“Foresight technologies of economic systems: evidence from the tourism sector of Ukraine”

AUTHORS	Svitlana Melnychenko http://orcid.org/0000-0002-5162-6324 https://publons.com/researcher/2212404/svitlana-melnychenko/ Margarita Boiko http://orcid.org/0000-0003-0249-1432 http://www.researcherid.com/rid/N-3073-2016 Alla Okhrimenko http://orcid.org/0000-0003-0405-3081 https://publons.com/researcher/2216029/alla-ao-okhrimenko/ Myroslava Bosovska https://orcid.org/0000-0002-6021-5228 http://www.researcherid.com/rid/N-4652-2016 Nataliia Mazaraki https://orcid.org/0000-0002-1729-7846 http://www.researcherid.com/rid/M-5404-2016

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Svitlana Melnychenko, Doctor of Economics, Professor, Faculty of Restaurant, Hotel and Tourism Business, Department of Hotel and Restaurant Business, Kyiv National University of Trade and Economics, Ukraine.

Margarita Boiko, Doctor of Economics, Professor, Faculty of Restaurant, Hotel and Tourism Business, Department of Hotel and Restaurant Business, Kyiv National University of Trade and Economics, Ukraine.

Alla Okhrimenko, Ph.D. in Economics, Associate Professor, Faculty of Restaurant, Hotel and Tourism Business, Department of Hotel and Restaurant Business, Kyiv National University of Trade and Economics, Ukraine. (Corresponding author)

Myroslava Bosovska, Doctor of Economics, Professor, Faculty of Restaurant, Hotel and Tourism Business, Department of Hotel and Restaurant Business, Kyiv National University of Trade and Economics, Ukraine.

Nataliia Mazaraki, Doctor of Juridical Science, Associate Professor, Faculty of International Trade and Law, Department of International Private, Commercial and Civil Law, Kyiv National University of Trade and Economics, Ukraine.

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Svitlana Melnychenko (Ukraine), **Margarita Boiko** (Ukraine), **Alla Okhrimenko** (Ukraine), **Myroslava Bosovska** (Ukraine), **Nataliia Mazaraki** (Ukraine)

FORESIGHT TECHNOLOGIES OF ECONOMIC SYSTEMS: EVIDENCE FROM THE TOURISM SECTOR OF UKRAINE

Abstract

Nowadays, it is imperative to use forecasting technologies that are most likely to predict the development of economic systems. Foresight technologies based on a combination of strategic analysis and forecasting of key indicators provide a high level of probability of achieving certain results and contribute to shaping conditions for their achievement. Among economic systems, tourism sector is the most vulnerable to the negative impact of the global pandemic. In 2020, its revenues fell by 70%, leading to an unprecedented crisis. Accordingly, questions arise about the Ukrainian tourism sector's ability to use the crisis as a prerequisite for recovery and growth.

Based on the results of a two-round survey using the Delphi method among experts (56 at the first stage and 42 at the second) representing various tourism directions for Ukraine's tourism sector up to 2030, six strategic development priorities were formed. Key indicators were identified, such as contribution to GDP (7-8%), place in the global tourism competitiveness rating (60-70th position among 140 countries), and average annual growth rate of international arrivals (5-10%). It has been determined that in case of the end of the world pandemic, the Ukrainian tourism sector can achieve the indicators of "pre-crisis" functioning in 1-3 years.

The proposed architectonics of the foresight platform in the context of digitalization of network communications will ensure the adoption of management decisions to develop Ukraine's tourism sector in the domestic and international markets. It will strengthen its position, image, and strategic sustainability in the markets for tourist services.

Keywords system, tourism, forecasting, foresight, technological trends, foresight platform, innovative technologies, hotel business

JEL Classification L83, O29, P49

INTRODUCTION

Global crisis phenomena that are nowadays characteristic of the state's economic development and the lack of a preventive response to external imbalances complicate the socio-economic development. Ukraine pursues a policy of openness and integration into the world economy, while the level of uncertainty and volatility is high. Measures to combat the pandemic have already come as a shock of unprecedented proportions, while quarantine measures and self-isolation have led to a decrease in GDP growth.

Economic systems of different levels (macro, meso, and micro) and types (economic sectors, regions, corporations, enterprises) that have experienced a collapse of economic activity reflect a high vulnerability level. Thus, forecasting the development of economic systems as components of the national economy is the basis for determining regions and countries' future socio-economic development in certain time horizons. This will allow simulating the scenarios for the development of subsystems in a dynamic market environment, which is currently

de facto poorly predictable. The main requirements for forecasting technologies for the development of economic systems are that, first, they must consider the current negative trends, which will simulate medium-term and long-term horizons of the influence of various subsystems on the national economy during the global pandemic; second, successfully implement scenarios of the positive impact of economic systems on the national economy during the period when deferred demand can be realized; third, simulate inertial, optimistic and pessimistic scenarios of the impact of economic systems of different levels and types on the national economy. Foresight meets these requirements as a new technology for forecasting and planning development. This technology is based on a combination of intra-system and inter-system comparisons of forecast trends in economic systems.

Among the economic systems that most tangibly respond to modern societal challenges are tourism sector. The attribution of the tourism sector to economic systems is based on the fact that it implements the processes of production, distribution, exchange and consumption of goods (Kleiner, 2013, Geoffrey, 2019, Krozer, 2019). The term «tourism sector» includes those industries that typically produce tourism characteristic products (World Tourism Organization, 2020, 9). Travel restrictions imposed in response to the COVID-19 pandemic caused a 70% drop in international arrivals in the first eight months of 2020, putting millions of jobs and businesses at risk (UNWTO, 2020b). Moreover, the tourism sector in the world economy before the global pandemic was the leader in terms of income and employment. For example, in 2019 direct, indirect and induced impact of tourism sector accounted for: US$8.9 trillion contribution to the world's GDP, 10.3% of global GDP, 330 million jobs, 1 in 10 jobs around the world (World Travel and Tourism Council, 2020).

Accordingly, the problem of studying the prediction of behavior and design of the vector of economic systems (for example, tourism sector of Ukraine) during the global crisis is related to the fact that the use of foresight technologies will allow predicting scenarios of their development based on the configuration of economic, social, resource, infrastructure, geographical and cultural and historical indicators reflecting growth opportunities during the global crisis.

1. LITERATURE REVIEW

The instability of an economic system is an almost normal condition, because it's widespread, But it is a distortion if compared to the path of a stable economy (Cossiga, 2019, 162). A strategic foresight can help near-term recovery become resilient over the long term (Noonan, 2020, 2).

