A PROSPECTIVE STUDY OF THE ALGERIAN TOURISM SECTOR, PROSPECTS FOR 2030, USING THE STRUCTURAL ANALYSIS TECHNIQUE (MICMAC)

Ziani Bey Seyfeddine[1], NaerLaredj[2], Bourahla Zahra[3]

Abstract

The study aims to address the problem of revitalizing the Algerian tourism sector, as well as anticipating the potential contributions of tourism projects in supporting Algeria's economic growth, prospects for 2030. Additionally, this study seeks to review the development strategy adopted by Algeria to develop the tourism sector, and assess the extent to which this strategy has been implemented in practice. In order to answer the research question, the structural analysis technique was used using the MICMAC program.

The study concluded that Algeria, despite possessing exceptional tourism potential which that positions it as a prime tourist destination and despite the adopted strategy for sector development, has experienced a slow pace in developing the tourism sector and transforming it into a development sector that is an alternative to the hydrocarbon sector. The study reached a set of results, the most important of which is that the tourism sector in Algeria suffers from a structural defect. In order to activate this sector, policy makers in Algeria must coordinate with the rest of the sectors to implement the sector's plans in their time and remove obstacles. The laws related to tourism investment must also be reviewed.

Keywords: Tourism; Master Plan for Tourism Development; Tourism Indicators; Tourism Forecast; MICMAC; Structural Analysis.

JEL Codes: Z32; Z3; L83.

Introduction

Tourism plays a vital and fundamental role in strengthening the economies of developing and developed countries, as it is a dynamic driver for other economic sectors due to its connection to more than 185 economic activities on the supply side. Tourism

[1]Contracted Professor, Faculty of Economic and Business, University of Mostaganem (Algeria), Email: syfeddine.zianibey.etu@univ-mosta.dz, ORCID: 0000-0003-0460-6643

[2]Contracted Professor, Faculty of Economic and Business, University of Mostaganem (Algeria), Email: laredj.naer.etu@univ-mota.dz, ORCID: 0000-0002-7906-5063

[3]Contracted Professor, Faculty of Economic and Business, University of Mostaganem (Algeria), Email: zahra.bourahla.etu@univ-mosta.dz, ORCID: 0000-0002-0526-7180

has become an integrated industry that includes planning, investment, construction and marketing. It is also a strategic sector that has the ability to generate income and provide job opportunities, stimulate capital markets, attract foreign investments, and add value at the local and regional levels.

The performance of the tourism sector depends directly on increasing the productivity related goods and services sectors, such as transportation facilities, communications networks, electricity and water services, as well as productive sectors such as agriculture and industry, and ensuring the provision of financial resources. To achieve this goal, a balance must be achieved between the number of incoming tourists and the volume of available tourism goods and services. Algeria has implemented short- and long-term development programs in the tourism sector, which can be an important economic alternative. To that end, a joint public-private economic strategy must be built, and enterprises geared towards investment in the tourism sector must be established with a view to its promotion. Providing tax concessions and incentives for tourism investments, whether for the national or foreign investor, as well as eliminating bureaucracy and administrative corruption, reviewing the investment law and finding solutions to the problem of tourism property in Algeria, which has become a major obstacle to the tourism sector. In our case, we propose a comprehensive prospective study of the 2030 horizons according to the SDAT2030 Tourism Development Master Plan. Hence, the main question in our work is:

What is the mechanism for revitalizing the Algerian tourism sector, the 2030 horizons?

To answer the question, we formulated the following hypotheses:
- **Hypothesis 1:** Tourism is the future of the Algerian economy.
- **Hypothesis 2:** The Tourism Development Master Plan includes sub-plans to facilitate its implementation and revive the tourism sector in Algeria, and hence the national economy.
- **Hypothesis 3:** The laws governing the Algerian tourism sector are the main factor in developing the sector.

To verify these hypotheses and carry out our work, we adopted a research methodology with a dual methodological approach: an exploratory approach to the literature (initially) to understand the theoretical backgrounds of the Algerian tourism sector; and we also conducted a prospective study that allowed us to define various variables that enter into the framework of the development of the tourism by 2030, primarily relying on the structural analysis method MICMAC.

Concepts about Tourism

Tourism plays a major role in the social and economic development of remote areas, but it faced serious challenges due to the Covid-19 pandemic. To solve these problems, theoretical research and new approaches in tourism marketing, management and development must be relied upon (Putkaradze, Michalski, & Abuselidze, 2022, p. 29).Tourism is often associated with pleasant experiences like trips and new adventures, yet it demands significant effort and specialized skills. For students, mastering these skills can lead to success in an industry that employs 7.6% of the global workforce. By 2020, the World Trade Organization predicted that tourism would account for nearly 10% of global exports and involve one in every 11 workers (Lubov, 2018, p. 327).

Definition of Tourism

The definition of the World Tourism Organization (W.T.O) is as follows: "Tourism is the activities of a traveler to a place outside his familiar environment for a certain period not exceeding one year without interruption for rest or other purposes" (Pupion & Leroux, 2014, p. 23), and the International Academy of Tourism (A.I.T) defines it as: "Tourism is a term that refers to pleasure travel; it is a group of human activities that work to achieve this type of travel" (Zian, 2016, p. 137), while the German Guyer Freuler states that tourism "is a phenomenon of the era that arises from the increasing need to obtain rest and recreation, and to feel and taste the beauty of nature, and to feel joy and pleasure from staying in areas of a special nature" (Houidi , 2014, pp. 212-213).

Tourism is a subject of pleasure and individual interaction with the changing conditions of modernity, with implications for nations, citizenship, consumption, cosmopolitanism, and globalization. Tourism is an economic activity of global importance that transcends traditional sectors of the economy and attracts the attention of governments, organizations, and academics. There is no single structure that represents the tourism industry; places vary in content, some focusing on food, some on mountains, some on beaches, others on education, and so on (Sanjeev et al., 2022, p. 2). Economic growth, represented by increased GDP, net national income, and foreign direct investment, contributes to enhancing financial resources, raising productivity in all economic sectors, and improving human capital. Therefore, increasing these economic indicators, along with appropriate and effective tourism policies that encourage the arrival of tourists, enhances the growth of the tourism sector and supports its sustainability(Qin , 2023, p. 19327).

Foundations of Tourism

Tourism, like other sciences, is built on a set of foundations that complement each other to establish this activity. These foundations include the following:

Tourism Demand: Definitions of tourist demand vary based on different perspectives. Economists view demand as the quantity that individuals are willing and able to purchase of a product, whether a good, service, or idea, at a given price within a range of possible prices over a specific period. Psychologists approach demand from the perspective of motivations and behavior. Geographers define tourist demand as the total number of people who travel or wish to travel and use tourism facilities and services in places far from their workplaces and residences (Al-Taie & Al-Alaq, 2013, pp. 59-60).

