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Tracing the Impact Pathways of COVID-19 on Tourism and Developing Strategies for Resilience and Adaptation in Iran

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Abstract: The COVID-19 epidemic has caused unprecedented impacts on the travel and tourism industry. The current study traced the impacts of COVID-19 on tourism in Iran using an "Impact Pathway (IP)" approach to identify impacts and possible mitigation strategies. The results illustrate two main impact pathways: negative impacts along the economic-institutional and socio-cultural dimensions, and positive impacts along the physical-environmental dimension. Using SWOT (strengths, weaknesses, opportunities, and threats) and ANP (analytic network process) models, we identified defensive and review strategies as optimal for increasing resilience against the impacts of COVID-19. These strategies control the threats and weaknesses of negative impacts and enhance the opportunities and strengths emerging from the COVID-19 pandemic for tourism. We use this information to identify optimal strategies for dealing with the impacts of this crisis on tourism. Most prominently among them is the development of an integrated management system that improves the coordination of the response of local government to crisis and that better orchestrates the combined efforts and integration of non-governmental organizations.

Keywords: analytic network process; COVID-19; impacts pathway approach; integrated management system; SWOT; tourist

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1. Introduction

Tourism plays an essential role in the economic, social, and cultural development of many countries. Globally, tourism numbers reached 1.5 billion, generating approximately $1.5 trillion in spending [1]. The main positive effects of tourism include economic benefits such as tax revenues, job creation, or diversification of local economies [2–4]. However, the tourism industry is also vulnerable to 'shock' like a pandemic or a natural disaster. Tourism is among the most affected sectors by the COVID-19 pandemic, for instance, that has caused a global collapse in tourism demand due to severe disruptions in travel and mobility [5–8]. Due to air travel suspensions, lockdowns and social distancing protocols implemented worldwide, the tourism sector has been particularly impacted [9]. Current estimates indicate that 75 million jobs in various tourism sectors around the world are in crisis, and the industry has lost more than $2.1 trillion in turnover [10]. According to the latest reports from the World Trade Organization and the World Travel Council, revenue from the industrial tourism section has dropped by a third to $450 billion due to the

outbreak of COVID-19. The World Bank report on the economic impacts of the pandemic shows a drastic reduction in personal income, the growth of trade and the GDP of many countries. In addition, literature has emerged that examines the economic and social impacts of COVID-19 on tourism, as well as employee uncertainty and business innovation, and how tourism might look in the future [11–14]. It should be noted that the COVID-19 has affected each country differently, and the degree of recovery or containment varies as well [15]. In this research, we investigate the impacts of COVID-19 along environmental, social, and economic dimensions using Iran as a case study.

Iran offers unique natural features and attractions that position it as a prime nature-based tourism destination in the world [16]. During the COVID-19 pandemic, all tourism sectors in Iran were affected, just as they were in other developed or developing countries. In Iran, the disruption of domestic and international travel due to COVID-19 and related unemployment have led to a crisis in the tourism industry [17]. According to the Chamber of Commerce, Industries, Mines, and Agriculture of Iran [18], travel decreased by 54% in 2020 compared to the same period in 2019. The employment status of more than 80,000 tourism industry employees has been severely threatened. Accommodation, hospitality offers, air, rail and road transport, cultural, artistic and recreational industries, educational services, and food production have all been directly affected. The National Cultural Heritage, Tourism, and Handicrafts Administration stated that the spread of COVID-19 not only caused the bankruptcy of many tourism agencies, hotels, and restaurants, but it has also imposed expenses of more than $121 million on the tourism sector and resulted in the death of more than 1000 employers. As a result, travel offices, tourism services and facilities, guides, and educational institutions have suffered major economic losses [18]. COVID-19 has also impacted on the social and psychological dimensions of Iran. Issues arising from the pandemic include increasing levels of anxiety among tourists and tourism communities, escalating health problems, increasing levels of social tension, the inability of the government to effectively control the spread of the disease due to the lack of coordination among local government organizations, and an overall decrease in social resilience. However, the spread of COVID-19 has also had noticeable positive impacts on the environment, including a decrease in pollution, waste, the consumption of materials and energy and the deterioration of ecosystems [19–21] used for nature-based tourism activities as reported elsewhere [22–24].

Impacts and possible mitigation strategies against COVID-19 need to be identified for national strategy development to make countries more resilient to such a crisis in the future, even if each country faces challenges from the pandemic that are unique [25]. In this research, we draw from a tourism expert panel's expertise to assess the Impact- Pathway (IP) of COVID-19 on the various tourism sectors in Iran. We use this information to identify optimal strategies for dealing with the impacts of this crisis on tourism. Thus, the main questions addressed by this research are: (a) What are the main impacts of COVID-19 on different dimensions of tourism? and (b) What are the optimal strategies for controlling the negative impacts and strengthening the positive ones?

