HOW WAS THE SERVICE SECTOR IN LITHUANIA AFFECTED THROUGH THE COVID-19 PANDEMIC?

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Abstract. This study aims to assess the impact of selected economic indicators (independent variables) on the turnover of food and beverage service companies in Lithuania. In order to achieve the intended goal of the study, an analysis of scientific articles was performed, with the primary aim to find out the consequences of the COVID-19 pandemic for the Lithuanian economy and select five independent variables that could affect the turnover of food and beverage companies. After analysing the literature, five independent variables were highlighted: the number of tourists accommodated, the statistics of Vilnius Airport flights, the number of employees hired, the unemployment rate and inflation. The correlation and regression analysis results show that the turnover of catering and beverage enterprises and the number of accommodated tourists are strongly correlated ($r > 0.90$). Meanwhile, the linear correlation between the number of Vilnius Airport flights and the number of hired employees with the research variable is average ($0.60 < r < 0.70$). However, the linear correlation of macroeconomic factors such as unemployment and inflation with the turnover of food and beverage enterprises is statistically insignificant.

Keywords: COVID-19 impact, service sector, economic impact, tourism, regression.

JEL Classification: M15, M21.

Introduction

At the beginning of 2019, the World was hit by a global problem – the rapidly spreading coronavirus and first detected in Wuhan, China. The virus soon spread around the World. The first case in Lithuania was confirmed on February 28 2020. Over time, the virus has spread, and like many countries, Lithuania has announced nationwide quarantine. The consequences of this virus, such as quarantine, restrictions on contact activities, and restrictions on businesses, have significantly impacted the Lithuanian economy and affected the country's economic performance. Many people's lives have changed during this period: some have lost their jobs, and others have started working from home. Quarantine's restrictions have affected the business sector. From another hand, people have begun to save disposable income or, conversely, invest it. Because of limited opportunities during a pandemic, people's expenses, often income, have become significantly lower. Lithuanian economy and the economy of all the rest of the World were affected considerably. This research analyses the impact of the economic indicators affected by the coronavirus pandemic on Lithuanian businesses that provide food and beverage services. Based on scientific literature analysis and empirical study of economic indicators, the situation in Lithuania during the pandemic will be analysed. The research problem for this analysis was formulated as economic consequences of the COVID-19 pandemic shock. The main object of the research is an economic indicator – Turnover of food and beverage service enterprises (excluding VAT, mln. EUR). The rate, which describes the change of indicator of the service sector, will mirror the coronavirus's impact on the Lithuanian economy.

Based on this, the study's aim was formulated – to assess the impact of the selected independent variables on the turnover of food and beverage service enterprises.

1. Literature review

As the topic of COVID-19 pandemic touched very broad areas of economic sectors, so it is natural that there are plenty of researches regarding this theme (Christophe et al., 2022; Hokama et al., 2022; Nurmohamed et al., 2022; Pinchera et al., 2022; Schmidt et al., 2022; Su et al.,

2022; Wang et al., 2022). Lots of these researches are investigating the impact of COVID-19 on economy (Atsız & Cifci, 2021; Hyman et al., 2021; Keogh-Brown et al., 2020; Malik et al., 2022; Pham et al., 2021), another are making the prognoses (Atsız & Cifci, 2021; Hyman et al., 2021; Keogh-Brown et al., 2020; Malik et al., 2022; Pham et al., 2021) or giving a recommendations (Atsız & Cifci, 2021; Hyman et al., 2021; Keogh-Brown et al., 2020; Malik et al., 2022; Pham et al., 2021), and only some of these scientific publications are dedicating the research about the impact of COVID-19 on a food and beverage service enterprises (Atsız & Cifci, 2021; Hyman et al., 2021; Keogh-Brown et al., 2020; Malik et al., 2022; Pham et al., 2021). In order to analyse the literature, the research and scientific articles on the situation in Europe, Canada, the United States, Malaysia during the pandemic have been selected. As the COVID-19 pandemic is a global problem, the countries' prevention policies and measures are more or less similar. The most commonly used measures to stop the spread of COVID-19 were restrictions on movement, mobility, purification, and quarantine. As a result, food and beverage companies became among the sectors, most affected by the COVID-19 pandemic. In general, the service sector suffered a very severe economic shock during the pandemic, both in Lithuania and in the world. Due to the consequences of the COVID-19 pandemic, people themselves or government bans have avoided contact with people. As a result, the service sector has suffered huge losses, as most of its activities were based on face-to-face communications. This research analyses the impact of the indicators affected by the COVID-19 pandemic on restaurants and cafes' activities, which will be expressed in the empirical study as an economic indicator. In the following subsections, several potential indicators are being analysed scientifically by reviewing the existing literature to determine the dependence between the turnover of food and beverage service enterprises and those indicators.