Tourism offer and tourism product:Supply is defined as the producer's willingness to offer goods and services for sale in the markets at a specific price and time (Al-Hawri & Al-Dabbagh, 2013, p. 54). It is also described as all the facilities and services that tourist destinations must provide to their current and potential visitors, in addition to all the goods and services that might attract individuals to visit a particular country (Muwaffaq, 2013, p. 78).

Tourism revenues and expenditures: Revenues are the total income that a country generates from various tourism activities, whether these revenues are direct or indirect. Expenditures refer to the total amount of money spent by tourists on tourism and hotel services, purchases, and transportation during their visit. This also includes fees for visiting tourist attractions (Bachiri , 2022, p. 4).

Tourism Marketing: It involves the administrative and technical activities carried out by agencies and institutions within and outside the country to identify current and potential tourism markets and influence them to develop inbound tourism (Farah & Budala , 2012, p. 106).

Pillars of Tourism

Every tourism activity requires a set of pillars that increase its attractiveness to tourists. These pillars are:
- **Transportation:** Tourism is closely linked to the transportation sector. Tourism cannot thrive without the development of transportation means and the provision of transportation routes and services (Bashiri , 2022, p. 18).
- **Accommodation:** When a tourist arrives in a country or place, he/she first looks for a suitable place to stay. Therefore, there is no tourism without accommodation, which includes hotels, tourist apartments, and camps (Hamidatou, 2015, p. 13).

- **Tourism Programs:** Successful tourism depends on specific entertainment programs that the tourist can enjoy, whether he/she has booked them in advance or upon arrival. These programs include visiting museums, archaeological and historical sites, entertainment venues, in addition to markets, shops, and resorts (Kawash, 2007, p. 56).
- **Tourism Infrastructure:** This encompasses the essential services necessary for any tourism project or area, such as water networks, healthcare services, roads, and banks. Without this infrastructure, no tourism project can fully deliver its services (Maher, 1971, p. 14).
- **Superstructure:** Includes accommodation facilities such as hotels, tourist services, tourist reception projects, tourist information offices, and travel agents. The quality and availability of these services vary from one country to another based on the level of development (Muqabala, 2007, p. 28).

Algeria's Tourism Qualifications

Algerian tourism is characterized by a set of qualifications that can be mentioned as follows:

Geography: Algeria spans an area of 2,381,741 square kilometers, occupying a strategic global position as it overlooks the Mediterranean Sea, making it a gateway to Africa and a bridge between the African and European continents in the north, extending into the depths of the Sahara Desert in the south. Algeria boasts numerous prominent tourist attractions, including El Kala National Park, Tassili National Park, the Casbah, Notre Dame d'Afrique in Algiers, the Bardo Museum, and the Botanical Garden of Hamma (Ben Amar, 2022, p. 396).

Historical and Archaeological Sites:Algeria contains historical and archaeological sites classified as UNESCO World Heritage Sites, such as the Beni Hammad Fort, Djemila, Tassili n'Ajjer, Tipasa, the M'zab Valley, Constantine, and the site of Timgad (Ben Sharif & Wakli , 2020, pp. 20-22).

Coastline and Climate: The Algerian coastline stretches 1200 kilometers, characterized by a mild Mediterranean climate. Algeria spans three climatic regions from north to south: the Mediterranean region, the Tell region, and the Saharan region (Mansour & Ben Turki , 2022, p. 150).

Southern Algeria: Represented by the Saharan Atlas, it contains oases, palm groves, sand dunes, stone plains, and rocky plateaus. Tourism in these areas could significantly contribute to the state's treasury, if properly invested (Ben Amar, 2022, p. 396).

Tourism Development Laws and Institutions: Numerous laws and plans have been issued aimed at developing the tourism sector, including the establishment of many institutions concerned with organizing and structuring this sector, such as the law on tourism expansion areas and tourist sites. Since 2003, a Ministry of Tourism and Traditional Industries has been established, as well as the National Institute for Tourism Studies and the National Committee for Facilitating Tourism Activities (Qalash & Khantar., 2019, p. 204).

Infrastructure: Algeria is connected to the Sahel countries via the "Unity Road" that crosses the Sahara, extending 2,344 kilometers. The East-West Highway, which is 1,216 kilometers long, has been established. The country has a railway network extending 4,200 kilometers, an air fleet of 63 planes transporting 3.6 million passengers annually, and 55 airports, including 16 international airports (Tunisian & Shakhar , 2022, p. 80).

Indicators of the Algerian Tourism Sector

The tourism sector in Algeria is considered one of the important sectors that can contribute to enhancing economic growth. However, tourism revenues in Algeria are still much lower than in neighboring countries, which requires greater development of tourism infrastructure and improvement of the quality of services.

Accommodation Capacity

Accommodation services are considered one of the essential elements that tourists cannot do without, as they contribute to providing security, stability, and comfort after a long day of touring various available sites. Therefore, it is necessary to pay attention to the quality of accommodation places, whether they are tourist hotels or any other type of lodging. These should be subject to continuous supervision to ensure healthy and satisfactory hotel services for tourists. By doing so, these hotels or other accommodations can become attractive destinations for tourists annually (Kadi & Bilal, 2017).

Table no. 1 – Development of tourist accommodation capacity in Algeria (2016-2022)

Year	2016	2017	2018	2019	2020	2021	2022
Number of hotel establishments	1231	1289	1368	1417	1449	1502	1567
Number of beds	107420	112264	119155	125676	127614	132266	145526

Source: Prepared by the researchers based on documents from the Ministry of Tourism and Traditional Industry. Retrieved from https://www.mta.gov.dz on July 7, 2024, at 10:27.

Hotels and accommodation facilities are an essential element in tourism activity, as they cater to the needs of tourists and travelers by providing lodging and accommodation services, in addition to offering a variety of amenities and essential services. Table 1

shows a significant growth in absorptive capacity during the period under consideration, with a positive annual growth rate. Capacity doubled by 35% between 2016 and 2022, rising from 107, 420 beds in 2016 to 145, 526 beds in 2022, representing an increase of 38, 106 beds. In addition, the number of hotel establishments also saw a rise, rising from 1,231 in 2016 to 1,567 in 2022, reflecting a 27.40% growth. This development is due to the new government policy implemented since 2013, which has begun to yield positive results.

