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Alina M. Borysova-Yaryha

Mykolaiv State Agrarian University, Ukraine

**STATISTICAL APPROACH TO FORMING AN ECONOMIC MODEL OF HUMAN
POTENTIAL MANAGEMENT IN TOURISM INDUSTRY OF MYKOLAIV REGION**

The study aimed to develop an economic model for managing human potential in the tourism sector of Mykolaiv region based on a statistical approach. The creation of a model that took into account socio-economic and demographic factors was based on quantitative and qualitative methods, including contextual analysis, cost-benefit analysis, and benchmarking. It was found that the tourism sector of Mykolaiv region suffered from the significant losses due to the full-scale invasion, caused by its proximity to the combat zone, population outflow, economic downturn, and the inability to conduct strategic planning. Cost-benefit analysis confirmed the feasibility of further development and human potential management for the restoration and sustainable growth of the region's tourism segment. The proposed economic model for human potential analysis and management included quantitative and qualitative indicators measured using matrices such as professional training assessment; alignment of personal qualities with formal job descriptions; determination of an employee's work utility; evaluation of work behaviour; level of goal achievement; comprehensive assessment of professional activity; and measurement of employee effectiveness in achieving objectives within a given time frame. Potential challenges in applying the proposed model were considered, including a shortage of qualified personnel and low motivation to work in a sector experiencing a recession. The proposed employee retention and motivation strategies help overcome obstacles to the development of the tourism segment in Mykolaiv region. The research findings can be used to facilitate the post-war recovery of the industry.

Keywords: *human potential; individual professional trajectory; strategic resource planning; benchmarking; cost-benefit analysis.*

Аліна М. Борисова-Ярига

Миколаївський державний аграрний університет, Україна

**СТАТИСТИЧНИЙ ПІДХІД ПРИ ФОРМУВАННІ ЕКОНОМІЧНОЇ МОДЕЛІ
УПРАВЛІННЯ ЛЮДСЬКИМ ПОТЕНЦІАЛОМ У ТУРИСТИЧНІЙ ГАЛУЗІ
МИКОЛАЇВСЬКОЇ ОБЛАСТІ**

Метою дослідження було розробити економічну модель управління людським потенціалом у туристичній галузі Миколаївської області, спираючись на статистичний підхід. Створення моделі, що враховувала соціально-економічні та демографічні фактори, спиралося на кількісні та якісні підходи, зокрема, контекстуальний аналіз, аналіз вигод та витрат та бенчмаркінг. Було виявлено, що туристичний сектор Миколаївської області через повномасштабне вторгнення зазнав значних збитків, обумовлених близькістю до зони проведення бойових дій, відтоком населення, економічним спадом та неможливістю стратегічного планування. Аналіз вигод та витрат виявив доцільність подальшого розвитку та управління людським потенціалом задля відновлення та сталого розвитку туристичного сегменту регіону. Запропонована економічна модель аналізу та управління людським потенціалом включала в себе кількісні та якісні показники, що вимірювались за допомогою таких матриць, як оцінювання професійної підготовки; відповідність особистих якостей працівника формальній посадовій інструкції; визначення корисності праці окремого співробітника; оцінювання трудової поведінки працівника; рівень досягнення співробітником кінцевого результату; комплексної оцінки професійної діяльності та оцінки ефективності працівника у досягненні цілей за певний проміжок часу. Були розглянуті

потенційні труднощі при використанні запропонованої моделі, включаючи нестачу кваліфікованих працівників та низьку мотивацію до роботи в секторі, що переживає рецесію. Запропоновані стратегії утримання та мотивації працівників дають змогу подолати переешкоди на шляху розвитку туристичного сегменту Миколаївської області. Результати дослідження можуть бути використані для відновлення галузі у післявоєнний період.

Ключові слова: людський потенціал; індивідуальна професійна траєкторія; стратегічне планування ресурсів; бенчмаркінг; аналіз витрат та вигод.

Introduction. Tourism is one of the most attractive economic sectors, characterised by a relatively high rate of growth and development for many countries around the world. At the beginning of the 21st century, tourism gained particular popularity, and new branches emerged, such as youth tourism, family tourism, ecotourism, extreme tourism, and tourism for people with disabilities. The emergence of new and the development of existing branches would be impossible without human potential, also referred to as "workforce", "labour resources", or "labour potential". The analysis of the human potential of the tourism sector in the Mykolaiv region is driven by the presence of numerous landmarks that continue to attract visitors, even during the full-scale invasion. Among these tourist attractions are Aktove Canyon, the village of Myhiia, Trykartskiy Forest, and the Kinburn Spit. The regional centre itself also features places worth visiting, including the Council of Europe Square, the Cathedral of the Kasperiv Icon of the Mother of God, the Heavenly Hundred Memorial, Fleet Boulevard, and Mykolaiv Zoo. The abundance of significant and simply interesting sites confirms the region's tourism potential and highlights the necessity of developing human resources to further unlock and ensure its sustainable growth. Recognising the importance of effective human potential management in the tourism industry underpins the relevance of this study.