1.1. Labour market in the context of the COVID-19 pandemic

Researchers (Svabova et al., 2020) conducted a study of the unemployment rate in different sectors of the Slovakian economy. Monthly data covering the period from November 2019 to October 2020 were analysed. The study concludes that the COVID-19 shock had the greatest impact on the accommodation and food services, leisure and entertainment sectors. In April 2020, Slovakia's unemployment rate stood at 8 percent, up 30 percent from a month earlier (6.2 percent). Slovakia's sectoral data show that the number of jobseekers in the accommodation and catering sector quadrupled in April, compared to March 2020. The Slovak government is intervening in the country's economy by supporting business and the population in order to address the negative effects of the demand and supply shock caused by COVID-19.

Observing the Lithuanian unemployment rates in the same period, from November 2019 to October 2020, it can be seen some similarities. In Lithuania, the unemployment rate also started to increase during this period, and the highest unemployment rate (15–74 years) after seasonal adjustment was 9.9% in September 2020, although the quarantine had already expired at that time.

The start of nationwide quarantine on March 16 2020, significantly impacted the Lithuanian labour market and food and beverage services supply to businesses. From the quarantine date, the correlation between the above indicators can be seen. At the end of the first quarantine on June 17, 2020, the level of incapacity for work did not recover and remained above 9%, and the turnover rate of restaurant businesses began to return to the pre-pandemic turnover. Restrictions on contact activities have led to fewer customers in the restaurant business, which has affected the labour market in the service sector.

Researchers (Dube et al., 2020) write that the restaurant and service sectors are important sectors of the social economy, but are also highly sensitive and heavily affected by various global threats, such as the corona virus. After analysing the data, the authors found that restaurants in most countries lost almost all the visitors that are served locally. As a result, the service sector lost a large amount of revenue, which led to very high unemployment in catering establishments. According to the data collected by the source, it can be seen that according to the data of March 18, 2020 in the USA, Germany, Canada, Great Britain, Mexico, Australia and Ireland, the number of direct customers of restaurants decreased by about 90%. The COVID-19 pandemic affected the global service sector and most workers lost their jobs.

The high turnover of restaurants during the COVID-19 pandemic leads to an inability to retain existing staff, and no planning the recruitment of new ones. It is also known that a large part of the salary of waiters and bartenders working in catering and beverage supply establishments is derived from tips. The restrictions imposed during the COVID-19 pandemic clearly affected the monthly turnover of food and beverage companies. Comparing February and April 2020, when quarantine was already introduced, it can be seen that the turnover of restaurant businesses has decreased threefold. Seeing such data, it can concluded that employees in the service sector, whose salary consists of tips, have lost a significant part of their remuneration due to the decrease in the number of customers. This situation has pushed not only employers to reduce the number of employees, but also to leave employees with jobs due to lower incomes.