Table no. 2 –Distribution of hotel and similar establishment capacity by category (2016-2022)

Year	2018	2019	2020	2021	2022
Hotel 5*	6734	7234	7345	7613	8559
Hotel 4*	4746	6161	6824	7935	10223
Hotel 3*	5886	6427	6861	7707	9083
Hotel 2*	5185	5381	5995	7935	10403
Hotel 1*	11684	12612	12724	13027	14075
Unclassifiedhotel	8590	9456	9456	9456	9456
Tourist accommodation 2*	384	384	384	384	384
Tourist accommodation 1*	313	313	313	313	806
MotelRoad Inn 2*	93	93	93	93	152
MotelRoad Inn 1*	30	86	86	148	168
Country Inn 2*	16	16	16	16	16
Country Inn 1*	20	20	20	20	20
Holiday Village 3*	274	274	274	274	434
Holiday Village 1*	0	0	0	0	616
Furnished Inn "Single Class"	91	205	205	205	205
Family Inn "Single Class"	426	426	426	426	426
Other Hotel-oriented Structures	9786	9984	9984	9984	9984
Rest Station "Single Class"	170	170	170	170	170
Total Classified Establishments	54428	59242	61176	65706	75180
Hotel Establishments in the Process of Classification	64727	66434	66438	66560	70346
Total	119155	125676	127614	132266	145526

Source: Prepared by the researchers based on documents from the Ministry of Tourism and Traditional Industry. Retrieved from https://www.mta.gov.dz on July 7, 2024, at 13:10.

From Table 2, we note that the number of beds has increased from 119,155 beds in 2018 to 145,526 beds in 2022, with a difference estimated at: 26,371 beds. The number of hotel establishments of various types has also increased by 63.42% in 2022, estimated at

1,614 hotels, which reflects the efforts made by the authorities to promote this sector, but this remains insufficient in view of the fierce competition from neighboring countries. The delay recorded in establishing tourism projects can be explained by a weakness in financial resources as a result of the decline in state revenues from oil tax revenues starting in 2014, as well as the ineffectiveness of plans and programs dedicated to promoting and developing tourism activity.

Development of the number of incoming tourists

From Table 3, it is evident that foreign tourists make up a significant portion of the total tourist arrivals, accounting for 54.17%. This is a promising indicator that Algeria is well-positioned to become a premier international tourist destination. Notably, between 2021 and 2022, there was a remarkable growth rate of 1030.50% in foreign tourist arrivals. Conversely, the period between 2019 and 2021 witnessed a decline in foreign tourist numbers due to the suspension of flights and the imposition of stringent health measures, such as mandatory vaccinations, as the global pandemic took hold. Algerian expatriates, on the other hand, constituted 45.83% of tourists and experienced a substantial growth rate of 999.99% between 2021 and 2022.

Table no. 4 – Development of the number of tourists (2110-2022)

Year	Algerians living abroad		Foreign tourists		Total tourists	
	Number	Growth rate %	Number	Growth rate %	Number	Growth rate %
2010	1 415 509	12,73	654 987	-0,13	2 070 496	8,32
2011	1 493 245	5,49	901 642	37,66	2 394 887	15,67
2012	1 652 101	10,64	981 955	8,91	2 634 056	9,99
2013	1 768 578	7,05	964 153	-1,81	2 732 731	3,75
2014	1 361 248	-23,03	940 125	-2,49	2 301 373	-15,78
2015	626 873	-53,95	1 083 121	15,21	1 709 994	-25,70
2016	716 732	14,33	1 322 712	22,12	2 039 444	19,27
2017	742 410	3,58	1 708 375	29,16	2 450 785	20,17
2018	638 360	-14,02	2 018 753	18,17	2 657 113	8,42
2019	437 278	-31,50	1 933 778	-4,21	2 371 056	-10,77
2020	81295	-81.41	509736	-73.64	591031	-75.07
2021	58243	-28.36	66995	-86.86	125238	-78.81
2022	640668	999.99	757380	1030.50	1398048	1016.3

Source: Prepared by the researchers based on documents from the Ministry of Tourism and Traditional Industry. Retrieved from https://www.mta.gov.dz on July 8, 2024, at 9:15.

Share of the Tourism Sector in the Gross Domestic Product

The tourism sector is considered a component of the Gross Domestic Product (GDP), especially in many developed and developing countriesalike. According to Table 4, the contribution of tourism revenues to Algeria's GDP is quite weak during the period 2015-2020, with an average of only 1.8%. The highest percentage was recorded in 2019 at 1.8%, while the lowest was 1.4% in 2021. Analyzing the statistics in the Table further, the reason for this decline can be attributed to the low level of tourism revenues in the country and its heavy reliance on hydrocarbon revenues.

Table no. 4 – Development of the share of the tourism sector in the Gross Domestic Product (2015-2020)

Year	2015	2016	2017	2018	2019	2020	2021*
Tourism share in GDP (%)	1.3	1.4	1.6	1.7	1.8	1.1	1.4

Source: Prepared by the researchers based on documents from the Ministry of Tourism and Traditional Industry. Retrieved from https://www.mta.gov.dz on July 8, 2024

Statista: * Contribution share of the travel and tourism industry to the gross domestic product (GDP) in Algeria from 2019 to 2021; https://www.statista.com/statistics/1329743/tourism-sector-as-a-share-of-gdp-in-algeria/on July 8, 2024

Note: * Gross Domestic Product excluding the hydrocarbon sector

Development of the Balance of Payments - Travel item

A comparison of tourism spending reveals that the amount of foreign currency spent by citizens abroad exceeds that of foreign currency generated by non-resident tourist inflows. It's worth noting that tourism revenues from travel expenditures do not encompass all tourism earnings, as a significant portion of transactions occurs in the parallel foreign exchange market, particularly by Algerian expatriates (Industry, Ministry of Tourism and Traditional). Figure (1) shows that the tourism sector does not contribute significantly to the balance of payments, since tourism revenues have been consistently low, despite some improvement between 2018 and 2019, but they declined again in 2020. The balance of payments on the travel account has recorded a persistent deficit from 2010 to 2020. In contrast, Morocco generates substantial tourism revenues, estimated at an average of $7 billion annually. The excess of tourism spending over revenues is because the amount of foreign currency spent by citizens abroad surpasses the foreign currency generated by foreign tourist inflows.