2. Theoretical Background

Tourism as a human-based industry is highly vulnerable to the complex influences of a pandemic [3,4,26,27]. To reveal vulnerabilities, a considerable body of literature has studied the impacts of other pandemics and found pathways of influence on the tourism industry such as by SARS [28], avian influenza [29], Ebola [7,30], and influenza [31].

For instance, Sönmez et al. [32] investigated the effects of COVID-19 on the health and safety of immigrant hospitality workers in the United States. Their results revealed that restrictions and lockdowns have devastated tourism-dependent destinations and displaced millions of vulnerable workers, causing them to lose their livelihoods. Beck & Hensher [33] explained the impact of COVID-19 on travel and home activities in Australia during the bans, such as the reduction in social transitions, increasing virtual and online education, the launch of travel bans and closures of air agencies, closures of cinemas, leisure, and sports

centers, and consequently unemployment and economic losses. Sharma et al. [34] studied the revival of the tourism industry in the post COVID-19 era showing that tourism and economic growth depend on various factors, in particular the role of local communities in tourism. Qiu et al. [35] studied the social costs of tourism during the COVID-19 pandemic. They explored residents' perceptions of the dangers of tourism activities and the sequential social costs and public health risks. Yang et al. [36] stated that welfare policies in response to COVID-19 should be revised to provide financial support in all aspects, including tourism, health, and other affected areas. Their results revealed that hotel, airline, shipping, and rental car sectors had experienced a significant economic loss during the COVID-19 pandemic. Sharma & Nicolau [37] traced the impacts of COVID-19 on travel, tourism, and trade. These studies have identified various impacts of COVID-19 on the tourism industry such unemployment, bankruptcy of businesses, growth of economic pressure on tourism destinations and similar as collated in Table 1 [35,37,38].

Table 1. List of dimensions, variables (fields of impact), and indicators of COVID-19 impacts on tourism and sources of published literature.

Dimensions	Variables	Indicators	References
Physical-environmental	Environmental pollutions	Level of water resource pollution Level of soil pollution and erosion Level of air pollution Level of noise pollution and noise intensity in tourist destinations Level of visual pollution	[39–42]
	Ecosystems	Condition of mountains, forests, and deserts	
	Animals' habitats	Level of wildlife hunting Level of habitat destruction	
	Vegetation	Quantitative and qualitative status of vegetation	
	Resources consumption	Level of energy consumption and types of fuels Level of water resource consumption	
	Waste and sewage production	Amount of waste produced in tourist destinations	
	Quality of environmental resources and climate	Quality of water, soil and air resources	
	Safety	Number of accidents	
	Accommodation and food services	Usage level of accommodations outside of nature (hotels, inns, and guesthouses) Usage level of accommodations inside of nature (forest residences) Number of restaurant customers	
	Infrastructure and tourism facilities	Level of highway cost and toll services Level of information and communication networks (internet, social networks, telephone, newspapers, etc.) Level of parking lot usage	

Table 1. *Cont.*

Dimensions	Variables	Indicators	References
Socio-cultural	Tourism attractions and activities	Level of protection for natural attractions Level of protection for cultural and religious attractions Level of protection for historical and ancient attractions Level of protection for man-made attractions	[36,38–46]
	Transportation	Number of air trips Number of vehicle trips Number of rail trips (train and metro) Number of sea voyages Number of freight and transit trips	
	Psychic	Travel motivation among tourists Level of economic pressure among households	
	Security	Level of social security against crime and conflict	
	Behavior	Level of change in tourists' behavior	
	Traffic	Level of congestion in roads and public places	
	Education and information	Level of services and educational programs Level of information about tourism activities of different sites	
Economic—institutional	Institutional elements	The volume of government agencies working in tourism Revenues of government institutions	[35,39,41,44,45,47]
	Employment and income	Closure/bankruptcy of tourism businesses Number of employers in different sectors of tourism	
	Plans and projects	The volume of tourism plans and projects	
	Economic diversity	Volume of activities about tourism industries Volume of activities about tourism-related services	
	Local prices	Average price of estate and commodities	

