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Trends in Tourism Development in European Union Countries Before and After the COVID-19 Pandemic. How Quickly Has the Global Tourism Industry Recovered?

Katarzyna Cheba

West Pomeranian University of Technology in Szczecin

e-mail: katarzyna.cheba@zut.edu.pl

ORCID: 0000-0001-8753-7764

Iwona Bąk

West Pomeranian University of Technology in Szczecin

e-mail: iwona.bak@zut.edu.pl

ORCID: 0000-0001-8959-7269

Karolina Ertmańska

West Pomeranian University of Technology in Szczecin

e-mail: karolina.ertmanska@zut.edu.pl

ORCID: 0000-0003-4482-408X

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Abstract

Aim: The purpose of the article was to determine the development trends of tourism before and after the COVID-19 pandemic and to try to answer the question: How quickly did the tourism industry recover in EU countries and return to its pre-pandemic state?

Methodology: Two research approaches were used to build forecasts of selected tourism intensity indicators. The first one uses the trend models with seasonal fluctuations estimated based on monthly data before the pandemic. The forecasts were revised considering the current situation in the tourism market in individual EU countries. Various dynamics measures were used to estimate the value of the adjustment factor. As part of the second research approach, the Holt-Winters adaptive models were used.

Results: The analysis showed that EU countries have coped with the pandemic to varying degrees. Some of them, such as those in Southern Europe, recovered to pre-pandemic levels of tourism market activity relatively quickly. Surprisingly, this did not apply equally to all countries in the region (e.g. Italy).

Implications and recommendations: The research results described can be helpful for researchers and practitioners, such as government agencies and private companies, to review the forecasts and their application in forecasting tourism demand.

Originality/value: The added value of the work was the original research approach used by the authors, combining various statistical and econometric methods to predict the direction and rate of the recovery of the global tourism industry.

Keywords: tourism intensity indicators, the COVID-19 pandemic, EU countries trend models, adaptive models

1. Introduction

The pandemic of the new COVID-19 virus, one of humanitarian disasters, has affected people and businesses around the world, causing a global economic crisis, the tourism industry included. The impact of the pandemic on the operation of this industry is the subject of many scientific studies and a frequent topic of discussion around the world due to the fact that the tourism industry in many countries is one of the main economic sectors with a significant contribution to gross value added and job retention, as 1 in 10 jobs is directly related to tourism (McCabe & Qiao, 2020). An October 2020 UN report stated that up to 120 million tourism jobs were at risk due to the pandemic, and the industry could lose up to $1 trillion in turnover in that year. According to The World Bank (2020), the global number of international tourists in 2018 was 1.44 billion, up 5.8% from the previous year. Since 1995, international tourism has grown at an average rate of 4% per year worldwide. Due to the pandemic, almost all countries are struggling with problems concerning the number of visiting tourists visiting. In 2020, the number of international tourist visits worldwide dropped by 900 million, or 79%, compared to the previous year, which resulted in a loss of USD 935 billion in export earnings from international tourism. The situation affected all regions of the world: in Asia-Pacific, the drop in arrivals in January-November 2020 was 82%, in the Middle East 73%, and in Africa 69%, whilst international arrivals to Europe and the Americas fell by 68% (UNWTO, 2020).

This article aimed to determine tourism development trends before and after the pandemic, and to answer the question: How quickly did the tourism industry recover in EU countries and return to its pre-pandemic state? Since the tourism industry plays an important economic role for many countries, therefore it was important to carefully analyse and forecast tourism demand for the relevant strategic decisions, especially for decision-makers in tourism-dependent economies (Xiao et al., 2020). Inaccurate forecasts may result in an insufficient or excessive supply of food, hotel rooms and infrastructure, which may significantly impact the sustainable development of the tourism industry at a given destination (Onuferová et al., 2020; Li et al., 2022).

Two research approaches were used to build forecasts of selected tourism intensity indicators. The first one applied trend models with seasonal fluctuations estimated on the basis of monthly data before the pandemic. The forecasts were revised, taking into consideration the current situation in the tourism market in individual EU countries. Various dynamics measures were used to estimate the value of the adjustment factor. As part of the second research approach, the Holt-Winters adaptive models were used.

Although the processes taking place in the tourism services market, also in terms of tourism forecasting, are currently one of the important topics covered in the literature (Mei et al., 2019; Li et al., 2022; Rashad, 2022), there is a research gap regarding the prediction of the direction and rate of the recovery of the tourism industry of the European Union as a whole and the individual member states. The added value of the work is also the original research approach applied by the authors, combining various statistical and econometric methods. Indeed, there is no forecasting method that can produce the best forecasts with low error (Ghalehkhondabi et al., 2019), and only using different methods can provide forecasts sufficiently close to the realisation of the forecast variable. From a scientific point of view, the results presented in the article are a valuable source of information on how EU countries are coping with returning to the pre-pandemic levels of tourism market activity.

The article consists of six sections. Following the introduction describing the study's research objective, Section 2 presents an overview of publications on the impact of the COVID-19 pandemic on the tourism sector. Section 3 presents statistical data. Section 4 discusses the results obtained, while Section 5 compares the results with those obtained in other studies, and Section 6 presents the conclusions.

2. Literature Review – the Impact of the COVID-19 Pandemic on the Tourism Sector

The emergence of the pandemic caused global health and economic crises worldwide (Anderson et al., 2020). The tourism industry has been particularly affected, with a sharp drop in tourism due to the declining tourist activity of the population (Abbas et al., 2021). The occurrence of tourism crises is not a new phenomenon. The downturn in the tourist activity of the population was caused by terrorist attacks and war conflicts, as well as threats of various diseases. Pandemics negatively affect the behaviour of tourists and their mental well-being (Stankova et al., 2019; Abbott, 2021), as fear of contracting a disease while travelling leads to cancelling their trips. The severity of the pandemic can be assessed based on past epidemic figures such as SARS, Spanish flu, etc. (Jaipuria et al., 2020). When the World Health Organization announced in the summer of 2016 that the Zika virus was an international health threat, social media published information about travel restrictions to minimise virus transmission in public places (Avery, 2017). The situation was similar during the COVID-19 pandemic, even though, as noted by Meadows et al. (2019), the public showed the most concern in the health situation (as measured by the number of tweets and retweets) during the initial phase of the crisis, but then interest dropped dramatically.

The problems of the tourism industry were not only directly caused by the ban on travel but also by the need to maintain social distancing, as well as the change of economic status by job loss, which contributed to the cessation of tourist activity due to the lack of funds allocated for this purpose (Gössling et al., 2020). It was estimated that the global travel and tourism market lost around 62 million jobs in 2020. Although this scenario improved in 2021, the sector still recorded around 44 million fewer jobs worldwide compared to 2019. The Asia-Pacific region experienced the most significant loss of employment due to the COVID-19 pandemic, with nearly 25.5 million fewer jobs in the tourism industry (Statista, 2022).

