International Journal of Economics, Politics, Humanities & Social Sciences
Vol: 8 Issue: 1 e-ISSN: 2636-8137 Winter 2025

Efficiency of the Use of Employed Persons in European Tourist Accommodation Establishments in Europe, during 2008-2022

Marian Zaharia[1], Rodica-Manuela Gogonea[2], Aniela Bălăcescu[3]

DOI: *10.59445/ijephss.1583880*

Atıf / Cite: Zaharia, M., Gogonea, R.M., Bălăcescu, A. (2025). Efficiency of the use of employed persons in european tourist accommodation establishments in europe, during 2008-2022, *International Journal of Economics, Politics, Humanities & Social Sciences*, 8(1), 47-60, https://doi.org/10.59445/ijephss.1583880

Araştırma Makalesi / Research Article

Makale İlk Gönderim Tarihi / Recieved (First): 12.11.2024 **Makale Kabul Tarihi / Accepted:** 24.12.2024

Abstract

Tourism is an economic branch with significant potential in the vast majority of European states. However, its exploitation differs from one state to another with implications on the contribution to sustainable development at the regional and national level. Taking this aspect into account, the paper offers a comparative picture between most European states regarding the evolution of tourist arrivals in tourist accommodation establishments and the people employed in them, as well as the ratio between the intensity of tourist traffic and the employed persons in tourist accommodation establishments, highlighting the impact of the pandemic of Covid-19 on them. A strong correlation has been observed between the number of employed persons in tourist establishments and arrivals, though elasticity analysis indicates that employment does not respond uniformly to changes in arrivals, suggesting variable workforce adaptability. The study also has found considerable differences in employment efficiency across regions. Nordic countries, such as Iceland, have reached up to higher tourist numbers per employee compared to other areas, while nations like Slovakia and Ireland have reported lower figures, highlighting diverse workforce utilization rates in European tourism.

Keywords: Employed Persons, Tourism, Arrivals, Tourist Accommodation Establishments, Time Series

[1] Prof. Dr. / *Prof. Dr*, Petroleum-Gas University of Ploiesti, Romanya / *Petroleum-Gas University of Ploiesti*, Romania marianzaharia53@gmail.com, ORCID: https://orcid.org/0000-0002-6580-5913.
[2] Doç. Dr. / *Assoc. Prof.*, The Bucharest University of Economic Studies, Romanya / *The Bucharest University of Economic Studies, Romania*, *manuela.gogonea@gmail.com*, ORCID: https://orcid.org/0000-0002-2117-0821
[3] **Sorumlu Yazar / *Corresponding Author***. Prof. Dr. / *Prof. Dr.*, "Constantin Brâncuşi" University of Targu Jiu, Romanya / *"Constantin Brâncuşi" University of Targu Jiu, Romania*, *anielabalacescu@gmail.com*, ORCID: https://orcid.org/0000-0002-2937-4917

1. Introduction

Except for the period of the Covid-19 pandemic, in the last decades, tourism experienced a continuous growth with significant influences on the level of development of the destinations. This process was determined, on the one hand, by the evolution of the size of the business environment and their competitive advantages (Sul, Chi and Han, 2020; Stoicea 2022), and on the other hand, by the preferences of tourists (Dobrotă et.al. 2021; Gherghina, 2022)

Although the Covid-19 pandemic had a particularly negative impact on the tourism industry and industries interconnected with them (Bilevsky, 2023; Nagaj, 2021), it led to the identification and adoption of solutions to develop businesses and tourist destinations, more durable and resilient (Seabra and Bhatt, 2022).

In the development of sustainable tourism, an important role is played by the correlation of the capacity of tourist accommodation establishments with the flows of tourists. Their evolution over time highlighted the existence of positive feedback loops between them, tourist arrivals in the current period positively influenced by the quality of structures with accommodation functions and tourist arrivals from the previous period (Simionescu, 2017), as well as, last but not least, by eco-certification of tourist accommodation establishments (Constantin, et.al., 2013). These flows, in turn, drive the dynamics of the number of employed persons in tourist accommodation establishments. Regarding the relationship between the dynamics of tourist arrivals and employment in tourism, Sharma and Mitra (2021) demonstrate the existence of an asymmetry, in the sense that a decrease in tourist arrivals leads to a relatively lower reduction in employment, highlighting a relative stability of employment in tourism.

Taking into account these aspects, the paper evaluates the characteristics of the dynamics of arrivals and the number of employed persons in tourist accommodation establishments, as well as a comparative analysis regarding the efficiency of their use, expressed by the number of tourists per person employed in tourist accommodation establishments. In the analyses, the 27 current member states of the European Union were included, within the limits of available data, Iceland, Norway, Switzerland, United Kingdom, Montenegro, North Macedonia, Serbia and Turkey.

2. Research Methodology

Considering the objective of the work, the main data sources were the databases of Eurostat (EUDB, 2024) and World Tourism Organization (WTO, 2024). The main data series used in analyzes were Employed persons and employees by sex and full-time/part-time activity and NACE Rev. 2 activity (EPTA, 2024) and Arrivals at tourist accommodation establishments (ARTO, 2024). The identifiers and meanings of the variables included in analyzes are presented in table 1.