According to Martin (1993) and Ivey (2006), foresight is a systematic attempt to predict the long-term future of science, technology, economics, and society to identify areas of strategic research and technology that can bring the greatest economic and social benefits. The United Nations Industrial Development Organization (2004) has formulated guidelines for using foresight to develop roadmaps for business support and development. This was a prerequisite for considering foresight in the context of two structural aspects, namely static (through a set of forecasting methods and methodologies) and dynamic (as a process of forming long-term forecasts, plans, and strategies).

Given the openness of economic systems as objects of foresight, Bakker and Johansson (2014) substantiate the scientific position on its priority as a methodology for forecasting the implementation of innovations with stakeholders' involvement. Conway (2015) interprets it as a systematic process based on the coordination of expert assessments of strategic prospects for economic development and society. It helps determine the levels of strategy and the external environment's scanning format for making managerial decisions in the short and long term. An important aspect of foresight is considering the evolution of economic systems in their semantics. According to Fernandez-Guell and Collado (2014), foresight is the process of visualizing the future as a unique, linear, and evolutionary process based on past experience.

Foresight is viewed as a convergence of strategic analysis and forecasting of economic systems, but it is necessary to pay attention to the formulation of differences between foresight and forecasting. Forecasting involves the development (accumula-

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tion) of a set of information about the future. The foresight task is to understand future challenges, problems, opportunities, and uncertainties, based on this, form future priorities, and contribute to the accumulation of the necessary capacity and promising measures for their implementation. It is believed that one of the components of foresight is forecasting. Thus, Osypov et al. (2012) note that foresight includes many approaches that combine three components: 1) vision of the future (forecasting, prediction, prospects); 2) planning (strategic analysis, prioritization); and 3) communication (discussion, expert assessment). Vasylkonova (2014) and Kvitka (2016) substantiated that foresight as an innovative method of scientific research aims to determine the possible state of the future, create its desired image and justify strategies for achieving goals. Kyzym et al. (2015) developed a foresight methodology in three dimensions: economic, environmental, and social, which became the basis for modeling the Foresight Pyramid reflecting the current state of sustainable development in Ukraine. Ivey (2006) notes that foresight results are options for a possible future (for different periods: 1st horizon – 1-3 years; 2nd horizon – 5-7 years; and 3rd horizon – more than 10 years), which can become real under certain conditions: correct definition of development scenarios, taking into account megatrends, reaching a consensus on the choice of the desired scenario, and measures taken to implement it. Moreover, a shorter period (1st horizon) should be predicted from a longer-term (3rd horizon) position. This allows one to conclude that the implementation of foresight research requires a systematic approach, the use of specialized tools, and implementation only under certain organizational conditions.

Foresight is used to study different types of economic systems. Thus, in the context of macroeconomic research, the foresight technology, first, includes the choice of target settings for the technological or socio-economic orientation of forecasts of economic systems; secondly, it is the basis for determining the future socio-economic development with the definition of a range of industries that can form the basis for strategic economic development; thirdly, it contains forecasting the development of new technologies and the entry of fundamentally new types of products into the market (Onder, 2017). Gorelova and Pankratova (2018) summarize the foresight of economic systems in their works. They use the methodology of cognitive modeling of complex systems (social, economic, ecological, political, and socio-technical) as a foresight tool. Melnyk (2014) also investigates the methodological approaches to developing innovation and foresight of innovation and technological development in economic systems.

In Ukraine, the first large-scale study in this direction is Foresight of Ukraine's Economy: Medium-Term (2015–2020) and Long-Term (2020–2030) Time Horizons under the scientific supervision of Zgurovskyy (2015). The paper identifies 10 main clusters that can ensure the country's successful integration into the international economy. Among these 10 clusters is tourism as a cluster-forming factor, the main growth period of which is foreseen for 2017–2025.

In terms of tourism sectors, Li and Chenguang (2019) summarize the foresight tourism research approaches. Mazaraki et al. (2018) substantiate the theoretical and methodological aspects of using foresight to develop national tourism system (sector) through the definition of the determinants of its transformation in the global environment. Continuing the study of foresight technologies, there is a need for their practical application since the extrapolation of foresight into the field of scientific methods for studying tourism sectors is due to the following factors: aggravation of competition in the market of tourist services, restriction of state financing of projects in the field of tourism, increasing the importance of technological competencies in the development of components of the tourism sector. Foresight of the tourism sectors is also necessary to optimize the decision-making process, manage the choice of technologies, create alternative directions for strategic development, intensify the personnel training process, and motivate changes that are in line with the trends of tourism in the global dimension. This will become a significant catalyst for strengthening the tourism sectors of Ukraine competitive position in the global space.

Opinions are expressed that to determine the vector of tourism development, the unconditional (implicit) is a public process based on stakeholder values and consensus, and not through a more pri-

vate expert process based solely on market forces (Ritchie & Crouch, 2003). Thus, given the processes of democratization and decentralization and taking into account the features and advantages of foresight, it can be considered that it should be used as a tool for public-private partnership of in tourism sector of Ukraine. This is argued by the fact that the foresight of tourism sector assumes the involvement of stakeholders; requires systematic, consistent and continuous implementation, provided within the framework of public-private partnership; concerns the scale of coverage of the problems studied; can give a more realistic description of the picture of the future since this can be facilitated by qualitative methods of foresight or qualitative-quantitative (as opposed to purely quantitative ones) tools.

The need for foresight research of tourism sector is based, on the one hand, on the innovative capabilities of this methodology; on the other hand, on the peculiarities of the tourism sector and the need for its various aspects of research (Table 1).

Foresight is a technology of joint design of the future to create an image and joint actions to achieve it. In this context, as already mentioned, foresight clearly "fits" into the model of public-private partnership based on the principles of partnership and joint activity. Improvedforesight capacity is all the more valuable a resource at a time when a pandemic has brought such acute challenges for governance in Europe and around the world (Noonan, 2020, 3).

2. AIMS

The aim of the paper is to use foresight technologies to determine the priority areas of development of Ukraine's tourism sector, which is considered as a macroeconomic system that ensures the processes of production, sale, distribution and consumption of tourism products.

