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Original Research

Transformation of the Tourist Market in China Amid the Pandemic

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Abstract

The study's purpose is to form a methodical approach to assess the transformation of China's tourism market and determine the promising areas for its most effective recovery against the backdrop of the COVID-19 pandemic. The methodology of the study is based on the diagnosis of the effectiveness of China's tourism market, expressed through the Tourism development index. The proposed methodological approach has revealed the relationship between the factors that ensure its effectiveness. Integration of the studied indicators into the integral indicator allowed diagnosing the tourism market in 32 provinces of China. The consequences of the pandemic have no significant impact on the tourism market in the studied provinces of China due to the development of domestic tourism. The regression analysis allowed forming the corresponding equation models for the studied provinces. Accelerated recovery of China's tourism market against the backdrop of the pandemic is possible with a focus on domestic tourism.

Keywords: correlation, COVID-19, regression model, tourism development, tourism industry

Introduction

For many countries, international tourism is a priority sector of the economy, as it provides the lion's share of the total national income and has become a direction of international specialization [1]. Before the COVID-19 pandemic, revenues from tourism accounted for about a tenth of global economic growth. In recent years, the industry was even called a global driver, because it was developing much faster than the world economy as a whole [2]. Tourism activity is currently interrupted by the worldwide spread of the coronavirus, whose new 2019-nCoV strain was confirmed in December 2019 in Wuhan, China. With the uncertainty caused by the COVID-19 pandemic, the study of prospects for further

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development of international tourism are of particular relevance.

Tourist market is actively restructuring; in addition, innovative changes are rapidly modernizing both the technology of travel organization, the structure of demand, and the content of the tourist product in the post-pandemic period. All this affects the price of the latter, reducing the cost of travel and thus making travel cheaper and more affordable [3]. Changes in the target markets of travel services take place according to both the general principles of market evolution and purely tourism-specific factors:

– changes in operational content technology;
– mobile applications and online service booking platforms;
– package tourism offers;
– personalized travel programs;
– program tourism according to target market segments [4].

As a result of the pandemic, among the main features of international tourism have become the internationalization of business, international integration, and tourism services digitalization. The latter is the direction of innovative changes that can quickly restore and adapt the market, adjusting the tourism sector to the post-pandemic conditions of its development [5]. Difficult predictability of the consequences of crises (economic, political, epidemiological) and other negative factors of influence prompts tourist enterprises to invent ways of further development, which are the basis of innovative transformations in the market and the development of new forms and methods of management. These processes are typical for the tourism sector, which until recently has been rapidly developing, but has exhausted its natural path of growth and requires an assessment of its own potential in order to implement ambitious plans for further development [6].

China, showing rapid economic growth over the past decades at the level of annual GDP growth of 7-14%, has also become a powerful player in the international and pan-Asian tourism market. Since 2010, China has ranked among the top 10 touristic destinations in the world [7], and in 2019, it has emerged as the leader in international tourist spending (1st place), international tourist arrivals (4th), and international tourism revenue (11th) [8]. Over the past 10 years, the average annual growth rate of international tourist arrivals has been 2%. In 2019, prior to the pandemic, Chinese outbound tourism contributed to overall growth in both Asia-Pacific and overseas tourist arrivals, although Chinese tourist spending on overseas trips declined by 4% given trade tensions with the United States, the economic slowdown and the slight depreciation of the yuan [9]. Leading positions of Chinese tourism make it relevant to study socio-economic prerequisites, factors, and directions of the tourism industry development in this country. The COVID-19 pandemic has begun in China, so this study has a special relevance for the Chinese tourism market, which is actively recovering and remains promising for other countries. This study aims to fill a scientific gap in the context of determining the direction of China's tourism industry, taking into account the effects of the pandemic. In this regard, this study aims to form a methodological approach to assess the transformation of China's tourism market and identify promising areas for the most effective recovery against the backdrop of the pandemic. In order to achieve this goal, the study performed the following tasks:

– determined the relationship between key performance indicators of the tourism industry and factors through the generated correlation matrices for 32 provinces of China;
– assessed the effectiveness of the tourism market in a pandemic using the proposed Tourism development index, as a comprehensive indicator of the totality of integrated factors;
– regression analysis and scenario modeling of alternative options for transforming the tourism market in China against the backdrop of the pandemic were carried out taking into account the results. The object of this study is the transformational processes in the tourism sector of China against the backdrop of administrative restrictions associated with the COVID-19 pandemic.

Literature Review

Travel and tourism are among the sectors hardest hit by the pandemic, with a massive drop in international demand amid global travel restrictions, including the complete closure of many borders to contain the virus [10]. The Asia-Pacific region saw an 82% decline in tourist arrivals in 2020. The Middle East recorded a decline of 73%, while Africa saw a decline of 69%. Both Europe and the Americas saw a 68% decline in international tourist arrivals. Data on international tourism spending continue to reflect very weak demand for outbound travel. Nevertheless, some major markets, such as the U.S., Germany, and France, have shown some signs of recovery recently [11]. While demand for international travel remains low, domestic tourism continues to grow in several major markets, such as China and Russia, where demand for domestic air travel has largely returned to pre-COVID-19 levels [12, 13].

Based on current trends and United Nations World Tourism Organization (UNWTO) data, the number of international flights has declined by 70-75% throughout 2020. This means that international tourism could return to the level of 30 years ago. Looking ahead, most experts do not expect a full recovery in 2021, which has begun with many countries still struggling with the second wave of the pandemic. The UNWTO estimates that it will take 2.5 to 4 years for the industry to return to pre-crisis levels of international tourist arrivals [14].

The announcements and introduction of the vaccine will gradually increase consumer confidence and help ease travel restrictions. International arrivals are

expected to rebound in 2021, based on the assumption of a gradual reversal of the pandemic, the rollout of COVID-19 vaccination, a significant improvement in traveller confidence, and a significant lifting of mid-year travel restrictions. The expected recovery is also the result of a large pent-up demand after months of closed borders and travel bans [11].