Figure no. 1 Balance of payments - travel item (2010-2020)
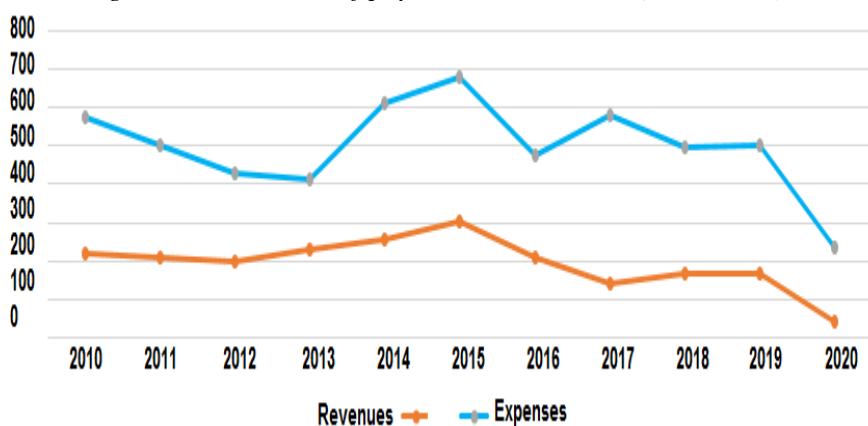
Source: Prepared by the researchers based on documents from the Ministry of Tourism and Traditional Industry. Retrieved from https://www.mta.gov.dz on July 10, 2024, at 12:27.

Employment in the tourism sector

Table 5 shows a gradual increase in the number of workers in Algeria's tourism sector between 2010 and 2019. The number of employees rose from 213,000 in 2010 to 320,000 in 2019, representing an increase of 107,000 employees, or a growth rate of 30.34%. However, this number is considered small compared to Algeria's vast tourism potential and the significant resources allocated to developing this sector as a better alternative to the rentier economy. However, the year 2019 saw a decrease in the number of workers, reaching 257,142.9 workers, with a decrease rate of 19.64%. This number increased in 2021 to 285,714.3 workers, with an increase rate of 10%

Table no. 5 – Employment in the tourism sector (hotels, cafes, restaurants)

Year	2010	2011	2012	2013	2014	2015
Number of Workers	213000	220000	224028	256775	261289	265803
Year	**2016**	**2017**	**2018**	**2019**	**2020***	**2021***
Number of Workers	270317	300000	308027	320000	257142.9	285714.3

Source: Prepared by the researchers based on documents from the Ministry of Tourism and Traditional Industry. Retrieved from https://www.mta.gov.dz on July 7, 2024, at 17:30.

* Statista; Employment in the tourism industry as a percentage of total employment in Algeria from 2019 to 2021; https://www.statista.com/statistics/1320699/employment-in-the-tourism-industry-as-share-of-total-employment-in-algeria/

Algerian Tourism Prospects 2035

The Tourism Development Master Plan (SDAT 2030) represents the fundamental strategic framework for Algeria's tourism policy. It is the document that the state uses to announce its future tourism project until 2030 to all stakeholders, sectors, and regions. This plan reflects the state's desire to exploit and valorize the country's natural, cultural, and historical resources to serve the tourism sector in Algeria.
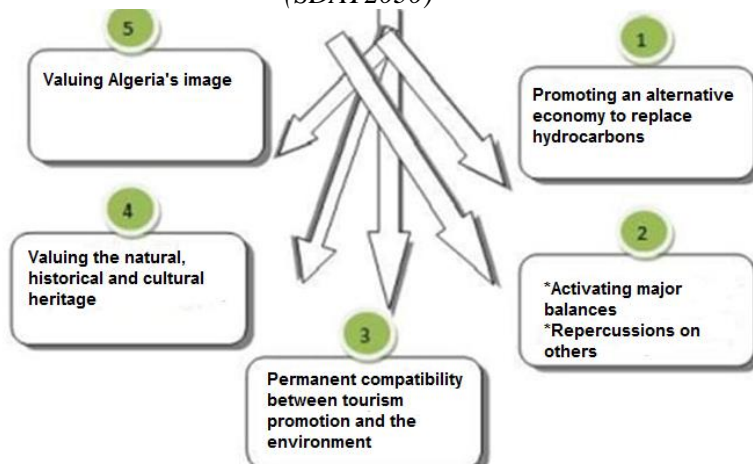
Definition of the Master Plan for Tourism Development (SDAT2030)

This plan is an official document through which the state announces its tourism vision for the horizons of 2030 to all actors, sectors and regions. The plan aims to valorize Algeria's natural, cultural and historical capabilities, and put them at the service of tourism to achieve the required growth and make tourism a national priority. This plan is part of the National Plan for Territorial Development (SNAT), and was prepared in 2007 in collaboration with the French Committee (ODIT-France), and includes Algeria's vision for tourism development in the short-term 2009, medium-term 2015, and long-term 2030 (Sahrawi & Sabti , 2017, p. 60).

Objectives of the Master Plan for Tourism Development (SDAT2030)

The general objectives can be summarized in the following figure:

Figure no. 1 The five objectives of the Master Plan for Tourism Development (SDAT2030)

Source: Ministry of Planning, Territory, Environment and Tourism. (2008). Master Plan for Tourism Development, Book No. 02: Diagnosis and Examination of Algerian Tourism (p. 18).

The material objectives for the 2008-2015 stage can be summarized in Table 6.

Table no. 6 – Material objectives for the 2008-2015

Year	2007	2015
Number of tourists	1.7 million	2.5 million
Number of beds	84869 rehabilitated	75000 luxury beds
Contribution to GDP	1.7%	3%
Revenues (million dollars)	250	1500 to 2000
Direct and indirect jobs	200000	400000
Formation of pedagogical seats	51200	91600

Source: Ministry of Planning, Territory, Environment and Tourism. (2008). Master Plan for Tourism Development, Book No. 02: Diagnosis and Examination of Algerian Tourism (p. 18).

Stages of preparing the SDAT2030 Tourism Development Master Plan

Preparing the SDAT2030 Tourism Development Master Plan is a comprehensive process based on an in-depth diagnosis of the tourism sector in Algeria. This diagnosis includes the effective contribution of discussions at local, regional and national forums, which allows to highlight and explain the major challenges facing tourism, in addition to its major problems and trends at the national and international levels. Preparing the master plan comprises several stages, including (Mushtar & Aouinan , 2019, p. 368):

Phase 1: Diagnosing global trends to identify major problems and stakes.

Phase 2: Setting strategic directions to achieve tourism development goals.

Phase 3: Developing priority action programs to implement the strategies set.

Phase 4: Implementing and monitoring progress according to a specific strategy to ensure achieving the desired goals.

Structural Analysis of The Algerian Tourism Sector Using MICMAC Technique.

We will attempt to define the study's objective and the variables that influence the tourism sector in Algeria. A set of variables that directly and indirectly affect the development of this sector will be extracted by 2030.