Numerous academic studies over the past decade have been dedicated to analysing the economic potential of the tourism sector. In their study, A. Bhattacharya *et al.* [5] emphasised the existence of various types of tourism, which, despite their differences, fulfilled universal strategic functions. According to the researchers, these functions included contributing to national economic development, job creation, infrastructure growth, cultural exchange, community development, and the promotion of peace and democracy. H.P. Avila & R.H. Martin [4] pointed out the impossibility of establishing a comprehensive definition of tourism due to the sector's continuous evolution and the emergence of new branches and types. In their study, the researchers suggested examining tourism through the lens of key concepts, such as destinations, landmarks, accommodation, and attractions. H. Aguinis *et al.* [2] asserted that the development of the tourism sector generates both local and foreign income, making it a driving force behind the economic advancement of a specific region or country. According to the industry report "Travel & Tourism Economic Impact 2023", tourism accounted for 23.3% of the global economy, contributing USD 1.8 trillion to the overall Gross Domestic Product (GDP). Research conducted by G. Grilli *et al.* [13] highlighted that economic growth driven by tourism development can help address pressing social issues, such as unemployment and wealth inequality. This claim was corroborated by data from "Travel & Tourism Economic Impact 2023", which reported that in 2023, one in ten jobs worldwide was in the tourism sector [38]. As of 2023, approximately 320 million people globally were employed in the tourism industry, and the gradual increase in employment suggests that more individuals will have a stable source of income, enabling them to meet basic needs such as food, housing, education, healthcare, etc.

The development of the tourism industry is largely dependent on its human potential, which, as defined by F.A. Sairmaly [28], is the combination of technical, managerial, communicative, and

other skills that enhance employees' work quality and contribute to the overall economic prosperity of a company or sector. The positive impact of human potential on economic development was also confirmed in the study by O. Plaksiuk *et al.* [26], who argued that human potential – expressed through knowledge, experience, skills, competencies, and talents – is a driving force behind innovation processes that enhance the competitiveness of individual organisations and entire industries. For this reason, the development of human potential is the focus of specific management fields, such as talent management and crisis management. The importance of human potential for the growth of the tourism sector was empirically demonstrated in the study by G.A. Mweta *et al.* [19], who employed a regression model to prove that high-quality job performance by employees contributed to the return on investment, thereby increasing the financial attractiveness of the tourism sector.

Recognising the importance of human potential, researchers have yet to propose a universal model for its assessment and management. In their study, S.D.A. Ambarwati *et al.* [3] analysed the effectiveness of the Tourism Enterprise Performance Index and found that this model provides a comprehensive evaluation of human potential within the tourism sector. The proposed model considered key factors influencing the development of the tourism segment, including human potential, social potential, and openness to innovation. O. Stryzhak *et al.* [32] examined the application of the Human Capital Index and World Digital Competitiveness. Based on an analysis of data from a sample comprising 61 countries or 63 tourism cases, the researchers proposed a cluster-based approach to tourism planning. This approach, which takes into consideration the geographical, economic, political, cultural, and other specific characteristics of a given area, can be used to assess the human potential required for tourism development under specific conditions.

The studies reviewed suggest that the effectiveness of these tools depends on the context in which the assessment is conducted. The tourism sector of Mykolaiv region requires the creation of a tailored model for evaluating and managing human potential within the region's tourism industry.

The aim of this study was to apply a statistical approach to developing an economic model for managing human potential in the tourism segment of Mykolaiv region.

Materials and Methods. In the study, statistical data obtained from the State Employment Service [30], the Decision "On Approval of the Programme for the Development of Tourism and Resorts of Mykolaiv Region for 2021–2023" [11], the report "Labour Market of Ukraine: 2022–2023: State, Trends, and Perspectives" presented by the Federation of Employers of Ukraine [12], the report of the State Statistics Service of Ukraine [31] regarding the number of business entities as of 2023, data from the Mykolaiv Employment Centre for 2024, and the report from the State Employment Service [30] were analysed. In addition to sectoral reports, the "Analytical Study of the Losses of the Tourism Industry Due to the War in Ukraine" [34] and "Evaluation of the Factors of Mykolaiv Tourism Destination Development" [24] were reviewed. These materials were used for the contextual analysis of the development of the tourism sector in Mykolaiv region and its further comparison with the tourism sectors of other regions. The sources were also utilised for the quantitative assessment of the human potential in the tourism segment of Mykolaiv region.

The development of the economic model for evaluating and managing human potential involved the use of a cost-benefit analysis, as it was based on the understanding that human potential management in any sector of the economy involves financial costs, including for training, motivation, and the ongoing improvement of professional skills. A five-step model for conducting the cost-benefit analysis was chosen, which involved: identifying the problem and possible solutions; evaluating resources (inputs) and likely outcomes (outputs) for each of the selected solutions; determining the benefits and costs associated with each analysed option; comparing the "net" benefit of implementing each individual alternative; and determining the best alternative [36]. The development of the model for managing human potential in the tourism sector of Mykolaiv

region was based on the ideas proposed in the studies by F. Milost [18] and M. Chyzhevska *et al.* [10].

The proposed model included seven factors for assessing the effectiveness of professional activities and employee management in the tourism industry: professional training; alignment of personal qualities with the formal job description; determining the usefulness of an individual employee's work; evaluating an employee's work behaviour; the level of achievement of the employee's final result; comprehensive assessment of professional activities; and evaluating the effectiveness of the employee in achieving goals over a specified period. Analytical tools and recommendations for conducting evaluations were proposed for each of the identified factors. Possible difficulties in evaluating and managing human potential in the tourism sector of Mykolaiv region were also considered, and solutions for overcoming these challenges were suggested. The recommendations for overcoming difficulties were based on key motivational models, including Herzberg's two-factor theory, McClelland's theory of three needs, and Maslow's hierarchy of needs.