In spite of this growing body of literature, research is lacking on practical mitigation strategies to deal with COVID-19 impacts on tourism and related businesses. To address this gap and to present appropriate strategies to control negative impacts of COVID-19 we used an Impact Pathway (IP) approach. This approach is commonly adopted to assess the type and extent of impacts on projects and events such as agricultural [48] aquatic [49]. IP analysis provides a comprehensive evaluation of change processes (from inputs to impacts; Figure 1) influencing projects and events and allows to evaluate analyses (i.e., a process of converting input to impact) and decision-making processes over time. In addition, it accommodates the viewpoints of different stakeholders and incorporates information from a variety of sources. This approach is structural in that it collects and classifies the knowledge available among a group of experts who are sufficiently familiar with the field in question [48]. As shown in Table 1, a list of impacts of COVID-19 on tourism was provided through the examination of previous studies. We have classified this information along 3 dimensions (physical-environmental, socio-cultural, and economic-institutional), 22 variables/fields of impact and 44 indicators (Table 1). As shown in Table 1, COVID-19 can affect multiple tourism variables, including security, employment and income, education, institutions, prices, pollutions, and ecosystems. The present study examined the positive and negative aspects of these variables.

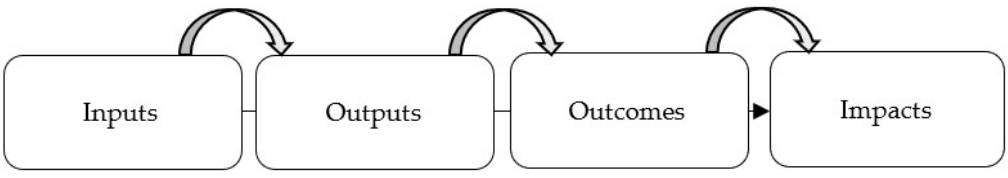

Figure 1. The logical framework of the research.

3. Research Methods

3.1. Research Framework

First, the Impact Pathway (IP) was explored to identify and categorize the main impacts of COVID-19 on tourism using an expert panel. Then, the IP approach was employed to develop optimum strategies for managing and mitigating the negative effects and strengthening the positive ones using SWOT (strengths, weaknesses, opportunities, and threats) and ANP (analytic network process) models. The internal (strengths and weaknesses) and external factors (opportunities and threats) were also identified using the viewpoints of experts. The goal was to identify the SWOT factors and integrate quantitative principles for strategic planning. This hybrid model has been applied widely in various study contexts [50–53] to determine optimal strategies. More details on the study methodology are depicted in Figure 2.

3.2. Research Procedure

The IP approach was used as a tool for logic-based evaluation, which can help prevent some of the shortcomings of other current impact assessment methods. The logical framework of the research shows four links in a simple "impact chain" (Figure 1). The chain concept was used to formulate research strategies and to capture the structure of the impact. A logical sequence of four main stages in the impact chain (input, outputs, outcomes, and impacts) was explored, including several indicators. This process deals with how COVID-19 affects the tourism industry in the stage, which in each stage states what impact the defined indicators have on the environmental-physical, demographic-social and economic-institutional dimensions, and finally these impacts in two directions (i.e., positive and negative) are checked. In the next step, the impacts of COVID-19 on tourism were considered along the physical-environmental, socio-cultural, and economic-institutional dimensions and in conjunction with the different variables and indicators. The IP captures the process that runs from inputs to outputs, and to outcomes and impacts to clarify the causal mechanisms without temporality (i.e., the continuity of the impact, without being temporary or over a short period).

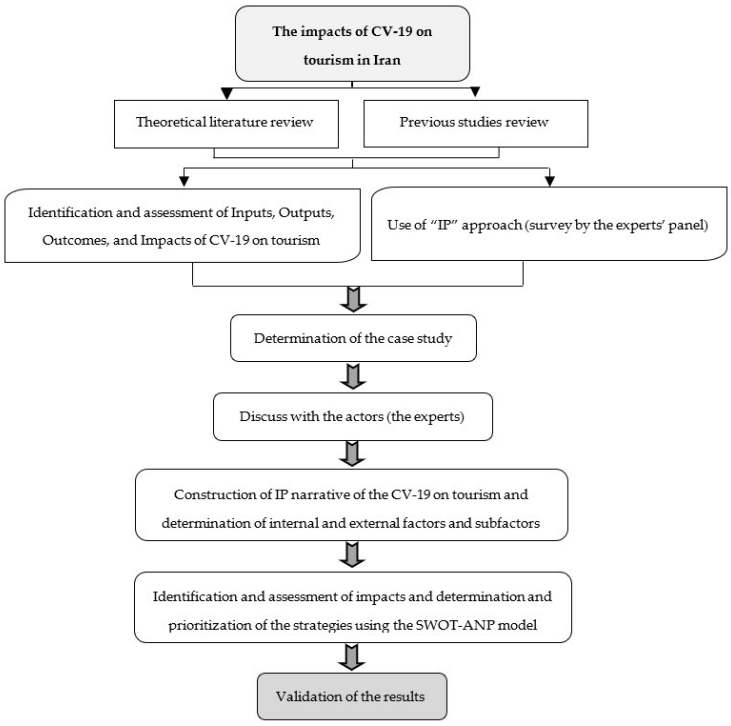

Figure 2. The process of research.