1.2. Inflation in the context of the COVID-19 pandemic

In the scientific article, the authors (Erdogan et al., 2020) investigated the causes of inflation in European countries from January 2020 to July 2020. Regression models were used to examine the determinants of inflation in

the context of COVID-19. Empirical results have shown that exchange rates and money supply have been the main causes of rising inflation. The study has shown that macroeconomic imbalances have been identified in all countries and that the effects have passed on to each other, making regional cooperation important for economic stability, although this does not guarantee that it will prevent future shocks.

Inflation or depreciation of money in the context of COVID-19 is inevitable. As the shock was struggled in Lithuania, as in most countries, more money was included in the offer and people were given support. Most of the money came from the European Union. The European Union has allocated € 2,364.3 billion to economic recovery. This is to support European countries in the fight against the COVID-19 pandemic and the economic shock. Therefore, increased inflation in the heat of COVID-19 is a normal economic factor.

An American scientist (Shapiro, 2020) writes that social distancing has significantly reduced consumer costs in sectors where human contact is necessary and frequent. Restaurant and hotel businesses are mentioned. Shapiro and A.H conducted a study analysing, for the 18-month period from January 2019 to June 2020, COVID-19 inflation in affected sectors in America. Inflation in these sectors has been affected by government restrictions to reduce the spread of the pandemic. The data show that the 1% fall in PCE inflation from the previous 2% threshold is a consequence of declining consumer demand for goods and services.

Accordingly, it can be concluded that the COVID-19 sector most affected by inflation affects the opposite of the economy as a whole. According to the collected data, the inflation rate in Lithuania started to rise clearly during the second quarantine, in September 2021 the inflation reached 1.4%. The reason for such high inflation – Increased money supply to suppress COVID-19 caused a shock to the economy. But restaurants and cafes in the United States were affected by the opposite, as people spent less on these services due to the strict restrictions imposed during quarantine. Thus, increasing the money supply does not lead to inflation in all sectors. The turnover of Lithuanian catering establishments shows that people spent less in this sector during the pandemic, therefore inflation had to have a small impact on restaurant and cafe businesses.

1.3. Decreased tourism due to mobility restrictions

Researchers (Karim et al., 2020) reported that due to the COVID-19 pandemic, the Malaysian government issued a Movement Control Order (MCO) in early 2020 to curb the spread of the virus. The order was aimed at reducing flights to Malaysia, which affected the country's hotel and restaurant-service sector. Also, the Malaysian tourism sector in 2020 was considered a highly productive and fast-growing sector in a global context until a pandemic broke out.

For countries such as Malaysia or Spain, where much of the country's revenue comes from the tourism and services sectors, the COVID-19 pandemic has been a major economic shock. As the tourism sector in Lithuania is not so developed, it can be assumed that at the same time the Lithuanian economy and the income of catering establishments have suffered less than in Malaysia or Spain.

A scientific article by these authors (Ozili & Arun, 2020) reviews how the global health crisis has become a global economic crisis. As a result, sectors and their businesses that require frequent human contact have been forced to close or change operating mechanisms. The global tourism industry has lost $ 200 billion to prevent the pandemic from spreading. Due to reduced tourist and mobility restrictions, the hotel and restaurant business suffered a severe economic shock during the pandemic. The small businesses in the service sector were most affected, and many of them were no longer able to implement their activities. An empirical study was also conducted based on data from March 23, 2020 to April 23, 2020. The study revealed that the length of quarantine had a significant negative impact on stock prices and the overall economy.

Thus, restrictions on mobility have been introduced in many countries, including Lithuania. International travel has had a major impact on flight statistics and the number of tourists in the countries. From the analysed scientific articles on restrictions on mobility and tourism, it is seen that the COVID-19 pandemic had a significant impact on two indicators related to this topic. Number of tourists and flight statistics.