Results.

Contextual analysis of the development of the tourism sector in Mykolaiv Region.

Mykolaiv region has a convenient geographical location and a favourable climate, making it ideal for the development of various types of tourism, including event tourism [24]. The region has 5,194 immovable monuments, including 4,490 archaeological monuments, 1,199 historical monuments, 67 monumental art monuments, 145 architectural monuments, 11 park art monuments, 1 landscape art monument, and 1 science and technology monument [23]. Notable tourist locations include the village of Myhiia, the Trykarskyi Forest, Kinburn Spit, Mykolaiv Zoo, and others.

According to information from L. Patrusheva *et al.* [24] and the materials from Mykolaiv City Council [11], the tourist potential of Mykolaiv region consists of four main components: the recreational and wellness potential of the Black Sea coast, objects of the nature reserve fund, the development of historical and cultural tourism, and opportunities for organising ecological and green tourism. The main elements of the tourism potential of Mykolaiv region are presented in Table 1.

Table 1

Main components of the tourism potential of Mykolaiv Region

Tourist site	Features	Tourism potential
Recreational and wellness potential		
Kobleve Recreation Zone	7 km of sandy beaches, 200 accommodation and dining facilities, 15,000 places	Youth and family holidays, event and eco-tourism
Rybakivka Recreation Zone	Children's wellness activities	Children's and family holidays
Ochakiv-Chornomorske Recreation Zone	34 km of sandy beaches, 100 accommodation and dining facilities, 10,000 places	Family holidays, historical and cultural tourism, yachting and sports tourism, restoration of historical complexes and infrastructure
Natural reserve potential		
Kinburn Spit	Around 5,000 animal species, rich flora, popular holiday destination	Children's and family holidays, event and eco-tourism
Buzkyi Gard	National nature park located in five districts of Mykolaiv region. Includes the Myhiia rapids on the Southern Buh River	Children's and family holidays, active recreation (rafting, water tourism, etc.)

End Table 1

Tourist site	Features	Tourism potential
Aktove Canyon	The oldest land area in Ukraine. Includes Trykratskyi Forest, Vasyleva Pasika tract, and the Labyrinth	Children's and family holidays, active recreation (alpinism, rock climbing)
Historical and cultural potential		
Staroflotski Barracks (Local History Museum)	Part of the Mykolaiv Admiralty complex, built in the mid-19th century in classical style by Karl Ackroid	Children's and family holidays, event tourism, academic tours
Shipbuilding and Fleet Museum	The only museum of its kind in Ukraine, featuring 100 ship models	Children's and family holidays, event tourism, academic tours
Ochakiv Military History Museum named after A.V. Suvorov	Established in 1972 as part of the Mykolaiv Regional Museum of Local History; the highlight is the diorama "Storming of Ochakiv Fortress" (6 December 1788)	Children's and family holidays, event tourism, academic tours
National Historical and Archaeological Reserve "Olbia", Parutyne	Established in 1927 to preserve archaeological and historical monuments. Includes remains of an ancient quarter, early dwellings, a main cross-shaped altar, and remnants of columns.	Children's and family holidays, event tourism
Ecotourism and green tourism		
Savanna Farm (Stavky village, Veselyнове district)	Ostrich farming, sale of ostrich meat and leather goods, souvenir production	Event tourism, green tourism, workshops
Ostrich Farm "Kremenivskyi Ostrich" (Kremenivka village, Veselyнове district)	Agrotourism complex, petting zoo, labyrinth of 40,000 apricot trees, forge, workshops	Children's and family holidays, agrotourism, workshops
PRIVAT Fishing and Recreation Complex "Zolota Pidkova" (Kandybyne village, Novo Odesa district)	Tourist complex with an equestrian courtyard	Event tourism, green tourism, workshops, family holidays, active leisure

Source: created by the author based on [11, 24].

Thus, the city of Mykolaiv and Mykolaiv region have many locations that contribute to the development of various types of tourism. Mykolaiv region can become a "magnet" for thousands of tourists not only from different parts of the country but also from abroad. The region's rich potential is determined by its natural and historical diversity, which helps to select locations for various tastes.

However, with the onset of full-scale military actions, the number of tourist visits to the region has significantly decreased, primarily due to safety concerns. The functioning of the tourism sector under martial law requires the creation of safe conditions for tourists through the construction of shelters, the development of new routes, the building of barricades, and the informing of tourists

about potential dangers and ways to avoid them [39]. Over time, the tourism sector has adapted to the changed business conditions, as seen in Table 2 below. This table presents the dynamics of tax revenues from the tourism sector across the regions of the country, starting from 2021 – the year before the military invasion – and continuing to 2024, when the country's tourism sector adjusted to function under the new conditions.