MICMAC technique methodology

The MICMAC software has been developed by The Institute for Computer Innovation for Enterprises, under the supervision of their creators, Laboratory for investigation in Prospective Strategy and Organization. This corresponds to the structural analysis where the structure is defined as a reality that is studied as a system, and the elements keep interdependencies, at the same time it allows the consideration of qualitative variables and exploring multiple and uncertain futures. The method starts from the problem definition, then a list of internal and external variables is identified. It

proceeds to analyze the relationship between the variables that the system is made, weighing that relationship according to the degree of mobility and dependence between existing variables. These variables are weighted according to the following qualification: if the degree of influence is non-existent, low, medium or high, a scale that can be 0, 1, 2, and 3 or 0, 1, 3 and 5 is used. This matrix entry is generally qualitative, so it is possible to adjust the intensities of the relationships (0 = non-existent, 1 = weak, 2 = medium, 3 = strong, P = potential). The qualifying result identifies the key variables: direct and indirect classification. Analyses of mobility (Influence) and dependence are obtained by the location of the indicator of the variable in the quadrant, resulting in a variable that can be power variable, autonomous, of conflict or output variable, according to their degree of influence and dependence (Arias , Castañeda, & Alejandro Valencia, 2016, p. 13).

Examination and selection of variables

After identifying the internal and external variables that affect the Algerian tourism sector and consulting with experts and professors specialized in tourism, we obtained 24 variablesThen we coded them to facilitate the entry process in the MICMAC program (Appendix 01).

Comment on the Results of the Study

After identifying the influential relationships between the variables by measuring the degree of influence of each variable on the rest of the system variables and in consultation with experts and professors specialized in tourism, a direct effects matrix was built. The degrees of influence were classified as follows: 0 = No influence, 1 = Weak influence, 2 = Medium influence, 3 = Strong influence, and P = Very strong influence (Appendix 02).

Characteristics of the Direct Effects Matrix MID: After entering the matrix in Appendix 02 into the MICMAC program, we obtained a matrix with the characteristics shown in Table 7.

Table no. 7 – Characteristics of the structural analysis matrix

Indicator	Value
Matrix size	24
Number of iterations	2
Number of zeros	412
Number of ones	38
Number of twos	81

Indicator	Value
Number of threes	38
Number of P	7
Total	164
Fillrate	28.47222%

Source: MICMAC program outputs

Both Michel Godet and Philippe Durance determined a good filling rate ranging between 15% and 25% depending on the size of the matrix (Godet, 2007, p. 43). In our case, the filling rate of the matrix was 28.47%, which represents the percentage of cells filled with P, 3, 2, 1. Referring to the experts, it is acceptable and expressive in terms of the number of variables, which confirms the existence of relationships between most of the study variables.

Stability of the direct effects matrix MID: We notice from Table08 that the matrix tends towards stability (100%) starting from the second iteration, where the rates of influence and importance are very high. The MICMAC program suggests stability at the fifth iteration, and the real meaning of stability is that the order of the variables reached according to the degree of influence and correlation will not change after the fifth iteration because we have discovered all the direct and indirect influence relationships of the variables.

Table no. 8 – Stability of the matrix

Iteration	Influence	Dependence
1	80 %	92 %
2	103 %	100 %

Source: MICMAC program outputs

Direct effects and correlations diagram: Figure02 shows the classification of variables based on their total scores in the columns and rows, which is an illustrative representation of the relationships between them. This classification enables us to differentiate variables based on their nature, as shown in the figure divided into five sections:

Figure no.2 Direct effects/correlations diagram

Source: MICMAC program outputs after entering the direct effects matrix.

- **Category 01:(Entry variables)** These variables have a strong influence but are weakly correlated. These variables represent the factors influencing the Algerian tourism sector, such as: the general strategy of the state (Gene str), the laws governing the tourism sector (Laws), and the interest rate (Interest R).
- **Category 02: (Dependent variables)** these variables have a strong influence and are also strongly correlated. Any change in them will affect the tourism sector as a whole. These include: public and private investment spending (pub priv), which represent the stakes of the tourism sector.
- **Category 03: (Resulting variables)** these variables have a weak influence but are strongly correlated. These variables can be explained through entry variables and dependent variables, including: economic growth (Econ Grow), favorable macroeconomic framework (Macro econ), tourism promotion (Touri Prom).
- **Category 04:(Excluded Variables)** The effect of these variables is weak, and their correlation is also weak. They do not play a significant role in the development of the tourism sector. However, they are not without importance; rather, they are obvious variables in the studied system and are not really significant for understanding it. Therefore, they are likely to be ignored later. They include: health and hygiene (Health H), savings (Savings), exchange offices (Exch Offi), media and communication (Media Co), corruption (Corruption),

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taxes and fees (Taxes Fe), inflation (Inflation), business openness (Open Bus), service prices (Service Pr).

- **Category 05: (Pivotal variables)** These variables have a moderate influence and correlation and combine with all other variables and when analyzed together they play an important role in the dynamics of the tourism sector. These variables include: Information and Communication Technology (lCT), Political, Security and Economic Stability (Poli-Sec), Skilled Workforce (Skilled Wo), Scientific and Technological Level (Scientific), Governance (Governance), Visa (Visa), Transport Network (Trans net).

Indirect Impact Matrix MII: By filling out the Direct Impact Matrix (DIM), only direct relationships were considered when preparing it, but variables can follow different behavior. Variable A may have an effect on variable B by mediating variable C. Therefore, this type of indirect relationships between variables must be taken into account. This matrix, formed by multiplying the DIM matrix by itself, creates a new structure for variables in rows and columns. The main objective of this matrix is to work on indirect effects that were not prominent in the DIM matrix, but have important indirect effects on the dynamics of the system under study (the tourism sector).

Figure no. 3 Indirect effects/correlations diagram
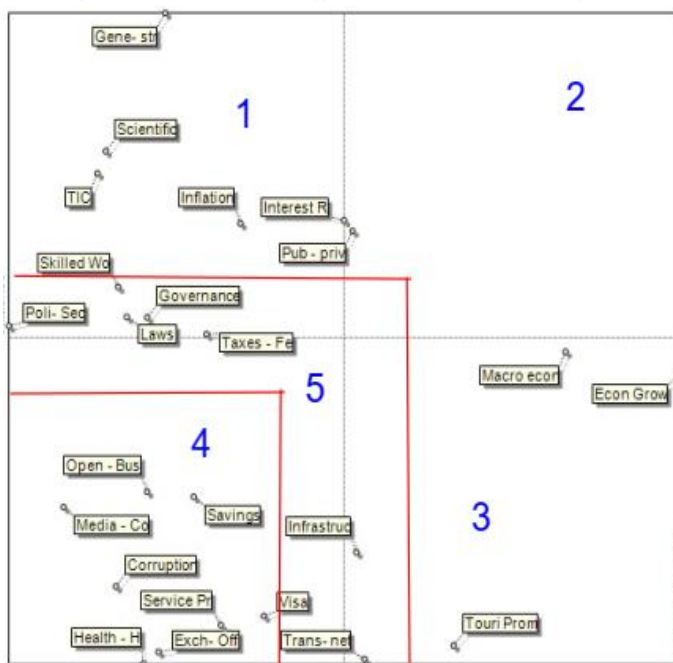
Source: MICMAC program outputs after entering the direct effects matrix.

