American Journal of Social and Humanitarian Research

Vol. 6 Issue 1 | pp. 54-60 | **ISSN:** 2690-9626
Available online @ https://globalresearchnetwork.us/index.php/ajshr

Features of the Use Of Cross-Sectoral Balance Models in the Sustainable Development of Tourist Areas

Asrakulov Abdurakhmon Sultonovich[1]

1. Fergana State University (PhD)
* Correspondence: asasrakulov@gmail.com

Abstract: In this research work, studied optimization models in the planning and management of sustainable development of tourist areas, in particular, some aspects of the use of the cross-sectoral balance model. The aim of the study is to assess the possibility of applying certain methodological aspects of the use of cross-sectoral balance models, which ensure the priority of the tourism sector in regions with high tourist resource potential. The results of the study will be able to be used in the development of strategies for the sustainable development of tourist areas of different countries, as well as in strategic management processes. From the developed recommendations, it is recommended to fool the results of the activities of the sectors in the tourist areas in the development of cross-sectoral balance models, which are intended to ensure the priority of the tourism sector.

Keywords: Tourist Areas, Planning, Management, Optimization Models, Incoming Factors, Network Results, Cross-Sectoral Balance Model, Model Quadrants

Citation: Asrakulov Abdurakhmon Sultonovich. Features of the use of cross-sectoral balance models in the sustainable development of tourist areas. American Journal of Social and Humanitarian Research 2025, 6(1), 54-60.

Received: 20th Dec 2024
Revised: 01th Jan 2025
Accepted: 10th Jan 2025
Published: 21th Jan 2025

1. Introduction

With the growth of the globalization factor and the demand for the restoration of "human capital" in the recent period, the tourism sector is becoming one of the sectors with a high rate of development in the world economy. An increase in the level of average income of people, attempts to reduce the level of stress from daily loads lead to an increase in the volume of their demand for tourist services. This requires the formation of a supply of tourist services that are proportional to demand.

The observed trends in all countries of the world, in particular in Uzbekistan, indicate the need to adapt the volume of supply for tourist services to demand in regions of the country with high tourist potential. In this sense, the tourism sector in the country is becoming one of the areas that is rapidly developing within the sectors of the national economy. However, within the framework of the potential of the existing tourist resource, the existing opportunities are being mastered in a stichic way, and this situation leads to the fact that the existing potential is not optimally optimized by the networks in the tourist areas. This requires strategic planning and management of economic processes in tourist areas using economic-mathematical models that imply the priority of the tourism sector.

2. Materials and Methods

In the planning and management of economic processes, depending on the purpose, various methods of modeling are used today. Optimization models are most often used for the purpose of optimal planning of material production processes, and the fact that

these methods can also be used in the field of services based on the characteristics of processes is reflected in research.

In the process of carrying out the study, a number of methods of optimization were studied, from which the method of forming inter-sectoral balance models, which are relatively not more used in the strategic planning of tourist areas, was studied in more depth.

The main content of this method is to plan the optimal result of all sectors and spheres in the territory, taking into account the priority of the tourism sector, a holistic economic result in the direction of "cost-production" in regions with high tourist resource potential. Through this method, it will be possible to determine the most effective ratios of quantitative indicators of intersecting "input-output" (cost-output) factors for the organization of processes in industries and industries operating in the territorial economy.

3. Results

Strategic planning of territories is the process of substantiating and selecting strategic priorities and directions of sustainable development of the territory in the unity of social, economic, scientific, technical, environmental and institutional factors and conditions. Also, this type of planning involves the development of management policies and implementation mechanisms to increase the competitiveness of the socio-economic system of the territory and adapt to changing environmental conditions.

The object of strategic planning of territories is sustainable socio-economic development based on the complex use of the existing potential of the territory. This type of planning is carried out with three main stages (Fig. 1):

1. Analysis of existing trends in the socio-economic development of the territory, comprehensive assessment of competitive advantages, opportunities, threats and weaknesses.
2. Long-term forecast of the development of the territory and the development of possible development scenarios.
3. Formation of a list of large investment projects and assessing their impact on the promising development of the territory.

An instrument for strategic planning of the territory's development is the cross-sectoral balance (CSB), which is a set of interrelated tables characterizing the relationship between the output of products in one industry and the costs and expenditure of products from all participating industries necessary to ensure this output. It is also customary to refer to the cross-sectoral balance sheet as input-output tables.

Figure 1. The main stages of strategic planning of territories

The input-output method was implemented by V. Leontiev in the 1930s when constructing such tables for the United States for 1919 and 1929 (for 44 sectors of the economy). Subsequently, input-output tables were also developed in France, the Netherlands, Norway, and Australia, and later began to be built in more than 90 countries around the world.

Statistical tables that record the flows of products and services between all branches of production over a certain period of time serve as data for the intersectoral balance. This method is used to analyze and plan industry proportions.