Table 1. The identifiers and the meanings of the variables used in the analysis

Variable	Signification	Units
ATAEU	Arrivals at tourist accommodation establishments at EU27 level	persons
EPAEU	Employed persons in accommodation establishments at EU27 level	persons
REPEU	Tourists per employed persons in accommodation establishments at EU27 level	persons
IATAS	Annual indices of arrivals at tourist accommodation establishments at country level	%
IEPAS	Annual indices of employed persons in accommodation establishments at country level	%
REPS	Tourists per employed persons in accommodation establishments at country level	tourists

For the analysis of data series, with chronological series, of (n+1) terms, of the form $\{y_i\}_{i=\overline{0,n}}$, were used: the fixed base growth ($\Delta_{i/0}$), the chain-based growth index ($I_{i/i-1}$), average annual growth ($\bar{\Delta}$), average annual index ($\bar{I}$), average annual rate ($\bar{R}$):

$$\Delta_{i/0} = y_i - y_0, \quad I_{i/i-1} = \frac{y_i}{y_{i-1}}, \quad \bar{\Delta} = \frac{\Delta_{n/0}}{n}, \quad \bar{I} = \sqrt[n]{I_{n/0}}, \quad \bar{R} = \bar{I} - 1 \tag{1}$$

Also, regression models were used to analyze the $y = f(t)$ time series, and for the analysis of the dependence between variables, models $y = f(x)$, as well as marginal ($M_{x/y}$) and elasticity indicators ($E_{x/y}$):

$$M_{x/y} = \frac{\Delta_x}{\Delta_y}, \quad E_{x/y} = \left| \frac{\Delta_x}{\bar{x}} \cdot \frac{\bar{y}}{\Delta_y} \right| \tag{2}$$

The condition for accepting the statistical hypotheses is: Sig.> α., where α=0.05 corresponding to a confidence level of 95%. Data processing was performed using SPSS.

3. Results and Discussions

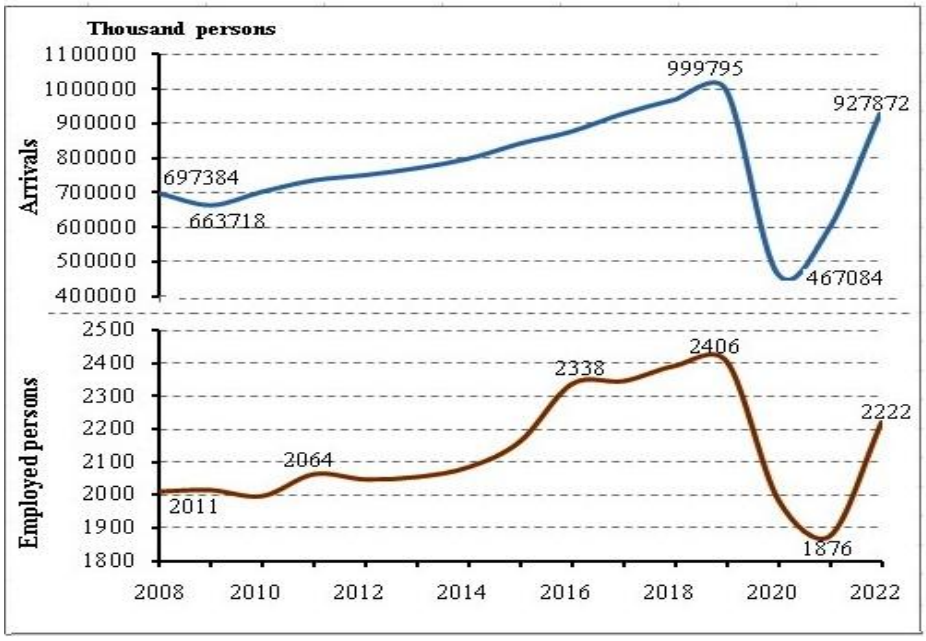
In order to provide the most conclusive picture of the evolution of the number of employed persons and the arrivals of tourists in accommodation establishments at the level of the 35 European states, the discussions refer to the evolutions of the arrivals and of employed persons in tourist accommodation establishments at the level of the European Union and at the level of each countries, as well as the evolution of the number of arrivals per person employed in tourist accommodation establishments.

3.1. The Evolution of Arrivals and Employed Persons in Tourist Accommodation Establishments at The Level of The European Union

In order to capture the characteristics of the relationship between the intensity of tourist arrivals in tourist accommodation establishments (ATAEU) and the number of employed persons (EPAEU), the analyzes focused on three aspects: the analysis of the characteristics of the two time series, the analysis of the bilateral correlation between them and the analysis of the characteristics of the function $EPAEU = f(ATAEU)$.

The analysis of the time series of the ATAEU and EPAEU variables highlights the fact that, between 2008 and 2022, at the EU27 level, these evolutions were relatively similar (Figure 1), characterized by a continuous increase until the end of 2019, followed by a significant gap in 2020, caused by the outbreak of the Covid-19 pandemic, and a significant return in 2021 and 2022.

Figure 1. The Evolution of The Number of Arrivals and Employed Persons in Tourist Accommodation Establishments



Source: prepared by authors based on ARTO and EPTA

In the period preceding the outbreak of the Covid-19 pandemic, the number of tourist arrivals in tourist accommodation establishments (ATAEU) increased from 697,384 thousand tourists in 2008 to 999,795 thousand tourists in 2019, an increase of 43.36%, which corresponds to an average annual increase ($\bar{\Delta}$) 27,492 thousand tourists annually (Table 2), and an average annual rate ($\bar{R}$) of 3.33%.