According to Gössling & Schweiggartd (2022), it can be assumed that the situation will stabilise in the following years, but the complete return to the structure of pre-pandemic demand will be relatively long, as shown in studies in other countries – both European and non-European. The tourism sector will not emerge from the COVID-19 crisis without the so-called 'aftershocks'. The pandemic has caused a significant slowdown in economic growth, and even economic recession, in some business sectors. According to Jaipuria et al. (2020), the process of recovering from the post-pandemic crisis in India could last up to two years, whereas in South Africa, the socioeconomic costs of the pandemic may last even several years (Tourism sector…, 2020).

According to Gretzel et al. (2020), an essential condition for tourism to function during and after a pandemic is using modern ICT technologies, essential in solving many of the problems associated with a pandemic, such as traveler control, online education, and entertainment. Various actors and institutions looking for ways and tools to combat the pandemic have widely and quickly implemented new technological solutions into everyday life, including tourism. The pandemic has increased the acceptance of technology and digital transformation among tourists and service providers (Amaro et al., 2021; Lee et al., 2021; Ndou et al., 2022). For example, digital technologies, especially virtual reality, allow tourists to discover new places, even from their home, thus enriching their tourist experiences (Akhtar et al., 2021). Advanced virtual reality technologies take advantage of the 360-degree visibility of tourist destinations, stimulating the desire to travel and providing an unforgettable experience. The development of digital media and social media platforms is crucial. Technological innovations are essential, especially for those involved in travel and tourism-related business. From the point of view of tourism companies it has become possible to expand their business with online channels, introduce electronic sales, and thus reduce costs, automate customer service, and increase sales (Bąk et al., 2022).

The pandemic has changed virtually every aspect of life and increased the mental health concerns of most people, and they place great emphasis on improving their physical and mental well-being. A study conducted in the UK during the period of advanced pandemic found that more than 33% of British consumers believed that health and well-being were a vital part of their lives, compared to 23% before the pandemic. Nearly half of the respondents said that they crave rest to cope with the stress of the pandemic, whilst for 42% the priority for the post-COVID-19 holiday was to "recharge their batteries" and relax, and 33% stated that they need contact with nature and escape from everyday problems, especially those related to the pandemic (Medical Tourism Magazine, 2022). However, a survey by the Wellness Tourism Association found that nearly 78% of people in 48 countries declared that healthcare travel would be on their list of travel plans when restrictions are lifted. Most respondents believed that escaping from everyday stress in the context of a pandemic, interacting with nature and feeling rejuvenated were the main reasons they would book a wellness trip.

Sigala (2020) showed that many uncertainties characterise the post-pandemic new reality in the tourism industry. The first choice of most tourists may be a return to pre-covid normality and the reconstruction of tourism in accordance with current patterns, as long as sanitary conditions allow this. At the same time, the changes occurring in the tourism market before the pandemic will become apparent: interest in tourists' search for transformational experiences, the dynamic growth of the wellness sector and the development of the bleisure (business and leisure) segment (Keadplang, 2018). There are many indications that both domestic and foreign tourism will be revived, however, in what proportion this will happen will depend on the sanitary and epidemic conditions, as well as the prices in the tourism market.

3. Methodology

3.1. Statistical Data

The empirical research presented in the paper was based on monthly data describing the intensity of tourism in European Union countries. The following variables were considered:

- arrivals at tourist accommodation establishments (x_{1t}),
- nights spent at tourist accommodation establishments (x_{2t}),
- net occupancy rate (%) of bed-places and bedrooms in hotels and similar accommodations (x_{3t}).

Data covering two sub-periods were analysed: before the COVID-19 pandemic (monthly data from 2015-2019) and the pandemic period (monthly data from 2020-2022). Table 1 shows the selected descriptive characteristics of the variables under study, determined based on data covering the first of the analysed sub-periods. For each variable, the values determined on the basis of aggregate data for the 27 countries of the European Union are presented, as well as for the countries with the highest and lowest average values of indicators in the analysed time frame. From the information presented in Table 1, it follows that all the variables studied were characterised by a high level of variation – above 20%. Given the data for the EU-27 as a whole, these variables additionally showed right-hand asymmetry – which means that more than half of the EU countries achieved lower values of indicators than on average in the group, and these were also variables with a high intensity of seasonality.

Table 1. Descriptive characteristics of the tourism intensity indicators adopted for the study for the EU-27 and selected countries

Indicator	Area	Mean	Asymmetry	Coefficient of variation (%)
x_{1t}	EU – 27	76 943 571	0.55	33.28
	Germany	14 391 171	-0.12	22.36
	Luxembourg	96 969	0.34	27.12
x_{2t}	EU – 27	224 708 726	1.05	49.78
	Spain	38 070 736	0.70	42.28
	Luxembourg	243 320.07	0.75	45.64
x_{3t}	EU – 27	45.11	0.57	22.93
	Malta	65.20	-0.24	23.20
	Luxembourg	32.36	0.34	3.54

Source: own elaboration based on Eurostat data.

3.2. Research Method

In this paper, a two-stage research procedure was used to build forecasts of selected indicators of tourism intensity in EU countries (Figure 1).

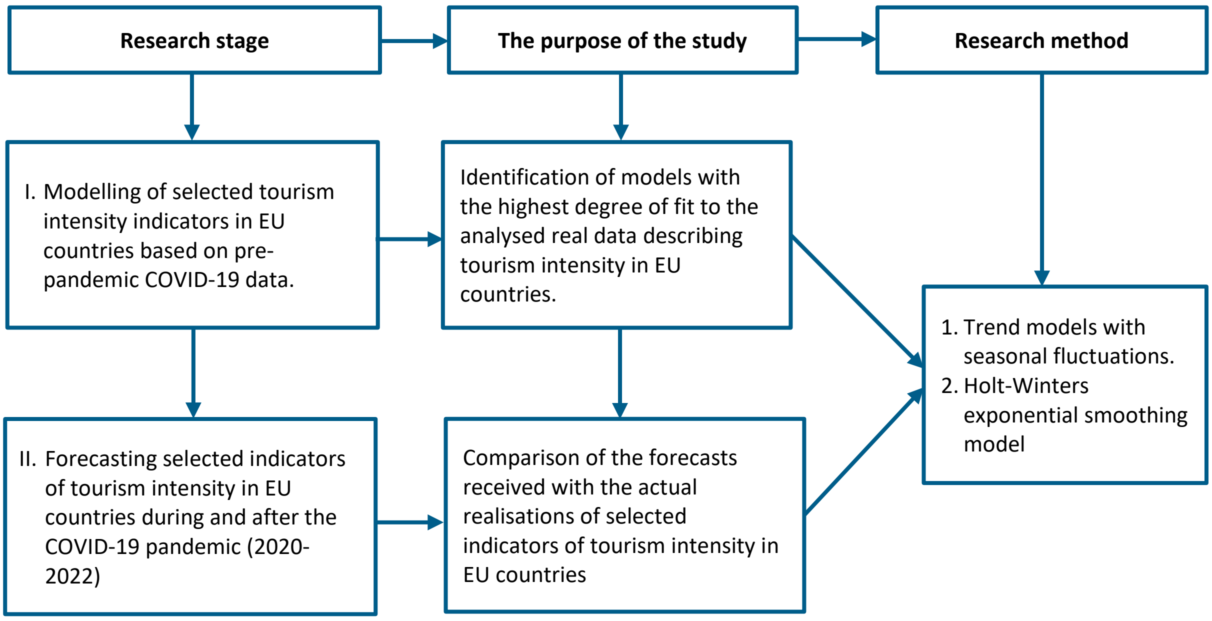

Fig. 1. The organization of the research

Source: own elaboration.