Table 2

**The dynamics of tax revenues from the tourism sector across the regions of Ukraine
(2021 – 1st half of 2024), millions of UAH**

Regions	2021	2022	2023	2024
Vinnitsia region	10.9	11.5	11.7	17.2
Volyn region	5.5	6	6.8	11
Dnipropetrovsk region	42.3	35	43.1	59.5
Donetsk region	22.5	13	3.6	5.8
Zhytomyr region	5.5	4.6	6	8.4
Zakarpattia region	24.7	33.2	35.9	52.2
Ivano-Frankivsk region	65	106.2	58.3	119.5
Kyiv region	54.3	63.2	111.2	123.8
Kirovohrad region	6.6	5.7	6.4	10.3
Luhansk region	4.3	1.8	0.2	0.03
Lviv region	85.9	129.9	147.9	194.8
Mykolaiv region	15.8	9.4	7.5	11.1
Odesa region	241.8	42.8	43.4	60.6
Poltava region	18.4	17	18.2	28.9
Rivne region	6.7	6.7	7.8	13.2
Sumy region	4.7	4.7	4.5	6
Ternopil region	7.3	8.7	8	12.8
Kharkiv region	44.6	24.6	16.2	22.8
Kherson region	18.9	9.3	0.7	1.1
Khmelnyskyi region	8.5	11	11.3	16.3
Cherkasy region	9.3	8.8	8.2	13.6
Chernihiv region	7.7	7.6	4.2	6.8
Kyiv	336.6	222.8	229.8	389.9

Source: created by the author based on [29].

The data clearly shows that in 2021, the tourism potential of Mykolaiv region was represented by UAH 15.8 million in tax revenues to the state budget. Among the 22 regions of Ukraine and Kyiv, considered as an autonomous tourist location, Mykolaiv region ranked 12th in terms of annual tourist levies. From 2021 to 2023, there was a nearly twofold decrease in tax revenues, illustrating the impact of the proximity to the ongoing military operations on the development of the region's tourism sector. However, in 2024, there was a significant increase in tax revenues from the tourism sector, signalling the recovery of the tourism segment in Mykolaiv region. This not only speaks to the region's rich potential but also highlights the sector's flexibility and adaptability.

The development of the tourism sector in Mykolaiv region relies on enterprises and individual entrepreneurs (FOPs). According to the State Statistics Service of Ukraine (2024), in 2023, there were 336 enterprises and 319 individual entrepreneurs operating in the "Arts, sports, entertainment, and recreation" sector, which includes the provision of tourism services. These data

were used in subsequent analysis, considering that the Main Statistical Department in Mykolaiv region does not provide separate information about the tourism sector. The same source indicates that from 2021 to the first half of 2024, the number of enterprises and FOPs in the analysed sector declined, which can be explained by the dangers posed by military operations and the restrictions imposed under the martial law regime, which significantly reduced the attractiveness of the tourism sector for both visitors and tourism business owners.

Thus, the community of Mykolaiv region faced the challenge of reorienting its tourism sector, enhancing its resilience during the crisis, and promoting sustainable development under conditions of uncertainty. A crucial task is to restore tourism sector indicators to pre-war levels and gradually build its capacity by unlocking the region's potential. Mykolaiv and Mykolaiv region have numerous locations for recreational, health, natural conservation, historical-cultural, ecological, and green tourism. However, the development of these and other types of tourism requires unlocking, developing, and effectively managing human potential.

Evaluation of human potential in the tourism sector of the region. Human potential, manifested in strategically important knowledge, skills, and competencies, is one of the most crucial factors for the development of the tourism sector. Well-trained and motivated professionals are the source of innovations and approaches that contribute to the adaptation and sustainable development of the tourism segment, despite internal and external challenges. Therefore, human potential is an important resource, the use of which requires careful planning and the selection of the most appropriate development strategy. In the current conditions of martial law in Ukraine, for regions located in close proximity to the combat zone, there is a choice between continuing to develop the human potential of the tourism sector or abandoning it, considering the difficulties and even the impossibility of ensuring safety within the territory. The analysis of potential costs and benefits when choosing between these two strategies is presented in Table 3.

Table 3

**Analysis of costs and benefits in the context of developing human potential
in the tourism sector of Mykolaiv Region**

Component of analysis	Development of human potential	Rejection of human potential development
Problem Identification	Since the start of the full-scale invasion, the decline in tourist tax revenue in Mykolaiv Region has been approximately 72%. The region's tourism sector is in recession.	
Resource Assessment and Expected Outcomes (Inputs)	Resources for training and retraining qualified specialists; incentives for professionals to remain in the sector despite challenges.	No resource allocation planned.
Potential Benefits	Possibility of sector recovery and sustainable development after the end of martial law; increase in the share of businesses and sole proprietors engaged in tourism activities within the total number of active enterprises; emergence of new types of tourism; growth in tourist numbers and tax revenue; potential for attracting additional, including international, funding.	Short-term budget savings with possible reallocation to other sectors.

End Table 3

Component of analysis	Development of human potential	Rejection of human potential development
Potential Costs and Losses	Training and retraining of specialists; encouragement of collaboration despite challenges; creation of new directions within the sector.	Reduction of human capital; decline of certain destinations; reduction or absence of tax revenue from the sector.
Conclusion	Long-term prospects include an increase in the number of specialists, a high prestige of the sector, enhanced tourism appeal of the region, and sustainable sector development.	In the short term, budget savings may be achieved by rejecting human potential development. In the long term, the tourism sector may decline due to a lack of specialists for its development.

Source: created by the author.

Based on the data provided, it can be concluded that while abandoning the further development of human potential in the tourism sector does not involve short-term challenges or costs, it does not contribute to the sustainable development of the region. Investments in the development of human potential, on the other hand, imply the sector's adaptation to the changed business conditions and its subsequent sustainable development. The effectiveness of investments in the development of human potential requires prior evaluation of this resource using a set of parameters. To assess the human potential in the tourism sector, the criteria presented in Table 4 were selected.