The problems of international tourism development in China were studied by Li et al. [15]. Wang et al. [16] highlighted the current trends and prospects of tourism development in China. The study by Shao et al. [17] focuses on the main directions of China's state policy in tourism and the regulatory framework of tourism activities in China. Yang et al. [18] analyzed the factors that made China attractive as an international tourist destination, in particular the developed tourist infrastructure, Chinese culture, arts and traditions, shopping opportunities and e-tourism. Hoque et al. [19] noted the priority of the Chinese market to promote the Chinese tourist product, the authors analyzed the marketing research of inbound tourist flows to China, developed specific proposals to attract Chinese tourists to China. The content research on China's tourism sector has been carried out by Hao et al. [20].

As for the methods for assessing the effectiveness of tourism development in China, it can be noted that recently researchers have increasingly resorted to methods at the intersection of mathematical economics, system analysis (such as Data Envelopment Analysis) and statistical methods [21]. Contemporary research related to the analysis of the effectiveness of the tourism market of China as a whole or regions of the country using economic and mathematical methods, methods of mathematical statistics and methods at the junction are devoted to such issues as: the assessment of the effectiveness of tourism development and spatial spillover effect based on EBM (Epsilon-based measure) model - Hainan Island (China) example [21], assessing the combined effects of transportation infrastructure on regional tourism development in China using a spatial econometric model (geographically weighted Poisson regression – GWPR) [22], study of the spatial network structure of the eco-efficiency of tourism in the scale of the province of China using the analysis of social networks [23], COVID-19 and its impact on the tourism sector: Implications for a green economy recovery (based on an autoregressive conditional heteroskedasticity (GARCH) model) [24], forecasting tourism recovery amid COVID-19 through econometric and judgmental methods (scenario-based Delphi adjustment forecasting approach, general-to-specific modeling approach) [25], studying the COVID-19 pandemic affect on the tourism industry in China (through extreme quantiles approach) [26]. As for modern studies related to the study of the effectiveness of the development of the tourism sector using the tourism development index, no relevant research has been found.

Related research on the topic of the current work is devoted to such issues as an analysis of the impact of tourism development on the urban-rural income gap [27], study the relationship between tourism development, technological innovation and carbon emissions in the PRC [28], the effect of Coronavirus (COVID-19) in the tourism industry in China [19], the evolution of China's tourism industry performance using sociological methods [29], research of the COVID-19 pandemic impact on tourism in the PRC using the method of dynamic stochastic general equilibrium modeling of an outbreak of an infectious disease [30], COVID-19 potential effects on Chinese citizens' lifestyle and travel [31].

China, as a tourist destination and donor country of tourist flows, is playing an increasingly important role in world tourism markets; China is showing strong growth in international and domestic tourism. Specifically, in 2019, the number of international tourist visits to China was 67.6 million and revenues totaled $35.4 billion. Almost the same level of visits and revenues were recorded in Macau, with 18.9 million visits and revenues of $40.4 billion, and Hong Kong, with 237 million visits and revenues of $35.7 billion, respectively [32]. The outbound tourism market in China, according to various sources, is estimated at 132-150 million international tourist visits and outbound tourism expenditure at 266.2 billion [33].

Globalization dynamics and, especially, the COVID-19 pandemic have generated stagnation and crisis in many industries, among which is tourism. New problems and challenges have emerged concerning methods and tools for the fundamentally qualitative functioning of the business, interaction with customers, the provision of services, and the creation of "smart" technologies [34]. The global trends of the current post-pandemic times include the digitalization of all aspects of the tourism business based on the rapid development of innovative infrastructure [35]. The global world is becoming increasingly digital and technological, which increases competition over the consumer by providing the latter with new opportunities in the form of innovative services. The use of artificial intelligence, as well as connected devices, already provides a qualitatively new life for consumers, who can get a product and service in a convenient place and at any time [16]. Key industry representatives, including international hotel chains, have introduced a number of external and internal measures to minimize the effects of the COVID-19 pandemic, among them:

- market assurances (rescheduling or refunding booked rooms, streamlined loyalty programs, community support);
- implementation of mandatory health and safety measures;
- internal reorganization (downsizing, leave without pay, reduction/withdrawal of capital investments).

All this is done through intensive digitalization [36].

However, modern processes in the world market of tourist services in the face of modern challenges and threats, including those caused by the COVID-19

pandemic, remain understudied. The current virus is spreading intensively around the world and can be deadly for humans and devastating for the global economy, particularly for the international tourism industry. Therefore, the article aims to highlight current trends in the tourism market of China, consider market dynamics in the pandemic, as well as search for alternative ways of transformation to minimize the risks of significant losses of the tourism industry.

Materials and Methods

This study is based on the diagnosis of China's tourism market effectiveness, expressed through the Tourism development index (TDI), as a comprehensive indicator of the totality of integrated factors. This indicator is the basis for regression analysis and scenario modeling of alternative options for the transformation of China's tourism market in the pandemic. In general, the study includes several stages.

The first stage involves the collection of statistical information for 32 provinces in China. The key performance indicators of the tourism market for 2019-2020 are used for the study [37].

At the second stage, correlation matrices of the studied factors were built. Among the investigated indicators, it is necessary to allocate:

- Domestic tourism index (DTI);
- Operating income from tourism business (OITB);
- Number of travel agencies (NTA);
- International tourism revenue (FIT);
- Outbound tourism (OVA);
- Inbound tourism (FVA).

Based on correlation matrices results, the interrelated factors were identified. This served as a prerequisite for their integration into the Tourism development index (TDI).

The third stage of the study involved assessing the efficiency of the tourism market in a pandemic using TDI. This indicator is complex and it is proposed to determine as follows:

$$TDI_i = \sqrt{\mathrm{NTA}_i^2 + \mathrm{FIT}_i^2 + \mathrm{OVA}_i^2 + \mathrm{FVA}_i^2}, \quad (1)$$

where NTA_i – the number of tourist companies of the *i*-th province; FIT_i – international tourism revenues of the *i*-th province (billion US dollars); OVA_i – departure of tourists abroad from the *i*-th province (persons); FVA_i – arrival of foreign tourists in the *i*-th province (persons). Since the TDI indicators have different units of measurement, they must be normalized before the composite indicator can be calculated.

