

Journal of Geology, Geography and Geoecology

Journal home page: geology-dnu.dp.ua

ISSN 2617-2909 (print)
ISSN 2617-2119 (online)

Journ. Geol. Geograph.
Geology,
30(2), 344–354.
doi: [10.15421/112131](https://doi.org/10.15421/112131)

Nezdoyminov S. G., Baldzhy M. D., Kniazhkovska H. O.

Journ. Geol. Geograph. Geoecology, 30(2), 344-354.

Regional measurement of the hotel sector development of a tourist destination (on the example of Odessa region, Ukraine)

Sergii G. Nezdoyminov¹, Maryna D. Baldzhy¹, Hanna O. Kniazhkovska¹

¹Odessa National Economic University, Odessa, Odessa, Ukraine, 2072945@gmail.com

Received: 01.12.2020

Received in revised form: 23.12.2020

Accepted: 05.01.2021

Abstract. In the conditions of transformation of the national economy and intensification of competition in the regional tourist markets, Ukrainian hotel business enterprises have an important problem related to increasing the efficiency of filling hotel places and attracting tourist flows. One of the ways to solve this problem is to form a management measures

based on forecasting the length of stay of tourists in accommodation facilities, load levels of hotel enterprises in tourist destinations of Ukraine, planning the production of competitive hotel services that can meet the needs of foreign and domestic consumers, market demand. This problem is especially important in the context of overcoming the effects of the global COVID-19 pandemic. The purpose of the article is to identify trends in the hotel business in the tourist regions of Ukraine and outline the prospects that can be realized in post-crisis conditions. The study used a statistical method of trend analysis of the dynamics of the duration of tourists in hotels, which aims at the establishing patterns of changes in the levels of the studied indicators over time, to identify the main trend of this phenomenon. The example of Odessa region proved that the evaluation of the hotel business areas are the basis for predicting spatial and temporal relationships in the regional economy for the development of hotel business in other tourist destinations, increase their competitiveness and improve the marketing of tourist flows. According to the calculations, the annual decrease in the length of stay of tourists for the period 2021-2022 in hotel establishments of the Odessa region is forecasted. The experience of experimental verification of the proposed approach to forecasting the length of stay of tourists in hotel establishments shows that the proposed research methods can form modern tools for diagnosing the current state of regional markets for hotel services and making management decisions.

Keywords: hotel industry, tourist flow, forecasting, tourism, trend analysis.

Регіональний вимір розвитку готельного сектору туристичної дестинації (на прикладі Одеського регіону, Україна)

С.Г. Нездоймінов¹, М. Д. Балджи¹, Г.О. Княжковська¹

¹Одеський національний економічний університет, Одеса, Україна, 2072945@gmail.com

Анотація. В умовах трансформації національної економіки та загострення конкуренції на регіональних туристичних ринках, українські підприємства сфери гостинності мають важливу проблему, пов'язану з підвищенням ефективності завантаження готельних місць та приваблення туристичних потоків. Одним із шляхів вирішення цієї проблеми, автори вважають формування заходів управління на основі прогнозування тривалості перебування туристів в засобах розміщення, рівнів завантаження підприємств готельної сфери в туристичних дестинаціях України, планування виробництва конкурентоспроможних готельних послуг, які зможуть задовольнити потреби іноземних та вітчизняних споживачів, оперативно реагуючи на ринковий попит. Ця проблема набуває особливого значення в умовах подолання наслідків світової пандемії COVID-19. У статті проаналізовано тенденції розвитку сектору гостинності в туристичних дестинаціях України та запропоновано заходи, які можливо реалізувати у посткризових умовах діяльності підприємств галузі. Для дослідження був використаний статистичний метод трендового аналізу рядів динаміки тривалості перебування туристів в готелях, який спрямовано на встановлення закономірностей змін рівнів досліджуваних показників у часі, виявленні основної тенденції (тренда) розвитку цього явища. На прикладі Одеського регіону доведено, що оцінка діяльності підприємств готельного сектору є основою для прогнозування просторово-часових зв'язків в регіональній економіці щодо розвитку готельного бізнесу в інших туристичних дестинаціях, підвищення їх конкурентоспроможності та вдосконалення маркетингу туристичних потоків. За даними розрахунків прогнозується щорічне зменшення тривалості перебування туристів на період 2021-2022 років в готельних закладах Одеського регіону. Досвід експериментальної перевірки запропонованого підходу щодо прогнозування тривалості перебування туристів в готельних закладах показує, що запропоновані методи прогнозування можуть сформувати сучасні інструменти для діагностики стану регіональних ринків послуг гостинності та прийняття управлінських рішень.

Ключові слова: готельна індустрія, туристичний потік, прогнозування, туризм, трендовий аналіз

Introduction

Research and forecasting of regional economic processes in the hotel sector of tourist destinations is necessary for unambiguous formulation and solution of the problem, which requires an extremely important solution for the formation of tourist flow and development of regional tourist markets. In Ukraine, there are 3165 hotel-type accommodations, the largest share of which needs modernization. The global hotel industry has about 350 thousand hotels and similar accommodation facilities, providing more than 14 million rooms, with their number growing by 3-4% annually (Bulgaru, Petrariu, & Colan, 2019). The share of the hotel sector of Ukraine in the global hotel industry is less than one percent, which indicates the need to develop the hospitality services in tourist regions.

In our country, there is a problem of concentration of tourist resources in certain regions, most of these areas are experiencing a shortage of categorical hotels and specialized accommodation. Therefore, it is necessary to form a modern infrastructure for recreation and tourism in attractive regions, such as cultural and historical resources of event tourism or sacred resources of religious tourism, to introduce models of hotel sector development, which will primarily focus on diversifying activities and providing domestic investment resources.

Methods of analysis and forecasting of demand for hotel business services in the regions of Ukraine are the most important tools to attract investment and innovative approaches to modernization of the hotel industry, solving problems and shaping prospects for further growth of the regional economy through tourism and recreation services. Assessing the real state and dynamics of the hotel and tourism sector allows to put forward approaches to forecast the demand for hospitality services in tourism destinations of Ukraine on the basis of reliable and trustworthy sources of information, substantiate the prospects of their development and reproduce the possible future situation, local authorities will outline its strategic planning and prospects. The urgency of solving these issues in the context of overcoming the effects of the global pandemic led to the choice of research topic, defined its purpose and objectives.