Table 4

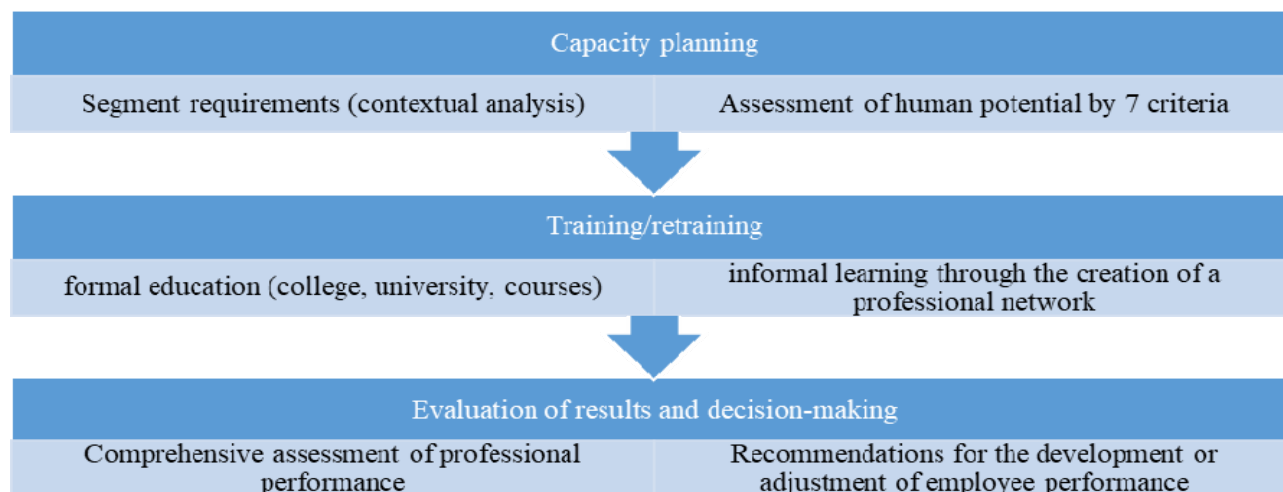
Criteria for the assessment and management of human potential in the tourism sector

No.	Criterion	Evaluation approach
1	Professional training (P)	Assessment focuses on the quality of professional training.
2	Compliance of personal qualities with the formal job description (V)	This criterion considers the mandatory presence of a job description at the enterprise and compliance with legal requirements. Compliance is evaluated through employee observation.
3	Determination of an employee's work utility (B)	The utility of an employee's work is determined mathematically.
4	Evaluation of employee work behaviour (L)	Work behaviour is assessed as the arithmetic mean of expert evaluations of work behaviour indicators within the enterprise.
5	Level of employee achievement of the final result (C)	The benchmarking method is used to compare the employee's achievements with expected results.
6	Assessment of employee efficiency in achieving goals over a certain period (C_t)	The benchmarking method is used, but over a shorter period for evaluation.
7	Comprehensive assessment of professional activity	A combination of quantitative and qualitative indicators of an employee's professional performance.

Source: created by the author.

The criteria listed were used in the development of the human potential management model presented in Figure 1. These criteria offer a comprehensive approach to managing human potential in the tourism industry. They enable the assessment of both professional and personal qualities of

employees, ensuring that their skills align with the requirements of their roles. Additionally, mathematical and expert methods contribute to an objective evaluation of productivity and work efficiency. This systemic approach helps in making well-informed management decisions.



Source: created by the author.

Figure 1. Model for managing human potential in the tourism sector

The process of analysing and managing human potential in the tourism sector begins with the assessment of employees' professional training. According to P. Luzan *et al.* [17], the key component of an employee's professional preparation is the quality of education received. This quality manifests itself through the alignment of learning outcomes with educational standards, the effectiveness of the educational institution's activities, the results of the educational process, the efficiency of the educational system at a certain level or in a particular sector, and the priorities of the national education policy. The proposed evaluation model takes into account the equivalence of these components, each of which is assigned a score from 0 to 20 points. Thus, the total score that an employee can receive from an employer or HR manager during the recruitment process and in the first few months of employment ranges from 0, indicating a lack of any training, to 100, denoting the highest level of professional preparation. Universal checklists are recommended for evaluation, and all employees of the organisation must be familiar with the checklist criteria, which should be signed off by them.

Qualitative indicators, such as observation results, are permitted when assessing an employee's compliance with the job description. When using this metric, the existence of a job description within the organisation conducting the evaluation, as well as employees' awareness of it, is considered. Employees confirm their awareness by signing the job description. Based on the job description, the person responsible for the evaluation creates a checklist to determine the alignment of the employee's personal qualities with the job requirements. Depending on the organisation's philosophy, the view of the manager or the evaluator, and other factors, each item on the checklist is assigned a certain number of points. The total score earned is used to draw conclusions about the employee's compliance with the job description. It is recommended to use a 100-point grading system, where 90–100 points correspond to a high level of compliance, 70–80 points to a sufficient level, 60–50 points to an average level, and below 50 points to a low level. Employees who score 50 or fewer points on the compliance scale need immediate attention from the HR manager, company director, or another responsible person.

To determine the productivity of an individual employee, the following production formula is used:

$$B = Q/T, \quad (1)$$

where B is the productivity, Q is the quantity of goods or services, and T is the time spent.