3. RESEARCH METHODS

The foresight methodology's basic methods and tools are analysis of information sources (bibliographic), social networks, scanning, monitoring, SWOT analysis of the external and internal environment of the studied economic systems, Delphi method, scenario analysis, and trend analysis. The use of the Delphi method in this study is because it is identified with foresight (Dalkey & Helmer, 1963; Gordon & Helmer, 1964; Helmer, 1994). The Delphi method's goals are 1) determining the re-

Table 1. Foresight potential for determining the strategic landmarks of the Ukrainian tourism sector

Source: Improved by the authors based on Mazaraki et al. (2018).

Tourism sector	Foresight	Foresight of the tourism sector of Ukraine
• The priority of its development is recognized at the state level • It is multi-subjective and therefore requires the development of trade-offs in cooperation with stakeholders • Requires long-term investments, large-scale projects, and resources • Develops effectively with a positive image among foreign and domestic consumers • Determined by the influence of transformational factors • It is polystructural; therefore, it requires a combination of different research methods • Budgetary expenditures for its development are determined according to the residual principle • Is characterized by high "manufacturability"	• It concerns the definition of directions for developing various business scopes, which in the future will be a priority in the world, national or regional economy • Identifies the areas of development of various areas of activity that will be a priority in the future in the global, national or regional economy • Is the basis for making strategic decisions on long-term investment and the use of resources • Is a factor of a positive image and growth of competitiveness • Uses innovative knowledge about the development of economic systems • Is a complex tool • Assumes consideration of various alternatives for future development • Refers to the definition of long-term trends	• Shaping the country's future taking government preference into account • Development of long-term development strategies • Developing a consensus (systemic and agreed view) on the further development of the national tourism sector, both as a whole and its elements • Coordination of interests of multidisciplinary stakeholders

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quired resources; 2) accumulation of information on the need for state support; and 3) creation of a new culture of cooperation between science, business, and public structures.

Based on the SWOT analysis results, the comparative advantages, problems, and risks of Ukraine's tourism sector were identified. Based on the Delphi method, a two-round survey of experts was conducted. For this, a questionnaire of 27 questions was developed. At the first stage, five answers to 26 questions were offered; at the second – three specified options. At the expert's request, one open-ended question was provided to present a generalized vision of the development of the Ukrainian tourism sector. At the first stage, 56 experts took part in the survey through the Google form, at the second – 42. The experts represented most of the Ukrainian regions and the fields of activity and development of the tourism sector: state and local government bodies, public organizations in the field of tourism on a national scale, tourism clusters, as well as representatives of business structures, scientists, bloggers, and founders of startups. During a two-round survey of experts in predicting the future state of the studied economic system (tourism sector), feedback was obtained based on summarizing the results and adjusting the previous answers to identify probable trends. The processing of the results using the continuous scenario planning method, which involves determining the "inevitable future" and the semantic description of prospects, allowed forming a foresight of the studied economic system in a 10-year perspective.

The data from The World Economic Forum (WEF), the World Tourism Organization (UNWTO), World Travel and Tourism Council (WTTC) as well as the world's leading companies (Amadeus IT Group S.A., Sabre Corporation, Booking, Google) on current trends in social development and tourism, were used in the development of the questionnaire.

4. RESULTS

Using the Ukrainian tourism sector example, a foresight study of its development in a 10-year perspective was carried out. It is currently characterized by a structural and temporal asymmetry of tourist flows, volatility in the dynamics of key indicators of international tourist arrivals and domestic tourism, which causes an imbalance in the competitiveness of the tourism sector in the global space (Table 2).

Based on the SWOT analysis of the Ukrainian tourism sector in the context of the development of foreign and domestic tourism and taking into account analytical research on the components of tourism sector and their future (Bevolo, 2019; Prymak et al., 2020), it is possible to substantiate the relationship between strengths and weaknesses, opportunities and threats (see Table 3), and in the future to formulate comparative advantages, problems and risks, which are the basis for the strategic vision of development and foresight of the Ukrainian tourism sector.

These comparative advantages, challenges, and risks of Ukraine's tourism sector due to scanning its external environment in the context of the development of foreign and domestic tourism (Table 4) can be used as a basis for its foresight.

Table 2. Dynamics of the main indicators of the Ukrainian tourism sector (TS) development for 2012–2018

Source: Developed by the authors (The World Economic Forum (WEF), World Tourism Organization, World Travel and Tourism Council).

Indicators	2012	2013	2014	2015	2016	2017	2018
Total TS contributions to GDP, UAH billion	105,6	111,3	87,4	106,9	129,0	147,2	169,7
Growth rate, %	×	5,4	–21,5	22,3	20,7	14.1	15,3
Share of total TS contributions to GDP, %	7,5	7,5	5,5	5,4	5,4	4,9	4,8
Ukraine's position in the global ranking of tourist competitiveness, place/number of countries in the ranking[1]	–	76/140	–	Not rated	–	88/136	78[2]/140
International arrivals, million people	23,0	24,7	12,7	12,4	13,3	14,4	14,2
Growth rate, %	×	7,4	–48,6	–2,4	7,3	8,3	–1,4
Revenues from international tourist arrivals, USD billion	4,8	5,1	1,1	1,1	1,3	1,5	1,6
Growth rate, %	×	6,3	–78,4	0	18,2	15,4	6,6
Revenues per one international tourist arrival, USD	208,7	206,5	86,7	88,7	97,8	104,1	112,7
Growth rate, %	×	–1,1	–61,9	12,7	–6,8	10,6	15,4

Note: 1 The rating is published biennially. 2 Rating data of the World Economic Forum for 2019.

Table 3. SWOT analysis of Ukraine's tourism sector

Source: Developed by the authors.

Strengths	Weaknesses
1. Geographical location of the country (a border country between East and West)	1. Armed aggression of the Russian Federation against Ukraine
2. Significant potential of natural and cultural-historical resources	2. Occupation of a part of Ukraine's territory with significant tourist potential (Crimea) by the Russian Federation
3. Relatively low prices for food, basic necessities, and restaurant services	3. High level of corruption
4. Favorable exchange rate of Ukrainian currency against the major world currencies	4. Environmental problems in some parts of the country
5. High level of IT specialists	5. Poor quality of tourism services and infrastructure
6. Availability of ecologically clean territories	6. Irrational use of potential (natural, cultural, historical, human)
7. High level of self-organization of society and civic engagement	7. Outflow of intellectual resources outside the country
8. Development of art (cinema, theater, and show business)	8. Underdeveloped river and maritime transport business and low level of quality and development of urban and intercity transport and highways
9. National hospitality and traditions, authentic crafts	9. Insufficient level of innovation implementation
10. Recognized national cuisine	10. Low level of knowledge of foreign languages by citizens
Opportunities	**Threats**
1. Political, economic, and socio-cultural rapprochement with European and North American countries	1. Deterioration of international relations, in particular with neighboring countries
2. Implementation of social reforms	2. Deterioration of public and personal safety
3. Improving the state policy of tourism development	3. Reduced investment in the tourism sector
4. Restoration of investment activity and business climate	4. Increasing corruption
5. Improving the tourist image of the country, expanding international relations and representation abroad	5. Forming the country's image as a sex tourism destination
6. Development of innovative types of tourism	6. Deterioration of tourism infrastructure
7. Development of tourism infrastructure	7. Growth of labor migration and loss of highly skilled human resources
8. Liberalization of air traffic with the EU countries and the development of air transport	8. Deterioration of environmental sustainability and natural and man-made emergencies
9. Dissemination of information and communication technologies, 4G-Internet	9. Decline of cultural heritage and traditions
10. Activation of events (artistic, sports, culinary)	10. Deteriorating visa policy