The purpose of the article is to analyze the current state of the hospitality sector in the Odessa region of Ukraine and identify prospects for further development based on methods of forecasting the load of hotel enterprises in post-crisis conditions, forming proposals for management decisions of hotel business in tourist destinations.

Analysis of recent research and publications

Our study is based on the work of foreign and domestic scientists, which are aimed at developing methods for analyzing and forecasting the development of the hotel sector of certain territorial entities. The issues of definition and typifying of the category “destination” were considered in the works of O. Lyubitseva, O. Tretyakov (2012); L. Yurchishina (2017), who believes that in the field of tourism, this term, defines tourist destinations from a particular hotel, resort, city to a country or territory of a particular region that has administrative boundaries. Experts at UNWTO emphasize that the term “tourist destination” defines the physical space in which a tourist spends at least one night (A Practical Guide to Tourism Destination Management, 2007).

Modern research on the assessment of sustainable development of tourism destinations in the EU uses the methodology of The European Tourism Indicator System (ETIS), which defines the process of data collection and analysis for the general purpose of assessing the impact of tourism on the destination. One of the basic indicators of ETIS is the level of tourist accommodation in the regions (The European Tourism Indicator System, 2016). Methods for measuring the levels of development of tourist accommodation in the regions are considered by Derkach and Mylasenko (2020). Chaitip and Chaiboonsri (2014) proposed methods for forecasting tourist flows to Thailand using a nonlinear model. The use of a logistic growth regression model to predict the demand for travel services in Macau hotels has been proposed by Chu, F.L. (2011). Forecasting the demand for international urban tourism services using one-dimensional and multidimensional models using monthly data is presented in the study of Gunter & Önder (2015), methods for forecasting the weekly occupancy of destination hotels using big data are proposed in the Pan & Yang study (2017). Modelling and forecasting of tourist and hotel demand was considered in the work of Wu, Song & Shen (2017). A thorough review of modern methodological approaches in scientific works and the application of econometric methods and hybrid models for forecasting in tourism were made by Jiao & Chen (2019). In their study, researchers focus on the methodology of analysis of socio-economic components of small and medium-sized enterprises of the hotel business at the regional level (Yadegaridehkordi et al., 2020), model the management of hotel enterprises and travel agencies to shape tourist demand for hotel services (Huang Yin, Goh, & Law, 2019), substantiate the regional «smart - specialization» in terms of sustainable development (Andryeyeva et al.,

2020), propose a method of component analysis for interregional modelling of tourism seasonality (Tsiotas, Krabokoukis, & Polyzos, 2020). The growing interest in assessing the efficiency of the hotel industry from a regional point of view is indicated by studies analysing the impact of the length of stay of tourists in hotels on the economy of hospitality in the regions of Spain (Sellers-Rubio, & Casado-Díaz, 2018).

Issues of improving the methodology for assessing the tourist potential of regional recreational areas are considered in a monograph edited by V. Gerasimenko (2016). The work of O.A. Melnichenko and V.O. Shveduna «Features of the tourism industry in Ukraine» (2017) highlights the current problems of tourism in the country, analyses the implementation of regional reforms in tourism and hospitality, proposed ways to develop the domestic tourism industry, the principles of reforming the mechanism of state regulation of tourism in the regions. Researchers conducted an empirical study of international tourism flows in Southeast Asia and proposed a comprehensive and accurate systematic approach to the analysis of regional tourism demand, based on the Bayesian model of global vector autoregression (Assaf, Li, Song & Tsionas, 2019). Researchers propose to use the «semiparametric GWR model» to study the spatiotemporal relationships in the regional economy to predict the development of tourist areas (Jin, Xu & Huang, 2019), scientists focus on measures to overcome the effects of the COVID-19 pandemic (Gaffney, & Eeckels, 2020), offer tools for marketing and management of hotel services in a crisis (Jiang & Wen, 2020).

According to the World Travel and Tourism Council (WTTC), in 2020 the global decline in tourism could reach 25% and lead to job reduction by 12-14%. The World Tourism Organization (UNWTO) has called on governments to support small and medium-sized enterprises in tourism, as they make up to 80% of the industry. «The travel and tourism sector has a unique impact, and we believe that 50 million jobs worldwide are at risk,» experts say (Open Letter to Governments from the WTTC and the Travel and Tourism Sector, 2020). Strict quarantine measures and a policy of social distancing have forced the hotel sector to actively seek ways to restore the flow of tourists in the regions. For example, to ensure the safety of hotels in the international group Accor, introduced enhanced hygiene and prevention measures for tourists. The ALLSAFE certificate, developed in collaboration with Bureau VERITAS, introduces new protocols and standards of high cleanliness and ensures that all anti-epidemic measures are followed in Accor hotels. Including the possibility of contactless check-

in at the hotel and subsequent departure, subject to contactless payments (Accor launches the Cleanliness & Prevention ALLSAFE label, 2020).

Despite the wide range of researchers in this direction and significant developments in this area, the issues of forecasting the development of hospitality in post-crisis conditions in tourist destinations in Ukraine remain insufficiently studied.

Material and methods of research

For the analysis of the current condition of Ukraine hotel business sphere, the forecast of prospects of realization of its potential, methods of the regional analysis of statistics of indicators of material and technical base of the enterprises of regional hotel business, distribution of establishments of accommodation of tourists in regions were used. The State Statistics Service of Ukraine, starting with the report for 2011, introduced a new form of state statistical observation No1 - KZR (annual) «Report on the activities of collective accommodation», the analysis of which is the basis of this study. Data provided by collective accommodation facilities is one of the sources of data on tourist flows (Collective accommodation facilities, 2015-2018; Collective accommodation in Ukraine, 2020). The main indicators of tourist flows according to collective accommodation are the number of accommodated, including foreigners, the number of nights spent by visitors in hospitality establishments and the average length of stay, which allows for comprehensive research in tourism and hospitality (Brida, Garrido, Deidda, & Pulina, 2012; Lado-Sestayo, Vivel-Búa, and Otero-González, 2017; Srovnalíková, Semionovaitė, Baranskaitė, Labanauskaitė, 2020; Kanina, 2020).