In the first stage, for data from before the COVID-19 pandemic (2015-2019), models were sought that would reflect the changes in this area to the greatest extent. In this case, 2019 was the period of empirical verification of forecasts. Two groups of models were considered: trend models with seasonal fluctuations and the Holt-Winters exponential smoothing model, which also allows the modelling and forecasting of variables with seasonal fluctuations (see: Tayman & Swanson, 1999; Kalekar, 2004; Goodwin, 2010; Dobrovič et al., 2021).

Four versions of trend models with seasonal fluctuations were estimated:

- the linear trend with fixed seasonality (LT):

$$y_t = \alpha_0 + \alpha_1 t + \varepsilon_t, \tag{1}$$

- the square trend with fixed seasonality (T2):

$$y_t = \alpha_0 + \alpha_1 t + \alpha_1 t^2 + \varepsilon_t, \quad (2)$$

- the exponential trend with relatively constant seasonality (ET):

$$y_t = e^{\alpha_0 + \alpha_1 t + \varepsilon_t}, \quad (3)$$

- the square trend with relatively constant seasonality (ET2):

$$y_t = e^{\alpha_0 + \alpha_1 t + \alpha_2 t^2 + \varepsilon_t}, \quad (4)$$

and additionally, a multiplicative version of the Holt-Winters model.

The Holt-Winters model consists of three equations describing the baseline level (m_t), the directional trend parameter (δ_{1t}), and the seasonality component (C_t). The equations for the multiplicative form are as follows:

$$m_t = \frac{\alpha Y_t}{C_{t-m}} + (1-\alpha)(m_{t-1} + \delta_{1t-1}), \quad (5)$$

$$\delta_{1t} = \beta(m_t - m_{t-1}) + (1-\beta)\delta_{1t-1}, \quad (6)$$

$$C_t = \frac{\delta Y_t}{m_t} + (1-\delta)C_{t-m}, \quad (7)$$

where *m* is the period of periodic fluctuations (in this case 12 months), and *α, β, δ* (to adjust the level, trend, and seasonal components, respectively) are the permanent smoothing values taking values between [0, 1]. The following formula expresses the predictor based on this model:

$$\Pi = (m_{t_0} + \delta_{1t_0} h) C_{t_0 - m + h}. \quad (8)$$

To select the model with the best predictive properties, both for trend models as well as for the Holt-Winters exponential smoothing models, the mean absolute percentage error of the smoothed values, i.e. $n - m + 1$ of ‘forecasts’ calculated for the time interval of the ‘sample’ was most often used:

$$MAPE = \frac{\sum_{t \epsilon M} \left| \frac{y_t - Y_t^*}{y_t} \right|}{n} * 100\%. \quad (9)$$

In Stage 2, forecasts for 2020-2022 were determined on the basis of models characterised by the highest degree of fit to empirical data, with forecasts for 2022 covering 6 to 10 months, depending on data availability. In this case the entire analysed time interval (2020-2022) was treated as a period of empirical verification of the determined forecasts. The estimated forecast values were compared again with the actual outputs of the individual variables, which allowed for the identification of countries with the most significant deviation from the estimated trend that did not consider the occurrence of the COVID-19 pandemic. It was also possible to identify countries where the designated forecast values were lower than the actual values at the end of the period under study. In this case, the recovery process from the COVID-19 pandemic turned out to be faster than the estimated forecasts that did not include the pandemic.

4. Results

Tables 2-4 present the best results (according to the level of ex-post errors for h=12 months less than 4% in the case of trend and for the Holt-Winters models) of modelling the variables selected for the study to describe tourism intensity. The results of modelling all the variables are also presented in the Appendix, summarising the average ex-post forecast error estimates for 2019 as the year of empirical verification of forecasts. The tables also include different forecast horizons – from *h*=3 months to *h*=12 months. The trend and Holt-Winters models with the lowest forecast mean absolute percentage error ratings for the most extended forecast horizon were selected for the compilation. The values of smoothing constants (*α, β, δ*) are given for each Holt-Winters model.

Table 2. Ex-post error assessments during the empirical forecast verification period (2019), considering different forecasting horizons – arrivals at tourist accommodation establishments (x_{1t})

Area	Model	Model Parameters	Evaluation of ex-post errors for			
			h=3	h=6	h=9	h=12
EU27	T	ET	2.23	2.96	2.94	2.73
	HW	0.1_0.45_0.95	0.95	2.24	1.89	1.84
AT	T	ET2	2.96	4.58	3.60	3.31
	HW	0.05_0.1_0.5	1.89	4.36	3.57	3.05
CZ	T	ET2	1.69	1.65	2.93	2.39
	HW	0.15_0.15_0.5	1.01	1.55	1.91	1.66
DK	T	ET2	3.26	3.44	2.61	2.69
	HW	0.05_0.9_0.25	2.50	2.93	2.36	2.12
FI	T	ET2	0.32	0.85	1.10	1.20
	HW	0.1_0.1_0.45	0.64	1.08	0.96	1.09
DE	T	ET2	0.71	1.51	1.57	1.40
	HW	0.05_0.35_0.55	0.55	1.27	1.34	1.11
HU	T	ET2	0.72	1.25	3.03	2.85
	HW	0.3_0.05_0.95	1.82	1.47	2.25	1.82
IT	T	ET2	2.92	4.22	4.40	3.87
	HW	0.5_0.25_0.95	1.09	3.34	2.75	2.35
LT	T	ET2	1.22	2.24	2.00	2.30
	HW	0.05_0.4_0.55	0.86	1.21	1.10	0.95
PL	T	ET2	2.38	2.44	2.41	2.23
	HW	0.3_0.65_0.7	0.65	1.81	1.92	1.69
RO	T	ET2	1.41	1.16	1.44	1.57
	HW	0.25_0.35_0.4	0.23	1.47	1.22	1.56
ES	T	ET2	0.59	2.56	2.37	3.25
	HW	0.15_0.9_0.2	0.67	1.78	1.33	1.54

Source: own elaboration based on Eurostat data.