The fourth stage of the study involves regression analysis using paired linear regression. At this stage, the relationship between the level of tourism industry development and the volume of operating profits of tourism companies, as well as the level of development of the tourism industry and domestic tourism in China in 2020, was determined.

The fifth stage included scenario modeling of China's tourism market transformation against the backdrop of the pandemic. The study used the opinion of UNWTO experts for the countries of the Asian region as the baseline scenario to model three scenarios for tourism industry development in China in the pandemic [14]. That is, according to this scenario, the level of tourism industry development in the forecast period assumes a recovery in 2021 - 6%, in 2022 - 14%, in 2023 - 39% and in 2024 - 42%, while the deviation is 30% for the realistic and pessimistic scenarios. With 2019 considered as a benchmark and pre-pandemic year, the study determined that in 2020 the Chinese market had already significantly exceeded the rate of recovery from the effects of the pandemic, so predictive values were added to the results obtained.

Given the fact that the scenario of China's tourism market transformation has not yet been selected, the hierarchical synthesis of the obtained regression equations is proposed to be used for scenario modeling. This approach is easy enough to use and provides an opportunity to achieve high accuracy in solving the problem of nonlinear optimization in the context of analytical hierarchical synthesis of the factors under study. This method involves modeling based on matrices. In this study, the method was adapted to solve the problem of nonlinear optimization through the scenario of China's tourism market transformation. The process of hierarchical synthesis based on regression modeling includes the following several steps.

The first step is to identify the regression dependence of Operating income from tourism business (OITBy) and Domestic tourism index (DTIy) on the level of Tourism development index (TDIx) of the studied provinces of China. Thus, the equations of paired linear regression were developed:

$$\begin{cases} OITB_{y1} = a_{y1} + b_{y1} \cdot TDI_x \\ DTI_{y2} = a_{y2} + b_{y2} \cdot TDI_x \end{cases} \quad (2)$$

TDI_x is replaced by the corresponding values according to the scenario forecast. Thus, the estimates of OITBy and DTIy were determined for the scenario of tourism market transformation, expressed using TDIx.

The second step involves determining the proportion of optimality criteria. Operating income from tourism business (OITBy) and Domestic tourism index (DTIy) are ranked according to their importance for the studied provinces of China. The assessment is made on a standard scale. Criteria can be rated as follows: 1 - equivalent criteria; 3 - slight predominance of one criterion over another; 6 - marked dominance of one criterion over another; 9 - absolute dominance of one criterion.

The third step is to normalize the obtained indicators according to the scenario. The arithmetic mean of all Operating income from tourism business (OITBy) and

Domestic tourism index (DTIy) indicators is estimated separately, and the share of OITBy and DTIy, according to the formed scenario, is the arithmetic mean of the sum of all parts. This is the basis for determining $OITB_y^{norm}$ and DTI_y^{norm}. These indicators are used to determine the weighted sum of indicators, under the generated scenario, according to the following formula:

$$OITB_y^{ws} = OITB_y^{norm} \cdot \text{weight}, \quad (3)$$

$$DTI_y^{ws} = DTI_y^{norm} \cdot \text{weight} \quad (4)$$

The final step is to perform the hierarchical synthesis directly as follows:

$$HS_{sc} = OITB_y^{ws} \cdot DTI_y^{ws} \quad (5)$$

The obtained values of the indicators undergo a comparative characterization, the results of which are determined by the maximum acceptable option.

For this study, the raw data shown in Table 1 were used.

The limitation of the study is related to the limited number of statistical indicators that can be integrated into a comprehensive index of tourism development. It would be possible to improve the quality of the

Table 1. Baseline performance indicators of the tourism industry in China's provinces in 2020.

China's Province	Number of travel agencies	International tourism revenue, mln of US dollars	Outbound tourism, mln persons	Inbound tourism, mln persons	Domestic tourism index	Operating income from tourism business, mln of US dollars
Anhui	1522	609.78	0.68	0.38	0.4210	490517.8
Beijing	3194	1453.89	1.06	0.90	0.4814	1145120
Chongqing	710	706.95	0.83	0.48	1.3067	1325910
Hong Kong, Macao, and Taiwan (Corps)	162	307.66	0.46	0.34	0.0144	32030.92
Fujian	1270	611.72	1.02	0.43	0.7632	601231.5
Gansu	796	10.63	0.04	0.02	0.1050	170009.9
Guangdong	3390	5540.75	6.75	1.51	2.1609	3093307
Guangxi	922	948.05	1.68	0.80	0.2013	243564.2
Guizhou	671	93.16	0.13	0.06	0.2620	250495.3
Hainan	600	223.65	0.33	0.25	0.1962	506101.2
Hebei	1531	170.25	0.22	0.17	0.1174	112874.6
Heilongjiang	824	148.56	0.26	0.23	0.0316	92637.46
Henan	1166	217.80	0.41	0.26	0.2221	187058.3
Hubei	1310	690.08	1.17	0.91	1.2474	597159.4
Hunan	1315	585.23	1.21	0.65	1.3957	689385.5
Inner Mongolia	1159	348.42	0.51	0.49	0.0476	69178.52
Jiangsu	3057	1328.20	1.12	0.74	1.6825	1819883
Jiangxi	974	242.31	0.55	0.17	0.4300	269748
Jilin	696	110.69	0.25	0.22	0.0530	56034.01
Liaoning	1530	313.03	0.53	0.43	0.2210	173918.7
Ningxia	173	12.48	0.02	0.01	0.0718	42704.14
Qinghai	527	6.00	0.01	0.01	0.0894	86194.14
Shaanxi	903	606.18	0.84	0.59	0.5330	493863.6
Shandong	2676	614.37	0.73	0.53	0.4680	377654.4
Shanghai	1808	2637.92	2.35	1.92	0.7440	3066614

Table 1. Continued.