As can be seen in Figure 3, the IP approach is conducted in five steps: determination of the case study; discussion with the actors; construction of the IP narrative and determination of internal and external factors and subfactors; identification and assessment of impact responses and prioritization of indicators using the ANP model; and finally, the validation of the results. Accordingly, the IP was used in five phases as follows:

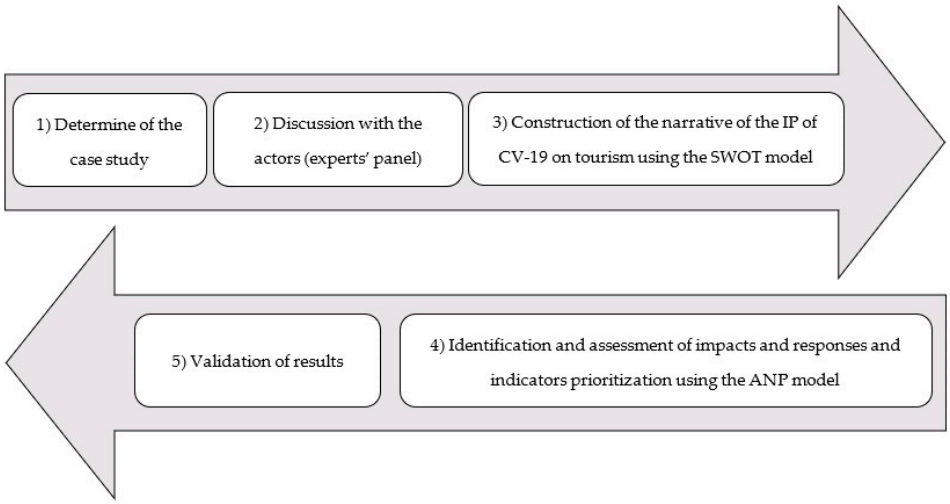

Figure 3. Main steps of the impact pathway (IP) approach.

(1) Iran was identified as the case study because of its abundance of tourist attractions and the growing demand of tourists for natural, historical-archeological, cultural, and religious sites as well as its artificial attractions.
(2) A group of 35 experts in tourism who are familiar with different tourism industry sectors in Iran was selected.
(3) To construct the IP narrative of the COVID-19 impacts on tourism, the strengths, weaknesses, opportunities, and threats were formulated using the SWOT model, and appropriate solutions for dealing with the impacts of COVID-19 were presented. Figure 4 depicts the steps in the development of the SWOT matrix.
(4) The impacts and indicators were identified and assessed with the participation of the expert panel. At this stage, the experts described the kind of change that they perceived as resulting from a specified situation. Then, for each indicator, the experts assessed negative and positive impacts and determined a value from 1 to 5 for each impact (very low, low, moderate, high, and very high). Using the ANP model, the strategies were then prioritized, and the optimal strategy was selected. The ANP model, one of the multi-criteria decision analysis (MCDA) methods, has various advantages, including measuring different criteria based on their relationships, the complexity of other issues, and achieving better results [54]. The ANP procedure is realized through four steps [55,56]: (I) Modeling and converting a problem into a network structure: When the problem is converted into a network structure, the nodes are presented as clusters. The elements within a cluster may be related to one or all other cluster elements. Elements within a cluster may also interact with each other. (II) Establishment of a matrix of pairwise comparisons and determination of priority vectors: At this stage, the decision elements in each cluster are compared based on how important they are for the two-to-two control dimensions. A special vector can represent the impact of each element on other elements. The vector of internal significance indicates the relative importance of elements or clusters. The interdependence between the cluster criteria is also compared and examined according to Table 2. (III) Creation of a supermatrix and conversion into a limited supermatrix: To achieve general priorities into a system with reciprocal impacts, internal priority vectors are entered in the appropriate matrix columns. The result is presented in a

supermatrix; each section demonstrates the relationship between the two clusters in a system. The hierarchical analysis process becomes a networking process if the dimensions have reciprocal impacts. The interactions among the dimensions are possible. (IV) Selection of the best alternative: If the supermatrix created in the third step considers the whole network and the options are also included in the supermatrix, the overall priority of the options from the column of options in the supermatrix of the normalized limit will be available. Suppose the supermatrix includes only a portion of the interconnected network, and the options are not considered in the supermatrix. In that case, further calculations are needed to represent the overall priority of the options. The option that has the highest overall priority is ultimately selected as the best option for the subject.