Balance planning methods can be considered at various levels of the hierarchy of economic entities: enterprises, associations, industries, and the national economy as a

whole. The cross-sectoral balance model is historically the first economic and mathematical model of consolidated national economic planning.

The cross-sectoral model is based on an economic and mathematical matrix model, which shows the distribution of products of a particular industry across other industries in accordance with the direct cost coefficient, as well as a part of the products entering final consumption. The columns show the cost structure of the industry: its material costs, labor costs, and net income.

A schematic diagram of the cross-sectoral balance of production and distribution of the total social product in value terms is shown in the following table (Tab. 1). This scheme is based on the division of the total product into two parts: the intermediate and final product; the entire national economy is represented as a set of *n*-branches (meaning pure branches), with each industry appearing in the balance sheet as producing and consuming.

Branches and spheres	**Consuming branches**			**Final product**	**Gross product**
	1	**…**	***n***		
1	X_{11}	**…**	X_{1n}	Y_1	X_1
…	…	**I**	…	…**II**…	…
n	X_{n1}		X_{nn}	Y_n	X_n
Depreciation	C_1	...	Cn		
Payment of labor (wages)	V_1	**III**	V_n	**IV**	
Net income	m_1	…	m_n		
Gross product	X_1	…	X_n		

Table 1. Schematic diagram of the cross-sectoral balance (CSB)

There are four parts with different economic content, they are called balance quadrants and are indicated in Roman numerals on the diagram.

The first quadrant of the cross-sectoral balance sheet is a table of cross-sectoral material relationships. The indicators placed at the intersections of rows and columns represent the values of cross-sectoral product flows and are generally designated x_{ij}, where *i* and *j* are the numbers of producing and consuming industries, respectively. Thus, the first quadrant (I) is shaped like a square matrix of the order of *n*, the sum of all elements of which is equal to the annual cost recovery fund for the means of production in the material sphere.

The second quadrant (II) represents the final products of all branches of material production, while the final one refers to products that go from the sphere of production to the field of final use (for consumption and accumulation). In the table, this section is given in the form of a single column of Y_i values; in the detailed balance scheme, the final product of each branch is shown differentially in areas of use for personal consumption of the population, public consumption, accumulation, compensation for losses, export, etc.

So, the second quadrant (II) characterizes the sectoral material structure of national income, and in its expanded form, it also describes the distribution of

national income into the accumulation fund and the consumption fund, the structure of consumption and accumulation by industry and consumers.

The third quadrant (III) of the cross-sectoral balance also characterizes national income, but from the point of view of its value composition as the sum of net output and depreciation; net output is understood as the sum of wages and net income of industries. The sum of depreciation (C_j) and net output ($V_j + m_j$) of a certain j-th branch will be called the relatively pure output of this industry and hereinafter referred to as Z_j.

The fourth quadrant (IV) of the balance sheet is located at the cross-section of the columns of the second quadrant (final product) and the rows of the third quadrant (relatively pure products). This determines the content of the quadrant: the fourth quadrant (IV) reflects the final distribution and use of national income.

As a result of the redistribution of the originally created national income, the final incomes of the population, enterprises, and the state are formed. The data of the fourth quadrant is important for reflecting in the cross-sectoral model the balance of income and expenses of the population, sources of financing for capital investments, current costs of the non-productive sector, and for analyzing the overall structure of final incomes by consumer groups. The constituent elements of this quadrant are very important that the total amount of the fourth quadrant, as well as the second and third, should be equal to the national income generated during the period.

Thus, in general, the cross-sectoral balance within the framework of a single model combines the balances of the branches of material production, the balance of the total social product, the balance of national income, financial, the balance of income and expenses of the population. It should be particularly noted that although the gross output of industries is not included in the four quadrants discussed above, it is presented in the schematic diagram of the cross-sectoral balance in two places in the form of a column located to the right of the second quadrant and in the form of a row below the third quadrant. These column and row of gross output complete the scheme of the cross-sectoral balance and play an important role both for verifying the correctness of the quadrants and for developing an economic and mathematical model of the cross-sectoral balance.

The cross-sectoral balance model of the territory or country is expressed in the following terms:

$$Xi=j=1naijyi \quad (1)$$

There is: Xi – production volume of a network or branch ($i=1, \dots, n$);

aij – the direct cost coefficient, which indicates the amount of product i spent on the production of a unit of product j;

yi – value of the final product that goes beyond the production of the branch i.

Based on the cross-sectoral balance model, indirect and total effects in the economy are calculated that arise from changes in final consumption (household consumption, government spending, investment, net exports). As well as the impact of state policy on the socio-economic development of territories:

1. Increase (decrease) in expenditures of the municipal budget;
2. Reduction (increase) of financial assistance to the subject of the country (municipality);

3. Closing/reduction of financing (creation/increase of financing) of state organizations.

Also, based on thes cross-sectoral balance, it is possible to assess the impact of the implementation of large investment projects on the socio-economic development of the territory, the consequences of restrictions on economic activity, calculate the multipliers of environmental pollution, employment, taxes, etc.

