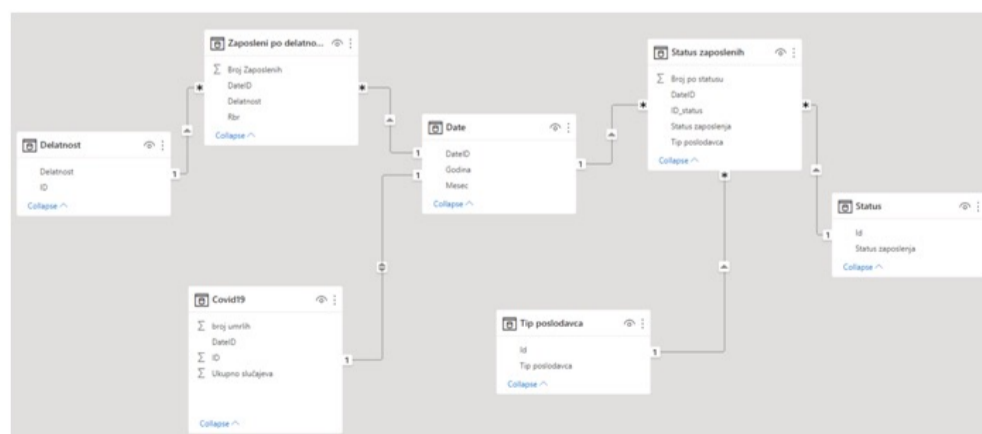

Figure 4. Analytical model

4.3   Analysis of the impact of the COVID-19 pandemic on the labor market in Serbia

Based on the analytical data model and publicly available data, the analysis of the impact of the coronavirus pandemic on the labor market in Serbia was conducted. The analysis covers the period between March and September 2019 and 2020. The reason for this is the fact that the pandemic was declared in Serbia in March 2020, and a state of emergency was declared in April. After the measures were relaxed, the number of new cases and deaths had begun to rise rapidly, so that, according to official data, the record in both categories was reached in July 2020 (Figure 5).
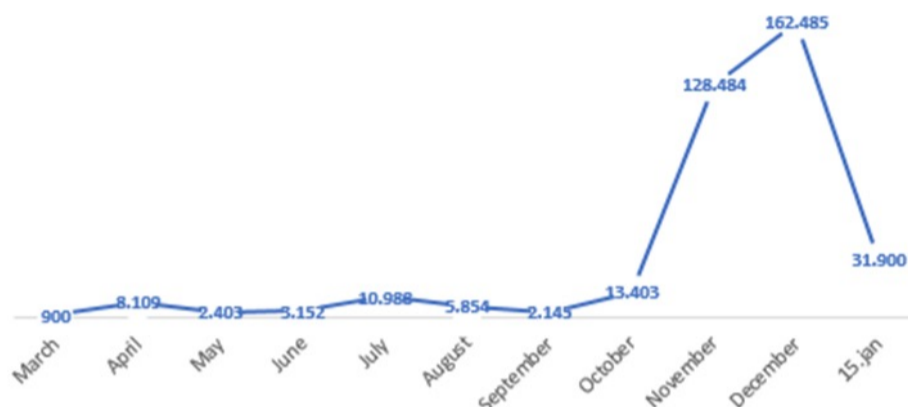
Figure 5. Number of confirmed cases of COVID-19 in 2020

In order to see how the coronavirus pandemic affected the labor market in the observed period, analyses based on the analytical model shown in figure 9 were created. One of the first analyses shows the total number of full-time employees in two consecutive years (Figure 6).

Figure 6. Total number of full-time employees by month over two consecutive years

In order to see how the coronavirus pandemic affected the labor market in the observed period, analyses based on the analytical model shown in figure 9 were created. One of the first analyses shows the total number of full-time employees in two consecutive years (Figure 7).
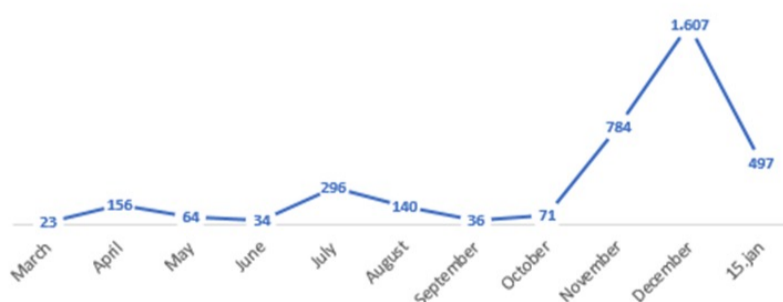
Figure 7. Number of deaths due to COVID-19 in 2020