To determine the level of hotel development of tourism regions of Ukraine, based on quantitative indicators of tourist flows, the dynamics of tourist arrivals, revenues from services, the state of material and technical base, i.e. tourist infrastructure were used methods of statistical trend analysis (Chattopadhyay, & Mitra, 2019; Lozynskyy, & Kushniruk, 2020). The analysis of time series is to establish patterns of changes in the levels of the studied indicator over time, to identify the main trend of the phenomenon – a certain direction of change: the tendency to increase, stability or decrease the levels of the phenomenon. Thus, the above indicators were compared in dynamics with similar indicators of activity of regional subjects of hotel business in various time intervals, the “horizontal” analysis was carried out. Researchers believe that the method of trend analysis of the above indicators (comparing data from different years) also allows you to analyse how the processes

of intensification went on, in hotel activities of tourist regions (Bondarenko, Kulyniak, and Prokopyshyn-Rashkevych, 2019). This method of analysis allows you to transfer the experience of leading regions to other less successful regions (Maximov et al., 2016, p. 46). The processing of regional indicators of hotel activity was carried out with the help of the application package “Statistics” MS EXCEL. Here are the basic formulas for our calculations:

Absolute growth:

$$\text{chain gain : } \Delta y_c = y_i - y_{i-1} \quad (1)$$

$$\text{basic gain : } \Delta y_b = y_i - y_1 \quad (2)$$

Growth rates characterize the absolute increase in relative terms. The percentage growth rate shows how many percent the comparable level has changed from the level taken as the basis of comparison.

Growth rate:

$$\text{chain growth rate : } T_{cgr} = \Delta y_i / y_{i-1} \quad (3)$$

$$\text{basic growth rate : } T_{bgr} = \Delta y_b / y_1 \quad (4)$$

A common statistical indicator of the dynamics is the rise rate. It characterizes the ratio of the two levels of the series and can be expressed as a coefficient or as a percentage.

Rise rate:

$$\text{chain rise rate: } T_{crr} = y_i / y_{i-1} \quad (5)$$

$$\text{basic rise rate : } T_{brr} = y_b / y_1 \quad (6)$$

The absolute value of 1% increase:

$$\text{chain: } 1\%c = y_{i-1} / 100\% \quad (7)$$

$$\text{basic: } 1\%b = y_b / 100\% \quad (8)$$

An important statistical indicator of the dynamics of socio-economic processes in the hotel business is the build rate, which in the context of economic intensification measures the increase in time of economic potential in tourist-active regions.

Build rate:

$$T_{br} = \Delta y_c / y_1 \quad (9)$$

Application of this technique will allow to make the forecast in development of potential hotel business in Odessa region as in one of active tourist regions basing on an indicator – duration of stay of tourists in means of accommodation.

Results and analysis

Market instability and current problems of economic growth in tourist regions require a critical analysis of the hotel industry, forecasting the length of stay of tourists in accommodation facilities, calculating the load levels of hotel enterprises in the regions of Ukraine. The study of structural and functional relationships in the economy is the basis for forecasting and modelling the future development of the hotel sector and destinations, which is possible through

the integrated use of own resources in competition (Zhang, Tu, Zhou & Yu, 2020; Bekjanov & Matyusupov, 2020). Analysis of market trends in the hotel sector of tourist regions corresponds to the state priorities for socio-economic growth of recreation and tourism through efficient management (Strategy for the development of tourism and resorts for the period of up to 2026: the Order of the Cabinet of Ministers of Ukraine, 2017).

The analysis of the state of the hotel sector of the economy according to statistical information in Ukraine, shows that the number of hotel-type enterprises increased by 690 units in the period from 2015 to 2019. The largest growth was observed from 2018 to 2019, totally by 14%. However, there was a negative trend to reduce the number of hotel enterprises by 6% in 2015 compared to 2014 and by 2% in 2017 compared to 2016. The number of places also gradually increased, except for a slight decrease of 2% in 2017 compared to 2016, in 2019 the number of places increased by 27% or 36 400 units compared to 2018. Due to the introduction of new hotels, the total number of places increased by 39.192 units (Collective accommodation facilities, 2015-2018; The main indicators of collective accommodation in Ukraine in 2019, 2020) from 2015 to 2019. We also observe a slight fluctuation in the number of placed persons, the highest growth rate observed from 2015 to 2017 is 17%, then the figure falls sharply. During the analysed period, the number of accommodated persons increased by 1.197.020 people (Table 1).

The distribution of hotel enterprises of Ukraine in 2019 by region indicates that the largest number of them is in the Lviv region – 106 units, Kyiv region and the city of Kyiv, which together consist of – 145 units, Odessa region – 72, Transcarpathian region – 49, Ivano-Frankivsk region – 44, Kharkiv region – 38 (Fig. 1). These regions with the largest localization of hotels and similar accommodation are developed tourist destinations of various types of tourism: business tourism, cultural and cognitive, ski resorts, health tourism, as well as transit (for example, the city of Borispol, where there is the country's main airport). All of them have attractive recreational resources and tourism infrastructure services, a significant number of full-time employees, relatively high capacity, as well as a high percentage of foreign tourists.

Our further research focuses on the example of the Odessa region, which is one of the leading tourist regions of Ukraine, as it has significant recreational and cultural – historical resources, transport infrastructure and hotel services. The city of Odessa forms the core of cultural, cognitive and business tourism in the region (Gerasimenko, Bedradina,

Table 1. The dynamics of the development of enterprises of Ukrainian hotel sector for 2015–2019