In a scenario where an employee at a tourism company processes 20 bookings in 8 working hours, their productivity would be 2.5 services provided per allotted time. The use of this metric involves comparing the productivity of a single employee with that of others holding the same position and receiving the same compensation. For example, if Employee A, who receives a salary of 20,000, has a productivity of 2.5 services provided within the designated time, they contribute less to the company than Employee B, who also receives the same salary but has higher productivity. Employee productivity should also be evaluated over time to understand whether the employee's efficiency is improving with experience. A productivity increase from 2.5 to 3 services within a given period indicates growing efficiency, while a constant or declining productivity suggests challenges with performance.

In addition to the metrics mentioned, it is recommended to assess the employee's work behaviour as the sum of expert evaluations of the work performance indicators at the company. This method involves creating a matrix of expert evaluations that includes work behaviour codes and documents the expert assessments. These are used to calculate the average for each code, which is calculated using the following formula:

$$L = \frac{\sum_{i=1}^n L_i}{n}, \quad (2)$$

where L is the average value, L_i is the expert's evaluation, and n is the number of experts.

In the tourism sector, the following types of work behaviour can be considered: knowledge of the services offered by the tourism company (expressed as a percentage of the total services provided); response time to customer feedback (depending on the specifics, this may be calculated in minutes or hours); speed of order processing and preparation of relevant documents (this may vary depending on the specifics and scope, and can be calculated in minutes, hours, or days); provision of services according to the agreed script (percentage of communication with clients following the script from the total amount of communication); overall quality of service (a 10-point scale is recommended for evaluation by both the HR manager and the client. This scale may also be used for self-assessment by the employee). In cases where there are a large number of expert evaluations for work behaviour codes, it is recommended to verify their validity using the concordance coefficient and Pearson's criterion.

The benchmarking method is recommended to assess the employee's level of achieving the final result and their effectiveness in reaching goals over a certain period. In both cases, the previously established final result is assessed as 100% and used as the benchmark when evaluating the employee's achievements. Thus, the given standard S is compared to the actual result A . The achievement coefficient C is calculated using the following formula:

$$C = \frac{A}{S} \times 100\%. \quad (3)$$

The use of the benchmarking method requires setting goals that meet SMART criteria. According to C. Swann *et al.* (2022), the acronym indicates goals that are specific, measurable, achievable, realistic, and time-bound. Using such goals not only promotes objective evaluation of the employee's progress but also provides an understanding of the factors that slow down this progress. Understanding these factors is crucial because it allows for planning management strategies and improving the quality of human potential in the tourism sector.

The proposed quantitative and qualitative metrics are used to conduct a comprehensive assessment of employees' professional activities in the tourism sector. Quantitative metrics include objective data, such as the number of tasks completed or productivity levels achieved. Qualitative metrics involve expert evaluations, such as the level of professional training, work behaviour, and compliance with job requirements. Therefore, a weighted approach is applied in the comprehensive assessment, considering the weight coefficients for each criterion:

$$K = w_1 P + w_2 V + w_3 B + w_4 L + w_5 C + w_6 C_t, \quad (4)$$

where K is the comprehensive evaluation; P, V, B, L, C, C_t are the assessments based on the criteria; $w_1, w_2, w_3, w_4, w_5, w_6$ are the weight coefficients.

The comprehensive evaluation results in a detailed profile of the individual employee, which can be used for purposes such as analysing the employee's value, identifying the need for professional training/retraining, and assessing the economic feasibility of conducting such training. The detailed profile also helps assess the professional dynamics of a specific employee and plan strategies for the rational use of human potential.

The developed human potential management model in the tourism industry provides a comprehensive evaluation of employees' professional and personal qualities. It is based on using quantitative and qualitative criteria such as professional training, work behaviour, compliance with job instructions, and goal achievement effectiveness. The integration of benchmarking methods and SMART goals allows for an objective assessment of work results and the identification of opportunities to improve productivity. This approach contributes to enhancing the quality of human potential and the competitiveness of enterprises in the tourism sector.

Challenges in human potential management and strategies to overcome them. In the tourism sector of Mykolaiv region involve several key obstacles. One of the primary challenges is the lack of qualified specialists for the sector's development, caused by the general population outflow from the city and region. As a result of the shortage of personnel, there has been a decline in the quality of tourism services, a reduction in their volume, and the disappearance of certain types of services. Another significant constraint is the economic downturn, manifested by a general budget deficit and a reduction in available resources to support the tourism sector. According to materials related to the draft decision of the Mykolaiv City Council "On the Budget of Mykolaiv Territorial Community for 2025", the deficit of the special fund of the city budget exceeded 6 million UAH, which impacts the development opportunities of the region's tourism sector [20].

In addition to the limitations already mentioned, uncertainty in the needs of the tourism market has been taken into account, which makes effective resource planning, including human resources, impossible. This constraint arises from data provided by the State Employment Service [30], which shows that the tourism sector is not one of the industries actively seeking new employees. Thus, there is a lack of demand for additional labor resources in the sector despite the increasing unemployment rate.

According to data from the State Employment Service [30], the number of unemployed in Mykolaiv increased by 11%, from 643 people registered as of October 1, 2024, to 715 by November 1 of the same year. A similar situation is observed in the region, where, between January and April 2024, the number of individuals registering for unemployment increased compared to previous months. Unemployment has significantly risen since 2022, largely due to the full-scale military aggression against Ukraine and the associated economic crisis. According to the State Statistics Service of Ukraine [31], the number of registered unemployed increased by 10% in 2022 compared to 2021. In 2023, local employment services saw a 12.2% rise in job seekers compared to the previous year, showing a consistent rise in unemployment in both the city of Mykolaiv and

Mykolaiv region. As of September 19, 2024, there were 477 vacancies in the city and region, with around 15,000 job seekers competing for them.