Table 3. Ex-post error assessments during the empirical forecast verification period (2019), considering different forecasting horizons– nights spent at tourist accommodation establishments (x_{2t})

Area	Model	Model Parameters	Evaluation of ex-post errors for			
			h=3	h=6	h=9	h=12
EU27	T	ET	3.26	4.46	4.39	3.61
	HW	0.1_0.45_0.9	1.57	3.85	2.96	2.32
BG	T	ET2	5.38	4.30	3.63	3.95
	HW	0.2_0.4_0.6	3.26	3.08	2.99	2.94
CZ	T	ET2	1.73	1.98	2.65	2.29
	HW	0.15_0.1_0.55	1.34	1.88	2.05	1.74
DK	T	ET2	3.92	4.82	3.65	3.88
	HW	0.15_0.7_0.35	2.89	4.43	3.60	3.07
FI	T	ET	1.70	1.83	1.53	1.54
	HW	0.1_0.1_0.5	1.27	1.58	1.27	1.36
DE	T	ET2	1.83	4.15	3.72	3.02
	HW	0.1_0.55_0.75	1.32	3.79	3.09	2.54
HU	T	ET2	1.86	1.17	2.78	3.13
	HW	0.4_0.05_0.95	1.83	2.49	2.54	1.94
LT	T	ET2	2.28	2.76	2.57	2.21
	HW	0.15_0.75_0.7	0.33	0.63	1.10	1.03
PL	T	ET2	2.02	1.68	1.95	2.30
	HW	0.35_0.4_0.8	0.99	1.83	1.62	1.43
PT	T	ET2	1.50	1.71	2.34	3.27
	HW	0.25_0.5_0.8	2.62	2.49	2.01	2.38
RO	T	ET2	4.70	3.41	2.69	2.46
	HW	0.2_0.65_0.45	1.37	1.32	1.31	1.57
ES	T	ET2	0.53	2.93	2.81	3.61
	HW	0.05_0.7_0.6	1.07	1.84	1.52	1.59
SE	T	ET2	3.72	4.91	3.90	3.66
	HW	0.05_0.95_0.4	1.12	2.80	2.35	2.02

Source: own elaboration based on Eurostat data.

Table 4. Ex-post error assessments during the empirical forecast verification period (2019), considering different forecasting horizons – net occupation rate (%) of bed-places and bedrooms in hotels and similar accommodations (x_{3t})

Area	Model	Model Parameters	Evaluation of ex-post errors for			
			h=3	h=6	h=9	h=12
EU27	T	ET2	0.44	1.33	1.07	1.93
	HW	0.15_0.55_0.6	0.20	0.85	1.07	0.99
CY	T	ET2	1.40	2.19	2.24	2.41
	HW	0.15_0.55_0.55	3.44	2.27	1.64	2.06
DK	T	ET2	0.85	1.36	1.22	1.51
	HW	0.15_0.55_0.25	0.43	0.82	0.96	1.29
FI	T	ET2	2.04	2.15	1.98	3.12
	HW	0.15_0.05_0.5	1.80	1.72	1.48	1.44
DE	T	ET2	0.48	1.06	1.20	1.32
	HW	0.15_0.3_0.7	0.30	0.62	0.86	0.85
HU	T	ET2	3.84	2.41	2.69	2.09
	HW	0.15_0.1_0.7	2.37	1.71	1.97	1.61
LT	T	ET2	4.60	3.07	2.86	2.70
	HW	0.05_0.35_0.25	1.91	2.05	1.95	1.98
NL	T	ET2	2.82	2.93	3.05	2.71
	HW	0.3_0.1_0.85	2.60	2.60	2.27	2.01
PL	T	ET2	1.26	1.49	1.73	1.72
	HW	0.25_0.8_0.95	0.82	1.32	1.46	1.41
RO	T	ET2	1.77	2.02	1.70	1.87
	HW	0.25_0.9_0.5	0.56	1.44	1.66	1.79
ES	T	ET2	2.08	2.13	1.51	2.00
	HW	0.1_0.15_0.75	0.41	1.14	0.96	1.09
SE	T	ET2	2.48	3.38	3.19	3.81
	HW	0.05_0.15_0.35	0.96	1.14	1.35	1.51

Source: own elaboration based on Eurostat data.

The information presented in the tables shows that the models with the lowest values of the forecast mean absolute percentage error for all the analysed variables turned out to be the Holt-Winters models. These error estimates were relatively low for most of the analysed countries and the EU-27, and even below 1%.

In the second stage, these models were used to determine forecasts for 2020-2022. The results of this research phase are shown in Table 5 and, for the EU-27, in Figures 2-4.

Table 5 provides information on the assessments of the forecast mean absolute percentage error determined for each year separately. For the year 2022, the symbol '*' indicates the countries for which the estimates of forecast errors concerned periods shorter than that resulting from the designation of the relevant column in the table. Symbol (-) indicates countries for which the designated forecast assessments in the last month analysed (column marked 4) were lower than the actual realisations. These countries started their recovery from the COVID-19 pandemic slightly earlier than others.

As one can see, the most significant differences between the determined forecast values and their realisations concerned the year 2020 – the first year of the pandemic. For some countries (e.g. Croatia, Cyprus, Greece and Italy), they exceeded 1500%. The highest differences for this period were identified for Cyprus – the forecast mean absolute percentage error was above 19000%. In subsequent years, with the recovery from the pandemic, a gradual narrowing of the gap between forecast values and their realisations was observed. The best situation, exceeding the values of the determined forecasts in the last month for which actual values were available, and thus a faster-than-expected pace of recovery from the pandemic, was identified for the following countries:

- for variable x_{1t} for Denmark, Luxembourg, Romania and Spain,
- for variable x_{2t} for Austria, Croatia, Denmark, Spain, and Luxembourg,
- for variable x_{3t} for Belgium, Germany, Luxembourg, Poland, Slovenia, Sweden and in addition, the EU-27.

Table 5. Average ex-post forecast error assessments (MAPE) in the period of empirical forecast verification (2020-2022)