Table 2. The Characteristics of The Evolutions Over Time of The Number of Arrivals And of Employed Persons in Tourist Accommodation Establishments in The EU27, in The Period 2008-2019

	$I_{2019/2008}$	$\bar{\Delta}$	$\bar{R}$	$y = a + b \cdot t + \varepsilon,\ t = \overline{0,11}\ ;\ t_{2008} = t_0$		
	%	Thousand	%	a	b	Sig.F
ATAEU	143.36	27492	3.33	644958.6	30266.97	0.000
EPAEU	119.64	36	1.64	1930.6	41.76	0.000

Source: preparated by the authors

At the same time, the number of staff employed in tourist accommodation establishments (EPAEU) decreased from 2011 thousand people in 2008, to 2406 thousand employees in 2019, an increase of 19.64%, which corresponds to an average annual increase ($\bar{\Delta}$) of 36 thousand people annually, and an average annual rate ($\bar{R}$) of 1.64%. On the other hand, both ATAEU and EPAEU had relatively linear evolutions, a fact highlighted by their corresponding are statistically significant (Sig.F=0.00<α=0.05), and the values of the regressor (b) being quite close to the values of the average annual increase ($\bar{\Delta}$).

On the other hand, the results of the analysis of the bilateral correlation between the intensity of tourist arrivals in tourist accommodation establishments (ATAEU) and the number of employed staff (EPAEU) highlight the fact that (Table 3), there is a very strong (r=0.964) and statistically significant correlation between them (Sig.2_tailed=0.000<α=0.05).

Table 3. The Bilateral Correlation Coefficient Between ATAEU and EPAEU

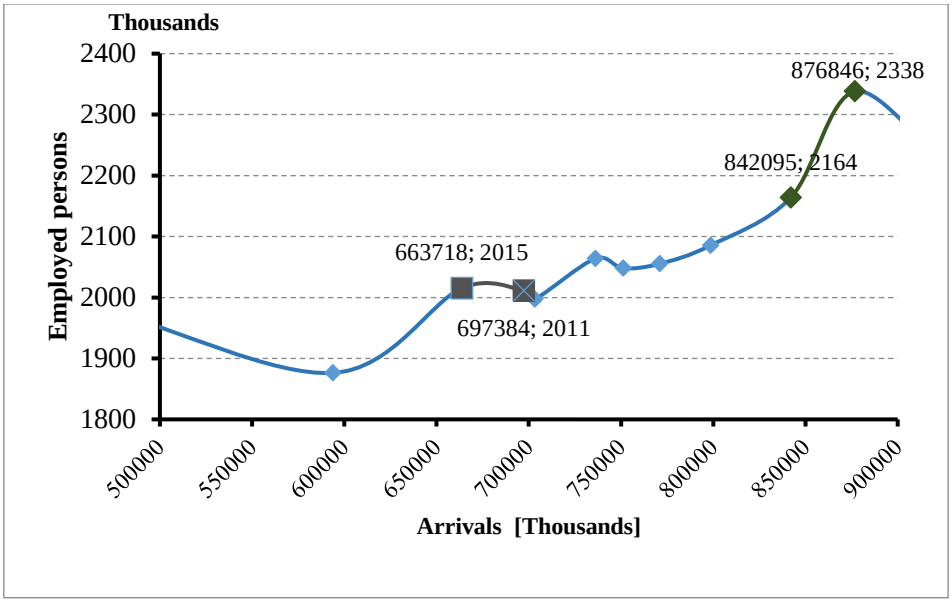
		ATAEU	EPAEU
ATAEU	Pearson Correlation	1	0.964**
	Sig. (2-tailed)		0.000
EPAEU	Pearson Correlation	0.964**	1
	Sig. (2-tailed)	0.000	

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

Source: prepared by authors using SPSS

However, although, as figure 1 suggests, as well as the value of the correlation coefficient, the evolutions of ATAEU and EPAEU, in the period 2008-2019, are similar and correlated, the analysis of the characteristics of the $EPAEU = f(ATAEU)$ function highlights a series of significant particular aspects.

Figure 2. Graphic Representation of The Dependence Between EPAEU And ATAEU Values at The EU27 Level, Registered in The Period 2008-2019



Source: prepared by authors based on ARTO and EPTA

Secondly, it is expected that ATAEU directly and in the same sense influence EPAEU, so that the increase in the number of arrivals in tourist accommodation establishments leads to the increase in the number of employed persons in these structures. The shape of the function (Figure 2) contradicts this.

To emphasize this aspect, the elasticity of the number of employed personnel was calculated depending on the number of tourist arrivals, for an increase in their number from 663,718 to 697,384 thousand tourists, as well as for an increase from 842,095 to 876,846 thousand tourists.

In the first case,

$$E_{EPAEU/ATAEU} = \left| \frac{\Delta_{EPAEU}}{\overline{EPAEU}} \cdot \frac{\overline{ATAEU}}{\Delta_{ATAEU}} \right| = \left| \frac{-4}{2013} \cdot \frac{680551}{33666} \right| = 0.04 \quad (3)$$

.

In the second case,

$$E_{EPAEU/ATAEU} = \left| \frac{\Delta_{EPAEU}}{\overline{EPAEU}} \cdot \frac{\overline{ATAEU}}{\Delta_{ATAEU}} \right| = \left| \frac{192}{2242} \cdot \frac{859471}{34751} \right| = 2.12 \quad (4)$$

.