The impact of rising unemployment on the development of the tourism sector in Mykolaiv region is not straightforward. On the one hand, individuals registered as unemployed may be involved in the tourism sector. On the other hand, the State Employment Service's report indicates that the tourism sector is not among the industries currently needing new workers. Thus, the crisis in the tourism sector is caused by a decrease in the number of potential clients, reduced purchasing power, and a shrinking workforce in the sector due to migration abroad, population decline, and mobilization processes. Given this, a major challenge for the tourism sector in Mykolaiv region is the significant reduction in human potential, which can only be fully restored after the end of martial law.

Another challenge is the need to maintain consistently high-quality tourism services amid a shortage of experienced and motivated specialists. In this regard, I.N. Braje *et al.* [7] emphasize that the quality of services directly depends on the level of professional training of employees. Research by A.I.P. Peña *et al.* [25] confirms that well-trained personnel not only inform clients effectively about the advantages of a tourism product but also provide services in a way that minimizes risks and maximizes benefits for consumers.

A key task in managing the human potential of the tourism sector in Mykolaiv region is to encourage qualified workers by minimizing management challenges. This can be achieved through strategies such as implementing flexible working hours and/or remote work, providing emotional support to employees, developing crisis management strategies for human potential, investing in retraining workers for changed conditions, ensuring transparency in communication with employees, and offering competitive salaries.

Flexible working hours are one of the most effective ways to motivate employees who seek to optimize their time and maintain a balance between work and other responsibilities. Remote work, in turn, helps ensure the safety of employees during martial law and enables cost-effective use of resources by reducing depreciation. Another priority is emotional support for employees, including through the implementation of crisis management strategies for human potential. Such strategies include periodic employee surveys to assess their emotional state and provide assistance before burnout sets in. Transparent communication with employees and providing opportunities for professional growth also help prevent emotional burnout and employee turnover in the tourism industry. Encouraging employees to participate in formal and informal training, join professional communities, and plan individual professional tracks improves morale and boosts motivation, especially when employees feel that the company is open to productive and long-term cooperation.

Moreover, offering competitive wages helps employees maintain a decent standard of living, particularly during periods of declining demand for tourism services.

Given that the development of the tourism sector in Mykolaiv region is significantly hindered by the full-scale invasion, economic crisis, and population outflow, a key task for sector management is to retain the existing human potential for planning the sustainable development of the sector after martial law ends. This task can be accomplished through a thorough audit of human potential in the tourism sector using both qualitative and quantitative metrics and by further motivating employees to continuously improve the quality of their work despite the crisis situation. The use of qualitative and quantitative tools provides a detailed understanding of sector issues and strategies for resolving them.

Discussion. The conclusions regarding the crisis in the tourism sector of Mykolaiv region due to the full-scale invasion align with the results of previous studies, including that of T. But [9], who emphasized the sector's particularly vulnerable state. According to the expert, the vulnerability of the tourism sector is due to the fact that, having not fully recovered from the restrictions of the

coronavirus pandemic, the national tourism segment had to face the challenges of the full-scale invasion. K. Tomej & I. Bilynets [35] noted the gradual recovery of the Ukrainian tourism sector compared to the year of the full-scale aggression's onset. Researchers attributed this recovery to the tourism sector moving beyond leisure activities and creating new areas of operation, including humanitarian activities, rehabilitation efforts, and patriotic events aimed at fostering national awareness through exploring one's own country. However, A.R. Kozlowski [15] emphasized that a return to pre-war levels is currently impossible due to the "war stigma", referring to the perception of areas where battles have occurred or are ongoing as dangerous and to be avoided. Support for the notion that developing the tourism sector during martial law is an extremely difficult, if not impossible, task was also found in the research of V. Bobek *et al.* [6], who stressed that the war experience shapes Ukrainians' travel habits, such as postponing trips, which may affect the development of the tourism industry both within the country and abroad.

At the same time, scientific discussions regarding the development of Ukraine's tourism industry are focused on creating strategies for the recovery of the sector in the post-war period. This was echoed in the work of N. Naumenko & O. Rozhko [21], who proposed several pathways for the recovery of the national tourism sector in the post-war years, including the creation of new routes, the development of rehabilitation tourism, and the integration of internally displaced persons into the economic and socio-cultural life of large cities. The studies reviewed show moderate optimism regarding the recovery of Ukraine's tourism sector after the end of martial law. These conclusions align with the findings of the current study, particularly the recommendations for restoring the tourism segment through the rational use of human resources.

The statistical approach to managing human resources, including in the tourism sector, was examined by Y. Safonov *et al.* [27]. The researchers pointed out that data sources for this could include socio-psychological resources, environmental factors, customs, and traditions of a particular region. J. Brodny & M. Tutak [8] suggested using these and other sources for creating a multi-criteria measurement of human potential. The effectiveness of this tool was tested on a sample from 27 European Union (EU) countries, with the Netherlands, Denmark, and Sweden showing the highest results in human potential development. Thus, there is a consistency between the multi-component management model proposed in this work and the studies that emphasize the need to consider various factors and combine both quantitative and qualitative metrics when assessing human potential in any economic sector. Previous studies, including those by J. Brodny & M. Tutak [8], also support the idea that periodic assessment of human potential is a prerequisite for its effective development. W. Tunsı [37], for his part, explained the importance of such assessments, highlighting the statistically significant relationship between the quality of human potential and the effectiveness of a company's operations, i.e., its competitiveness. Based on the cited sources, it can be concluded that the recovery and development of the human potential of the Mykolaiv tourism sector is necessary. While such development requires additional resources, failure to pursue it will negatively impact the tourism sector after martial law ends.