Area	x_{1t}				x_{2t}				x_{3t}			
	2020	2021	I-X.2022	MAPE	2020	2021	I-X.2022	MAPE	2020	2021	I-IX.2022	MAPE
EU27	448.06	169.85	30.67*	20.53	357.60	154.36	21.60*	9.46	195.73	84.34	8.14*	7.96 (-)
AT	930.76	684.50	34.68	20.61	588.60	499.12	17.54	3.33 (-)	998.36	508.68	30.95	51.06
BE	>1500	104.84	14.34	12.04	>1300	106.24	13.75	12.44	249.72	82.08	5.49	2.19 (-)
BG	447.63	55.39	19.96*	17.39	393.57	81.07	39.56*	49.12	176.77	133.28	126.34	224.90
HR	>4500	149.23	31.28	33.23	987.02	79.97	13.23	9.40 (-)	371.19	88.07	30.46	106.45
CY	>19000	356.28	90.76*	78.51	>2200	441.04	66.50*	34.55	207.52	91.91	29.73*	19.87
CZ	1097.67	570.26	31.89	14.85	666.29	391.48	29.35	14.41	295.95	230.11	38.37	16.25
DK	107.47	66.88	16.02	14.00 (-)	92.84	74.76	14.08	9.96 (-)	251.75	64.39	19.98	12.12
EE	331.12	175.26	51.00*	44.28	211.47	136.61	32.26*	25.77	331.02	137.55	38.43	30.96
FI	219.58	79.31	24.97	8.14	153.34	61.15	20.45	9.01	128.44	61.58	22.53	19.59
FR	485.28	108.15	20.40	9.31	479.83	88.90	8.15	1.55	124.99	45.06	7.94	10.56
DE	335.81	298.84	43.16	19.30	239.69	218.89	30.66	12.17	169.90	112.83	14.04	17.11 (-)
EL	>2100	121.89	91.20	111.60	>2400	189.57	42.13	40.58 (-)	133.27	45.79	28.64	61.60
HU	734.75	460.12	63.36	53.25	546.97	322.47	52.19	37.61	331.28	130.50	15.52	6.58
IT	>1500	190.40	23.70	5.37	418.29	167.09	15.72	0.32	>1100	>1300	39.49*	5.94
LV	304.49	197.78	64.65	40.79	195.43	199.11	73.15	46.21	303.74	101.49	36.36	54.42
LT	296.29	232.84	49.89	42.42	218.65	180.97	57.02	49.53	175.59	123.70	34.92	41.38
LU	329.06	62.23	21.08	5.70 (-)	314.50	42.48	20.08	16.03 (-)	133.92	48.32	30.99	22.96 (-)
MT	4237.1	317.21	46.18	27.91	>1500	320.93	40.95	22.61	>1000	186.31	128.80	147.63
NL	191.94	99.14	34.54	12.62	149.27	67.39	21.53	3.46	358.04	150.26	14.56	10.88 (-)
PL	450.25	245.89	38.54	26.73	322.97	168.81	15.98	7.40	153.95	87.95	17.77	16.52 (-)
PT	783.87	239.33	30.05	16.07	712.08	260.59	39.93	26.87	241.08	108.28	34.20	63.87
RO	750.81	39.78	8.13	10.59 (-)	662.62	47.41	10.30	3.72	171.94	89.48	17.40	10.55
SK	926.44	613.24	75.81	56.64	531.01	442.58	102.39	73.11	148.71	75.89	48.76	39.59
SI	1015.3	750.13	50.68	52.98	>1100	394.32	31.36	26.26	89.18	62.62	101.28	120.28 (-)
ES	1013.7	137.02	12.74	13.83 (-)	936.46	198.78	10.13	0.94	2120.88	196.80	37.66	72.25
SE	112.52	67.01	15.42	16.87	84.34	44.93	10.15	3.80	104.23	29.48	30.77	29.51 (-)

Source: own elaboration.

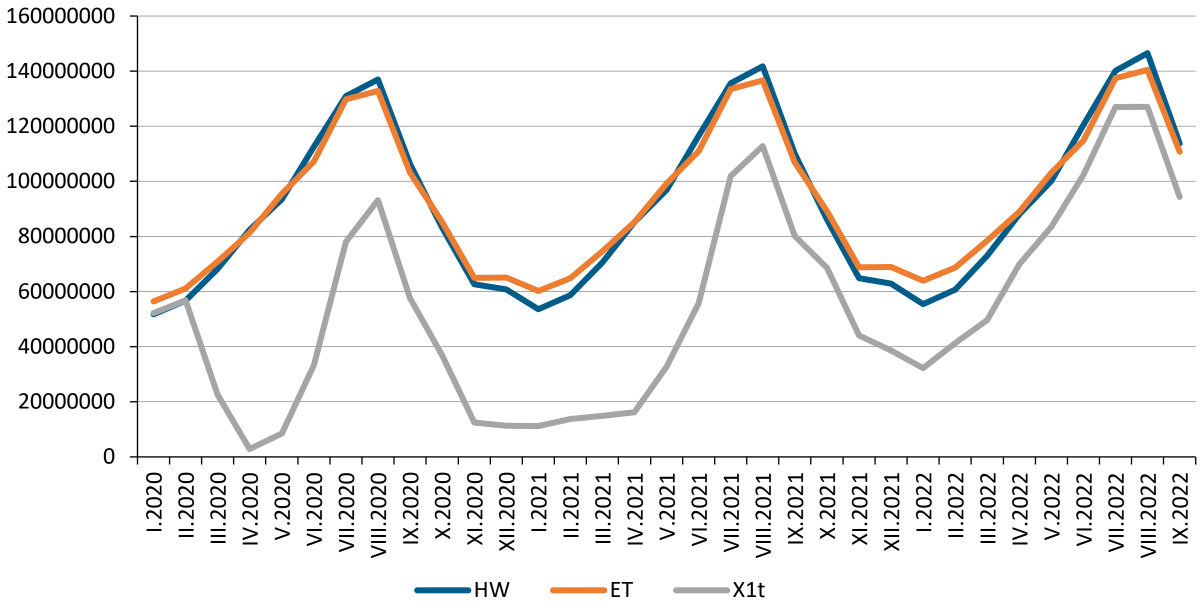

Fig. 2. The comparison of values of expired forecasts and actual realisation of the variable arrivals at tourist accommodation establishments (x_{1t}) for the EU-27 in 2020-2022

Source: own elaboration.

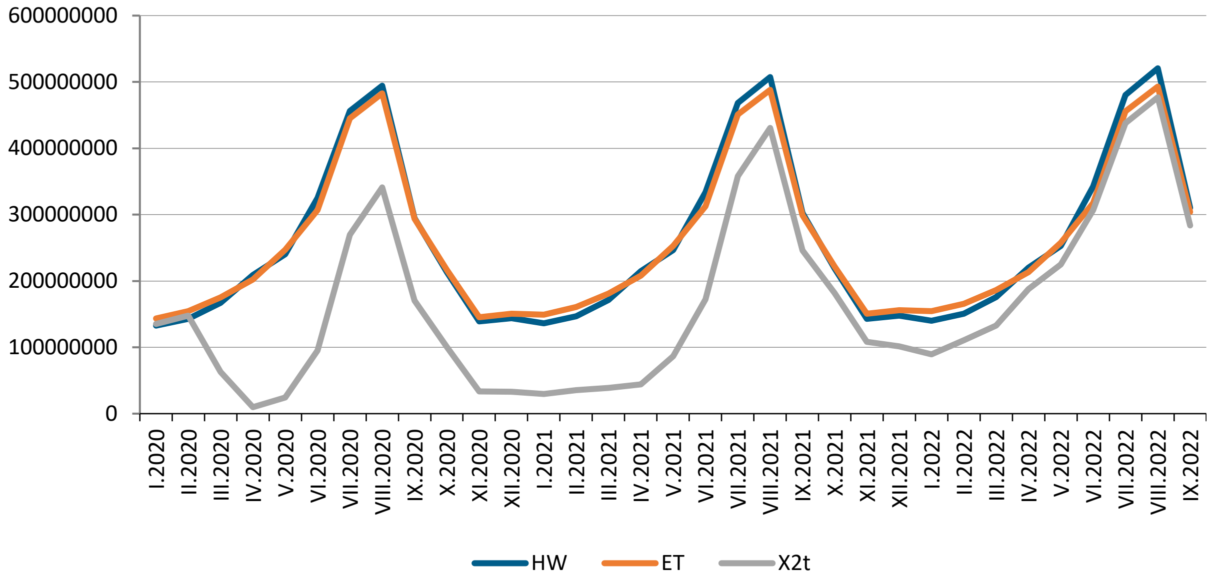

Fig. 3. The comparison of values of expired forecasts and actual realisation of the variable nights spent at tourist accommodation establishments (x_{2t}) for the EU-27 in 2020-2022

Source: own elaboration.