Comparing the two results shows that, in the first case (4), the elasticity of the number of employees in tourist accommodation establishments (EPAEU) in relation to the number of tourist arrivals (ATAEU) highlights an almost perfectly inelastic relationship, which means that their number does not depend on arrivals , and in the second case, the value of the elasticity coefficient (5) highlights that the EPAEU is significantly elastic in relation to the ATAEU, which means that, with a 1% increase in the ATAEU, the EPAEU increases by 2.12%.

Correlating these findings with the fact that between the number of employed persons in tourist accommodation establishments and the number of tourist arrivals in these reception structures is very strong, it follows that, at certain moments, the influence of disruptive factors on them is quite strong.

3.2. Evolutions at The Country Level

The analysis carried out at the EU27 level highlighted the fact that, overall, there is a strong correlation between the number of employees in tourist accommodation establishments and the number of arrivals, although for certain ranges of values of the number of arrivals, the ways in which the number of employed persons, changes differ greatly.

These findings lead to the verification of the hypothesis regarding the impact of sudden changes in the intensity of the flow of arrivals at the level of the member states on the ratio between the number of arrivals in tourist accommodation establishments and the number of employed persons.

For comparability between countries, the analyzes were performed on the evolution of the annual indices corresponding to arrivals in tourist accommodation establishments (IATAS) and the number of employed persons (IEPAS), and not on their nominal values.

In the period preceding the Covid-19 pandemic, at the level of the 35 European states included in the IATAS analysis, there were fluctuating evolutions (Figure 3) with values ranging between 141.94%, recorded in 2012, in Lithuania, and a minimum of 71.59%, recorded in 2009, in Latvia.

. Regarding this period, several aspects must be emphasized. First of all, the year 2009 was characterized by a decline in the flow of tourist arrivals in 31 of the analyzed states. Thus, with the exception of Greece, Sweden, Iceland and the United Kingdom, in all the others, due to the financial crisis, compared to 2008, IATAS decreased by values between 0.05% in Italy and 28.41% in Latvia. Also, significant reductions of IATAS were registered in Lithuania (21.57%), Slovakia (17.03%), Romania (13.81%) and Bulgaria (12.70%). At the EU27 level, IATAS recorded a reduction of 4.83%.

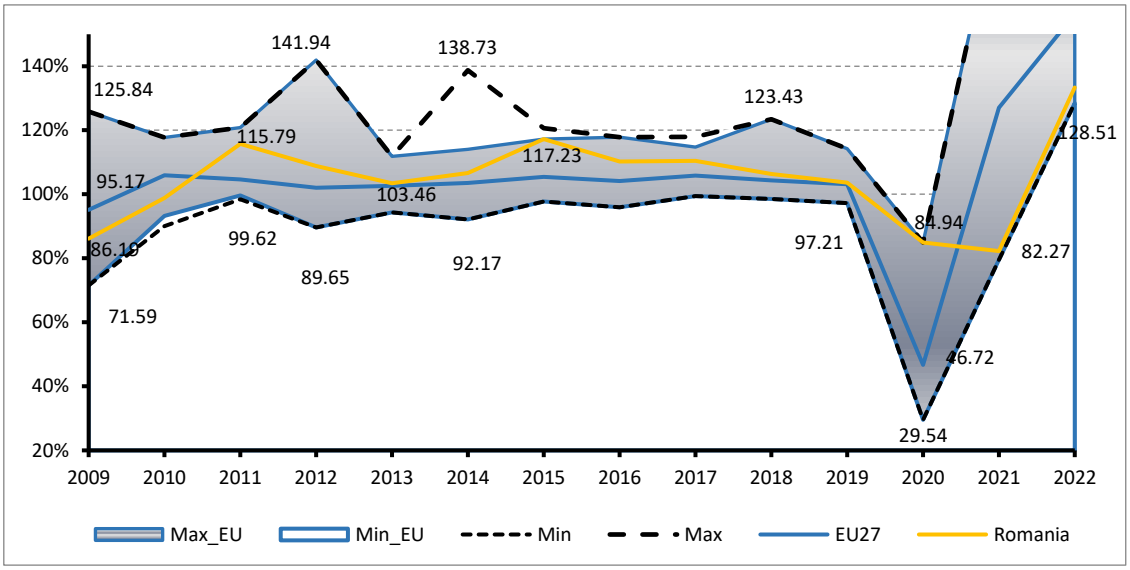
The impact of the financial crisis of 2009 induces in the period 2010-2012, evolutions of the IATAS values at the state level in a very wide range compared to the EU27 average, different behaviors towards stabilization, the biggest fluctuations being registered in Ireland, Greece, Lithuania and Latvia.

In the period 2013-2019, in EU27 member states, there is a relative stability in terms of IATAS values, around an increasing EU27 average, with annual indices between 103% and 106%. Regarding non-EU countries, Iceland stands out with significantly higher IATAS values of 138.73%, in 2014, and 120.68%, in 2015. Also, during this period, in 2017, the smallest difference is recorded in the IATAS values in the EU27 member states, of 15.23 percentage points.

The outbreak of the Covid-19 pandemic has a particularly strong impact on the flows of arrivals in tourist accommodation establishments, implicitly on the IATAS values, which in 2020 become subunits in all 35 analyzed states. Compared to 2019, in 2020, at the EU27 level, IATAS was 46.72%, a reduction of over 50% in the number of arrivals in tourist accommodation establishments.