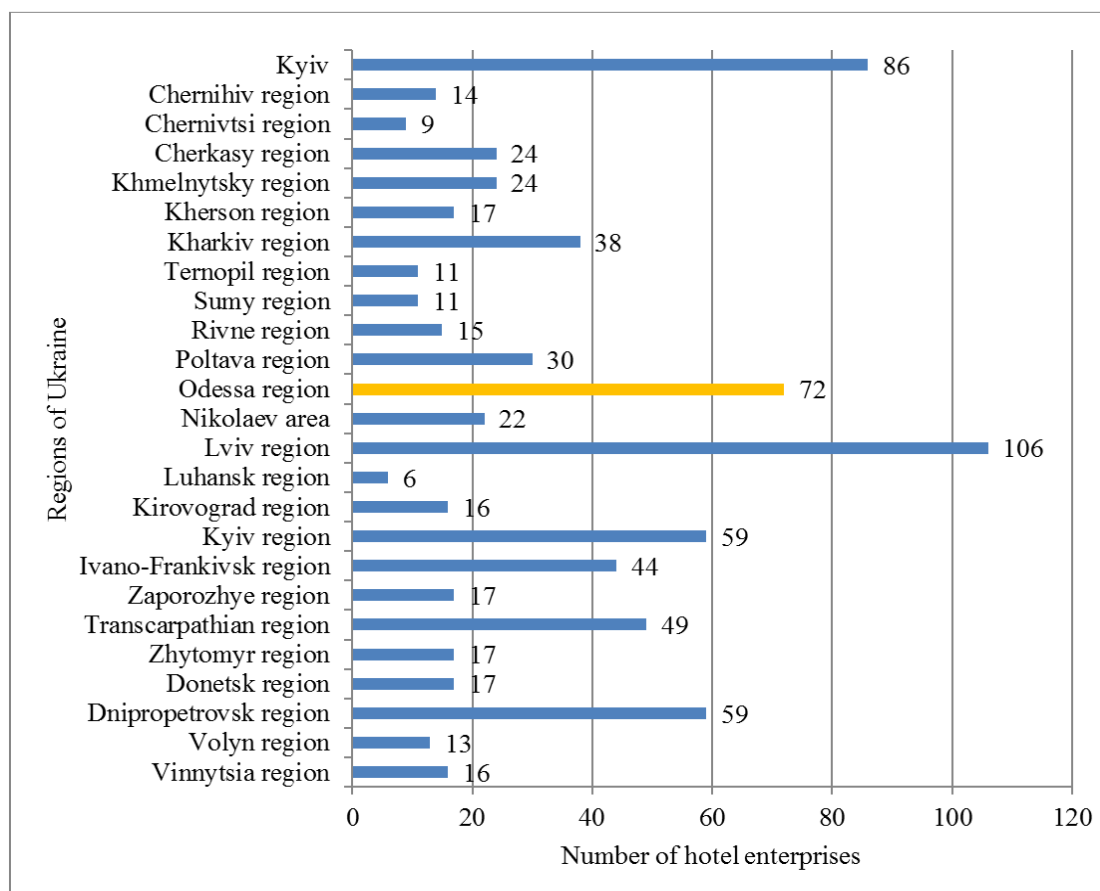
Year	Number of hotel-type enterprises, units		Number of rooms, units		Number of accommodated persons	
	The absolute value of the indicator, units	Growth rate, %	The absolute value of the indicator, units	Growth rate, %	The absolute value of the indicator, units	Growth rate, %
2015	2 478	-6	132 535	6	4 297 190	7
2016	2 534	2	135 916	3	5 037 075	17
2017	2 474	-2	133 396	-2	5 135 164	2
2018	2 777	12	135 327	1	5 410 242	5
2019	3 165	14	171 721	27	5 494 210	2

Source: developed and compiled by the authors according to the State Statistics Service.

Galasyuk et al, 2016). The region has powerful resources for the formation of a modern sphere of hotel and resort services. According to statistics, the number of hotels and similar accommodation in the region in 2019 amounted to 72 companies, which are by 12 companies less than in 2017. For the last 3 years, the Odessa region takes the third place in the ranking, which is inferior only to the Lviv region and the city of Kyiv.

Authors would like to note, that the reduction in the number of hotel enterprises has led to a reduction in accommodation capacity due to the liquidation of unprofitable enterprises. During the analysed period,

the base of tourist accommodation amounted to 6961 places in 2019, which is by 1002 places less than in 2017, which affected the overall rating of the region (Collective accommodation facilities, 2015-2018; the main indicators of collective accommodation in Ukraine in 2019, 2020). The total number of serviced tourists in 2019 increased by 32.089 people compared to 2017 (Table 2). According to the study, the number of foreign tourists served during the analysed period increased slightly, by only 108 people, while in 2018 their number decreased significantly, by 7839 people compared to 2017 (Table 2).

**Fig. 1.** Regional distribution of hotel business enterprises of Ukraine in 2019, units

Source: compiled and developed by the authors according to the State Statistics Service. The information is given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in Donetsk and Luhansk regions.

Table 2. The place of the Odessa region among other administrative-territorial units of Ukraine by the main indicators of the hotel sector in 2017-2019

Indicators		Years		
		2017	2018	2019
Number of hotel enterprises, units	Place	3 rd , after Lviv region, Kyiv	3 rd , after the city of Kyiv, Lviv region	3 rd , after Lviv region, Kyiv
	Indicator value	80	67	72
One-time capacity of hotel enterprises, places	Place	3 rd , after the city of Kyiv, Lviv region.	3 rd , after the city of Kyiv, Lviv region	3 rd after the city of Kyiv, Lviv region
	Indicator value	7963	6713	6961
The total number of served visitors, persons	Place	5 th , after the city of Kyiv, Lviv region, Kyiv region, Kharkiv region	4 th , after the city of Kyiv, Lviv region, Kyiv region.	4 th , after Kyiv, Lviv region, Kyiv region
	Indicator value	187275	201306	219364
Number of served foreigners, persons	Place	3 rd , after the city of Kyiv, Lviv region	4 th , after the city of Kyiv, Lviv region, Kyiv region.	3 rd , after Kyiv, Lviv region
	Indicator value	49480	41641	49588
Duration of stay of visitors, man-days	Place	3 rd , after the city of Kyiv, Lviv region	3 rd , after the city of Kyiv, Lviv region	3 rd , after Kyiv, Lviv region
	Indicator value	484064	414030	433111
Number of rooms, units	Place	3 rd , after the city of Kyiv, Lviv region	3 rd , after the city of Kyiv, Lviv region	3 rd , after Kyiv, Lviv region
	Indicator value	4043	3490	3453

Source: developed and compiled by the authors according to the State Statistics Service.

The length of stay in the Odessa region also tends to decrease, during the analysed period it decreased by 50.953 man-days compared to 2017, the number of rooms also decreased by 590 units (Table 3).

is less than the average for the regions of Ukraine, a slight increase of – 1.02%, for the analysed period is observed in 2019. The share of hotel enterprises in the Odessa region in the total capacity of Ukraine averages

Table 3. The load level of the hotel sector of Ukraine and in Odessa region

Row No	Indicators		Indicator values by years			Change in the values of indicators from 2019 to 2017,%
			2017	2018	2019	
1	The total number of seats places in the enterprise hotel entities (EHE), seats places	Total in Ukraine	87882	74198	75667	-13.90%
2		Odessa region	7963	6713	6961	-12.58%
3	The share of EHE of Odessa region in the total capacity of EHE of Ukraine, % (row 2: row 1 x 100%)		9.06%	9.05%	9.20%	x
4	Duration of stay of visitors in EHE, man-days	Total in Ukraine	7708079	7103662	7040927	-8.70%
5		Odessa region	484064	414030	433111	-10.53%
6	Share of EHE in Odessa region in the total amount of man-days of service provided,% (row 5: row 4 x 100%)		6.28%	5.83%	6.15%	x
7	EHE load level,%	Total in Ukraine	24.00%	26.20%	25.50%	6.30%
8		Odessa region	16.65	16.85	17.04	1.02

Source: developed and compiled by the authors according to the State Statistics Service.