Below we will analyze the main indicators of the tourism sector in recent years, calculated from the rapidly developing sectors of the national economy of the Republic of Uzbekistan (Tab. 2).

Table 2. Gross value added volume of sectors of the national economy (at current prices, per annum)

№	Branchs and spheres	Years				
		2019	2020	2021	2022	2023
1	Agriculture, forestry and fisheries	129885,0	150493,7	181787,7	208809,2	245222,5
2	Construction	45202,0	51927,4	63608,5	73209,4	84944,3
3	Mining and quarrying	30865,6	22161,9	28649,4	33396,2	34975,8
4	Manufacturing industry	104350,2	127781,3	159764,4	189871,5	225023,5
5	Professional, scientific and technical activities	5481,8	6912,4	8615,2	10394,8	12588,2
6	Activities for the management and provision of support services	6283,7	6884,3	8559,6	11277,1	13880,7
7	Public administration and defense; compulsory social security	20081,5	23219,4	30863,2	43933,8	63084,9
8	Arts, entertainment and recreation	2552,1	2622,5	3692,2	4568,3	5771,3
9	Provision of other types of services	6467,3	6187,4	8388,3	9522,5	11750,5
10	Electricity, gas, steam and air conditioning	8921,8	10994,0	12322,9	15380,5	18407,0
11	Water supply; sewerage, waste collection and disposal	946,3	1076,1	1482,6	1562,2	1606,9
12	Information and communication	8033,0	10110,3	13020,4	17955,9	23552,7
13	Financial and insurance activities	13860,9	22011,1	20157,4	33778,0	44111,1
14	Transportation and storage	32103,6	31088,0	39045,3	47055,1	60551,2
15	Accommodation and food services	25110,9	25520,2	34017,4	50618,9	68116,7
16	Wholesale and retail trade; repair of motor vehicles and motorcycles	33502,7	38489,5	48910,9	57703,8	71433,5
17	Operations with real estate	31597,1	35420,6	41364,1	48621,1	57204,6
18	Education	30742,2	32772,0	43098,1	53459,9	63516,9
19	Health and Social Service Delivery	13409,3	18004,4	21196,2	24676,7	28274,2

The network and branches shown in the table are all partly related to the tourism sector, and the placement and development of the cross-sectorial model in the branches with the separation of values belonging to the tourism sector from within these indicators expands the possibility of forming optimal management scenarios that imply the priority of the tourism sector in.

4. Discussion

Using the theoretical aspects of the formation of the above-mentioned cross-sectoral balance model and indicators that represent the volume of the final product of the sectors of the national economy of the country in the form of a time series, it is recommended to formulate an cross-sectoral balance model for the tourism sector of the country or territory in the following (Table. 3).

Table 3. Schematic diagram of the cross-sectoral balance (CSB) for tourism sector of the territory

Branches and spheres	**Consuming branches**										**Final product**	**Gross product**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**		
1. Agriculture, forestry and fisheries	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}	X_{17}	X_{18}	X_{19}	X_{110}	Y_1	X_1
2. Professional, scientific and technical activities	X_{21}	X_{22}	X_{23}	X_{24}	X_{25}	X_{26}	X_{27}	X_{28}	X_{29}	X_{210}	Y_2	X_2
3. Activities for the management and provision of support services	X_{31}	X_{32}	X_{33}	X_{34}	X_{35}	X_{36}	X_{37}	X_{38}	X_{39}	X_{310}	Y_3	X_3
4. Arts, entertainment and recreation	X_{41}	X_{42}	X_{43}	X_{44}	X_{45}	X_{46}	X_{47}	X_{48}	X_{49}	X_{410}	Y_4	X_4
5. Provision of other types of services	X_{51}	X_{52}	X_{53}	X_{54}	X_{55}	X_{56}	X_{57}	X_{58}	X_{59}	X_{510}	Y_5	X_5
6. Transportation and storage	X_{61}	X_{62}	X_{63}	X_{64}	X_{65}	X_{66}	X_{67}	X_{68}	X_{69}	X_{610}	Y_6	X_6
7. Accommodation and food services	X_{71}	X_{72}	X_{73}	X_{74}	X_{75}	X_{76}	X_{77}	X_{78}	X_{79}	X_{710}	Y_7	X_7
8. Wholesale and retail trade; repair of motor vehicles and motorcycles	X_{81}	X_{82}	X_{83}	X_{84}	X_{85}	X_{86}	X_{87}	X_{88}	X_{89}	X_{810}	Y_8	X_8
9. Education	X_{91}	X_{92}	X_{93}	X_{94}	X_{95}	X_{96}	X_{97}	X_{98}	X_{99}	X_{910}	Y_9	X_9
10. Health and Social Service Delivery	X_{101}	X_{102}	X_{103}	X_{104}	X_{105}	X_{106}	X_{107}	X_{108}	X_{109}	X_{1010}	Y_{10}	X_{10}
Depreciation	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	C_9	C_{10}		
Payment of labor (wages)	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	**IV**	
Net income	m_1	m_2	m_3	m_4	m_5	m_6	m_7	m_8	m_9	m_{10}		
Gross product	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}		