Shanxi	945	131.18	0.24	0.16	0.1602	115739.9
Sichuan	1336	364.28	0.75	0.56	0.5718	333819.6
Tianjin	516	212.86	0.10	0.09	0.0603	1546377
Xinjiang	657	81.72	0.06	0.05	0.0334	38605.78
Xizang (Tibet)	310	50.23	0.10	0.07	0.0187	75262.38
Yunnan	1147	926.52	1.33	1.06	0.3666	529620.8
Zhejiang	2885	480.28	0.84	0.59	2.4323	1985793

Source: Formed by the authors on the basis of statistical data [37, 38].

assessment and forecast through the use of the wider set of corresponding factors.

Results

At the end of 2020, the total number of travel agencies in China was 40,682 (an increase of 4.47% over 2019). With the exception of Jilin and Heilongjiang, where the number of travel agencies decreased by 0.71% and 1.55% respectively, the number of travel agencies in the remaining 30 regions increased to varying degrees; in five regions, including Hainan, Xinjiang, Hunan, Guizhou, and Gansu, it increased by more than 10%, including 24.22% at Hainan. In Guangdong, Beijing, Jiangsu, Zhejiang, Shandong, and other five regions, the number of travel agencies exceeds 2,000, the highest number is in Guangdong (3,390). In addition, the number of travel agencies in Tibet, Ningxia, and in three regions (Hong Kong, Macao, and Taiwan) is less than 500 (namely, 310, 173, and 162 respectively).

Total assets of travel agencies nationwide in 2020 were $298.87 billion, of which total liabilities were $24.05 billion, and total equity was $5.84 billion. The number of travel agency employees nationwide was 322,497, including 220,311 with a college degree or higher and 108,803 tour guides with employment contracts.

Operating income from domestic tourism of national travel agencies in 2020 was $17.92 billion, which was 86.9% of the total operating income of national travel agencies. Domestic tourism business had an operating profit of $39.75 million, representing 80.91% of the total operating profit of national travel agencies.

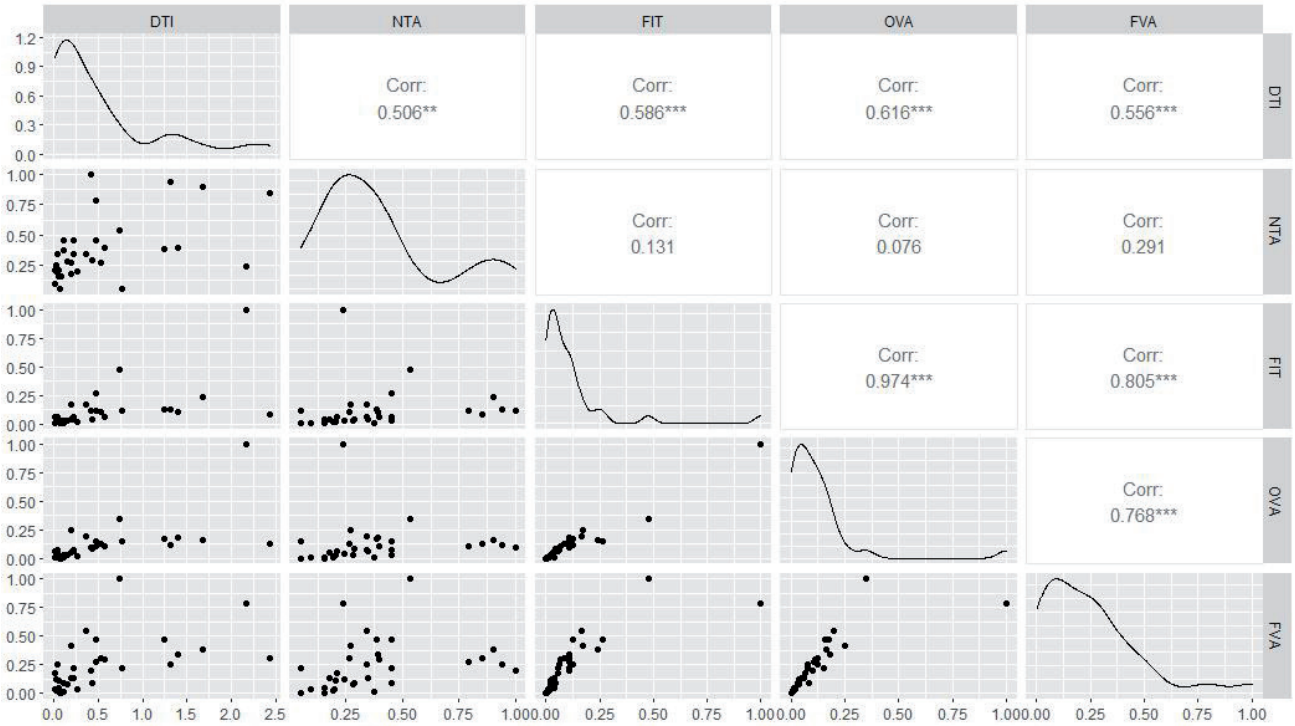

Fig. 1. Correlation matrix of the studied factors and domestic tourism index. Source: formed by the authors.