The analysis of the level of occupancy of hotel enterprises in the dynamics by regions of Ukraine and separately in the Odessa region proves that the total number of locations of hotel enterprises in the regions of Ukraine decreased by 13.9%, respectively in the Odessa region decreased by 12.58%. The level of occupancy of hotel enterprises in the Odessa region

9.1%. Competition in the hotel services market has led to a reduction in the number of hotel enterprises – legal entities in Ukraine as a whole by 15.7%, and in the Odessa region decreased by 10%. The total share of regional hotels and similar accommodation facilities averaged 8.5%, in Ukraine as a whole, and in 2019, the maximal share was 9.09%. In August, the

capacity of hotel enterprises in Ukraine increased by 3.20% and in the Odessa region – by 1.40% during the analysed period (Table 4).

the analysed period, so in 2017 the average length of stay was 2.6 days and in 2019 – 2 days. This trend is due to the rapid development of regional alternative

Table 4. The average capacity of enterprises in the hotel sector of Ukraine and in Odessa region

№ Row No	Indicators		Indicators value by years			Change in the values of indicators from 2019 to 2017, %
			2017	2018	2019	
1	The total number of seats places in the enterprise hotel entities (EHE), seats places	Total in Ukraine	87882	74198	75667	-13.90%
2		Odessa region	7963	6713	6961	-12.6%
3	The share of EHE in Odessa region in the total capacity of EHE of Ukraine, % (row 2: row 1 x 100%)		9.10%	9.00%	9.20%	x
4	Number of enterprise hotel entities, units	Total in Ukraine	940	789	792	-15.70%
5		Odessa region	80	67	72	-10%
6	Share of EHE in Odessa region in the total number of UGS of Ukraine, % (row 5: row 4 x 100%)		8.51%	8.49%	9.09%	x
7	The average capacity of the hotel industry, places	Total in Ukraine	93	94	96	3.20%
8		Odessa region	96	100	97	1.40%

Source: developed and compiled by the authors according to the State Statistics Service.

The indicator of the length of stay of tourists in Ukraine also decreased during the analysed period by 8.7%, and in the region decreased by 10.53%. The share of the Odessa region in the total volume of services provided (man-days) averages 6% for the whole period (Table 5).

rented accommodation and private apartments. For example, Airbnb is the largest platform for tourists in search of accommodation in 2019, which presents more than seven million properties around the world. Researchers note that partnership services for tourists in search engines in the field of private accommodation

Table 5. Average time of stay of tourists in the enterprises of the hotel sector of Ukraine and in Odessa region

№ row	Indicators		Indicator value by years			Change in the indicator value from 2019 to 2017, %
			2017	2018	2019	
1	Visitors duration of stay, man-days	Total in Ukraine	7708079	7103662	7040927	-8.70%
2		Odessa region	484064	414030	433111	-10.53%
3	The total number of served visitors	Total in Ukraine	3792576	3747656	3693556	-2.61%
4		Odessa region	187275	201306	219364	17.13%
5	The share of EHE in Odessa region in the total volume of served visitors, % (row 4: row 3 x 100%)		4.94%	5.37%	5.94%	X
6	The average visitors length of stay, days	Total in Ukraine	2	1,9	1,9	-5.00%
7		Odessa region	2,6	2,1	2	-23.08%

Source: developed and compiled by the authors according to the State Statistics Service.

The indicator of the total number of served tourists in Ukraine decreased by 2.61% during the analysed period, but in the Odessa region this figure increased by 17.13%, the share of hotel services in the Odessa region in the total number of served visitors ranged from 4.94% in 2017 to 5.94% in 2019. The average length of stay of visitors in Ukraine decreased by 5% and amounted to 1.9 days in 2019. In the Odessa region there is also a negative trend of decreasing the number of visitors by 23.08% during

have significantly undermined the hotel sector of the tourism industry (Keogh, Kriz, Barnes & Rosenberger III, 2020), and at the same time should attract the attention of local authorities and owners. Alternative accommodation facilities for limited recreational activities in relation to the natural resources of the destination (Sinlapasate, Buathong, Prayongrat, Sangkhanan, Chutchakul & Soonsawad, 2020).

In modern conditions, under the influence of intensified competition, in the regions of Ukraine

there are hotels by category, which provide a range of basic and additional services. The largest number of such hotels is located in the Kyiv region – 57, then in Odessa – 46, in Lviv – 31. Also, the largest five-star hotels in the Odessa region – 12, in Kiev – 8, Lviv – 4 (Register of certificates of establishment of hotel categories, 2020). The sector of hotels of three stars and below in Ukraine remains unfilled and is represented mainly by enterprises with a medium level of service and a small set of additional services, so it is necessary to develop demand in recreational regions for health services with SPA-hotels. Let's pay attention to the development of international hotel chains in Ukraine. Thus, the international hotel business operator Radisson Hotel Group plans to open a new hotel under the Radisson brand in Odessa in 2021. With the launch of the new hotel Radisson Hotel Group will be represented by eight hotels and 1445 guest rooms in Ukraine. But in the regions under international management is less than 1% of the hotel fund of the country, which indicates a low degree of investment attractiveness of the Ukrainian market of hotel services for international hotel operators.

An important factor influencing the occupancy of hotels is the level of cooperation of hotels with tour operators and travel agents in the implementation of tourist vouchers. Based on the fact that there is no official statistical information on the income of hotels and similar accommodation in Ukraine for 2018-2019, we analyse the income structure of hotel enterprises in 2017 in Ukraine and in the Odessa region (Collective accommodation facilities, 2015-2018; the main indicators of collective accommodation in Ukraine in 2019, 2020). The share of hotel business enterprises in the Odessa region by income, by regional distribution of Ukraine is 4.77% or 346582.9 thousand UAH, in the structure of income – 274180.5 thousand UAH is the income from the sale of rooms, 5964.1 thousand UAH from the sale of vouchers, 66438.3 thousand UAH from additional services. The largest percentage of the total income by region of Ukraine is the income

from the sale of rooms, the smallest from the sale of tourist vouchers. But in the Odessa region the share of the realized permits made 31.96% of the general income across Ukraine. Thus, we can conclude that the region has sold the largest number of tourist vouchers to accommodation facilities of different profiles compared to other regions of Ukraine (Table 6).