Through Figure 3, we notice a change in the locations of some variables as a result of taking into account the indirect influence relationships. Through this diagram, the hidden variables in the system can be extracted. These hidden variables in the renewable energy sector are classified as follows:

Category 1: The most influential variables with the least dependency or impact, which are essentially the explanatory variables of the system contributing to its overall dynamic control. With regard to the system being studied, related to "tourism", it is clear that the variables of Category 1 are represented in the general strategy of the state (Gene str), the interest rate (Interest R), the scientific and technological level (Scientific), Information and Communication Technology (ICT), and inflation (Inflation).

Category 2: These variables are characterized by their instability as they are highly influenced and highly influential at the same time. Any change in any of them causes impacts on the rest of the variables. They are affected by changes in others at a later time, leading to deep adjustments in the dynamics of the system under study. These variables are represented by public and Private Investment Expenditure (Pub-priv).

Category 3: These variables are characterized by having a weak influence and being strongly affected, or in other words, they have high dependency. The evolution of these variables is explained by the influences coming from other variables, especially those of category 1 and category 2. In the studied system, we find these variables in the following: economic growth (Econ-Grow), favorable macroeconomic framework (Macro-econ), and tourism promotion (Touri-Prom).

Category 4: These variables are characterized by having a weak influence and being weakly affected, having a limited impact on the studied system. This is either because they are sluggish variables whose inertia does not affect the dynamics of the system, or they may have a weak relationship with the studied system. The performance of these variables evolves somewhat independently of the system, thus allowing us to exclude them from the analysis without affecting the system. These variables are: health and hygiene (Health-H), savings, exchange offices (Exch-Offi), media and communication (Media-Co), corruption, business openness (Open-Bus), and service prices (Service Pr).

Category 5: These variables cannot be initially judged in terms of their influence on and by the system. Consequently, we cannot provide an initial estimate or conclusion regarding their role in the system. These variables include: political, security, and economic stability (Poli-Sec), skilled labor (Skilled Wo), governance, visa, transportation network (Trans-net), tourism laws, taxes and fees (Taxes-Fe), and infrastructure (Infrastruc).

The diagram of indirect effects shown in Figure 4, which is determined from the Indirect Impact Matrix (IIM), allows us to better visualize the indirect effects. Through the diagram, we observe that the variables connected by the red line are the most influential indirect variables, as the general state strategy (Gene-str) has a significant impact on economic growth (Econ-Grow). The blue arrows indicate the presence of relatively strong indirect effects, where each of Information and Communication Technology (ICT), scientific and technological level (Scientific), inflation (Inflation), and interest rate (Interest-R) has a relatively strong impact on economic growth (Econ-Grow). Additionally, there is a relatively strong impact of the general state strategy (Gene-str) on the suitable macroeconomic framework (Macro-econ).

Figure no. 4 A graph of the indirect effects/links diagram
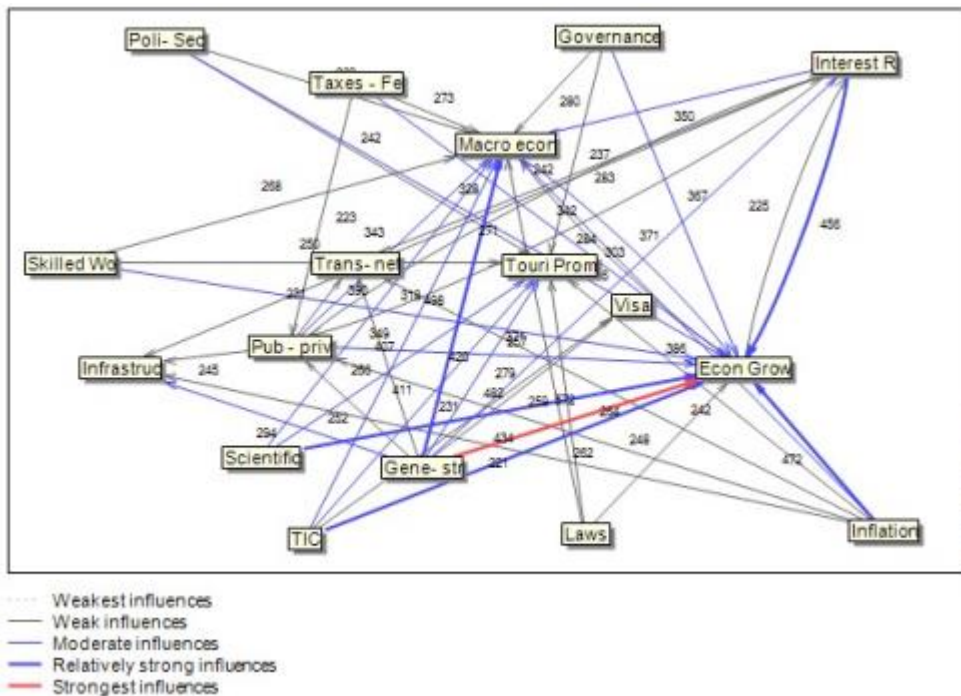
Source: MICMAC program outputs after entering the direct impact matrix.

After studying and analyzing the results of the program "MICMAC" and considering the theoretical framework of the subject of tourism in Algeria, the study reached the stage of identifying the key variables (fundamental, main) that control the future of the system and clarifying all the links between the variables of developing the tourism sector in Algeria. This made it easy to identify the key variables affecting this system, namely:

- **Laws governing the tourism sector:** Focus on establishing a set of laws that regulate investment in renewable energy projects from the beginning of the project activity until its completion.
- **Infrastructure:**it is necessary to develop and improve the tourism infrastructure, including transportation, accommodation, and tourism services, to ensure a comfortable and safe experience for tourists.
- **Qualified workforce:** To invest in training and qualifying human cadres working in the tourism sector to ensure the provision of high-quality services and create a distinctive tourism experience for tourists.
- **Governance:** Relying on governance principles and mandating their implementation in both the public and private sectors as they contribute to business openness.
- **Scientific and technological level**: Adopting advanced information and communication technologies to enhance tourism promotion and provide electronic services that facilitate tourists in planning their trips and booking tourism services.
- **General state strategy:** Ensuring the development of a long-term strategy that is periodically evaluated. This strategy should include a well-defined action plan with a specific timeframe, allowing for the optimal utilization of the available potential in the renewable energy sector.
- **Public and private investment spending:** Aligning government and private spending with the requirements of the tourism sector; private investment should also be encouraged, especially in expansion areas and tourist sites with significant potential.
- **Tourism promotion:** Strengthening marketing and promotional efforts to attract tourists from international markets and focusing on presenting a positive image of Algeria as a distinctive tourist destination.