Summing the analysis of literature review on the existing situation due to effect of some economic variables on turnover of food and beverage service enterprises in the context of COVID-19 pandemic, it is clearly seen that some of selected variables (inflation, number of tourists, number of flights, number of employees hired and unemployment rate) made a significant impact. The COVID-19 pandemic has had a major impact on the global economy and, in this particular case, on the selected independent variables affecting the turnover of food and drink companies: Unemployment, Inflation, Recruitment, Airport Flight Statistics and Accommodation number of tourists. The analysis of selected scientific articles helped to choose these variables for the following empirical research. Although, the articles examine different countries of the world, which is very useful findings, and can be applied to the Lithuanian market, as the COVID-19 virus affected Worlds economy globally.

2. Methodology

In reviewing the scientific literature, five independent variables that influence the unemployment rate were discussed. Taking into consideration all the scientific literature analysis and the statistical data, which was collected for this research, the variables, which are being used for this research are as follows:

Dependent variable:

Y – turnover of food and beverage enterprises

Independent variables:

X_1 – number of tourists accommodated

X_2 – number of flights at Vilnius Airport:

X_3 – number of employees hired;

X_4 – unemployment rate;

X_5 – inflation.

Data for the research were obtained from the Official Portal of the Statistics Department and the Lithuanian Airports website.

First, the correlation analysis is being calculated. Correlation analysis allows to determine whether there is a relationship between the analysed factors, expressed in quantitative indicators (Pabedinskaitė & Činčikaitė, 2016). This analysis determines whether there is a relationship between the dependent factor and the independent factor. The relationship between the variables on the basis of available statistics is being determined. The correlation coefficient r is calculated and its significance is estimated. If the correlation coefficient is significant after the calculations, then it can be concluded that a relationship exists between the dependent and independent variables.

The correlation coefficient is calculated according to the Equation (1):

$$r = \frac{\frac{1}{n-1}\sum(x_i - \overline{x})(y_i - \overline{y})}{S_x S_y}, \tag{1}$$

where: r – correlation coefficient; n is the sample size; x_i – values of one variable; y_i – values of another variable; $\overline{x}$ is the average of the sample.

The values of the correlation coefficient are between –1 and 1. The closer the value of this coefficient is to the end of the range, the stronger the relationship between the variables. However, this relationship can be direct (positive) or reverse (negative). It depends on the sign of the correlation coefficient. If the sign of the coefficient is positive, then the relationship between these variables will be direct, which basically mean that if one variable increases, the other will increase and vice versa. And if there is a negative sign next to the coefficient, then the existing relationship is inverse, if one factor increases, the other decreases and vice versa.

After calculating the correlation coefficient, two hypotheses are raised (2):

$$\begin{cases} H_0 : r = 0 \\ H_1 : r \neq 0 \end{cases}. \tag{2}$$

The null hypothesis means that the value of the correlation coefficient is zero and there is no relationship between the variables. The alternative hypothesis means that the value of the correlation coefficient does not equal to zero and the relationship between the variable exists.

To accept one of the hypotheses raised, it is first necessary to calculate the value of the statistical T and the value of the critical T.

The statistical value of T is calculated according to the Equation (3):

$$T = r\sqrt{\frac{n-2}{1-r^2}}, \tag{3}$$

where: r is the value of the correlation coefficient.

The significance level α (alpha) is chosen to calculate the critical value of T. In the various calculations, the value of α is usually equal to 0.05, but in this study, the scatter is calculated for both the right and left sides, so the value of α is divided in half and is equal to 0.025.

The critical value of T can also be found in the statistical table, only the significance level α and the value of df, which is equal to $n – 2$, needs to be selected.

After calculating these two values, the significance of the correlation coefficient is checked. If the statistical value of T is greater than the critical value of T, we conclude that this coefficient is statistically significant – an alternative hypothesis is accepted. Only statistically significant indicators needed in order to make further calculations.

After the correlation analysis, the next step of the research is a pairwise regression analysis. It is performed only with statistically significant independent variables that are determined by correlation analysis. The idea and aim is to analyse how do the dependent factor is affected by each independent factor separately.