The most dynamic hotel industry is developing in Kyiv and Kyiv region (where 150 facilities with a total number of rooms over 9200 are concentrated), as well as in the recreational areas of Odessa, Lviv and Transcarpathia as a whole). But, even in Kiev, where the rate of hotel rooms is about 6-7 places per 1 thousand inhabitants, it is still very far from the rate of European capitals. For example, in the city of Vienna, this figure is 26 places per 1 thousand inhabitants, and in Paris – 35 (Kapranova & Nikitin, 2018, p.110). Increasing the number of rooms in category hotels is a necessary condition for the development of business tourism in the regions of Ukraine.

To predict the development of hospitality in the Odessa region, we will calculate the dynamics of the increase rate in the length of stay of tourists in hotels, which in the context of economic intensification measures the increase in time of economic potential of the hotel sector. Calculations of chain indicators of a number of dynamics of duration of stay of tourists in hotels for 2017-2019 are given in (Table 7).

As we can see from the calculations, in 2019, compared to 2018, the length of stay of tourists increased by 19081 days or by 4.6%. The maximal increase is observed in 2019 (19081 days). The minimal increase was recorded in 2018 (-70.034 days). The growth rate shows that the trend is increasing, which indicates an acceleration of the length of stay. Calculations of basic indicators of a number of dynamics are given in the Table. 8.

In 2019, compared to 2017, the length of stay decreased by 50.953 days or by 10.5%. The above indicators according to formulas 1-9 are grouped in summary table 9.

Table 6. The structure of revenues of enterprises in the hotel sector of Ukraine and in the Odessa region in 2017

Indicators	Total in Ukraine	Odessa region	Part of the Odessa region
Revenues from hotel services and similar accommodation, total thousand UAH	7261479.6	346582.9	4.77%
Rooms sale	5406776.4	274180.5	5.07%
proportion, %	74.46	79.11	x
from the sale of vouchers, thousand UAH	18658.5	5964.1	31.96%
proportion, %	0.26	1.72	x
from additional services that are not included in the price of the room / vouchers, thousand UAH	1836044.7	66438.3	3.62%
proportion, %	25.28	19.17	x

Source: own collaboration

Table 7. Chain indicators of a number of dynamics of duration of stay of tourists in hotels of the Odessa region for 2017 – 2019

Year	Duration of stay, days	Absolute growth	Growth rate, %	Rise rate, %	Absolute value of 1% increase	Rise rate, %
2017	484064	-	-	100	-	0
2018	414030	-70034	-14.47	85.53	4840.64	-14.47
2019	433111	19081	4.61	104.61	4140.3	3.94

Source: own collaboration

Table 8. Basic indicators of the dynamics of duration of stay of tourists in hotels of the Odessa region for 2017 – 2019

Year	Duration of stay, days	Absolute growth	Growth rate, %	Rise rate, %
2017	484064	-	-	100
2018	414030	-70034	-14.47	85.53
2019	433111	-50953	-10.53	89.47

Source: own collaboration

Table 9. Chain and baseline indicators of dynamics of the duration of stay of tourists in hotels of the Odessa region for 2017 – 2019

Year	Duration of stay, days	Absolute growth		Rise rate		Growth rate		Absolute value of 1% increase
		Chain	Basic	Chain	Basic	Chain	Basic	
1	484064	-	-	100	100	-	-	-
2	414030	-70034	-70034	85.53	85.53	-14.47	-14.47	4840.64
3	433111	19081	-50953	104.61	89.47	4.61	-10.53	4140.3

Source: own collaboration

Let's calculate the average characteristics of the series. The average level of the series y of the dynamics characterizes the typical value of absolute levels. To find the average level of the moment series use the chronological average:

$$\bar{y} = \frac{\sum y_i}{n} \quad (10)$$

$$\bar{y} = \frac{1331205}{3} = 443735.$$

The average length of stay for the analysed period was 443 735 days.

Average rise rate:

$$\bar{T}_p = \sqrt[n-1]{\frac{y_n}{y_1}} \quad (11)$$

$$\bar{T}_p = \sqrt[2]{\frac{433111}{484064}} = 0.9459.$$

The average for the entire period of growth of the analysed indicator was 0.9459.

Average growth rate:

$$\bar{T}_{np} = \bar{T}_p - 1 \quad (12)$$

$$\bar{T}_{np} = 0.9459 - 1 = -0.0541.$$

On average, the length of stay decreased by 5.4% annually. The average absolute increase is a generalized characteristic of individual absolute increments of a number of dynamics.

Let's calculate the average absolute increase:

$$\overline{dy} = \frac{y_n - y_1}{n - 1} \quad (13)$$

$$\overline{dy} = \frac{433111 - 484064}{2} = -25476.5.$$

Thus, every year the length of stay of tourists in hotels in the region decreased by an average of 25 476.5 days. Let's make a forecast for the length of stay of tourists in hotels in the region for the next 3 years, using the rate of absolute growth:

$$y(2020) = 433111 - 25476.5 = 407634.5 \text{ days.}$$

$$y(2021) = 407634.5 - 25476.5 = 382158 \text{ days.}$$

$$y(2022) = 382158 - 25476.5 = 356681.5 \text{ days.}$$

According to the calculations, the annual decrease in the length of stay of tourists for the period 2020-2022 in hotel establishments of the Odessa region is forecasted. Therefore, it is possible to offer the management of regional hotel business enterprises to intensify marketing activities in foreign and domestic tourism markets to attract tourist flows to their accommodation facilities, establish mutually beneficial cooperation with international hotel operators, develop franchised hotel chains in the region, and implement flexible pricing. The obtained results support and complement modern methods of regional research on forecasting tourist flows and tourist stays (Karadzic, Pejovic, 2020).

Conclusions

A study of the hotel sector according to statistical information in Ukraine shows that over the past 3 years, the Odessa region ranks third in the main

indicators of economic activity of the hotel industry, second only to the Lviv region and the city of Kyiv. It is established that the largest percentage of sold tourist vouchers to accommodation establishments in the regions of Ukraine, falls on the hotel sector of the Odessa region. At the same time, the commercial activity of the hotel sector of the destination is influenced by the development of alternative accommodation: hostels, private mini-hotels, as well as short-term rented apartments, which affected the demand for hotel services, hotel revenue from room sales, travel vouchers and additional services.