(5) To validate the results, the expert panel met in three rounds. In the first round, indicators extracted from theoretical literature were presented to the experts, and they were asked to express their viewpoints about them. In the second round, experts were prompted to suggest additional indicators, and internal and external factors for the SWOT analysis. In the third round, the total selection of indicators and factors obtained from the panel meetings were presented to the experts. They were asked to express their final viewpoints to reach a consensus. The process concluded with a validation stage to ensure the accuracy of the views where the experts reviewed the final list of impact indicators and factors.

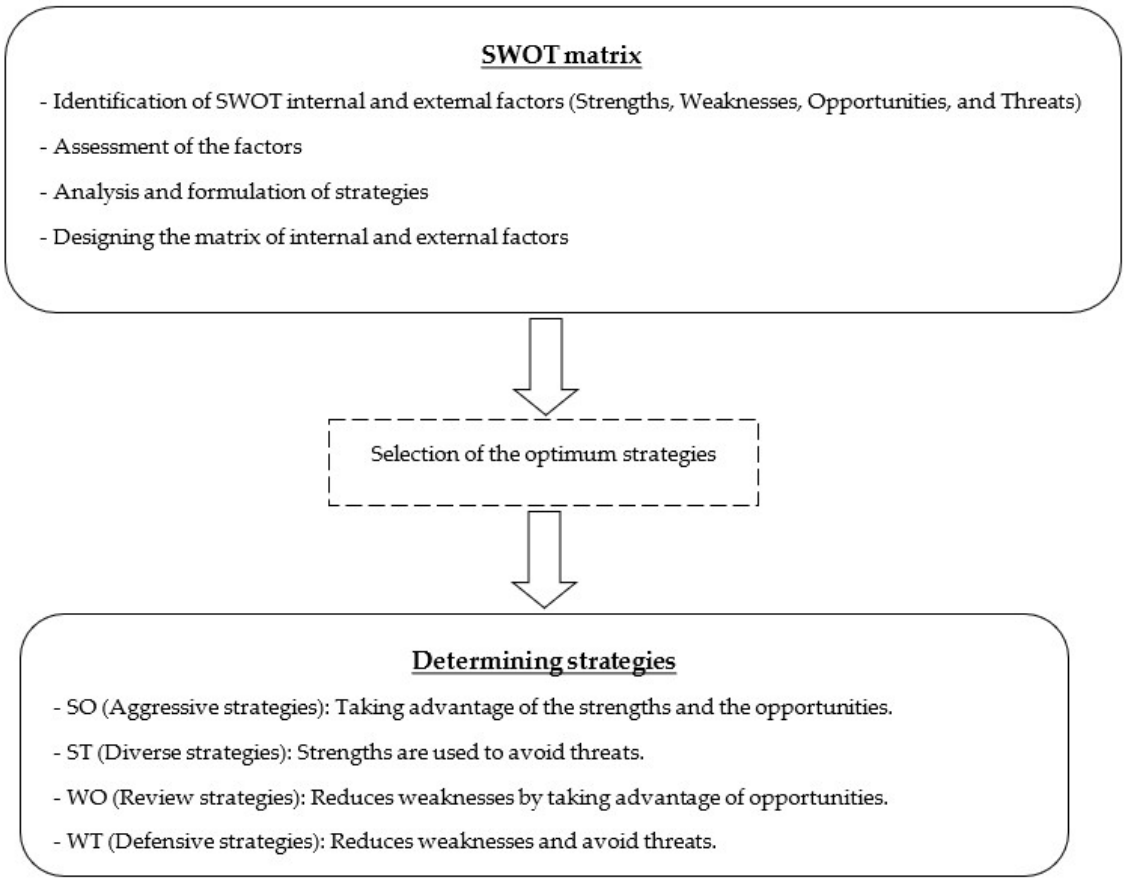

Figure 4. Main steps of the SWOT model.

Table 2. Relative preference values for pairwise comparisons [55].

Intensity of Importance	Definition
1	Equal importance
3	Moderate importance
5	Strong importance
7	Very strong importance
9	Absolute importance
2, 4, 6, 8	Intermediate values

4. Results

4.1. Respondent Characteristics

As shown in Table 3, about 62% of the respondents were male and 38% female. Most of the respondents were between 30 and 40 years old (42.9%). In terms of education most of the experts had a M.Sc. degree in tourism-related fields. Overall, 54.3% of the respondents were employed in different tourism sectors. Furthermore, most of the respondents stated that they had 6–10 years of experience in the tourism industry.