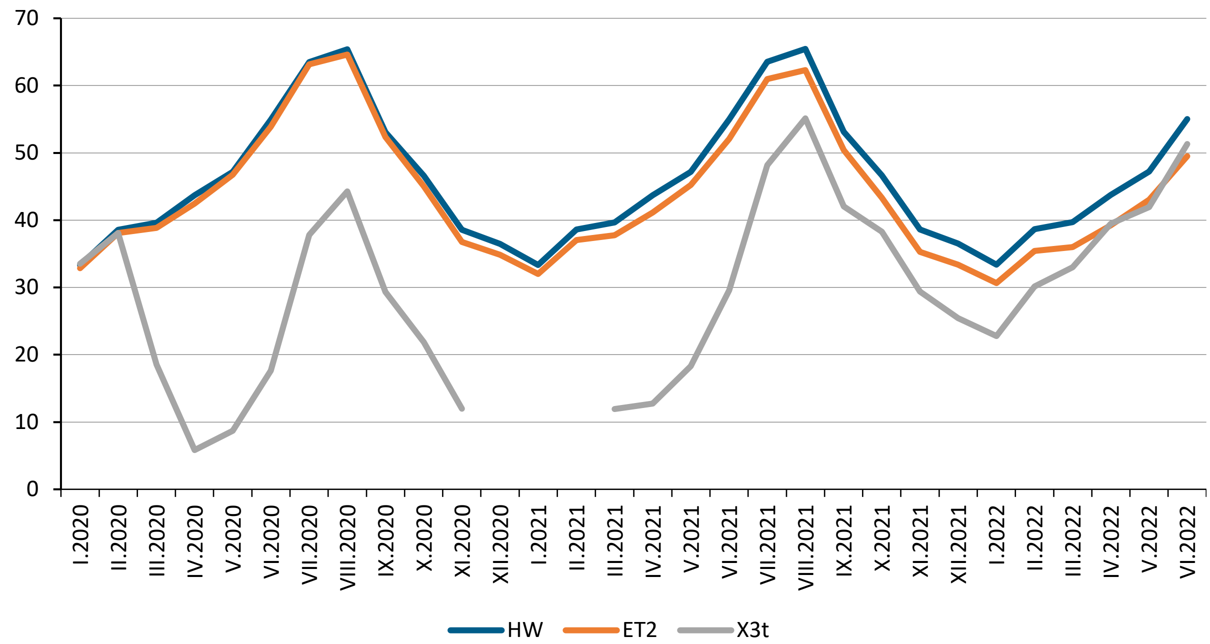

Fig. 4. The comparison of the value of the expired forecasts and the actual realisation of the variable net occupancy rate (%) of beds and bedrooms in hotels and similar accommodations (x_{3t}) for the EU-27 in 2020-2022

Source: own elaboration.

The number of countries that succeeded in 2022 (usually by Sept-Oct 2022) in achieving a level higher than the models estimated based on pre-pandemic COVID-19 data appears to be small. In addition, Luxembourg, which is not a typical tourist destination, is recurring on the list. It is worth noting that for countries that are among the most attractive to tourists, e.g. Italy and France, the values of the analysed indicators were lower than the estimated trends suggest. The exception, however, was Spain, which had lifted the so-called pandemic restrictions sooner than, for example, Italy.

5. Discussion and Conclusions

More than three years of the COVID-19 pandemic have forced reflection on the condition and prospects of the tourism economy, both globally and locally. Tourism is undoubtedly one of the most affected sectors of the world economy. Depending on the situation, travel restrictions, blockades, quarantine, and mandatory testing have affected national tourism systems, creating unstable and unpredictable business and travel environments (Gössling & Schweiggartd, 2022). The restrictions introduced on the movement of people resulted in a decline in the number of tourists staying at tourist accommodations. Substantial decreases in the use of facilities were observed in all EU countries surveyed. Despite the initially quite optimistic expectations of experts regarding the duration of pandemic restrictions, it soon became apparent that it would take much longer than expected to return to the pre-pandemic situation (Zenker & Kock, 2020). According to the World Travel & Tourism Council, 75 million jobs were directly threatened in 2020, and the industry was estimated to lose more than $2.1 trillion in turnover (WTTC, 2020).

The crisis in the tourism industry caused by the COVID-19 pandemic requires further research to improve the recognition of the phenomenon in order to counteract it and also reduce its harmful effects (Chang & Wu, 2021; Landmesser, 2021). However, it should be emphasised that not all aspects of COVID-19 should be considered a novelty, as similar changes taking place in the tourism market, but on a smaller scale, were observed already in previous years – see e.g. studies on SARS (Zeng et al., 2005), bird flu (Rittichainuwat & Chacraborty, 2009), and the influenza pandemic (Page et al., 2006; Přívara, 2022).

Some similarities can also be found in the descriptions of the effects caused by the recent 2008 economic crisis on the tourism market, including the behaviour of travelers during the crisis. Reflections on this topic can be found, for example, in the study by Campos-Soria et al. from 2015, which examined, among other things, how tourists from 165 regions of the EU-27 countries reduced their travel expenses during the global economic crisis in 2009.

It should also be emphasised how ‘healthy’ the companies operating in the industry will be and how consumers will react in the long run, which will project the speed of the tourism sector’s recovery from the pandemic economic crisis. This challenge directly highlights the critical importance of systemic resilience – the capacity of the tourism ecosystem to withstand shocks, adapt to new conditions, and potentially transform. The pandemic has served as an unprecedented stress test, revealing that recovery is not just about returning to pre-pandemic levels but also concerns building adaptive capacity. This includes diversifying tourism products, strengthening local supply chains, and integrating flexible business models that can better navigate future uncertainty and disruption.

The analysis of the research presented in this paper shows that only a small group of countries at the end of 2020 managed to achieve the values of the considered indicators under at levels similar to those resulting from forecasts estimated based on the pre-pandemic data. In other words, the process of recovery of the EU-27 countries from the crisis caused by the pandemic in the tourism market is still ongoing.

Due to the relatively short post-pandemic period and the newly emerging reports of an increase in the number of cases in some countries, the current situation cannot continue to be regarded as a time unmarked by the coronavirus pandemic. Therefore, this study can be regarded as a contribution to the further discussion of the scientific community on the possibilities for the development of the tourism industry and its return to the state before the pandemic.

A significant limitation of the considerations presented in the paper is the need to have a relatively long time series to predict future changes. The time series used to forecast changes in the tourism services market in the EU-27 in the post-pandemic period of COVID-19 were, for obvious reasons, too short, and did not allow for the classical prediction of changes in this market on the basis of the methods chosen by the authors. Thus, the proposed two-stage research procedure and research primarily aimed at identifying countries that have achieved the results of tourism market activity predicted as possible before the pandemic.

The research results described can be helpful for both researchers and practitioners, such as government agencies and private companies, to review the forecasts and their application in forecasting tourism demand.