In the year 2021, among the 27 EU member states, only six states, including Romania, recorded regressions in the number of arrivals in tourist accommodation establishments, in the others, IATAS registering positive values. The year 2022 characterized by IATAS values of over 128% in all the states included in the analysis.

Figure 3. Evolutions of The Annual Indices of Arrivals at Tourist Accommodation Establishments At State Level (IATAS).

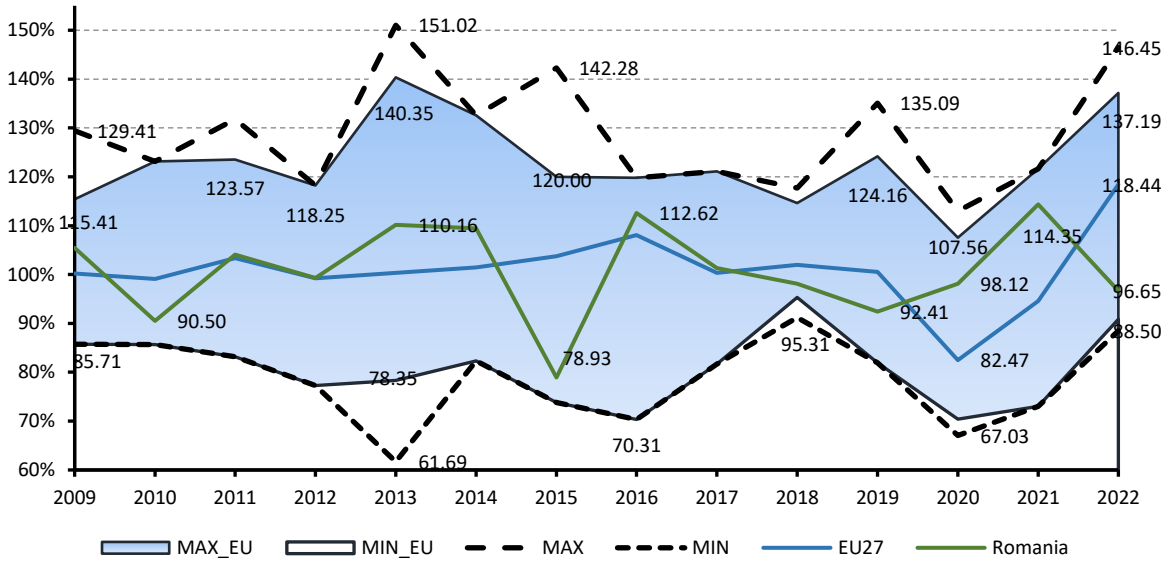


Source: prepared by authors based on ARTO

The evolutions of the annual indices of employed persons in accommodation establishments, at the state level (IEPAS), differ from the evolutions of the annual indices of arrivals at tourist accommodation establishments (IATAS).

The IEPAS evolutions of the EU27 member states (Figure 4) are much more compact than those of the seven non-member states, included in the analysis. Thus, while in the case of EU27 member states, they evolved between a maximum of 143.35%, in 2013, in Lithuania, and a minimum of 70.45%, in 2020, in Cyprus, in non-EU member states they evolved between 151.02% in Montenegro and 61.68%, in Serbia, values recorded in 2014.

Figure 4. Evolutions of The Annual Indexes of Employed Persons in Accommodation Establishments At State Level (IEPAS).



Source: prepared by authors based on EPTA

On the other hand, however, the differences between the maximum and minimum annual values of IEPAS are much greater than in the case of IATAS values. Thus, in the period 2010-2019, with the exception of 2013, while the extreme annual values of IATAS were between 15.23 and 24.89 percentage points, between the extreme values of IEPAS the difference was between 19.33 and 50.27 percentage points, highlighting significant differences between the EU27 member states regarding employed persons in accommodation establishments.

Regarding the impact of the covid-19 pandemic on employed persons in accommodation establishments, it determined, in 2020 and 2021, reductions in employed persons in accommodation establishments in the vast majority of states. Compared to 2019, in 2020, in the EU27 member states with the exception of Luxembourg and Slovenia, the IEPAS values fall between a maximum of 95.51%, in the Netherlands, and 70.42% in Cyprus. In 2021, in 20 of the 27 EU member states, reductions of employed persons in accommodation establishments were still recorded.

3.3. The evolution of the number of arrivals per employed person in tourist accommodation establishments

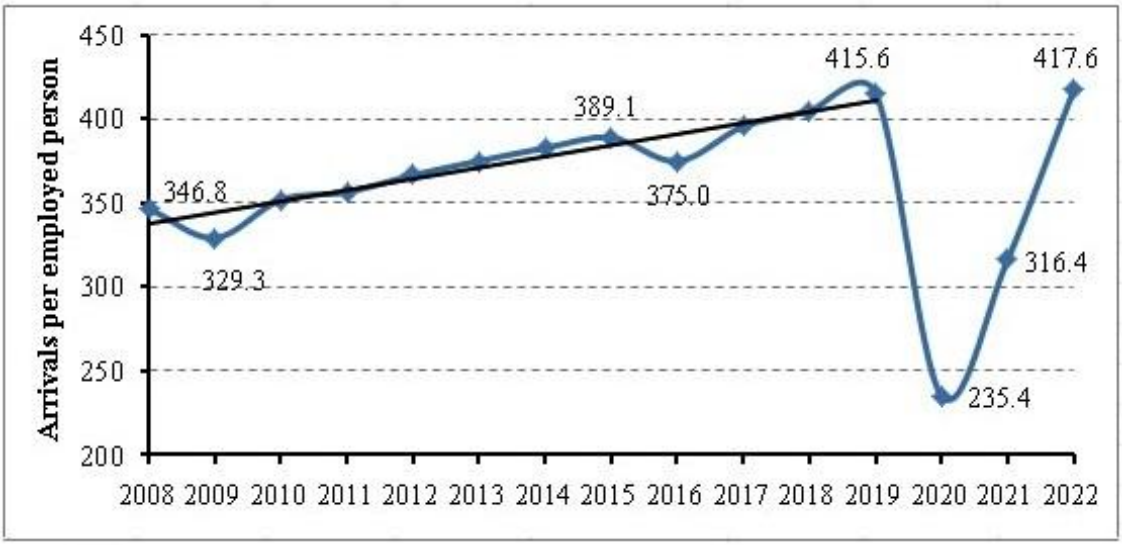
One way of comparative evaluation of the efficiency of the use of employed persons in tourist accommodation establishments is to determine their yield expressed by the number of tourists arriving in tourist accommodation establishments per employed person (REPEU).