It is established that the effective operation of enterprises in the hotel sector affects the attractiveness of the tourist destination. The movement of tourist flows depends primarily on the level of development of hospitality, quality and specialization of services. The calculated data obtained during the study show that for the period 2021 - 2022 the annual decrease in the indicator of the length of stay of tourists in the enterprises of the hotel sector of the Odessa region is forecasted. In the context of overcoming the effects of the global COVID-19 pandemic, managers of regional hotel enterprises need to focus on marketing activities to attract consumers of domestic tourism services, in particular, establish cooperation with regional and municipal networks of tourist information centres and tour operators, and promote hotel services through communication channels, Internet networks. To ensure the support of their own segment of the tourism market, owners and managers of regional hospitality enterprises must guarantee safe conditions for consumers of hotel services, providing them with prompt medical, technical and legal assistance.

According to the results of the study, it is advisable to recommend the hotel sector to form post-crisis bonus programs to increase the length of stay of tourists in their institutions, develop loyalty programs to attract foreign and domestic tourists to destinations, establish mutually beneficial cooperation in franchising hotel chains, additional services to pursue a flexible pricing policy for room tariffs and services based on methods of forecasting the load of hotel enterprises in post-crisis conditions.

Further research of the authors will be aimed at forming a mechanism for promoting tourist destinations in Ukraine in foreign markets.

References

- Accor launches the Cleanliness & Prevention ALLSAFE label, 2020. Retrieved from: <https://group.accor.com/en/Actualites/2020/05/allsafe-cleanliness-prevention-label>
- Andryeyeva, N., Tiutiunnyk, H., Burkinsky, B., Khumarova, N., Kupinets, L., 2020. Methodological approach of investment and innovation regional environmental policy using the Smart Specialization and Quintuple helix models. *Ekonomia i Środowisko*, 3(74), 53-80. <http://dx.doi.org/10.34659/2020/3/24>
- A practical guide to tourism destination management, 2007. Retrieved from: <http://www.e-unwto.org/doi/pdf/10.18111/9789284412433>.
- Assaf, A. G., Li, G., Song, H., & Tsionas, M. G., 2019. Modeling and Forecasting Regional Tourism Demand Using the Bayesian Global Vector Autoregressive (BGVAR) Model. *Journal of Travel Research*, 58(3), 383–397. <https://doi.org/10.1177/0047287518759226>
- Bekjanov, D., & Matyusupov, B., 2020. Influence of Innovative Processes in the Competitiveness of Tourist Destination. In *Innovation and Entrepreneurial Opportunities in Community Tourism*, 243-263. IGI Global. DOI: 10.4018 / 978-1-7998-4855-4.ch014
- Bondarenko, Y. H., Kulyniak, I. Ya., and Prokopyshyn-Rashkevych, L. M., 2019. Evaluation of Development of Collective Means of Accommodation According to the Indicators of Capacity. *Business Inform*, 3, 162–169. <https://doi.org/10.32983/2222-4459-2019-3-162-169>
- Brida, J. G., Garrido, N., Deidda, M., & Pulina, M., 2012. Exploring the dynamics of the efficiency in the Italian hospitality sector. A regional case study. *Expert Systems with Applications*, 39(10), 9064-9071.
- Bulgaru, N., Petrariu, I. R., & Colan, A., 2019. Statistical Analysis of Hotel Enterprises and Forecasting Its Development. *Annals of the University Dunarea de Jos of Galati: Fascicle: I, Economics & Applied Informatics*, 25(3), 97-102. <https://doi.org/10.35219/eai1584040960>
- Chaitip, P., Chaiboonsri, C., 2014. International tourists arrival to Thailand: forecasting by non-linear model. *Procedia Economics and Finance*, 14(14), 100–109. doi: 10.1016/S2212-5671(14)00691-1
- Chattopadhyay, M., & Mitra, S. K., 2019. Determinants of revenue per available room: Influential roles of average daily rate, demand, seasonality and yearly trend. *International Journal of Hospitality Management*, 77, 573-582. DOI: 10.1016 / j.ijhm.2018.09.001
- Chu, FL., 2011. A piecewise linear approach to modeling and forecasting demand for Macau tourism. *Tourism Management*, 32(6), 1414–1420. DOI: 10.1016/j.tourman.2011.01.018.
- Derkach, T., and Mylashko, O., 2020. Improving the Statistical Monitoring of Performance of the Collective Accommodation Facilities in Ukraine. *Business Inform*, 3, 238–243. <https://doi.org/10.32983/2222-4459-2020-3-238-243>
- The European Tourism Indicator System, 2016. Luxembourg: Publications Office of the European Union. Retrieved from: <https://publications.europa.eu/en/publication-detail/-/publication/4b90d965-eff8-11e5-8529-01aa75ed71a1/language-en>; <https://doi.org/10.2873/982144>.
- Gaffney, C., & Eeckels, B., 2020. Covid-19 and Tourism Risk in the Americas. *Journal of Latin American Geography* 19(3), 308-313. doi:10.1353/lag.2020.0054.
- Gerasimenko, V., Bedradina, G., & Galasyuk, S., et al., 2016. Otsinka turystychno-rekreatsiynoho potentsialu rehionu: monohrafiya. [Estimation of tourist and recreational potential of the region: monograph]. Retrieved from: <http://dspace.oneu.edu.ua/jspui/handle/123456789/5474> (in Ukrainian).
- Gunter, U, Önder, I., 2015. Forecasting international city tourism demand for Paris: accuracy of uni- and multivari-