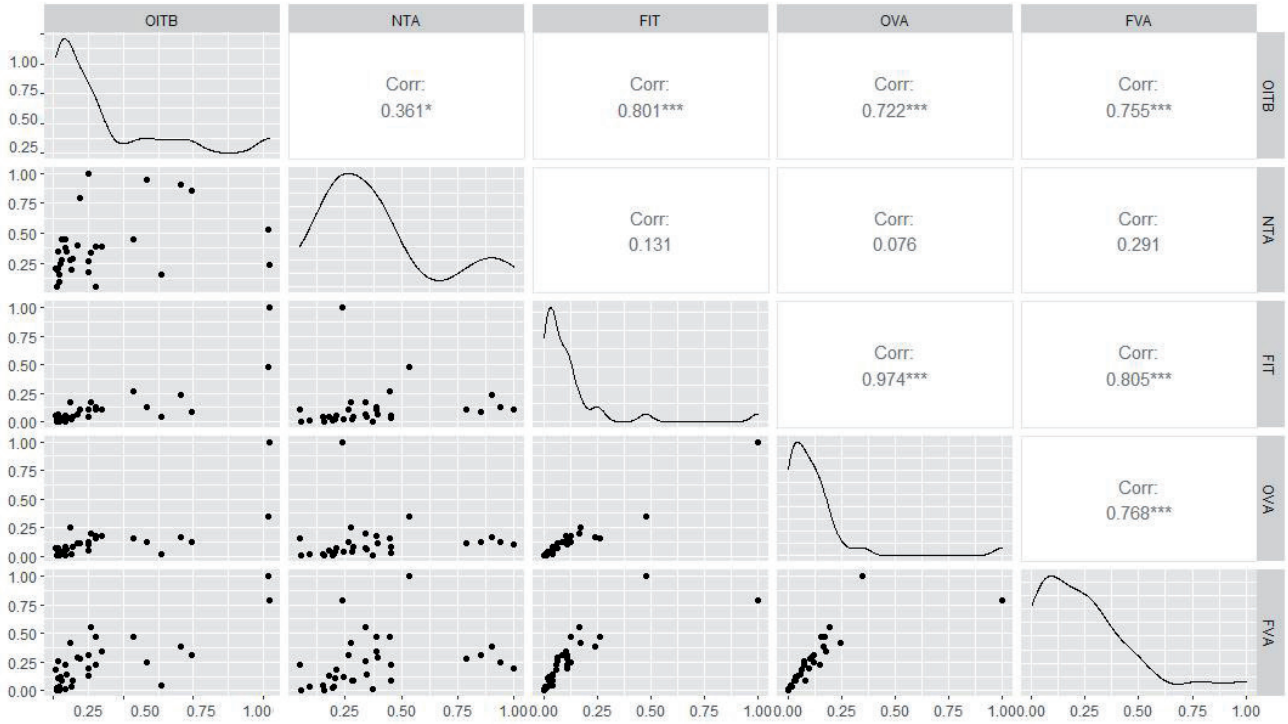

Fig. 2. Correlation matrix of the studied factors and operating profit from tourism business. Source: formed by the authors.

A correlation matrix was built to determine relationships between the level of domestic tourism and other factors under study in 2020 (Fig. 1).

Based on the resulting correlation matrix, there is a close relationship between international tourism revenue (FIT), outbound tourism (OVA), and inbound tourism (FVA). This indicates that they cannot be used to build a regression model in this form. Therefore, these three indicators were transformed, as constituent elements, into a comprehensive indicator of the level of tourism development (TDI).

Operating income from inbound tourism business of national travel agencies in 2020 was $0.24 billion, representing 1.18% of total operating income of national travel agencies. Operating profit from the inbound tourism business was $7.5 million, representing 1.59% of total operating profit for national travel agencies. Operating income from outbound tourism business of national travel companies in 2020 was $2.46 billion, which was 11.92% of the total operating income of the tourism business. Operating profit from the outbound tourism business was $85.5 million, representing 17.5% of total operating profit of the tourism business. The foreign-invested tourism business had an operating income of $0.63 billion, representing 3.07% of the total result of tourism companies nationwide.

The studied factors of China's tourism market development do not correlate with other variables (Figs 1-2). Fig. 2 shows the relationship between the studied factors and the volume of operating profit of China's tourism business in 2020.

Similar to the previous option, this correlation matrix shows a close relationship between international tourism revenue (FIT), outbound tourists (OVA), and inbound tourism (FVA). This confirms the relationship between these variables and indicates that they cannot be applied to develop a regression model as separate components. Therefore, these three indicators were integrated into a comprehensive indicator, tourism development index (TDI). In general, the level of tourism industry development in the regional context is asymmetrical (Fig. 3).

Guangdong, Shanghai, Zhejiang, Jiangsu, and Beijing, which have historical and natural attraction in the context of tourism, have the most developed tourism industry. Ningxia and Xizang are the outsiders in China's tourism market. The province of Hubei, where the pandemic began, has an average level of tourism industry development. Therefore, it can be argued that the effects of the pandemic do not have a significant impact on the tourism market in this province.

Taking into account the data obtained in the correlation matrices and diagnosis of the level of tourism industry development in China's provinces, a regression analysis was carried out. Its results are shown in Fig. 4.

The volume of operating income of tourism business in China demonstrates a sufficient level of dependence on the efficiency of tourism market development. This is confirmed by the coefficient of determination, which is $R^2 = 0.64$. That is, in the formed model, the factors under study have a significant enough influence on the volume of operating income. In this case, it is visually