Figure 7 shows the total number of full-time employees by month over the period of two consecutive years. Based on the diagram, it is clear that the number of full-time employees was higher in all months of 2020 compared to the same month of 2019. What is also visible is that the figures for 2019 are mostly stable - about 2,000,000 employed people, whereas if we look at January and February of 2020, there is a noticeable growth of full-time employment by 2,5%, i.e. 53,000 new employees. A slight drop in the number of full-time employees occurs in February and March 2020 and it equals 0,2%, or 5,000 people. However, with the lifting of the state of emergency in May 2020, the number of full-time employees begins to grow again by 4,5%, and there are no major changes until September. According to the monthly bulletin of the Statistical Office of the Republic of Serbia for September 2020, the total recorded employment for that month is higher by 2,5% (53,734 new employees) compared to September 2019. The number of full-time employees in legal entities increased by 54,161 new employees, whereas the number of new employees in enterprises was 10,796.

Bearing in mind that the pandemic did not have a negative impact on full-time employees, the aim of the next analysis was to determine the impact of the pandemic on temporary employees. Based on the obtained data shown in Figure 8, the number of temporary employees began to decline from March 2020, when the coronavirus pandemic was officially declared, reaching its lowest point in April 2020, during the lockdown. Starting in May 2020 when the lockdown was lifted, the number of temporary employees began to increase, approximately reaching the level of February 2020. This suggests that the number of seasonal employers/workers in 2020 had decreased significantly compared to 2019. If viewed on a monthly level, the average difference is 9,000 employees, the biggest difference being in June – 10,000 employees, and somewhat lower for the remaining two months July – 8.000 and August – 9.000. In percentage terms, there is a 12% decline with regard to the same period last year. Figure 9 shows the overview of the number of temporary employees in the same period. This includes all seasonal workers and people employed through youth and student cooperatives. The chart shows significant oscillations depending on the time of the year. In order to best illustrate the impact of the coronavirus pandemic on this employee category, we will compare data for summer 2019 and the same period in 2020. The chart with filtered data is shown in the figure below (Figure 8).
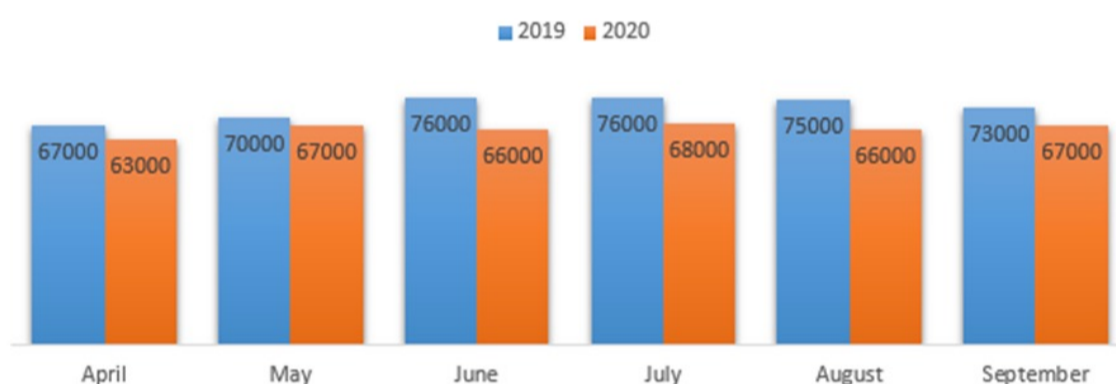

Figure 8. Temporary employees – from the beginning of lockdown

Based on available data, the analysis of the total number of unemployed people over two consecutive years was conducted (Figure 9). Record unemployment in 2019 was recorded in February –569,778 according to the official data of the Statistical Office of the Republic of Serbia. In the period between February and September, the number of unemployed declined by 49,217 and was 502,561 people in September. In early 2020, i.e. more specifically in January, the number of unemployed increased sharply by 9,643 compared to December 2019. The number of unemployed increased again in June, after the lockdown had been lifted.
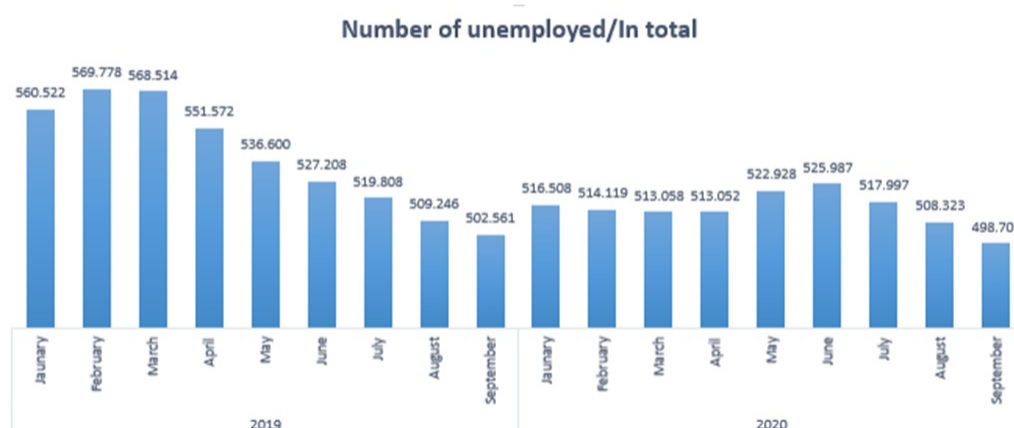