During the transition of the tourism sector to the post-industrial (information) era, there is a growing need to focus on its characteristic "breakthrough innovations", which are products and services that meet the information economy's requirements – technology startups. According to Mark McSpadden, vice president of the global hospitality distribution network Sabre Corporation, the next generation will live, work, and take rest in a completely new environment, so the business has great opportunities and nowadays, one can begin to experiment and implement blockchain technologies, augmented reality, and authentic presence to make travel more comfortable, safer and more personal (Sabre Corporation, 2017).

The combination of ontological analysis and foresight of global value chains created by the tourism sector enabled to establish that a complex development trend has determined technological trends (Scarpino, 2010; Scott, 2010; Morrison, 2013; Pascariu & Ibănescu, 2018; Ghobakhloo, 2018); therefore, it is possible to design their decisive influence on the development of tourism sector (Table 5).

The spread of technological megatrends, which is the result of globalization, can lead to radical changes in the world tourism sector and, accordingly, in Ukraine's tourism sector. Simultaneously, the practical implementation of the influence of technological trends on the tourism sector is the blockchain technology and its potential opportunities associated with the procedures for identifying tourists, improving the quality of service, and the emergence of fundamentally different travel mechanisms, market monitoring, etc. Ukraine, which has a fairly strong IT industry, should already lay the innovative foundations of tourism activities.

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Table 4. Comparative advantages, challenges and risks of Ukraine's tourism sector

Source: Developed by the authors.

Criteria	Comparative advantages	Challenges	Risks
Direction and nature of the interaction	Opportunities support strengths	Opportunities reduce weaknesses	Threats exacerbate weaknesses
Effects	Favorable geographical location, social reforms, combined with the desire for rapprochement with European countries, will help revive investment and business climate in tourism sector, which will further improve tourism infrastructure and create new types of tourism	Rapprochement with European and North American countries will strengthen resistance to Russian aggression	The deterioration of international relations may strengthen Russia's aggressive policy
	The presence of a significant potential of natural and cultural-historical resources, relatively low prices, and a favorable exchange rate of the Ukrainian currency are an additional incentive to attract foreign tourists	Implementation of social reforms and improvement of state policy in the field of tourism development will reduce the level of corruption and contribute to the improvement of infrastructure and quality of tourism services	Reduced investment in the tourism sector will contribute to the underdeveloped transport infrastructure and insufficient level of innovation
	A high level of IT specialists will contribute to the development and dissemination of ICT, innovative types of tourism	The development of ICT will reduce the outflow of intellectual resources outside the country, increase the level of innovation	Deteriorating environmental sustainability and natural and anthropogenic emergencies will exacerbate environmental problems and wasteful use of potential
	A high level of self-organization of society and civic engagement, national hospitality, and traditions, authentic crafts, recognized national cuisine, and the development of art will stimulate the improvement of the country's tourist image	Expansion of international relations, liberalization of air traffic, strengthening of preventive measures will contribute to the need for citizens of Ukraine to study foreign languages	The growth of labor migration and the loss of highly qualified human resources will reduce the quality of tourism services and infrastructure

Table 5. Foresight studies of the impact of technological trends on tourism sector

Source: Developed by the authors based on Sabre Corporation (2017), and Mazaraki et al. (2018).

Technological trend type	The essence and use in tourism sector
Artificial intelligence	Dissemination of technologies for the complex interaction of people and machines
	Data analysis and personalization of offers for tourists
Augmented reality	The ability to design information on any object in real time
	Usually used in travel applications
Autonomous delivery	Expansion of service technologies
Blockchain	Can revolutionize tourism
	Reliable distribution of record storage – Internet trust
	Startups (civic, loyal)
Cryptocurrency	Similar to the emergence of cryptocurrency in the Skincoin e-sports industry, it is possible to introduce cryptocurrency into tourism
Neuro interfaces	Exchange of information between the human brain and an electronic device
Quantum calculations	Processing large datasets
Space tourism	Development of a new type of tourism, namely space tourism, on a systemic (non-periodic and one-time) basis
Authentic presence	Dissemination of biometric technologies
Virtual reality	The possibility of complex immersion in objects of potential interest to certain people (for example, the Marriot network uses the VR postcards technology to view the hotel remotely)
A combination of mobile automatic translation apps	Smart translator earphone (for example, Google Pixel Buds)
Unmanned vehicles	To some extent, an "independent" vehicle, with which some operations are carried out without human intervention; fully self-driving vehicles are envisioned in the future*
Smart homes/rooms	Premises with special security systems
User-generated content	Based on the desire of tourists to share experiences and create content

Note: *For technological and ethical reasons, vehicles with partially autonomous control are still being developed. From 2021, it is expected that cars will appear, the human intervention in the movement of which is minimized. Self-driving cars are expected to become commonplace in 2026–2030. Companies developing such vehicles are Tesla, Mercedes, BMW, Volvo, Audi, Google (Alphabet), Apple, Baidu, and Uber.

Therefore, considering European and world experience, it is proposed to create foresight platforms (national, regional, local) at different levels of tourism sector. Thus, one of the confirmations of the relevance and importance of foresight on a global scale was the creation in early 2010. The successful functioning of the European Foresight Monitoring Platform (EFMN) aimed at creating a global network that brings together various communities and professionals for sharing foresight knowledge. The EFMN final report focuses on the creation of the Foresight Model and the Intelligent Decision Support System (IDSS), which provide a framework for the continuous assessment of threat prediction and foresight processes in the European community, thus creating an environment and new opportunities for improved networking and coordination between relevant stakeholders (EFMN, 2020). That is why the development of the tourism sector at the national level should consider key agents' economic interests and the interaction between them.