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Appendix

Table 2A. Ex-post error assessments during the empirical forecast verification period (2019), considering different forecasting horizons– arrivals at tourist accommodation establishments (x_{1t})

Area	Model	Model Parameters	Evaluation of ex-post errors for			
			h=3	h=6	h=9	h=12
EU27	T HW	ET 0.1_0.45_0.95	2.23 0.95	2.96 2.24	2.94 1.89	2.73 1.84
AT	T HW	ET2 0.05_0.1_0.5	2.96 1.89	4.58 4.36	3.60 3.57	3.31 3.05
BE	T HW	ET2 0.05_0.8_0.85	6.71 2.32	6.84 3.49	8.63 2.79	9.45 2.18
BG	T HW	ET2 0.1_0.25_0.85	5.34 4.12	4.75 2.56	5.48 2.98	4.47 2.60
CZ	T HW	ET2 0.15_0.15_0.5	1.69 1.01	1.65 1.55	2.93 1.91	2.39 1.66
DK	T HW	ET2 0.05_0.9_0.25	3.26 2.50	3.44 2.93	2.61 2.36	2.69 2.12
EE	T HW	ET2 0.15_0.5_0.95	2.05 3.00	3.59 1.91	4.10 1.80	4.42 2.18
FI	T HW	ET2 0.1_0.1_0.45	0.32 0.64	0.85 1.08	1.10 0.96	1.20 1.09
FR	T HW	ET2 0.45_0.1_0.95	4.69 1.32	5.76 4.13	7.76 5.44	7.64 5.22
DE	T HW	ET2 0.05_0.35_0.55	0.71 0.55	1.51 1.27	1.57 1.34	1.40 1.11
EL	T HW	ET2 0.25_0.95_0.3	>20 8.42	>20 6.78	>20 4.62	>20 4.52
HU	T HW	ET2 0.3_0.05_0.95	0.72 1.82	1.25 1.47	3.03 2.25	2.85 1.82
IT	T HW	ET2 0.5_0.25_0.95	2.92 1.09	4.22 3.34	4.40 2.75	3.87 2.35
LV	T HW	ET2 0.2_0.25_0.95	10.34 1.68	10.01 1.39	11.79 1.43	11.62 1.83
LT	T HW	ET2 0.05_0.4_0.55	1.22 0.86	2.24 1.21	2.00 1.10	2.30 0.95
LU	T HW	ET2 0.05_0.1_0.65	4.08 3.39	4.68 2.99	5.04 2.76	4.18 2.76
MT	T HW	ET2 0.3_0.05_0.65	8.44 2.44	7.37 4.03	9.01 3.41	7.74 3.42
NL	T HW	ET2 0.25_0.05_0.85	3.10 2.77	6.60 6.09	4.90 4.14	4.58 3.68
PL	T HW	ET2 0.3_0.65_0.7	2.38 0.65	2.44 1.81	2.41 1.92	2.23 1.69
PT	T HW	ET2 0.05_0.15_0.8	1.84 1.13	3.12 1.93	2.83 2.09	4.98 2.56
RO	T HW	ET2 0.25_0.35_0.4	1.41 0.23	1.16 1.47	1.44 1.22	1.57 1.56
SK	T HW	ET 0.05_0.05_0.2	4.01 0.82	7.90 1.01	10.63 1.62	12.80 1.49
SI	T HW	ET2 0.05_0.05_0.45	19.83 10.75	14.50 7.36	13.95 5.53	18.15 6.71
ES	T HW	ET2 0.15_0.9_0.2	0.59 0.67	2.56 1.78	2.37 1.33	3.25 1.54
SE	T HW	ET2 0.05_0.05_0.05	2.81 0.72	2.44 1.56	3.18 1.88	4.05 2.22

Source: own elaboration based on Eurostat data.

Table 3A. Ex-post error assessments during the empirical forecast verification period (2019), considering different forecasting horizons– nights spent at tourist accommodation establishments (x_{2t})

Area	Model	Model Parameters	Evaluation of ex-post errors for			
			h=3	h=6	h=9	h=12
EU27	T HW	ET 0.1_0.45_0.9	3.26 1.57	4.46 3.85	4.39 2.96	3.61 2.32
AT	T HW	ET 0.1_0.85_0.8	2.02 0.17	5.61 5.42	4.53 4.09	4.42 3.60
BE	T HW	ET2 0.1_0.5_0.5	5.26 2.69	5.66 4.97	7.57 3.66	8.32 2.89
BG	T HW	ET2 0.2_0.4_0.6	5.38 3.26	4.30 3.08	3.63 2.99	3.95 2.94
HR	T HW	ET2 0.35_0.4_0.7	7.99 4.78	9.06 8.05	12.74 6.84	9.60 5.37
CY	T HW	ET2 0.2_0.05_0.95	7.91 2.85	6.84 1.89	6.76 1.92	8.35 2.93
CZ	T HW	ET2 0.15_0.1_0.55	1.73 1.34	1.98 1.88	2.65 2.05	2.29 1.74
DK	T HW	ET2 0.15_0.7_0.35	3.92 2.89	4.82 4.43	3.65 3.60	3.88 3.07
EE	T HW	ET2 0.95_0.1_0.4	1.81 1.28	3.34 1.70	3.91 1.88	4.58 2.06
FI	T HW	ET 0.1_0.1_0.5	1.70 1.27	1.83 1.58	1.53 1.27	1.54 1.36
FR	T HW	ET2 0.05_0.95_0.65	7.83 1.81	8.70 5.76	8.96 3.95	8.71 3.24
DE	T HW	ET2 0.1_0.55_0.75	1.83 1.32	4.15 3.79	3.72 3.09	3.02 2.54
EL	T HW	ET2 0.3_0.45_0.55	>20 12.65	19.62 9.83	>20 6.89	>20 5.66
HU	T HW	ET2 0.4_0.05_0.95	1.86 1.83	1.17 2.49	2.78 2.54	3.13 1.94
IT	T HW	ET2 0.45_0.2_0.9	2.72 0.28	4.83 3.80	5.60 3.31	4.53 2.51
LV	T HW	ET2 0.05_0.75_0.9	8.24 2.05	7.81 2.30	9.38 1.70	9.21 1.98
LT	T HW	ET2 0.15_0.75_0.7	2.28 0.33	2.76 0.63	2.57 1.10	2.21 1.03
LU	T HW	ET 0.05_0.95_0.85	4.87 1.70	5.93 1.29	6.03 1.31	6.04 1.77
MT	T HW	ET2 0.3_0.05_0.75	8.16 3.13	6.91 4.21	8.35 3.21	7.54 2.91
NL	T HW	ET2 0.1_0.7_0.75	3.99 0.77	9.56 7.53	6.93 5.26	6.35 4.33
PL	T HW	ET2 0.35_0.4_0.8	2.02 0.99	1.68 1.83	1.95 1.62	2.30 1.43
PT	T HW	ET2 0.25_0.5_0.8	1.50 2.62	1.71 2.49	2.34 2.01	3.27 2.38
RO	T HW	ET2 0.2_0.65_0.45	4.70 1.37	3.41 1.32	2.69 1.31	2.46 1.57
SK	T HW	ET 0.1_0.75_0.6	4.34 3.31	8.35 3.11	10.60 2.64	12.71 2.30
SI	T HW	ET2 0.05_0.05_0.05	19.26 8.53	13.86 7.98	14.17 5.55	16.45 6.10
ES	T HW	ET2 0.05_0.7_0.6	0.53 1.07	2.93 1.84	2.81 1.52	3.61 1.59
SE	T HW	ET2 0.05_0.95_0.4	3.72 1.12	4.91 2.80	3.90 2.35	3.66 2.02

Source: own elaboration based on Eurostat data.