- ate models employing monthly data. *Tourism Management*, Pergamon, 46, 123–135. Retrieved from: <http://www.sciencedirect.com/science/article/pii/S0261517714001198>
- Huang Yin, C., Goh, E., & Law, R., 2019. Developing inter-organizational relationships with online travel agencies (OTAs) and the hotel industry. *Journal of Travel & Tourism Marketing*, 36(4), 428–442.
- Jiao, E. X., & Chen, J. L., 2019. Tourism forecasting: A review of methodological developments over the last decade. *Tourism Economics*, 25(3), 469–492. <https://doi.org/10.1177/1354816618812588>
- Jiang, Y., & Wen, J., 2020. Effects of COVID-19 on hotel marketing and management: a perspective article. *International Journal of Contemporary Hospitality Management*, 32, 8, 2563–2573. <https://doi.org/10.1108/IJCHM-03-2020-0237>
- Jin, C., Xu, J., & Huang, Z., 2019. Spatiotemporal analysis of regional tourism development: A semiparametric Geographically Weighted Regression model approach. *Habitat International*, 87, 1–10.
- Kanina, A. M., 2020. Development of Methods for Forecasting Tourist Flows. In *International Conference on Economics, Management and Technologies, ICEMT*, 612–615. Atlantis Press.
- Kapranova, L.G. and Nikitin, D., 2018. Hotel'nyy rynok Ukrainy: problemy ta perspektyvy rozvytku. [Hotel market of Ukraine: problems and prospects of development]. Visnyk of Pryazov State Technical University. Series: Economic Sciences, 35, 109–116. Retrieved from: http://nbuv.gov.ua/UJRN/VPDTU_ek_2018_35_18. (in Ukrainian).
- Karadzic, V., & Pejovic, B., 2020. Tourism Demand Forecasting Using ARIMA Model. *Transformations in Business and Economics*, 19(2), 731–745.
- Keogh, C., Kriz, A., Barnes, L., & Rosenberger III, P. J., 2020. Exploring destination engagement of sharing economy accommodation: case of Australian second-homes. *Current Issues in Tourism*, 1–18. <https://doi.org/10.1080/013683500.2020.1769572>
- Kolektyvni zasoby rozmishchuvannia v Ukraini za 2015 - 2018: statystychnyi zbirnyk. [Collective accommodation facilities in Ukraine in 2015 - 2018: statistical yearbook], Derzhavna sluzhba statystyky Ukrainy, 2018. Retrieved from http://www.ukrstat.gov.ua/operativ/menu/menu_u/tur.htm (in Ukrainian).
- Kolektyvni zasoby rozmishchuvannia v Ukraini za 2019: statystychnyi zbirnyk Collective accommodation facilities in Ukraine in 2019: statistical yearbook. [Collective accommodation facilities in Ukraine in 2019: statistical yearbook], Derzhavna sluzhba statystyky Ukrainy, 2020. Retrieved from http://www.ukrstat.gov.ua/operativ/menu/menu_u/tur.htm (in Ukrainian).
- Lado-Sestayo, R., Vivel-Búa, M. and Otero-González, L., 2017. Determinants of TRevPAR: hotel, management and tourist destination. *International Journal of Contemporary Hospitality Management*, 29(12), 3138–3156. <https://doi.org/10.1108/IJCHM-03-2016-0151>
- Lozynskyy, R., & Kushniruk, H., 2020. Dynamics and geographical structure of inbound tourism in political transit countries: case of Ukraine. *Journal of Geology, Geography and Geoecology*, 29(2), 335–350. <https://doi.org/10.15421/112030>
- Lyubitseva O.O., Tretyakov O.V., 2012. Typizatsiya destynatsiy. [Typification of destinations]. *Geography and tourism*, 17, 3 – 9. (in Ukrainian).
- Maksimov, D.V., Belikov, M.Yu., Minenkova, V.V. et al., 2016. Statistics and dynamics of development of the tourist and recreational system of the region: Krasnodar Territory. Retrieved from https://kubsu.ru/sites/default/files/faculty/monografiya_maksimov.pdf (in Russian).
- Melnychenko, O. A., Shvedun, V.O., 2017. Osoblyvosti rozvytku turystychnoyi haluzi v Ukraini: monohrafiya. [Peculiarities of tourism industry development in Ukraine: monograph]. Retrieved from: <http://repositsc.nuczu.edu.ua/handle/123456789/2195> (in Ukrainian).
- Open letter to Governments from WTTC and the Travel & Tourism sector., 2020. Retrieved from: <https://wttc.org/News-Article/Open-letter-from-WTTC-to-Governments-from-WTTC-and-the-Travel-Tourism-sector>
- Pan, B., Yang, Y., 2017. Forecasting destination weekly hotel occupancy with big data. *Journal of Travel Research*, 56(7), 957–970. <https://doi.org/10.1177/0047287516669050>
- Register of certificates of establishment of hotel categories., 2020. Retrieved from <https://data.gov.ua/dataset/ff8f65a4-676e-44c8-8f5e-d3553e2a009f>
- Sellers-Rubio, R., & Casado-Díaz, A. B., 2018. Analyzing hotel efficiency from a regional perspective: The role of environmental determinants. *International Journal of Hospitality Management*, 75, 75–85. DOI: 10.1016/j.ijhm.2018.03.015
- Sinlapasate, N., Buathong, W., Prayongrat, T., Sangkhanan, N., Chutchakul, K., & Soonsawad, C., 2020. Tourism carrying capacity toward sustainable tourism development: a case study of Phuket world class destination. *ABAC Journal*, 40(3), 140–159.
- Srovnalíková, P., Semionovaitė, E., Baranskaitė, E., Labanauskaitė, D., 2020. Evaluation of the Impact of Sharing Economy on Hotel Business. *Journal of Tourism and Services*, 20(11), 150–169. doi: 10.29036/jots.v11i20.145.
- Strategy for the development of tourism and resorts for the period up to 2026: Order of the Cabinet of Ministers of Ukraine dated 16.03. 2017, № 168-r., 2017. Retrieved from <https://zakon.rada.gov.ua/laws/show/168-2017-p>. (in Ukrainian).
- The main indicators of collective accommodation in Ukraine in 2019, 2020. Retrieved from http://www.ukrstat.gov.ua/operativ/menu/menu_u/tur.htm
- Tsiotas, D., Krabokoukis, T., & Polyzos, S., 2020. Detecting interregional patterns in tourism seasonality of Greece: A principal components analysis approach. *Regional Science Inquiry*, 12(2), 91–112.
- Wu, DC, Song, H, Shen, S., 2017. New developments in tourism and hotel demand modeling and forecasting. *International Journal of Contemporary Hospitality Management*, 29(1), 507–529. <https://doi.org/10.1108/IJCHM-05-2015-0249>
- Yadegaridehkordi, E., Nilashi, M., Shuib, L., Nasir, M. H. N. B. M., Asadi, S., Samad, S., & Awang, N. F., 2020. The impact of big data on firm performance in hotel industry. *Electronic Commerce Research and Applications*, 40, 100921. <https://doi.org/10.1016/j.elerap.2019.100921>
- Yurchishina L. I., 2017. Destynatsiya yak osnova rozvytku rehional'noho turizmu. [Destination as a basis for regional tourism development]. *Economic Bulletin of the National Mining University*, 4 (60), 77–84. (in Ukrainian).
- Zhang, D., Tu, J., Zhou, L., & Yu, Z., 2020. Higher tourism specialization, better hotel industry efficiency? *International Journal of Hospitality Management*, 87, 102509. <https://doi.org/10.1016/j.ijhm.2020.102509>