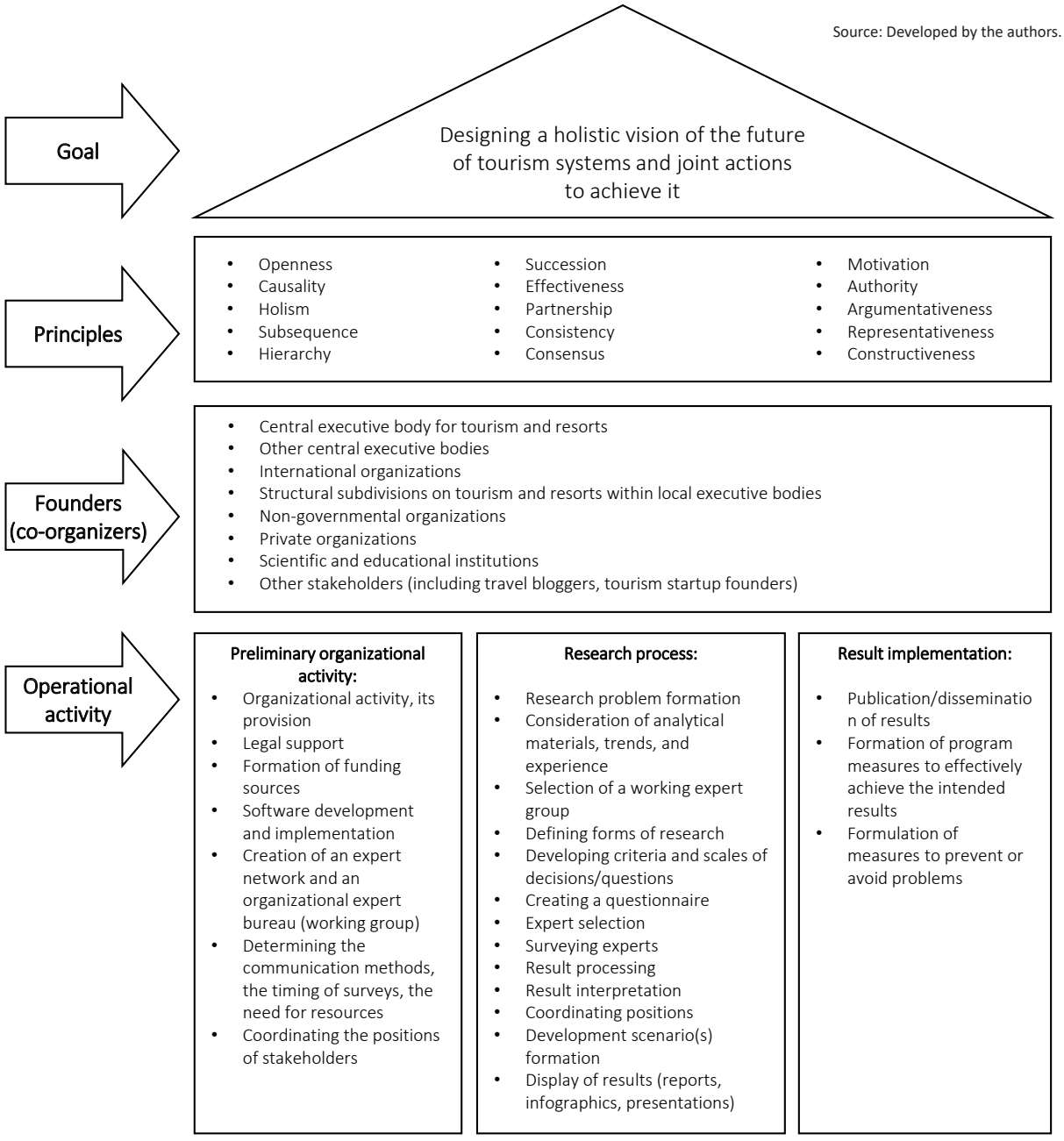

Figure 1. Architectonics of the foresight platform of Ukraine's tourism sector

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For Ukraine's tourism sector, special attention should be paid to the need to reach a consensus between stakeholders through their constant dialog, that is, the creation and operation of specialized foresight platforms. The idea behind the foresight tourism platforms will be that stakeholders will shape the vision and assess the future and develop their activities to increase the likelihood of certain events, amplify trends, counter, prevent and/or prepare for problems. In this context, Saritas (2013) points to the enormous potential that systems thinking can contribute to the effective application of foresight in the study of complex social and human systems and related situations.

In Ukraine, the central executive body for tourism, other interested agencies, and NGOs should be consolidators and organizers of the national level's tourism sector foresight platform. Figure 1 shows the architectonics of the foresight platform of Ukraine's tourism sector.

The purpose of creating and operating of the foresight platform of Ukraine's tourism sector is to build a holistic picture of tourism sector future and joint actions to achieve it. This activity should be based on the principles of openness, causality, holism, consistency, hierarchy, succession, effectiveness, partnership, coherence, argumentation, consensus, authority, representativeness, motivation, and constructiveness. A wide range of experts should be involved in the foresight platform of the tourism sector to reduce subjectivity and develop generalized, agreed, and constructive solutions. When selecting experts, it is necessary to consider the level of their professionalism, erudition, creative thinking, and competence. Among other things, a concomination can be a selection method for experts, when the expert himself recommends others. The foresight platform's operational activity includes three main blocks of activities, such as preliminary organizational activity, research process, and implementation of results, each of which involves many tasks and procedures (see Figure 1). Systematic foresight research (every 2-5 years) will improve the organization, work out its mechanisms to increase experts' interest, their importance, create a database of future NTS, and identify errors, deviations, and problematic points.

The proposed and outlined conceptual principles of the tourism sector foresight aim to ensure the effective integration of all its components. The use of foresight in the development of the tourism sector at the state level will help anticipate problematic phenomena and risks and attract experts to determine the vector of economic development, realize national tourism interests, and present the country's position as an attractive destination.

A foresight study based on the Delphi method was conducted to develop the Ukrainian tourism sector in the "third time horizon – 10 years" (based on Ivey, 2006).

Tourism sector foresight includes scanning the external environment to search and analyze relevant information about the state of subsystems, determine the basic segments and trends for forecasting, effective communication of stakeholders, information and the analytical component of forecasting, continuous scenario planning of variability of strategic landmarks for the trajectory of socio-economic development, building a road map as a strategic document for the development of the system on time horizons (Figure 2).