At the EU27 level, from the point of view of REPEU, in the period 2008-2022 (Figure 5), it had an upward evolution until 2019, interrupted in 2020 by the drastic limitation of tourist traffic, caused by the outbreak of the Covid-19 pandemic.

In the period 2008-2019, except for the years 2009 and 2016, when there were slight reductions, with 17.5 and 14.1 tourists respectively, the REPEU evolution was increasing, from 346.8 tourists per employed person, in 2008, to 415.6 tourists in 2019, an increase of 19.83%, which corresponds to an average annual increase ($\bar{\Delta}$) of 6.3 tourists (Tabe 4) and an average annual rate ($\bar{R}$) of 1.66%. The relatively linear evolution of the number of tourists per person employed in tourist accommodation establishments is highlighted by the fact that the corresponding regression model is statistically

significant (Sig.F=0.00<α=0.05), and the regressor value (b) being quite close of the value of the average annual increase ($\bar{\Delta}$).

Figure 5. Evolution of The Number of Tourists Per Employed Person in Tourist Accommodation Establishments in the EU27.



Source: prepared by authors

The outbreak of the Covid-19 pandemic in 2020 had a major impact both on tourist traffic, at the EU27 level the number of arrivals was reduced by 53.28%, and on the number of employed persons in tourist accommodation establishments, which recorded a reduction of 17.53%. Under these conditions, REPEU recorded a minimum of 235.4 tourists per person employed in tourist accommodation establishments.

Table 4. The characteristics of the time evolutions of the number of arrivals per employed person in tourist accommodation establishments in the EU27, in the period 2008-2019

	$I_{2019/2008}$	$\bar{\Delta}$	$\bar{R}$	$y = a + b \cdot t + \varepsilon,\ t = \overline{0,11}\ ;\ t_{2008} = t_0$		
	%	toutists	%	a	b	Sig.F
TEPEU	119.83	6.3	1.66	330.8	6.59	0.000

Source: prepared by authors

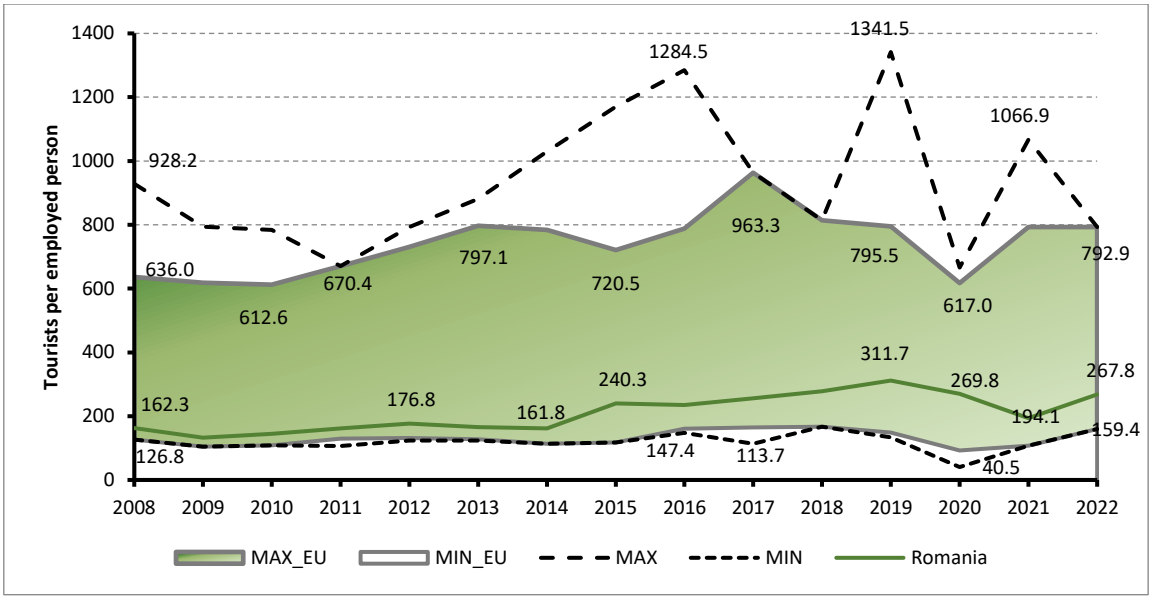
The relaxation of tourist circulation starting from 2021 led to the relaunch of the tourism industry so that the REPEU was 316.4 tourists per person employed in tourist accommodation establishments, reaching 417.6 tourists in 2022, which corresponds to the general trend recorded in the period before the outbreak of the pandemic.