Figure 9. Total number of unemployed over two consecutive years

In 2020, the largest number of new entrants into the labor market was recorded in June. This indicates that with the lifting of the lockdown in May 2020, a certain number of employees in Serbia lost their jobs, which caused the increased number of new entrants into the labor market. The drop in the number of newly registered unemployed in March and April can be explained by the fact that unemployed individuals could only register to the National Employment Service online during the state of emergency, so these data are not quite accurate. Figure 10 shows the average number of employees by business activity, industry, i.e. economic sector. The majority of employees in Serbia in 2019 and 2020 worked in manufacturing and wholesale and retail.

Average number of employees by activity Activity	Year 2019	2020	Growth index
Real estate	6.667	7.000 ⬆	5,00%
Electricity, gas and steam supply	26.000	24.889 ⬇	-4,27%
Mining	25.917	29.000 ⬆	11,90%
Agriculture, forestry and fishing	30.917	30.000 ⬇	-2,96%
Water supply and waste water management	35.583	35.556 ⬇	-0,08%
Art, entertainment and recration	36.667	37.667 ⬆	2,73%
Other services	42.667	43.778 ⬆	2,60%
Finance and insurance	43.833	44.000 ⬆	0,38%
Information and communication	67.583	72.667 ⬆	7,52%
Hospitality industry	82.583	84.889 ⬆	2,79%
Administrative and support services	106.500	101.667 ⬇	-4,54%
Expert, scientific, innovative and technical industry	109.000	107.889 ⬇	-1,02%
Construction	105.917	114.333 ⬆	7,95%
Transport and storage	119.000	122.333 ⬆	2,80%
Education	146.250	150.556 ⬆	2,94%
Healthcare and social care	156.917	154.667 ⬇	-1,43%
Public administration and compuslory social security	157.417	158.111 ⬆	0,44%
Wholesale and retail, motor vehicle repair	342.500	345.222 ⬆	0,79%
Manufacturing	459.667	472.333 ⬆	2,76%
Total	**110.610**	**112.450**	**2%**

Figure 10. Average number of employees by business activity

According to official data, the average number of employed people in 2020 is 2% higher than in 2019. The highest growth was recorded in the mining industry – 11,9%; information and communication – 7,52%, and real estate – 5%. The decline of employment was recorded in the following sectors: administrative and support services – 4,54%, gas and electricity suppliers – 4,27%, etc.

5. Conclusion

The pandemic caused by the COVID-19 virus has had a negative impact on the labor markets around the world, leaving many people jobless, whereas others had to work part-time, which has caused a drop in their monthly income. This paper presents an analysis of the labor market in Serbia during the COVID-19 pandemic, based on publicly available data of the Statistical Office of the Republic of Serbia. The analysis of publicly available data yielded the following conclusions. When it comes to the number of employees, the consequences of the coronavirus pandemic were more keenly felt by temporary employees, i.e. those with fixed-term employment contracts. In general, the number of temporary employees was lower from the beginning of 2020 than in the previous year, and the outbreak of the pandemic caused that number to drop even further. Due to the fact that hospitality facilities were closed during the lockdown, the number of workers decreased, and did not return to the pre-pandemic level even after the lifting of the state of emergency. The constant introduction and withdrawal of epidemiological measures also negatively impacted the number of employees in the hospitality industry.

When it comes to the analysis of the number of unemployed on the labor market, it is noticeable that the number of newly registered unemployed increased after the state of the emergency was lifted in May 2020, which means that many people were laid off in these emergency circumstances. Observing the number of new entrants into the labor market after the abolition of the state of emergency, we can conclude that this number had more than doubled compared to May.

Research conducted during the state of emergency in April 2020 gives a different picture of the impact of coronavirus on the labor market and loss of employment [11, 13]. According to this research, 8% of respondents who were employed in February 2020 lost their jobs; half of them lost their jobs because their companies closed down, and one fifth were let go because their contracts had expired. In most other cases, employees were forced to resign because public transport services were canceled, schools and kindergartens were closed, and social care for the elderly was suspended, so they could not reconcile work and care for their family members. In addition, all those who sought employment in this period were prevented from doing so due to the changed work model companies around the country had to adopt.

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