As part of this work, a two-round foresight study was conducted, during which feedback was provided, and the experts reviewed the results of the previous round and presented their views based on updated information, adjusted their opinions, thereby increasing overall coherence. According to the Delphi method, work with experts (groups of experts) is based on 1) repeatability of the procedure – conducting several rounds (stages) of surveys; 2) coincidence of opinions – when in the next rounds the experts are provided with generalized results of the previous survey for their correction; 3) anonymity – when experts are not informed about the composition of participants, which reduces the opinion of expert leaders and leads to more objective and reliable results; 4) structure – orientation to the subject of research based on the questionnaire; 5) feedback – experts are allowed to rethink their answers and correct them; 6) statistical aggregation – summarizing the results of each panel and identifying points and causes of discrepancies.

An expert foresight study of the development of Ukraine's tourism sector in the third horizon (10 years) was carried out in the following sequence:

Source: Developed by the authors.

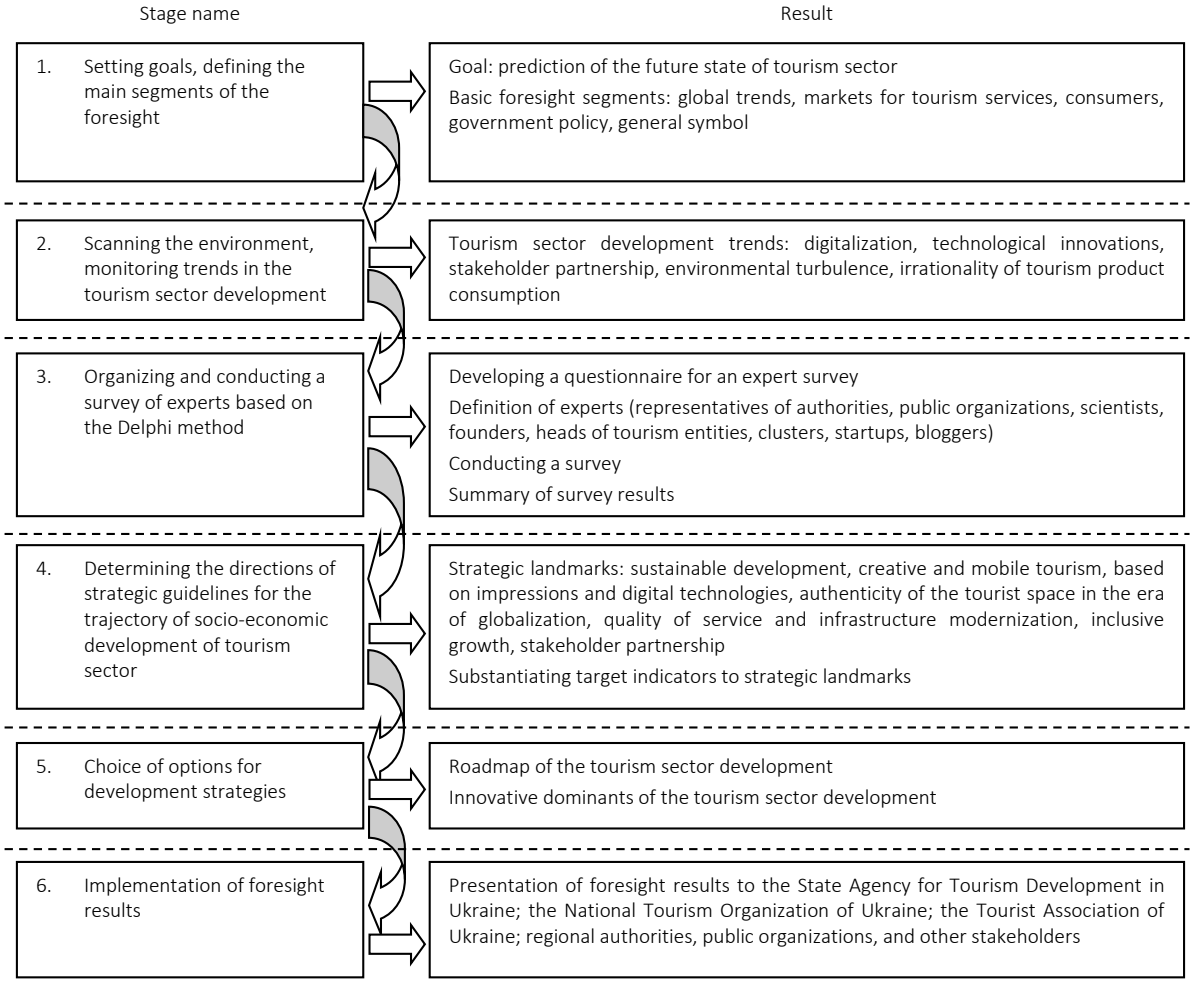

Figure 2. Structural and logical sequence of the tourism sector foresight

- research preparation (setting a problem, goals, and objectives, bibliographic monitoring, defining the methods);
- developing a questionnaire for interviewing experts based on an assessment of the real state of the tourism sector development and global trends;
- identification and selection of experts, communication with them (monitoring of personalia of government agencies, research institutions, and social networks: officials of state and regional structures, public associations, business and scientific environment, bloggers, founders of startups in tourism);
- conducting the 1st expert panel and processing its results (sending the questionnaire using Google tools via social networks and e-mail), correcting the possible answers in the questionnaire taking into account the experts' answers;
- conducting the 2nd expert panel and processing its results;
- elaborating and substantiating survey results;
- creating a scenario vision of the Ukrainian tourism sector development in the third horizon (10 years).

At the first stage, 56 experts took part in the survey via Google Forms; at the second – 42. These experts represented almost most of Ukraine's regions and the spheres of functioning and development of the tourism sector. These fore-

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Source: A snippet of a Google survey form.