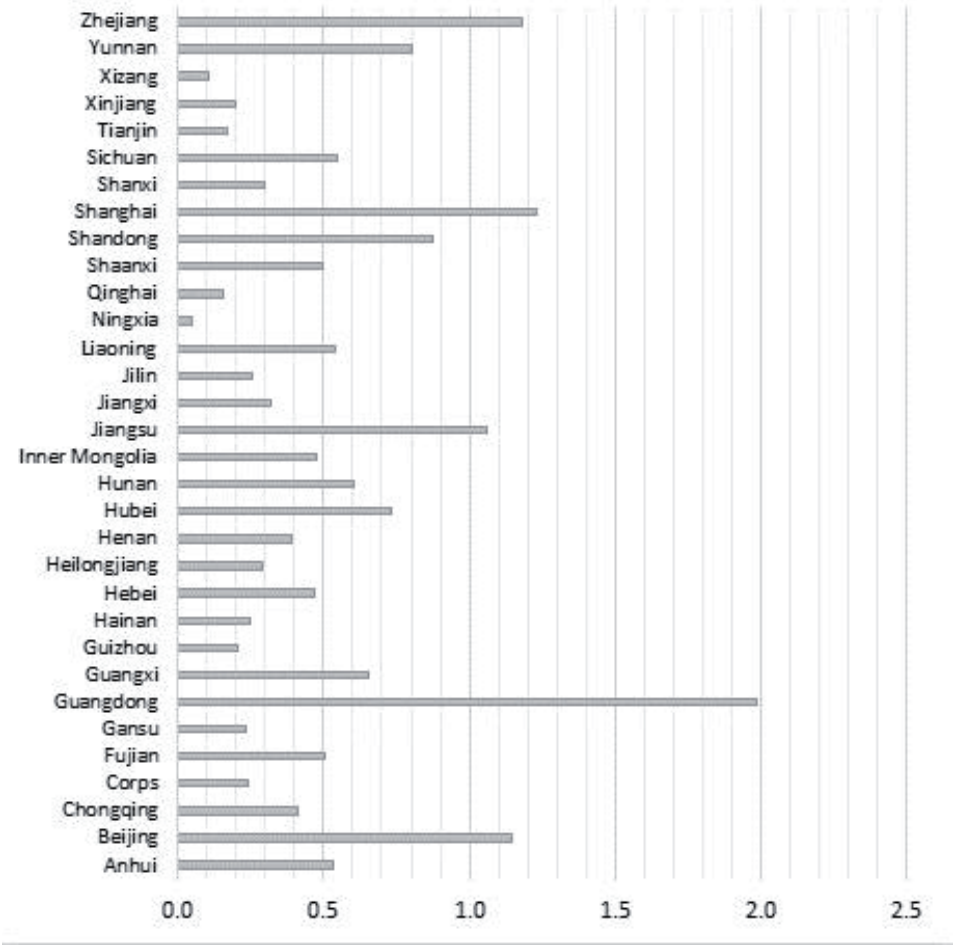

Fig. 3. The level of China's tourism market development (TDI) in 2020. Source: Formed by the authors.

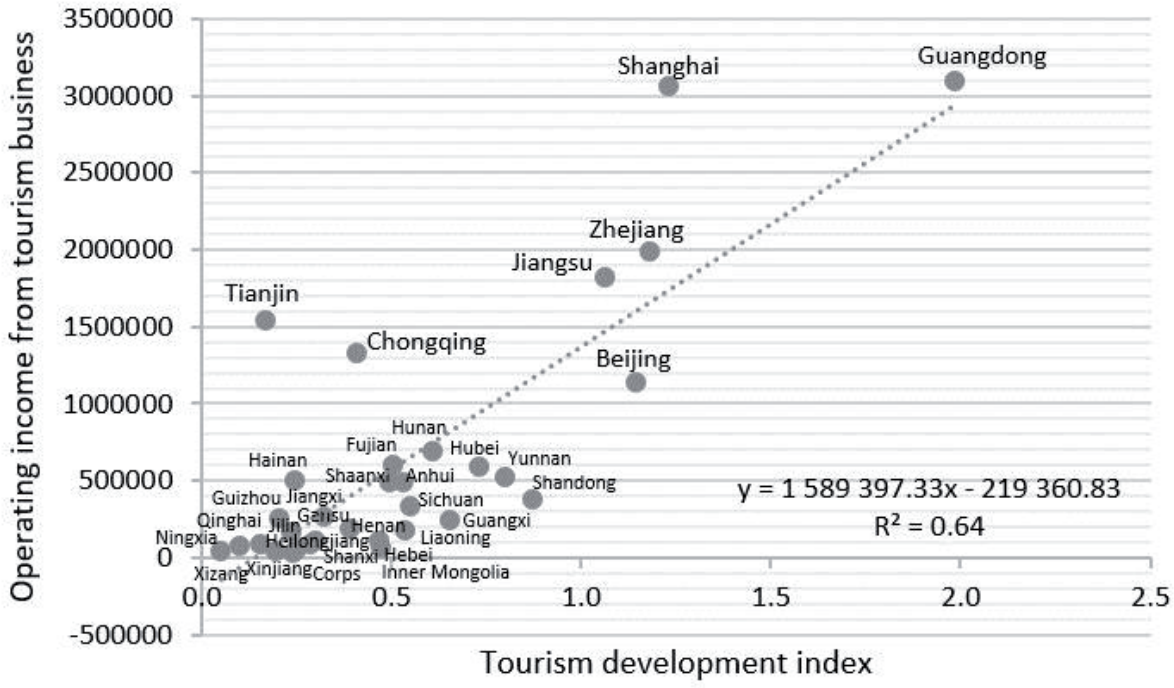

Fig. 4. The relationship between the level of tourism industry development and the volume of operating income of tourism companies in China in 2020. Source: Formed by the authors

noticeable that among all the provinces in the two studied indicators, the clear leaders of the tourism market are Guangdong and Shanghai. Among the surveyed provinces, Guangdong, Zhejiang, Shanghai, Fujian, Hunan, Anhui, Jiangxi, Jiangsu, Tianjin, and Beijing (in descending order) showed the highest operating income of tourism business. The top ten regions for the number of domestic tourist trips organized by travel agencies in 2020 are, in descending order, Zhejiang, Guangdong, Jiangsu, Hunan, Chongqing, Hubei, Fujian, Shanghai, Sichuan, and Shaanxi.

To determine the degree of correlation between the effectiveness of China's tourism market development and its domestic tourism during the pandemic, a regression analysis was conducted. Its results for the studied indicators by provinces of China are shown in Fig. 5.

The leaders among the surveyed provinces in terms of the number of domestic tourist visits in 2020 are Zhejiang, Hubei, Jiangsu, Hainan, Guizhou, Guangdong, Hunan, Yunnan, Anhui, and Fujian (from the highest to the lowest). At the same time, there is a sufficient relationship between tourism market development index (TDI) and domestic tourism, so it can be argued that it may be transformed towards domestic tourism in the context of quarantine restrictions. As for inbound tourism, the top ten countries or source regions for travel agents in 2020 are Hong Kong, Taiwan, Macau, Japan, Korea, Russia, Thailand, Singapore, the United States, and Malaysia (in descending order). The top ten countries or destination regions in terms of outbound tourism organized by travel agencies are Thailand, Japan, Taiwan, Vietnam, Singapore, Malaysia, Indonesia, Macau, South Korea, and Australia (in descending order).