Compared to the evolution of the REPEU, at the level of all the states included in the analysis, the evolution of the number of tourists per person employed in tourist accommodation establishments (RPES) shows a series of differences, both from the point of view of the recorded values and their evolutions.

Among the 35 states included in the analysis, the 27 member states of the European Union are characterized by more compact REPS evolutions, the differences between the maximum and minimum values falling between a minimum of 504.0 tourists, recorded in 2010, and a maximum of 798.6 tourists, recorded in 2017, while, in the case of the other eight non-member states of the EU27, the amplitude of

the differences between the REPS values, evolved between 413.3 tourists, in 2011, and 1207.5 tourists, in 2019.

Figure 6. Evolutions of the number of tourist arrivals per employed person in accommodation establishments at the country level (REPS).



Source: prepared by authors based on ARTO and EPTA

In order to highlight the characteristics of REPS evolutions at the country level, as well as to emphasize the differences between countries from this point of view, the following were determined: the variation intervals (AVI), the mean values of REPS over the period 2008-2019 (MREPS), as well as the deviations of the REPS values recorded in 2020, 2021 and 2022 compared to the value recorded in 2019.

Table 5. Variation Intervals (AVI), The Mean Values of REPS Over the Period 2008-2019 (MREPS), and The Deviations of REPS Values Compared to MREPS, Recorded in The Years 2020, 2021 and 2022

Countries	Period 2008 - 2019			Deviation from 2019		
	AVI	MREPS	AVMREPS	2020	2021	2022
	tourists	tourists	%	%	%	%
Spain	48.6	314.5	15.45	-56.77	-23.27	-3.74
Italy	74.5	437.2	17.05	-48.49	-17.39	-7.09
Germany	64.2	325.8	19.72	-30.08	-20.80	19.64
EU27	86.3	374.2	23.05	-43.35	-23.87	0.47
Cyprus	51.9	219.9	23.60	-51.64	-19.37	-19.75
Belgium	176.6	575.1	30.71	-50.74	-16.14	-1.80
Lithuania	304.7	420.0	72.55	-32.65	-30.90	4.08
Slovakia	115.3	147.3	78.30	-42.48	-40.69	16.30
Romania	179.0	202.3	88.51	-13.43	-37.72	-14.06
Slovenia	308.5	336.3	91.73	-54.30	-27.19	-18.78
Luxembourg	525.2	571.1	91.96	-52.74	-24.71	-4.38

Source: prepared by authors

In the period 2008-2019, the best stability of the REPS values around the average values were recorded in Spain, Italy and Germany (Table 5), where the amplitude of the variation interval (AVI) in relation to MREPS (AVMREPS) were included between 15.45% and 19.72%, with more than 3 percentage points below the EU27 average. Likewise, relatively stable values of REPS around MREPS were also registered in Cyprus and Belgium. The impact of the pandemic on the REPS, in these five states, led to its reduction in 2020, with values between 30.08%, in Germany, and 56.77%, in Spain. Although in the period 2021 - 2022 there are increases in the REPS values, only Germany ends up exceeding the value recorded in 2019 by 19.64 percentage points, in the other four states the deviations remain negative. Among them, the most unfavorable situation is registered in Cyprus (-19.75 percentage points)

At the opposite pole, high values of AVI in relation to the averages recorded in the period preceding the Covid-19 pandemic were recorded in Luxembourg, Slovenia, Slovakia, Lithuania, as well as in Romania. They highlight very high values, from one year to the next, of the number of tourist arrivals and/or employed persons in tourist accommodation establishments.

The outbreak of the Covid-19 pandemic has a significant impact on the REPS in these states as well, with values between -13.34%, in Romania, and -52.74%, in Luxembourg. However, this gap is overcome in the period 2021-2022 by Slovakia and Lithuania, in the other gaps remaining negative.

Romania, located in the group of states with the highest values of AVI in relation to the averages recorded in the period preceding the pandemic, registers different evolutions. This consists in the fact that, although in the other states the REPS values recorded in 2021 are higher than in 2020, in Romania in 2021 the REPS was 194.1 tourists per employed person in tourist accommodation establishments, compared to 268.1 tourists in 2020, and in 2022 it had reached to only 267.8 tourists, lower by 1.3 tourists than during the pandemic crisis.

Also, the significant differences, from the point of view of REPS, are highlighted by the values recorded at the beginning and end of the analyzed period as well as in the year preceding the pandemic crisis and the year of the outbreak of the crisis (Table 6).