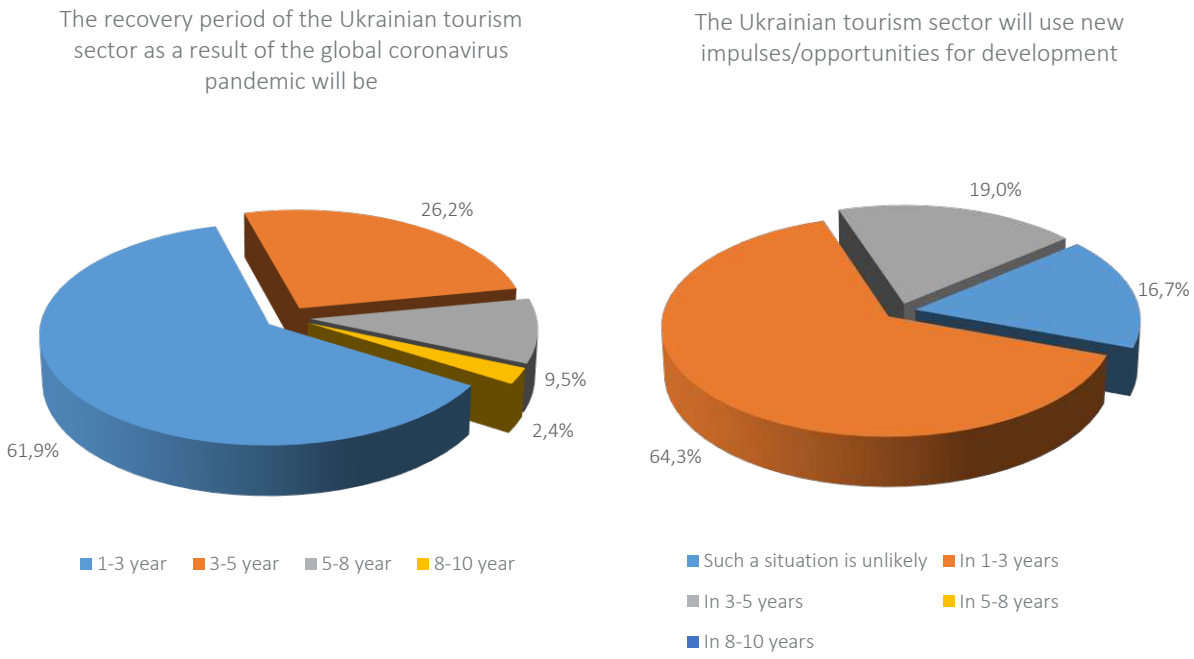

Figure 3. Generalization of the experts' answers in a foresight study on the restoration of Ukraine's tourism sector according to the consequences of COVID-19

sight study's objectives were to form a vision of Ukraine's tourism sector future in 10 years and determine the impact of the global pandemic on Ukraine's tourism sector and its recovery.

Fragments of approbation of foresight studies are presented in Figures 3 and 4. Regarding the reaction of the tourism sector to the pandemic, the majority (61.9%) of experts indicated that the recovery period of Ukraine's tourism sector due to the global coronavirus pandemic would be 1-3 years. Also, in 1-3 years (63.4%), Ukraine's tourism sector will use new impulses (opportunities) for development. This is because the tourism sector is focused on the use of modern information and communication technologies, the powerful development of the IT sector in Ukraine, the need to improve and restore citizens' health in the post-quarantine period. The combination of various types of tourism (78.6%) should become a priority area for developing the Ukrainian tourism sector. That is, the task is to form a diversified national tourism product.

The next stage is scenario analysis, during which a scenario vision of the future is developed, taking into account the trends of the main political, economic, sociological, and environmental drivers. The most likely scenarios appear here. However, according to Morgunov (2011), concerning the scenarios, in some cases, it is necessary to use not classical discrete but continuous scenario planning. With the discrete method, the number of scenarios is small, all of them are written, and one of them is chosen as the base one; the rest are considered undesirable alternatives. Continuous scenario planning is based on the concept of an "inevitable future". This method is based on the fact that the future incompatible with the "inevitable" is "impossible"; in turn, any future that includes a completely inevitable future and does not contain any element of the impossible future, is a version of the future, a scenario (Morgunov, 2011). The convergence of experts' opinions, provided by a two-round survey and analysis of its results, contributed to the possibility of determining the "inevitable future" of the Ukrainian tourism sector.

The four basic segments of foresight identified by Ivey (2006), such as global trends, tourism services markets, consumers, and government policy, were taken into account, and the general symbol was interpreted as a strategic priority that synthesizes the content of key descriptors identified based on a survey of experts.

Source: A snippet of a Google survey form.

Figure 4. Generalization of experts' answers within the framework of foresight researh on the priority of Ukraine's tourism sector development trends

Based on the results of an expert survey, following the four basic segments (global trends, markets for tourism services, consumers, and government policy), 24 key descriptors were identified, which are classified into six generalized groups of strategic priorities for the development of Ukraine's tourism sector: stakeholder partnership, inclusive growth, quality of service and infrastructure, authenticity of tourist space, creative and mobile tourism, sustainable development.

The survey's important aspects were to determine the key indicators of Ukraine's tourism sector development, namely: its share in Ukraine's GDP, the country's place in the Travel and Tourism Competitiveness Index (WEF, 2019), and the volume of international arrivals to Ukraine. It was determined that in a ten-year perspective, the share of the total contribution of the tourism sector to Ukraine's GDP will be 7.0-8.0% (now 4.8-7.5%), Ukraine will rank 60-70 in the Travel and Tourism Competitiveness Index (currently, 78th among 140 countries) (WEF, 2019), and the volume of international arrivals to Ukraine will grow by an average of 5.0-10.0% annually. Figure 5 shows the results of Ukraine's tourism sector foresight for ten years.

Thus, based on the general symbols shaped based on foresight in the third horizon (10 years) and the interdependence of socio-economic prospects for the development of the tourism sector in the global market, it is clear that the direction of the tourism sector development vector towards an innovative form is based on the existing strategic priorities: stakeholder partnerships, inclusive growth, improving service quality and modernizing infrastructure, preserving authenticity, creating an environment for creative and mobile tourism based on impressions and digital technologies, and ensuring sustainable tourism. The optimistic scenario of achieving the set goals is also due to the fact that, for example, World Tourism Organization has released a Tourism Recovery Technical Assistance Package to offer guidance to Member States in response to COVID-19. The package is structured around three main pillars: economic recovery, marketing and promotion and institutional strengthening and resilience building (World Tourism Organization, 2020a). Since foresight is a technology for forecasting and modeling the desired future, achieving these strategic priorities requires constructive inter-entity communication of different groups of stakeholders in the production, distribution, sale, and consumption of tourism products at mega, macro, and meso levels. The main task is assigned to the state authorities to create an environment for partnership and provide state support for business entities, united territorial communities, and tourism clusters during the crisis period.

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Source: Developed by the authors.