The results of modeling for three scenarios of tourist industry development in China, taking into account the effects of the pandemic, are shown in Table 2. The study took into account TDI in 2019, which is considered as a reference year (pre-pandemic). The level of tourism industry development in China averaged 1.2779 for the provinces.

According to the realistic (baseline) and pessimistic scenarios, China's tourism industry will not be able to achieve full recovery from the impact of the pandemic until 2024. According to the optimistic scenario, China's tourism industry will be able to reach the development level of 2019 in 2023. A 1% increase in tourism market development (TDI) contributed to a 1.4% increase in tourist business operating profits (about 10,598 mln US dollars) and a 1.2% increase in the domestic tourism market development index. This characterizes the recovery of China's tourism market against the backdrop of the pandemic, with its transformation towards domestic development.

Discussion

The study does not refute expert forecasts, but at the same time it demonstrates the possible options for the transformation of China's tourism market. It proves

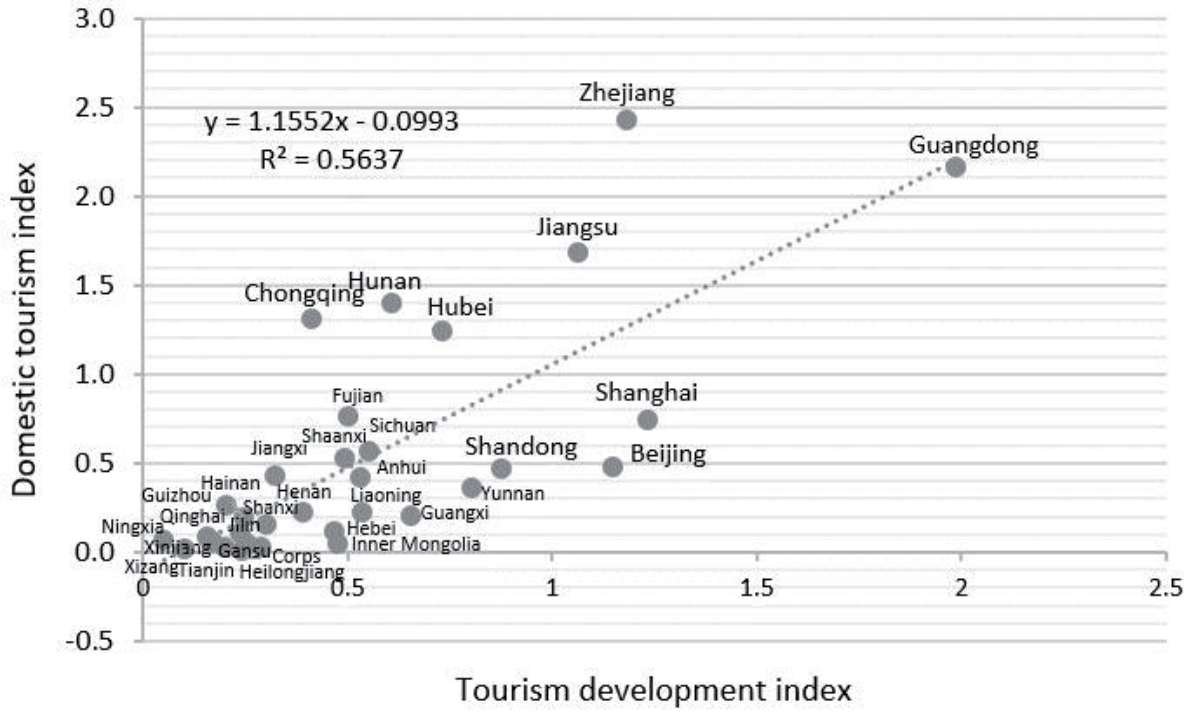

Fig. 5. Relationship between the level of development of China's tourism industry and domestic tourism in 2020. Source: Formed by the authors.

Table 2. Scenario modeling of China's tourism market transformation against the backdrop of the pandemic.

Period	Basic scenario			Optimistic scenario			Pessimistic scenario		
	TDI (coef.)	OITB, mln of US dollars	DTI (coef.)	TDI (coef.)	OITB, mln of US dollars	DTI (coef.)	TDI (coef.)	OITB, mln of US dollars	DTI (coef.)
2021	0.6006	735251.9	0.5945	0.7808	1021635.7	0.8027	0.4204	448868.1	0.3864
2022	0.7028	897739.1	0.7126	0.9137	1232869.1	0.9562	0.4920	562609.1	0.4690
2023	1.0223	1405511.8	1.0817	1.3290	1892973.7	1.4360	0.7156	918050.0	0.7274
2024	1.0607	1466444.6	1.1260	1.3789	1972186.2	1.4936	0.7425	960703.0	0.7584

Source: Formed by the authors.

that China has exceeded the recovery rate of the tourism industry in 2020 compared to the forecasts. The study takes into account the cumulative effect of tourism development in the 32 provinces of China. Optimistic UNWTO forecasts for 2021-2024 point to a market recovery in the second half of 2021, although a return to 2019 levels of international arrivals could take two-and-a-half to four years, but one certainly should not expect a simple return to the pre-coronavirus era [39]. However, the study has an alternative optimistic forecast with tourism performance in 2020, according to which China can achieve tourism market recovery as early as 2023. National governments and communities are focused on developing appropriate strategies for all tourism actors in all phases of the pandemic crisis. According to various international organizations, in particular the OECD, UNWTO, political measures related to the development of strategies to overcome the effects of the pandemic on the tourism sector in the period 2020-2022 were taken in almost all countries of the world [40,41]. Particularly it comes about providing support in the form of compensation for lost income, as well as the introduction of regulatory rules regarding standards and protocols for business [42, 43]. As the situation evolves, countries are beginning to lift border restrictions and tourism is taking steps to resumption of work, with policy initiatives increasingly focusing on measures to reopen tourism. Among them, the COVID 19 tourism policy tracker includes examples of measures on health and safety protocols to ensure safe and hassle-free travel and restore confidence as key priorities for countries to support travel and tourism along with marketing and advertising campaigns to develop demand for international and domestic tourism [40].