The linear regression equation is being determined by the Equation (4):

$$y = a_0 + a_1 x, \tag{4}$$

where: a_0, a_1 – regression line coefficients; x is an independent variable.

The coefficients a_0 and a_1 are calculated according to the Equations (5) and (6):

$$a_1 = \frac{n\sum x_i y_i - \sum x_i \sum y_i}{n\sum x_i^2 - (\sum x_i)^2}, \tag{5}$$

where: a_1 – influence; x_i – values of one sample; y_i – other sample values.

$$a_0 = \frac{\sum y_i}{n} - a_1 \times \frac{\sum x_i}{n}, \tag{6}$$

where: a_0 – free member.

After calculating the coefficients of the regression line, the coefficient of determination and the corrected coefficient of determination, the values of which are important to determine whether a regression equation can be constructed and statistically interpreted, must be calculated.

The coefficient of determination is calculated according to the Equation (7):

$$R^2 = \frac{(n\sum x_i y_i - \sum x_i y_i)^2}{(n\sum x_i^2 - (\sum x_i)^2) \times (n\sum y_i^2 - (\sum y_i)^2)}. \tag{7}$$

The corrected coefficient of determination is calculated according to the Equation (8):

$$\overline{R}^2 = 1 - \frac{n-1}{n-k-1}\left(1-R^2\right). \qquad (8)$$

In order to construct and interpret a linear regression equation, three conditions must be met:

The coefficient of determination must be greater than 0.25. This value indicates how much of the variance in our variables explains the equation.

The significance of the regression must be less than 0.05. This value indicates whether the equation contains independent variables (X) that affect the dependent variable (Y).

P value must be less than 0.05.

If at least one of these conditions is not met, it has to be concluded that it is impossible to construct and statistically interpret a linear regression equation.

3. The results and discussion

First, the correlation analysis was performed in order to investigate whether a statistically significant relationship exists between the variables. In this case, five hypotheses are tested, as the relationship between the main research variable – turnover of food and beverage enterprises and other factors: number of tourists accommodated; number of flights at Vilnius Airport: number of employees hired; unemployment rate; and inflation.

Thus, five null hypotheses Hoi, i = 1, 2, 3, 4, 5, which state that there is no statistically significant linear relationship between the variables, are tested. If the calculated test statistic were greater than the critical distribution value and $p < 0.05$, then the null hypothesis that there was no linear relationship between the variables would be rejected. The Table 1 below shows the results of the correlation analysis.

In this case, it is sufficient to examine the first line of the results, as it shows the correlations of all remaining variables with the variable "Turnover of food and beverage service activities excluding VAT, mln. EUR". According to the results of the correlation analysis, the variable of the study and three factors – the number of accommodated tourists, the number of flights at Vilnius Airport and the number of hired employees – are related by a statistically significant linear relationship. In the first case a very strong linear relationship was found, as $r = 0.901 > 0.90$ ($p = 0.000 < 0.05$), and in the case of the other two variables, a moderately strong linear relationship was found, as $0.50 < r = 0.62 < 0, 70$ ($p = 0.000 < 0.05$) and $0.50 < r = 0.694 < 0.70$ ($p = 0.000 < 0.05$). It also important to mention, that the correlation coefficients are

Table 1. The results of correlation analysis (source: composed by authors)