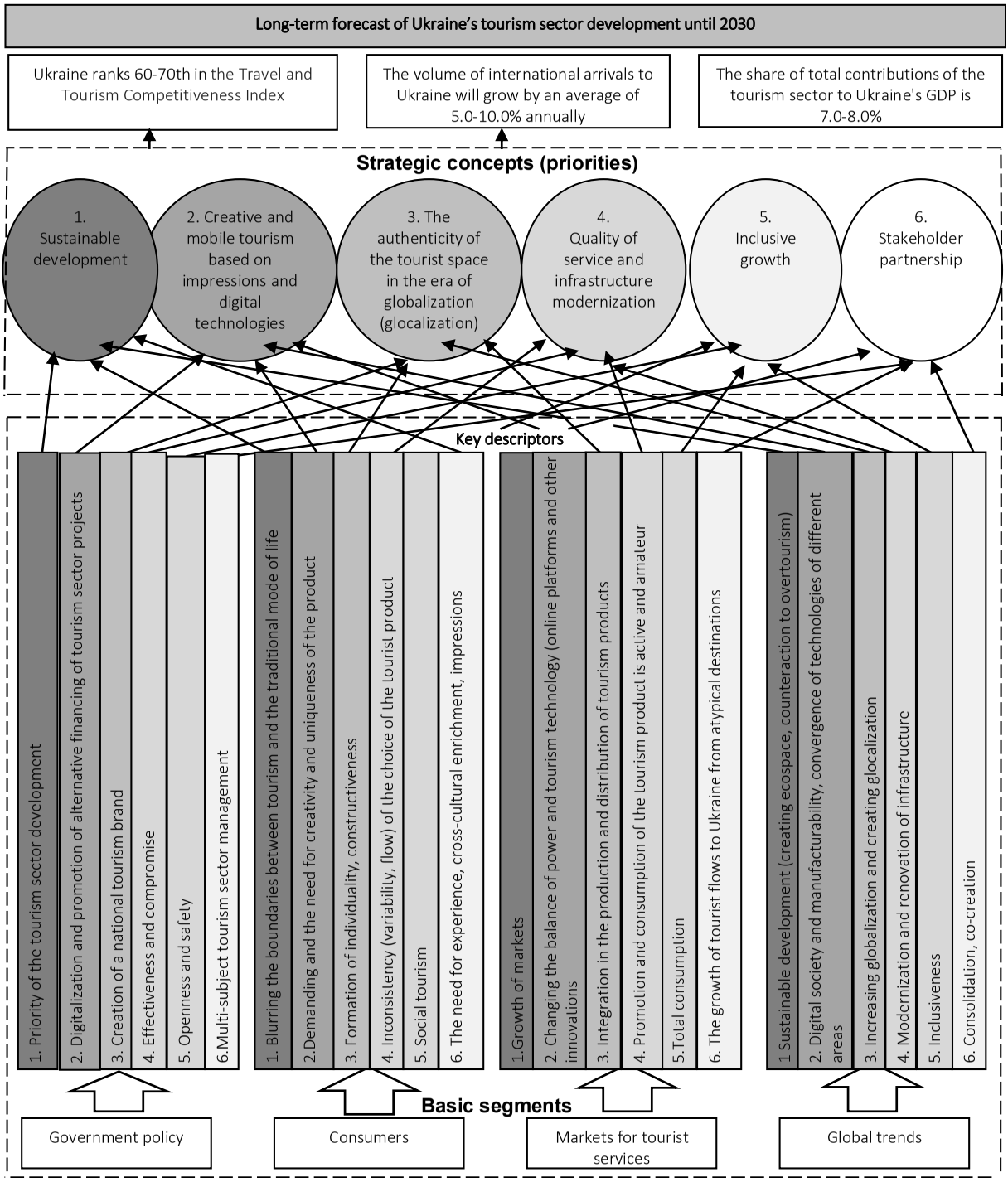

Figure 5. Foresight of Ukraine's tourism sector up to 2030

CONCLUSION

The use of foresight technologies to predict economic systems development, and the tourism sector, in particular, allows optimizing the process of making management decisions, choosing technologies, and creating alternative directions for strategic development.

According to the foresight study results, it has been determined that the drivers of the development of the tourism sector in Ukraine for a one-three-year perspective are anti-crisis measures to overcome the global recession and intensify the development of domestic tourism; for a five to eight-year perspective – the coherence of the activities of tourism sector stakeholders, authenticity, individuality and environmental friendliness of travel products; and for a ten-twenty-year perspective – technological innovations in the creation, sale, and consumption of travel products (artificial intelligence, virtual offers, blockchain, cryptocurrency, mobile apps, etc.). In the period up to 2030, the achievement of the planned key indicators of the development of Ukraine's tourism sector (the total contribution to GDP is 5-7%, the place in the world rating of tourism competitiveness is 60-70, the average annual growth of foreign arrivals is by 5-10%) is explained by the use of the post-crisis recovery based on significant resource potential (natural, cultural and historical, human, information and communication), the coherence of stakeholders, recognition of priorities and the formation of conditions for support at the state level.

Ensuring stakeholders' cooperation on future long-term development is implemented in the proposal to create a foresight platform for the tourism sector of Ukraine. In its format, consolidated management decisions will be presented regarding scenarios for the development of tourism in the domestic and international markets and forecasting of its future state, the selectivity of the direction of the development vector, and a preventive effect on the timely detection of problems. As a result, this will strengthen the Ukrainian tourism sector position, image, and strategic sustainability in the domestic and international markets for tourism services.

AUTHOR CONTRIBUTIONS

Conceptualization: Svitlana Melnychenko, Margarita Boiko, Alla Okhrimenko.
Data curation: Svitlana Melnychenko, Margarita Boiko, Myroslava Bosovska.
Formal analysis: Alla Okhrimenko, Myroslava Bosovska, Nataliia Mazaraki.
Funding acquisition: Nataliia Mazaraki.
Investigation: Margarita Boiko.
Methodology: Svitlana Melnychenko, Margarita Boiko, Alla Okhrimenko.
Project administration: Svitlana Melnychenko, Margarita Boiko.
Resources: Myroslava Bosovska, Nataliia Mazaraki.
Supervision: Margarita Boiko, Myroslava Bosovska.
Validation: Svitlana Melnychenko, Margarita Boiko, Alla Okhrimenko, Nataliia Mazaraki.
Visualization: Alla Okhrimenko, Myroslava Bosovska.
Writing – original draft: Margarita Boiko, Alla Okhrimenko, Myroslava Bosovska.
Writing – review & editing: Svitlana Melnychenko, Alla Okhrimenko, Nataliia Mazaraki.

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