Table 3. Descriptive profile of the respondents.

Characteristics		Frequency (*n*) (Total *n* = 35)	Percentage
Gender	Male	22	62.00
	Female	13	38.00
Age	Less than 30	5	14.28
	30–40	15	42.85
	40–50	8	22.57
	50+	7	20.00
Education	Bachelor's degree	12	34.29
	M.Sc. degree	15	42.86
	Ph.D. degree	8	22.85
Employment	Employed in different sectors of tourism	19	54.28
	Employed in non-tourism sectors	10	28.57
	Unemployed	6	17.15
Experience in tourism	6–10 years	21	60.00
	10–20 years	9	25.72
	More than 20 years	5	14.28

4.2. Construction of the Narrative of the IP and Assessment of COVID-19 Impacts

The list of impact indicators was generated using a mixed methodology consisting of a review of theoretical and empirical literature and sourcing expert viewpoints. The panel of experts added 15 indicators to the list of indicators in Table 1, which were categorized into different dimensions and variables. In the physical-environmental dimension, the four indicators of customers in shopping malls and stores, level of theater and cinema usage, level of religious and cultural place usage, and level of local arts and crafts sales in tourism destinations were added to the previous list. Three indicators were added to the socio-cultural dimension, comprising the volume of tourism festivals, level of social resilience, and tourism advertising. Eight indicators were added to the economic-institutional dimension: volume of work of non-government organizations, number of non-government organizations, revenues of non-government organizations, level of employees' income, level of residents' welfare in tourism destinations, agro-tourism, nature-based and eco-tourism, and urban and rural tourism. Table 4 presents the list of indicators related to different sectors of tourism that have been affected by COVID-19.

Table 4. The values and means of indicators of impacts.

Dimensions	Variables	Indicators of Impacts	Indicators Value	Impact Type	Impact Range
Physical-environmental (average impacts of dimensions = 2.87)	Environmental pollutions	Level of water resource pollution	2.94	P	M
		Level of soil pollution and erosion	2.91	P	M
		Level of air pollution	2.97	P	M
		Level of noise pollution and noise intensity in tourist destinations	2.77	P	M
		Level of visual pollution	2.74	P	M
	Ecosystems	Condition of mountains, forests, and deserts	2.88	P	M
	Animals' habitats	Level of wildlife hunting	3.42	P	H
		Level of habitat destruction	3.17	P	H
	Vegetation	Quantitative and qualitative status of vegetation	2.97	P	M
	Resource consumption	Level of energy consumption and types of fuels	2.91	P	M
		Level of water resources consumption	3.11	P	H
	Waste and sewage production	Amount of wastes for tourist destinations	2.42	P	M
		Amount of effluents and sewages for tourist destinations	2.40	P	M
	Quality of environmental resources and climate	Quality of water, soil, and air resources	3.20	P	H
	Safety	Level of accidents	2.42	P	M
	Accommodation and food services	Level of accommodation usage (hotels, inns, and guesthouses)	3.34	N	H
		Usage level of villas and forest residences	3.51	N	H
		Number of restaurant customers	3.40	N	H
		Level of shopping malls and stores customers	3.68	N	H
	Infrastructure and tourism facilities	Level of highways' cost and toll services	2.45	P	M
		Level of information and communication networks (internet, social networks, telephone, newspapers, etc.)	2.62	P	M
		Level of theaters and cinemas usage	2.42	N	M
		Level of religious and cultural places usage	2.57	N	M
		Level of parking lot usage	2.14	N	M
		Level of local arts and crafts sales in tourism destinations	2.62	N	M
Socio-cultural (average impacts of dimensions = 3.43)	Tourist attractions and activities	Level of natural attractions' protection	3.22	P	H
		Level of cultural and religious attractions' protection	2.88	P	M
		Level of historical and ancient attractions' protection	2.88	P	M
		Level of man-made attractions' protection	2.77	P	M
		The volume of tourism festivals	2.65	N	M
	Transportation	Number of air trips	3.48	N	H
		Number of road cars trips	3.28	N	H
		Number of rail trips (train and metro)	3.34	N	H
		Number of sea voyages	3.37	N	H
		Number of freight and transit trips	3.20	N	H
	Psychic	Travel motivation among tourists	3.22	N	H
		Level of economic pressure among households	4.22	N	VH
	Security	Level of social security against crime and conflict	3.88	P	H
	Behavior	Level of change in tourists behavior	3.94	P	H
	Traffic	Level of social resilience	4.20	N	VH
		Level of congestion in roads and public places	4.02	P	VH
	Education and information	Level of services and educational programs	3.77	N	H
		Level of information about tourism activities of different sites	3.25	N	H
		Tourism advertising	3.65	N	H