Understanding the importance of human resources, several economic models for its development have been proposed. F. Milost [18] particularly emphasized that human potential is one of the four key elements necessary for the effective functioning of an individual company or economic sector. The researcher also stressed the multifactorial nature of human potential, which includes intellectual, structural, and other types of capital. Thus, the researcher rejected the existence of a single, universal formula for assessing human potential in any economic sector. Confirmation of this assumption was also found in the work of M. Chyzhevska *et al.* [10], whose economic model included twelve key elements for assessing human potential in industry. The proposed model included both internal factors, which are directly controlled by the enterprise, and external factors, over which control is limited or absent. By analyzing academic studies from recent

years, it can be stated that the model by M. Chyzhevska *et al.* is one of the most comprehensive and can be adapted for other economic sectors, including the tourism sector.

L.I. Khoruzhy *et al.* [14] analyzed the use of statistical metrics to assess human potential at the national level. According to the experts, using quantitative indicators such as the Prosperity Index, the Index of Economic Freedom, the Human Inequality Coefficient, and others not only helps to understand the current state of human potential but also allows for the development of strategies to improve it, drawing on the experiences of countries or economic sectors that show high results. K. Agustian *et al.* [2], for their part, emphasized that human potential manifests itself not only through quantitative indicators but also through qualitative ones, such as, for example, organizational loyalty or the alignment of personal traits with formal job descriptions. The model proposed in this study aligns with the previously conducted studies, as it considers both quantitative and qualitative indicators of human potential efficiency for rational use.

Attention is drawn to the work of O. Nosyriev *et al.* [22], in which the scientists focus on the overall state of the tourism sector in the post-crisis period, rather than on its individual components, such as human potential, as in the current study. Drawing on the experience of Croatia, Cyprus, and Georgia, the researchers concluded that after the cessation of hostilities, the tourism sector recovers relatively quickly. The idea of a swift recovery of the sector was confirmed in the work of B. Liu *et al.* [16], who presented a systematic review of 356 scientific publications on the development of the tourism industry in the post-crisis period. Despite the relatively positive forecasts, the cited sources do not offer strategies for bringing workers back into the tourism sector, creating a professional network for planning sustainable development, etc. Addressing these and other issues is crucial for the Mykolaiv region, whose tourism and human potential have been severely affected by the full-scale invasion.

Thus, scientific studies underline the importance of human potential for the sustainable development of the tourism sector. There is a substantial body of tools for assessing the quality of human resources and their development, and strategies and tools for managing this potential are proposed. The model developed in the current study can contribute to both improving the efficiency of human resource management and the post-war recovery of the industry, as well as enhancing the competitiveness of tourism sector enterprises

Conclusions. The current study developed a model for the analysis and management of human potential in the tourism sector of Mykolaiv region. The proposed model includes both quantitative and qualitative metrics for assessing the professional quality of personnel employed in the tourism industry. In particular, it suggests criteria for evaluating employee professional training, alignment of personal qualities with formal job descriptions, the usefulness of individual labor, assessment of labor behavior, analysis of goal achievement levels, comprehensive assessment of professional activity, and evaluation of employee effectiveness in achieving goals over a specific period. The result of using these metrics is the creation of a detailed profile aimed at determining the level of professional preparedness, analyzing production dynamics, and planning further professional development. The model is recommended for use by tourism activity managers, recruitment and development specialists, and other responsible individuals.

The use of this model is based on the results of a cost-benefit analysis, conducted to determine the feasibility of developing human potential in the tourism sector. The analyzed strategy was compared with the decision to neglect the development of human potential in the sector, which has been one of the most affected by the full-scale invasion. Summarizing the evaluation, it was found that although abandoning the planning and management of human potential reduces costs associated with recruitment, training/retraining of specialists, it does not guarantee sustainable development of the tourism segment in Mykolaiv region. Based on this, planning and management

of human potential were proposed as tools for the recovery of the tourism sector and the emergence of new areas of activity.

Based on available statistical data, it was concluded that the use of the proposed economic model must take into account the realities of the development of the tourism sector in Mykolaiv region. These realities include, among others, the proximity of the region to the conflict zone, population outflow, economic decline, unemployment, and a shortage of qualified workers in certain sectors and enterprises. The study envisions overcoming these challenges through motivating specialists to stay and continue developing the segment despite significant reductions in well-being and the client base. Encouraging employees to work in the sector includes implementing flexible working hours, offering opportunities for remote work, providing emotional support, using crisis management strategies, motivating employees for continuous professional skill improvement, and ensuring long-term planning and competitive wages.

Future research may include a comparative analysis of the use of the proposed model for human potential management across multiple regions of the country. A comparative study of economic models incorporating only quantitative indicators and those that combine both quantitative and qualitative indicators is also recommended. The results of this study could be used for the recovery of the tourism sector in the post-war period and for strategic planning of its future growth.

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