		Turnover of enterprises without VAT, M EUR	Number of tourists accommodated in Lithuania	Vilniaus airport flight statistics	Employees recruited, thousands	Unemployment rate (15–74 years), seasonally adjusted, %	Inflation, %
Turnover of enterprises engaged in food and beverage service activities without VAT, M EUR	Pearson Correlation	1	.901**	.620**	.694**	−.118	.085
	Sig. (2-tailed)		.000	.000	.000	.514	.638
	N	33	33	33	33	33	33
Number of tourists accommodated in Lithuania	Pearson Correlation	.901**	1	.730**	.592**	−.217	−.142
	Sig. (2-tailed)	.000		.000	.000	.224	.431
	N	33	33	33	33	33	33
Vilniaus airport flight statistics	Pearson Correlation	.620**	.730**	1	.509**	−.681**	.006
	Sig. (2-tailed)	.000	.000		.002	.000	.974
	N	33	33	33	33	33	33
Employees recruited, Thousands	Pearson Correlation	.694**	.592**	.509**	1	−.136	.386*
	Sig. (2-tailed)	.000	.000	.002		.451	.026
	N	33	33	33	33	33	33
Unemployment rate (15–74 years), seasonally adjusted, %	Pearson Correlation	−.118	−.217	−.681**	−.136	1	−.257
	Sig. (2-tailed)	.514	.224	.000	.451		.148
	N	33	33	33	33	33	33
Inflation, %	Pearson Correlation	.085	−.142	.006	.386*	−.257	1
	Sig. (2-tailed)	.638	.431	.974	.026	.148	
	N	33	33	33	33	33	33

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

positive in all cases, so the linear relationship is direct. This basically means, that with the growth of the number of accommodated tourists, the number of flights at Vilnius Airport and the number of hired employees, the turnover of catering and beverage companies is growing accordingly. Thus, three null hypotheses: H_{oi}, $i = 1, 2, 3$ were rejected, while H_{oi}, $i = 4, 5$ could not be rejected, because in the case of the unemployment rate $r = -0.118$ ($p = 0.514 > 0.05$), and inflation – $r = 0.085$ ($p = 0.638$).

3.1. Pair-wise regression results

In order to investigate the relationship between the pairs of variables in detail, a pairwise regression analysis was performed, the results of which are presented in the figures below. In the first case, the relationship between the turnover of food and beverage enterprises and the number of tourists accommodated is examined.

According to the regression analysis results, the number of accommodated tourists and turnover of enterprises engaged in food and beverage service activities has a statistically meaningful effect on the turnover of catering and beverage service enterprises ($t = 11.571 > 1.96$; $p = 0.000 < 0.05$) (Table 2).

The coefficient of determination (R2) of the generated regression model is equal to 0.806. This shows that the number of accommodated tourists explains as much as 80.6 percent of the turnover of food and beverage companies.

As the cook's measure value is less than 1 for any of the observations, no exceptions are considered in the data. In addition, the Durbin-Watson statistic is 0.467, indicating that there is an autocorrelation of the errors.

The pair-wise equation can be composed as follows:

$$Y = 31.385 + 0.001 \times X_1. \qquad (9)$$

This equation shows that with the increase of the number of accommodated tourists by 1 thousand, the turnover of food and beverage enterprises can be increased by 1 million. Euros.

The results of the pairwise regression of Vilnius Airport Flight Statistics shows that the number of flights has a statistically significant effect on the turnover of catering and beverage companies ($t = 4.405 > 1.96$; $p = 0.000 < 0.05$) (Table 3).

The ANOVA statistics of the model showed that the constructed model is statistically significant (F (1, 31) = 19.404; $p = 0.000 < 0.05$).

The coefficient of determination (R2) of the developed regression model is equal to 0.365, which shows that the number of flights at Vilnius Airport explains about 36.5 percent of the variability in the turnover of catering and beverage companies.

As the cook's measure value is less than 1 for any of the observations, no exceptions are considered in the data. In addition, the Durbin-Watson statistics is 0.380, indicating that there is an autocorrelation of the errors.