The cross-sectoral balance model in the matrix form above allows planning the optimal combination of the volume of services with other sectors and industries in the tourism sector, which has a high resource potential by region or country. However,

without determining the volume of demand for the final product of branches and spheres by region using macroeconomic models (model of aggregate demand and aggregate supply, model in the form of production function or model of economic growth), the cross-sectoral balance model cannot be determined.

5. Conclusion

The results associated with the development of management scenarios for planning the formation of gross regional product of tourist regions, studied theoretically and practically in the research process, as well as the creation of optimal volume, are important in ensuring the rapid and sustainable development of territories in practice.

The use of the cross-sectoral balance model in the planning and strategic management of the gross product of regions with high tourist resource potential is considered important in the optimal use of the Priority Development points of the regions and in the most optimal state of proportional development of the branches and spheres.

.

REFERENCES

[1] V. V. Leontyev, *Selected Works in 3 Volumes. Vol. 1. Socio-Economic Problems of Inter-Industry Analysis*, Moscow: Economics, 2006, 406 p.

[2] G. Granberg, *Foundations of Regional Economics*, 3rd ed., Moscow: HSE, 2003, 495 p.

[3] V. Gubaeva, "Use of Input-Output Balance in Strategic Planning for Socio-Economic Development of Regions," *Bulletin of the Buryat State University*, no. 2, 2015, pp. 28-32.

[4] D. Masakova and N. E. Ustinova, "Russian 'Input-Output' Tables: Experience and Development Prospects," *Statistical Issues*, no. 3, 2009, pp. 39-46.

[5] H. C. Choi and E. Sirakaya, "Sustainability Indicators for Managing Community Tourism," *Tourism Management*, vol. 27, no. 6, pp. 1274–1289, 2006.

[6] B. Figueroa and E. Rotarou, "Sustainable Development or Eco-Collapse: Lessons for Tourism and Development from Easter Island," *Sustainability*, vol. 8, no. 11, pp. 1–26, 2016.

[7] Marzuki and I. H. J. James, "Public Participation Shortcomings in Tourism Planning: The Case of the Langkawi Islands, Malaysia," *Journal of Sustainable Tourism*, vol. 20, no. 4, pp. 585–602, 2012, doi: 10.1080/09669582.2011.638384.

[8] G. Moscardo, "Exploring Social Representations of Tourism Planning: Issues for Governance," *Journal of Sustainable Tourism*, vol. 19, no. 4-5, pp. 423–436, 2011, doi: 10.1080/09669582.2011.558625.

[9] R. Baggio, "Symptoms of Complexity in a Tourism System," *Tourism Analysis*, vol. 13, no. 1, pp. 1–20, 2008.

[10] E. Fletcher, "Input-Output Analysis and Tourism Impact Studies," *Annals of Tourism Research*, vol. 16, pp. 514–529, 1989.

[11] Pacaud, D. Vollet, and V. Angeon, "Impact of Tourism Infrastructure on Regional Development: The Implantation of a Center Parcs Resort in Northern France," *Tourism Economics*, vol. 13, pp. 389–406, 2007.

[12] S. Pratt, "The Economic Impact of Tourism in SIDS," *Annals of Tourism Research*, vol. 52, pp. 148–160, 2015.

[13] Z. Mottiar, B. Quinn, and T. Ryan, "Developing Cultural Tourism Through Cross-Sector Cooperation: Evidence from the West of Ireland," *School of Hospitality Management and Tourism*, vol. 8, 2016.

[14] V. A. Karpinskaya, "Ecosystem as a Unit of Economic Analysis," in *Systemic Problems of Domestic Meso-Economics, Micro-Economics, and Business Economics: Proceedings of the Second Conference of the Modeling Department of Production Objects and Complexes of the Central Economics and Mathematics Institute of the Russian Academy of Sciences*, vol. 2, Moscow: Central Economics and Mathematics Institute of the Russian Academy of Sciences, 2018, pp. 125–141.

[15] P. Mason, "Social Change and the Growth of Tourism," in *Tourism Impacts, Planning and Management*, 3rd ed., P. Mason, Ed., vol. 13, pp. 1–18, Great Britain: Routledge, 2015.