Conclusion

The tourism sector is considered a vital sector that plays a leading role in many countries around the world. It contributes to generating financial flows, creating job opportunities, and driving economic development. It also enhances security and political stability. However, the development of this sector requires providing a suitable tourism environment. Although Algeria has available tourism potential, it has not achieved the expected efficiency in terms of revenue, job opportunities, and contribution to the national product. The government must exert greater efforts to exploit these potentials by adopting a clear-objective government strategy aimed at giving a qualitative leap to the

sector so that it can play its effective role. It is also possible to benefit from the experiences of neighboring countries as a successful model. Moreover, the Tourism Development Plan (SDAT 2030), which was launched in 2008, faced many obstacles that prevented it from achieving the desired goals. Therefore, great attention must be paid to the tourism sector in order to find solutions and alternatives that revitalize it to become an effective contributor to the national economy and one of the alternative sectors to the hydrocarbon sector in Algeria.

In terms of foresight, we concluded that the most important factors that the Algerian state should target to develop in the tourism sector by 2030 are:

- The efficiency of the workforce and its ability to keep pace with technology and modern techniques.
- The widespread use of technologies.
- Encouraging foreign investors to invest in the tourism sector.
- Working to achieve the state's general strategy, which in turn will contribute to developing the tourism sector.

REFERENCES

Al-Hawri, M., & Al-Dabbagh, I. (2013). *Economics of Travel and Tourism.* Jordan: Al-Warraq Foundation for Publishing and Distribution.

Al-Taie, H., & Al-Alaq, B. (2013). *Tourist Behavior and Tourism Demand.* Jordan: Dar Zahran for Publishing and Distribution.

Arias, M., Castañeda, L., & Alejandro Valencia, A. (2016). Structural Analysis of Strategic Variables through MICMAC Use: Case Study. *Mediterranean Journal of Social Sciences,* 7(4), pp.11-19. DOI:10.5901/mjss.2016.v7n4p

Bashiri, A. (2022). The Role of Tourism Investment in Achieving Economic Development in Algeria. In *The Tourism Sector and the Stakes of Economic Diversification in Algeria,* pp. 1-299, Available at: http://fsecg.univ-djelfa.dz/ar/archives/9583

Ben Amar, H. (2022). Analysis and evaluation of the competitiveness of the Algerian tourism and travel sector in the Maghreb, the Arab world and internationally according to the World Economic Forum's Tourism and Travel Competitiveness Index for the period 2015-2019. *Al-Bishr Economic Magazine,* 8(2), pp. 390-411. Available at: https://www.asjp.cerist.dz/en/article/199758

Ben Sharif, M., & Wakli, K. (2020). The competitiveness of tourism and travel in Algeria compared to Tunisia and Morocco: between reality and hope. *New Economy Magazine,* 11(3), pp. 1-25. https://www.asjp.cerist.dz/en/article/120689

Farah, R., & Budala, Y. (2012). The role of tourism marketing in supporting tourism development and reducing tourism sector crises. *Managerial Economic Research,* 6(2), pp. 97-125. Available at: https://www.asjp.cerist.dz/en/article/49360

Godet, M. (2007). *Manuel de prospective stratégique*. 3 ed. France. Dunod.Paris.

Hamidatou, N. (2015). *Tourism activity in Algeria and its impact on economic growth.* F.O. Master's thesis, Trans. Algeria.

Houidi, A. (2014). The interactive relationship between ecotourism and sustainable development. *Journal of Social Studies and Research,* 2(6), pp. 211-225. Available at: https://www.asjp.cerist.dz/en/article/79406

Industry, Ministry of Tourism and Traditional. (n.d.). Available at: https://www.mta.gov.dz

Kadi, N., & Bilal, H. (2017). Le secteur du tourisme en Algérie à travers les indicateurs de capacité hôtelière et de flux touristiques durant la période (2000 – 2015). *Etudes économiques,* 11(2), pp.13-83. Available at: https://www.asjp.cerist.dz/en/article/63371

Kawash, K. (2007). *Tourism, its concept, pillars, types*. 1 ed. Algeria: Dar Al Tanweer for Publishing and Distribution.

Leroux, E. (2014). *Management du tourisme et des loisirs.* Paris: Magnard ruibert.

Lubov, I. (2018). Tourism education – an important investment for the staff development. Entrepreneurship, 6(2), pp. 326-337. Available at: https://ep.swu.bg/index.php/archive/2018/2018-issue-2/137-tourism-education-an-important-investment-for-the-staff-development

Maher, A. (1971). *Tourism Industry* (1 ed.). Amman: Dar Zahran for Publishing and Distribution.

Mansour, M., & Ben Turki, E. (2022). The reality of the competitiveness of the Algerian tourism sector compared to Tunisia and Morocco according to the World Economic Forum index (reports 2015, 2017 and 2019). *Review of Human & Social Sciences, 8*(1), pp. 144-162. Available at: https://www.asjp.cerist.dz/en/article/182079

Muqabala, A. (2007). *Tourism Industry.* 1 ed. Jordan: Dar Al-Kunooz Al-Ma'rifa for Publishing and Distribution.

Ministry of Planning, Territory, Environment and Tourism. (2008). *Master plan for tourism development.* Book No.2: Diagnosis and Examination of Algerian Tourism

Mushtar, F., & Aouinan, A. (2019). The developmental effects of the tourism sector in light of the master plan for tourism development SDAT 2030. *Journal of Economic Sciences,*

Management and Commercial Sciences, 12(2), pp. 363-372. Available at: https://www.asjp.cerist.dz/en/article/104191

Muwaffaq, A. (2013). *The Importance of Tourism Investments and Their Role in Economic Development.* Algiers: PhD Thesis in Economic Sciences, Planning Department, Faculty of Economics, Business and Management Sciences, University of Algiers 3.