Table 4. *Cont.*

Dimensions	Variables	Indicators of Impacts	Indicators Value	Impact Type	Impact Range
Economic-institutional (average impacts of dimensions = 4.35)	Institutional elements	The volume of governmental agencies' work in relation to tourism	4.34	N	VH
		Revenues of governmental institutions	4.28	N	VH
		The volume of non-governmental organizations' work (tourism agencies, NGOs, local associations and councils, etc.)	4.57	N	VH
		Number of non-governmental organizations	4.22	N	VH
		Level of non-governmental organizations revenues	4.54	N	VH
	Employment and income	Closure/bankruptcy of tourism businesses	4.88	N	VH
		Number of employers in different sectors of tourism	4.74	N	VH
		Level of employees' income in different sectors of tourism	4.88	N	VH
		Level of the residents' welfare of tourist destinations	4.22	N	VH
	Plans and projects	The volume of tourism plans and projects	4.45	N	VH
	Economic diversity	Volume of activities about tourism industries	4.68	N	VH
		Volume of activities about tourism-related services	4.54	N	VH
		Level of agro-tourism development	4.34	N	VH
		Level of nature-based and ecotourism development	4.77	N	VH
		Level of urban and rural tourism development	4.22	N	VH
	Local prices	Average prices of estate and commodities	1.97	P	L

Type of impact: P = Positive, N = Negative; Range of impact: VL (Very low) = range of values from 0–1; L (Low) = range of values from 1–2; M (Moderate) = range of values from 2–3; H (High) = range of values from 3–4; VH (Very high) = range of values from 4–5.

Of the 60 indicators 25 indicators captured positive impacts while 35 indicators captured negative impacts. Of these, 17 indicators were rated in the two highest of five classes and evidencing their perception as causing high to very high impacts.

The highest negative impacts of COVID-19 on tourism were perceived along the economic-institutional dimension (coefficient of 4.35), followed by the socio-cultural dimension with a coefficient of 3.43, and the physical-environmental dimension with a coefficient of 2.87. The highest scores of 4.88 were achieved by the following two indicators: "income of employees in different sectors of tourism" and "closure/bankruptcy of tourism businesses". Conversely, the lowest score of 1.97 was reached by the "average prices of estate and commodities". According to the results, the highest negative impacts of COVID-19 on tourism dimensions were, respectively, economic-institutional with a coefficient of 4.35, socio-cultural with a coefficient of 3.43, and physical-environmental with a coefficient of 2.87.

A diagram of the IP involved in the relationship between COVID-19 and tourism is presented in Figure 5. This diagram depicts the steps from inputs to outputs to outcomes and finally to direct (impacts 1) and indirect (impacts 2) impacts. COVID-19 is presented as the input that yields 10 outputs, 12 outcomes, 22 direct impacts, and 16 indirect impacts. This reflects the inclusion of only the most important impacts in accordance with expert opinion. We refer to output indicators as those directly influenced by COVID-19 which include: recession in the tourism industry, decrease in travel motivation among tourists, decrease in congestion level of roads and touristic places, and decrease in the number of trips. Indicators affected by outputs were categorized as outcomes which include: low use of tourism infrastructures, such as accommodation, restaurants, shopping malls, etc. Finally, indicators that were the results of outcomes were considered either direct (impacts 1) or indirect (impacts 2) impacts. The most important direct impacts include: a decrease in pollution, decrease in resource consumption, reduction of organizations' revenues and volume of work, decrease in different types of tourism, and improvement in statuses of ecosystems, society, quality of attractions, and tourists' behaviors.