The study results indicate the transformation of China's tourism industry towards the development of the domestic tourism market, which is estimated at 500 million tourist visits annually [36]. This is also supported by research, according to which this transformation is facilitated by such factors as an increase in the discretionary income of Chinese citizens [44]. The Chinese domestic tourism market is oriented toward the sectors of recreation, visits to friends and relatives, business, and the like. Tourism marke transformation in this direction is also confirmed by studies of domestic tourism active development and China's entry into the world tourism market. The latter is due to significant shifts towards modernization of the economy, the transition from the planned model of economy to a market economy, and the implementation of the "open doors" policy [45]. Significant progress in the development of the Chinese economy was reflected in changes in the socio-economic structure of society. Income growth has led to the transformation of the consumer behavioral model - spending on leisure and travel has increased [46]. The increase in wages, the growth of discrete family incomes, and the transition from a six-day workweek to a five-day workweek opened up the possibility of travel to a wide segment of the population. The rapid growth of private entrepreneurship was accompanied by an increase in the profitability of production and a significant differentiation of incomes and created the preconditions for the development of all types of tourism [47]. However, government policy is aimed at improving air travel, easing visa restrictions around the world, and increasing interest in outbound travel [48]. The Chinese are now the most desirable international tourists to leading tourist destinations, because they spend more on travel than all the tourists in the world - on average USD 4 thousand per person [49].

The study advantage is the assessment of the tourism industry development level using the Tourism development index since the proposed complex indicator integrates a set of factors. A significant addition to the proposed methodological toolkit is regression analysis and scenario modeling of alternative options for transforming the Chinese tourism market against the backdrop of a pandemic. All this forms an integrated methodological approach, the application of which contributes not only to diagnosing the situation in the market at present but also to predicting its prospects, taking into account alternatives.

The study limitation is the limited number of statistical indicators that can be integrated into the comprehensive Tourism development index. Due to a wider set of factors taken into account, an increase in the quality of assessment and forecast can be achieved. In order to overcome this limiting aspect, further research can include a comparative analysis of possible deviations from the predicted results, their combination

and reduce risks to a minimum. In addition, it is possible to study the structural part of the tourist market and its possible fluctuations as a result of changes in the operating environment due to pandemic and other crisis phenomena.

Conclusion

Proposed in this study, a comprehensive methodological approach to assessing the level of tourism industry development has revealed the relationship between factors that ensure its effectiveness. The generated correlation matrices indicated a correlation between international tourism revenues, outbound tourism, and inbound tourism. This was facilitated primarily by quarantine restrictions on the tourism market as a whole. The integration of these indicators into the integral indicator allowed to diagnose the tourism market in 32 provinces of China. The leaders (Guangdong, Shanghai, Zhejiang, Jiangsu, and Beijing) and outsiders (Ningxia and Xizang) of the tourism market were identified. Of particular interest is the fact that Hubei province, where COVID-19 started, is not critically underperforming, is not an outsider, and has an average level of tourism industry development. The study indicates that the effects of the pandemic do not have a significant impact on the tourism market in the studied provinces of China. This was facilitated by the development of the domestic tourism market against the backdrop of the pandemic.

The regression analysis of the relationship between the level of tourism industry development and the volume of operating income of tourism companies in China showed a sufficient level of dependence between the studied indicators. This allowed the authors to form a corresponding equation model for the provinces under study. The leaders in the volume of operating income of tourism business are Guangdong, Zhejiang, Shanghai, Fujian, Hunan, Anhui, Jiangxi, Jiangsu, Tianjin, and Beijing. It was recorded that among all provinces in terms of tourism industry development and the operating income of travel companies, the clear leaders in the tourism market are Guangdong and Shanghai. Zhejiang, Guangdong, Jiangsu, Hunan, Chongqing, Hubei, Fujian, Shanghai, Sichuan, and Shaanxi are among the top ten regions for the number of domestic tourist trips organized by travel agencies in 2020, in descending order.

Regression analysis of the relationship between the efficiency of China's tourism market development and its domestic tourism during the pandemic confirmed the existence of a sufficient relationship between these indicators. Zhejiang, Hubei, Jiangsu, Hainan, Guizhou, Guangdong, Hunan, Yunnan, Anhui, and Fujian are the leaders in the number of domestic tourism visits organized by travel agencies. The analysis revealed the possibility of transforming domestic tourism market in the context of quarantine restrictions.

Predictive modeling of the transformation of China's tourism market against the backdrop of the pandemic in three scenarios proves that under the realistic (baseline) and pessimistic scenarios, the tourism industry in China will not be able to achieve full recovery from the impact of the pandemic until 2024. The optimistic scenario for the transformation of China's tourism market assumes a pre-pandemic level of development in 2023. It is recorded that a 1% increase in the development level of China's tourism market contributes to a 1.4% increase in the operating profit of its tourism business. It is possible to increase the level of domestic tourism development by 1.2%. This proves the possibility of an accelerated recovery of China's tourism market against the backdrop of the pandemic due to the focus on domestic tourism development.

Expanding the range of factors taken into account can improve the quality of the assessment and the forecast as a whole. To overcome this limitation in the future, the study can be deepened in the direction of assessing possible deviations from the predicted results, their intersection, and the minimization of risks. It is also possible to study the structural content of the tourism market and its possible fluctuations as a result of changes due to the pandemic and other crisis phenomena.

This study is of interest to researchers and practitioners who are engaged in developing strategies and policies for the tourism industry, top management of tourism companies, individuals involved in risk management and modeling the effects of the pandemic and its impact on the tourism market, and others.

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Conflict of Interest

The authors declare no conflict of interest.

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