Putkaradze, M., Michalski, T., & Abuselidze, G. (2022). Tourism and recreational resources usage perspectives through according to mountainous adjaria`s example. *Economics and Management,* 19(2), pp. 27-39. DOI: 10.37708/em.swu.v19i2.4

Qalash, A., & Khantar, N. (2019). Evaluation of the performance of the Algerian tourism sector in light of the master plan for tourism development (2030 Sdat) - A comparative study with a group of Arab countries. *Journal of Economics and Finance, 5*(1), pp. 195-209. Available at: https://www.asjp.cerist.dz/en/article/86232

Qin, C. (2023). The impact of economic and environmental factors and tourism policies on the sustainability of tourism growth in China: evidence using novel NARDL model. *Environmental Science and Pollution Research*, pp. 19326-19341. DOI: https://doi.org/10.1007/s11356-022-22925-w

Sahrawi, M. D., & Sabti, W. (2017). Tourism in Algeria between: reality and hope. *Namaa Journal of Economics and Trade* (2), pp. 49-67. Available at: https://www.asjp.cerist.dz/en/article/91163

Sanjeev, V., Lekha, W., Brajesh, B., & Shraddha M., M. (2022). Past, present, and future of virtual tourism-a literature review. *International Journal of Information Management Data*. 2(2): 100085, DOI: https://doi.org/10.1016/j.jjimei.2022.100085

Statista: Employment in the tourism industry as a percentage of total employment in Algeria from 2019 to 202. Available at: https://www.statista.com/statistics/1320699/employment-in-the-tourism- industry-as-share-of-total-employment-in-algeria/

Statista: Contribution share of the travel and tourism industry to the gross domestic product (GDP) in Algeria from 2019 to 2021. Available at: https://www.statista.com/statistics/1329743/tourism- sector-as-a-share-of-gdp-in-algeria/

Tunisian, N., & Shakhar, N. (2022). Tourism investment in Algeria between reality and hope. *Al-Manhal Economic Magazine,* 5(1), pp. 75-90. Available at: https://www.asjp.cerist.dz/en/article/188302

Zian, B. (2016). Evaluation and Analysis of the Tourism Competitiveness of North African Countries According to the World Economic Forum (Davos) Index During the Period (2007-2015). *North African Economics Journal,* 12(14), pp. 133-160. Available at: https://www.asjp.cerist.dz/en/article/1872

Appendices

Appendix no. 1-List of variables forming the studied system

N°	Long label	Short label	Description
1	General strategy of the state	Gene- str	It is the long-term goal that the state wants to achieve by developing a strategy with clear goals, features and method of implementation.
2	Public and private investment spending	Pub - priv	It represents the spending made by both the government and the private sector to finance investment in tourism projects.
3	Laws governing the tourism sector	Laws	A set of laws regulating investment in tourism projects
4	Transportation network	Trans- net	It is represented by the land, sea and air transport network.
5	Taxes and fees	Taxes - Fe	It is represented by taxes related to investment in tourism.
6	Corruption	Corruption	Investors in developing countries face several obstacles including administrative bureaucracy, bribery and corruption.
7	Infrastructure	Infrastruc	The structures necessary for the comfort of the tourist.
8	Information and communication technology	lCT	Allows facilitating commercial, administrative and financial transactions.
9	Skilled labor force	Skilled Wo	A workforce with appropriate training, whether from universities or training centers.
10	Governance	Governance	Relying on the foundations of governance in managing projects and institutions, whether in the public or private sector, to facilitate openness and open the door to partnership.
11	Openness of business	Open - Bus	The degree of openness to international business and the ease of access for foreign investors.
12	Political, security and economic stability	Poli- Sec	The degree of stability of the political, economic and security situation, which allows for the provision of a suitable climate for investment.
13	Savings	Savings	It refers to the amounts of money saved by individuals in banks.
14	Appropriate macroeconomic framework	Macro econ	Which combines the level of growth, inflation, unemployment, etc.
15	Inflation	Inflation	The general level of prices.
16	Media and communication	Media - Co	The media and communication play a major role in raising awareness of any important issue from an economic, social and environmental perspective.
17	Interest rate	Interest R	Reducing the interest rate granted by banks may play a role in encouraging investment in tourism projects.

18	Tourism promotion	Touri Prom	The extent of promotion of the country's tourism potential.
19	Economic growth	Econ Grow	Tourism contributes to increasing the gross domestic product in most developing economies, which leads to economic growth in them.
20	Visa	Visa	How easy it is to get a visa
21	Health and hygiene	Health - H	How developed is the health system
22	Scientific and technological level	Scientific	Reflects the level of service provided to the tourist.
23	Exchange offices	Exch- Offi	Facilitating the exchange process.
24	Service prices	Service Pr	The competitiveness of the prices of the services provided.

Source: Prepared by the student based on a group of experts and actors in the tourism sector.

Appendix no 2 - Direct Impact Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 : Gene- str	0	3	P	2	2	2	2	2	2	3	2	0	0	0	0	0	2	1	1	2	1	1	2	2
2 : Pub - priv	0	0	0	3	0	0	3	1	1	0	0	0	0	3	2	0	2	1	2	0	1	1	0	1
3 : Laws	0	0	0	0	0	2	1	0	2	3	3	0	0	1	1	0	0	3	0	3	1	0	2	2
4 : Trans- net	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
5 : Taxes - Fe	0	3	0	0	0	0	0	0	0	0	0	1	0	0	2	2	0	1	0	3	0	0	0	0
6 : Corruption	P	0	P	0	0	0	0	0	0	P	2	0	0	1	0	0	0	0	2	0	0	0	0	0
7 : Infrastruc	0	0	0	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	3	0	0	0	0
8 : TIC	2	0	2	0	0	0	0	0	2	3	2	0	0	0	0	3	0	3	0	1	0	2	0	0
9 : Skilled Wo	0	0	0	2	0	2	0	2	0	2	0	0	0	2	0	1	0	2	2	0	2	2	0	1
10 : Governance	P	0	3	0	0	3	0	0	0	0	2	0	0	3	0	0	0	2	3	0	1	1	2	0
11 : Open - Bus	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	3	0	0	0	0
12 : Poli- Sec	2	2	0	2	0	0	2	0	0	0	0	0	0	2	0	0	0	3	2	2	0	0	0	2
13 : Savings	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	0	0
14 : Macro econ	2	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0
15 : Inflation	2	3	0	0	2	0	0	0	0	0	0	0	0	2	0	0	2	0	3	0	0	0	0	0
16 : Media - Co	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	P	1	2	0	2	0	0	0
17 : Interest R	0	3	0	2	2	0	2	0	0	0	0	0	3	2	3	0	0	0	3	0	0	0	0	0
18 : Touri Prom	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0
19 : Econ Grow	0	P	0	2	0	0	3	0	0	0	0	0	2	3	1	0	3	1	0	0	1	0	1	1
20 : Visa	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0
21 : Health - H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0	0	0
22 : Scientific	2	0	2	0	0	0	0	2	2	2	0	0	0	2	0	2	0	3	2	0	0	0	0	1
23 : Exch- Offi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0	0	0	1
24 : Service Pr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0

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Source: Prepared by the student based on a group of experts and actors in the tourism sector.