Table 4A. Ex-post error assessments during the empirical forecast verification period (2019), considering different forecasting horizons – net occupation rate (%) of beds and bedrooms in hotels and similar accommodations (x_{3t})

Area	Model	Model Parameters	Evaluation of ex-post errors for			
			h=3	h=6	h=9	h=12
EU27	T	ET2	0.44	1.33	1.07	1.93
	HW	0.15_0.55_0.6	0.20	0.85	1.07	0.99
AT	T	ET2	0.85	4.32	3.44	4.31
	HW	0.05_0.6_0.7	0.56	4.09	2.90	3.31
BE	T	ET2	1016	10.83	13.49	14.44
	HW	0.1_0.4_0.65	1.50	2.40	2.14	2.09
BG	T	ET2	3.01	2.94	2.97	5.59
	HW	0.55_0.65_0.95	3.76	3.69	4.08	3.48
HR	T	ET2	11.77	7.41	7.16	6.64
	HW	0.15_0.7_0.55	6.65	4.85	4.13	3.68
CY	T	ET2	1.40	2.19	2.24	2.41
	HW	0.15_0.55_0.55	3.44	2.27	1.64	2.06
CZ	T	ET2	3.18	3.01	4.17	5.99
	HW	0.05_0.2_0.45	0.85	1.90	2.13	2.01
DK	T	ET2	0.85	1.36	1.22	1.51
	HW	0.15_0.55_0.25	0.43	0.82	0.96	1.29
EE	T	ET2	1.70	3.67	4.11	5.95
	HW	0.15_0.9_0.3	3.55	2.48	2.43	2.38
FI	T	ET2	2.04	2.15	1.98	3.12
	HW	0.15_0.05_0.5	1.80	1.72	1.48	1.44
FR	T	ET2	7.44	6.86	7.01	7.39
	HW	0.35_0.1_0.95	0.69	2.53	1.76	1.58
DE	T	ET2	0.48	1.06	1.20	1.32
	HW	0.15_0.3_0.7	0.30	0.62	0.86	0.85
EL	T	ET2	8.97	7.07	5.57	5.60
	HW	0.05_0.95_0.95	3.35	5.01	4.66	4.02
HU	T	ET2	3.84	2.41	2.69	2.09
	HW	0.15_0.1_0.7	2.37	1.71	1.97	1.61
IT	T	ET2	11.68	13.58	17.02	16.91
	HW	0.05_0.05_0.2	1.18	2.86	5.40	5.91
LV	T	ET2	7.87	8.99	11.54	12.62
	HW	0.5_0.9_0.95	2.26	2.33	1.92	1.97
LT	T	ET2	4.60	3.07	2.86	2.70
	HW	0.05_0.35_0.25	1.91	2.05	1.95	1.98
LU	T	ET2	4.25	4.96	5.72	4.73
	HW	0.05_0.1_0.95	0.09	0.83	1.08	1.57
MT	T	ET2	10.40	7.02	6.30	5.73
	HW	0.6_0.05_0.9	2.90	3.56	2.69	2.36
NL	T	ET2	2.82	2.93	3.05	2.71
	HW	0.3_0.1_0.85	2.60	2.60	2.27	2.01
PL	T	ET2	1.26	1.49	1.73	1.72
	HW	0.25_0.8_0.95	0.82	1.32	1.46	1.41
PT	T	ET2	0.44	2.68	2.62	4.67
	HW	0.4_0.05_0.85	2.73	1.61	1.38	1.46
RO	T	ET2	1.77	2.02	1.70	1.87
	HW	0.25_0.9_0.5	0.56	1.44	1.66	1.79
SK	T	ET2	2.88	5.49	7.32	9.95
	HW	0.15_0.7_0.55	2.49	2.82	2.77	2.30
SI	T	ET2	>20	>20	>20	>20
	HW	0.2_0.8_0.05	14.65	3.48	9.33	8.23
ES	T	ET2	2.08	2.13	1.51	2.00
	HW	0.1_0.15_0.75	0.41	1.14	0.96	1.09
SE	T	ET2	2.48	3.38	3.19	3.81
	HW	0.05_0.15_0.35	0.96	1.14	1.35	1.51

Source: own elaboration based on Eurostat data.

Trendy w rozwoju turystyki w krajach Unii Europejskiej przed pandemią Covid-19 i po niej. Jak szybko globalna branża turystyczna odzyskała równowagę?

Streszczenie

Cel: Celem artykułu jest określenie trendów rozwoju turystyki przed i po Covid-19 oraz próba odpowiedzi na pytanie: Jak szybko branża turystyczna odbudowywała się w krajach UE i jak szybko następowało przywrócenie jej do stanu sprzed pandemii?

Metodyka: Do stworzenia prognoz wybranych wskaźników intensywności turystyki wykorzystano dwa podejścia badawcze. Pierwsze z nich wykorzystuje modele trendów z uwzględnieniem fluktuacji sezonowych oszacowanych na podstawie danych miesięcznych sprzed pandemii Covid-19. Prognozy zostały zrewidowane, biorąc pod uwagę obecną sytuację na rynku turystycznym w poszczególnych krajach UE. Do oszacowania wartości współczynnika korekty wykorzystano różne miary dynamiki. W ramach drugiego podejścia badawczego wykorzystano modele adaptacyjne Holta-Wintersa.

Wyniki: Z przeprowadzonych analiz wynika, że kraje UE poradziły sobie z Covid-19 w różny sposób. Niektóre z nich, np. kraje południowej Europy, stosunkowo szybko zaczęły wracać do poziomu aktywności rynku turystycznego sprzed pandemii. Co zaskakujące, nie dotyczy to w równym stopniu wszystkich krajów tego regionu (np. Włoch).

Implikacje i rekomendacje: Opisane wyniki badań mogą być pomocne dla naukowców i praktyków, takich jak agencje rządowe i prywatne firmy, które mogą je wykorzystać do prognozowania popytu na usługi rynku turystycznego.

Oryginalność/wartość: Wartością dodaną pracy jest oryginalne podejście badawcze zastosowane przez autorów, łączące różne metody statystyczne i ekonometryczne w celu przewidywania kierunku i tempa ożywienia globalnej branży turystycznej.

Słowa kluczowe: wskaźniki intensywności ruchu turystycznego; Covid-19; kraje UE, modele trendów; modele adaptacyjne