The pair-wise equation model is as follows:

$$Y = 36.381 + 0.010 \times X_2. \qquad (10)$$

Table 2. The results of pair-wise regression analysis (source: composed by authors)

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.901[a]	.812	.806	9.518	.467
a. Predictors: (Constant), Number of tourists accommodated in Lithuania; b. Dependent Variable					

Table 3. The results of pair-wise regression analysis (source: composed by authors)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	36.381	6.677		5.449	.000		
	Vilniaus airport flight statistics	.010	.002	.620	4.405	.000	1.000	1.000

Table 4. The results of pair-wise regression analysis (source: composed by authors)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	−2.041	12.368		−.165	.870		
	Employees recruited, thousands	.001	.000	.694	5.366	.000	1.000	1.000

Basically it shows that with the increase of the number of Vilnius Airport flights by 1 hundred, the turnover of catering and beverage companies' increases by 1 million. Euros. The results of the regression model of amount of employees showed that the number of newly hired employees and the turnover of food and beverage enterprises are related by a statistically significant linear relationship ($t = 5.366 > 1.96$; $p = 0.000 < 0.05$) (Table 4).

Meanwhile, the coefficient of determination ($R2$) of the model is equal to 0.465. This shows that the number of employees hired explains about 46.5 percent of the variability in the turnover of food and beverage enterprises.

As the cook's measure value is less than 1 for any of the observations, no exceptions are considered in the data. In addition, the Durbin-Watson statistic is 1,340, indicating that there is an autocorrelation in the model errors.

The pair-wise regression equation looks as follows:

$$Y = -2.041 + 0.001 \times X_3. \tag{11}$$

It shows that with the increase of the number of hired employees by 1 thousand, the turnover of food and beverage enterprises increases by 1 million. Euros.

Thus, summarizing the results of the pairwise regression analysis, it can be stated that the following coincided with the results of the correlation analysis: the number of accommodated tourists, the number of Vilnius Airport flights and the number of employees are statistically significantly related to the turnover of catering; while unemployment and inflation have no direct relationship with the turnover of the sector.

Conclusions

Analysing the different situations of the countries in the context of the COVID-19 pandemic, it is seen that this virus is a global problem and the countries' virus prevention policies were and are more or less dynamic, but very similar. Furthermore, the tourism and services sectors have been hitted hardest by economic and social constraints around the world. It is obviously that countries whose tourism sector is more developed have suffered a greater economic shock than countries whose economies are less dependent on this sector. After analysing the literature, five economic variables have been sorted out as a hypothesis, that they could have a significant impact on the turnover of the food and beverage service in Lithuania. They are: the number of tourists populated, the statistics of Vilnius Airport flights, the number of employees hired, the unemployment rate (15–74 years), seasonally adjusted, and inflation. All of these indicators have a greater or lesser impact on the turnover of companies that provide food and beverage services (basing on the literature review).

Descriptive statistics and analysis of the dynamics of variables showed that the turnover of catering and beverage companies, the number of tourists accommodated, the number of employees and the number of flights at Vilnius Airport reacted immediately to the restrictions on economic activity due to the spread of COVID-19. In April, the values of these indicators reached their lowest value during the whole study period. In addition, only the turnover and the number of hired employees reached or exceeded the previous level during the observed period, while the tourism indicators, such as the number of tourists accommodated and the number of flights at Vilnius Airport, still did not reach the previous level of the pandemic. Meanwhile, macroeconomic indicators have responded differently to the spread of COVID-19: unemployment has been rising steadily until 2020, reached a peak in September and started to decline. Inflation came to a halt at the beginning of the pandemic, but began to rise at the end of the observation period and reached higher levels than before the pandemic.

The results of the correlation and regression analysis show that the turnover of food and beverage enterprises and the number of accommodated tourists are strongly correlated ($r > 0.90$). Meanwhile, the linear correlation between the number of Vilnius Airport flights and the number of hired employees with the research variable is average ($0.60 < r < 0.70$). The linear correlation of macroeconomic factors such as the unemployment rate and inflation with the turnover of food and beverage enterprises is statistically insignificant.

The recommendation for the future research implementation could be to determine and evaluate the impact of statistically significant variables (number of tourists accommodated, number of flights and number of employees hired) on turnover of the food and beverage service in a complex, which requires a multivariate regression analysis.

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