Table 6. Values of The Number of Tourists Per Person Employed in Tourist Accommodation Establishments, Recorded in 2008, 2019, 2020 and 2022

2008		2019		2020		2022	
Countries	REPS	Countries	REPS	Countries	REPS	Countries	REPS
Iceland	928	Iceland	1341	Iceland	666	Iceland	793
Finland	636	Sweden	795	Finland	617	Sweden	699
Sweden	582	Finland	777	Sweden	540	Croatia	683
Belgium	531	France	742	Norway	464	Switzerland	654
France	530	Netherlands	589	France	424	UK	583
EU27	346	EU27	415	EU27	235	EU27	417
Cyprus	196	Slovakia	227	Ireland	108	Greece	216
Romania	162	Ireland	224	Serbia	105	Netherlands	209
Malta	145	Turkey	219	Malta	97	Latvia	183
Slovakia	143	Bulgaria	149	Bulgaria	93	Turkey	170
Bulgaria	127	Nth Macedonia	134	Nth Macedonia	40	Czechia	159

Source: prepared by authors

On the first places, from the point of view of REPS values are the northern counties. Of these, Iceland ranks first with values between 666 and 1341 tourists per employed person in tourist accommodation establishments. At the level of 2008, 2018 and 2020, Finland and Sweden are alternately in second and third place, and France is alternately in fourth and fifth place. in 2022, Croatia will take third place with 683 tourists per employed person in tourist accommodation establishments. Also, significant values of REPS were recorded in Belgium in 2008, in 2019 in the Netherlands, in 2020, and in 2022 in Croatia, Switzerland, and the UK.

At the opposite pole, low and very low values, below 200 tourists per employed person in tourist accommodation establishments, in the period preceding the pandemic, were registered in Nth Macedonia, Bulgaria, Slovakia, Malta, as well as in Romania and Cyprus. During the pandemic, in addition to Nth Macedonia, Bulgaria and Malta where tourist flows are almost completely reduced, extremely low values were also recorded in Serbia and Ireland.

4. Conclusions

In the period preceding the outbreak of the Covid-19 pandemic, as a result of the evolution of tourism, both the number of tourist arrivals in tourist accommodation establishments, as well as the number of employed persons in these reception structures, had significant ceasing evolutions. At the EU27 level, their evolution was relatively linear, with a 43.36% increase in the number of arrivals, and a 19.64% increase in the number of employed persons in tourist accommodation establishments. In 2020, the impact of the pandemic on tourism was particularly strong. Compared to 2019, the number of

arrivals decreased by 53.28% and the number of employed persons in tourist accommodation establishments, by 17.53%.

The analysis of the dependence between the number of employed persons (EPAEU) and the number of arrivals in tourist accommodation establishments (ATAEU) highlighted a previously strong correlation between them (the value of the Pearson correlation coefficient being 0.964). On the other hand, however, the analysis of the elasticity of EPAEU as a function of ATAEU highlighted that its values differ significantly in certain points of the curve of the EPAEU=f(ATAEU) function, which leads to the conclusion that, under certain conditions, there are different reactions of the number employed persons to changes in the number of arrivals in tourist accommodation establishments.

Regarding the efficiency of the use of employed persons in tourist accommodation establishments, significant differences have resulted from one group of states to another. Thus, in the case of the Nordic countries, including Iceland, Sweden and Finland, in 2019, the number of tourists arriving in tourist accommodation establishments per employed person (REPS) was between 777 tourists, in Finland, and 1341 tourists, in Iceland, and in 2020, there were over 540 tourists. At the same time, in 2019, in countries such as Slovakia, Ireland and Turkey, REPS was less than 230 tourists, in Bulgaria and North Macedonia it was under 150 tourists, and in 2020 their number drops below 100 tourists, in Malta, Bulgaria and North Macedonia.

The final conclusion is that, although there are significant differences between the 35 European states included in the analysis in terms of the number of tourists arriving in tourist accommodation establishments per employed person, in the case of tourist reception structures with accommodation functions, the dynamics of their number is much lower than the number of arrivals, which highlights a relative stability of employed persons in tourist accommodation establishments.

Competing Interest

The authors declare that they have no competing interests.

Fundings and Acknowledgments

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethical Statement

It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.

Author's Contributions

This article was created as a result of the authors' own efforts and reviews

REFERENCES

Bilevsky, G., (2023), The impact of Covid-19 on the dynamics of tourism in Romania, *Internal Auditing and Risk Management*, 68 (2), 60-69.

Constantin, C., Ispas, A. Candrea, A. N., (2013). Identifying tourists interested in eco-certified accommodation units from Brașov, Romania, *Management Dynamics in the Knowledge Economy*, 1 (3), 521-542.

Dobrotă, G. L., Grigore, A., Chifan, R. M., (2021), The analysis of the tourists' preferences regarding accommodation, *Romanian Economic Business Review*, 16 (2), 87-97.

Gherghina, L., (2022). Study regarding the preferences and attitude of consumers for spending vacations in tourist resorts in Romania, *Ovidius University Annals, Economic Sciences Series*, XXII (2), 574-583.

Nagaj, R., Žuromskaitė, B., (2021). Tourism in the era of Covid-19 and its impact on the environment, *Energies*, 14 (7), 1-18.

Seabra, C., Bhatt, K., (2022). Tourism sustainability and Covid-19 pandemic: Is there a positive side?, *Sustainability*, 14 (14), 1-14.

Sharma, J., Mitra, S. K., (2021). Asymmetric relationship between tourist arrivals and employment, *Tourism Economics*, 27 (5), 952-970.

Simionescu, M., (2017), The relationship between tourist arrivals and accomodation in Romanian regions. A panel data approach, *Revista de turism - studii si cercetari in turism / Journal of tourism - studies and research in tourism*, 23

Sul, H. K., Chi, X., Han, H. (2020). Measurement development for tourism destination business environment and competitive advantages, *Sustainability*, 12 (20), 1-20.

Stoicea (Ignătescu), D. M., (2022). The competitiveness of the destination and the development of tourism in Romania: problems and challenges, *Annals of University of Craiova - Economic Sciences Series*, 1 (50), 116-128.

.