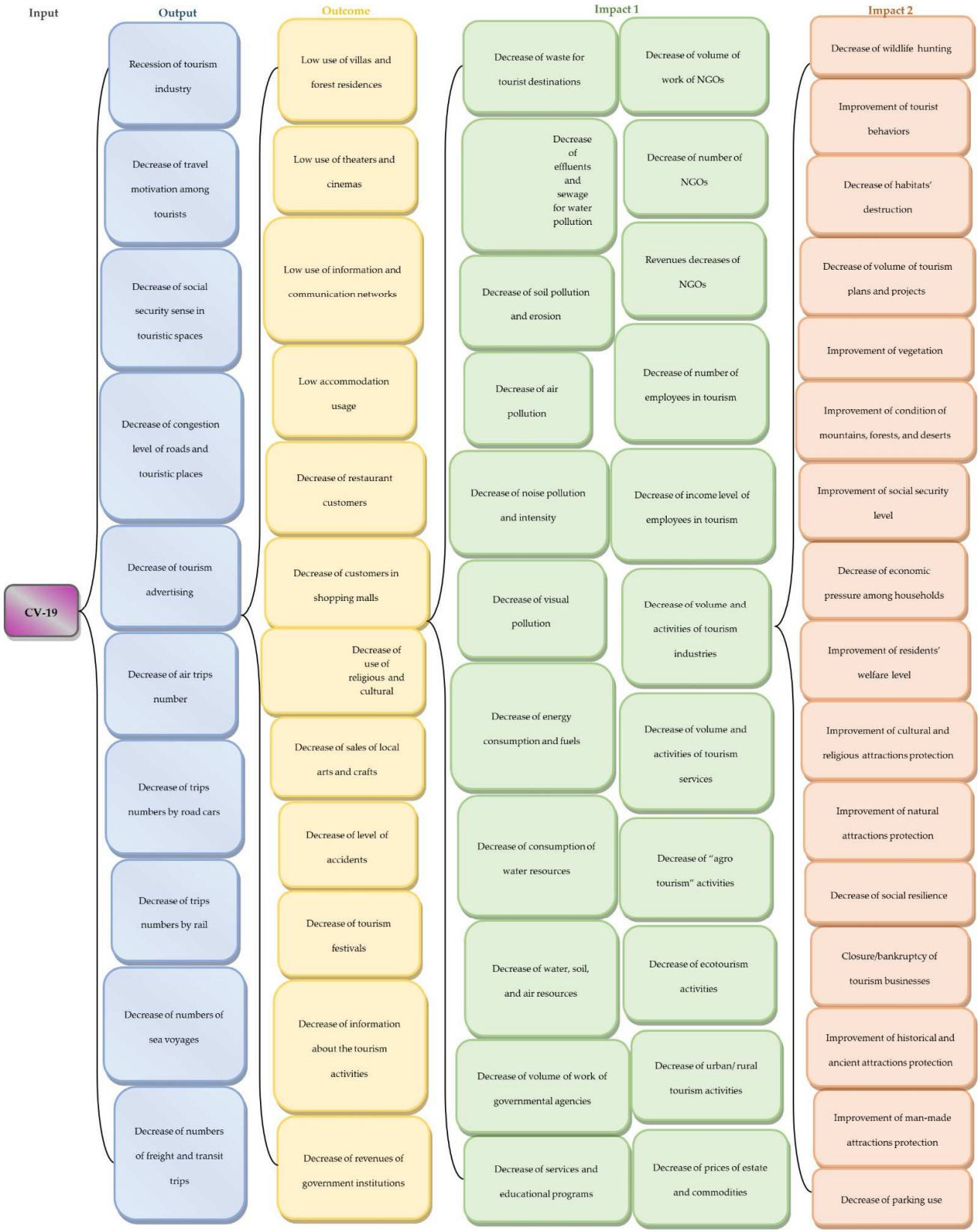

Figure 5. Impact Pathways (IPs) involved in the relationship between COVID-19 and tourism.

4.3. Developing a Response Pathway (RP) Approach to Manage COVID-19 Impacts on Tourism

At this stage of the RP approach, a matrix of internal and external factors and sub-factors of the impacts of COVID-19 on tourism was created using the SWOT model with

the four components of strengths, weaknesses, opportunities, and threats. First, four components (i.e., strengths, weaknesses, opportunities, and threat) were determined; then, a pairwise comparison of factors and subfactors was performed using the ANP model with the help of the experts (Table 5). The highest score was given to weaknesses, and the lowest score was given to opportunities. Weaknesses reached a score of 0.388 compared to strengths that reached a score of 0.321; and threats with a score of 0.157 compared to opportunities with a score of 0.132.

Table 5. Weighting of factors and sub factors of the SWOT matrix.

Internal Factors	Factors Weight	SWOT Subfactors	Subfactor Weight	Final Weight
Strengths	0.321	S_1: Existence of local NGOs in public education and crisis management	0.198	0.063
		S_2: Low level of environmental pollution	0.192	0.061
		S_3: Low level of traffic and population density in tourism destinations	0.175	0.056
		S_4: Improvements the protection of tourism attractions (natural, cultural and religious, historical, and man-made)	0.156	0.050
Weaknesses	0.388	W_1: Low level of organizational cooperation in crisis management	0.238	0.092
		W_2: Weaknesses in some of the rules and regulations	0.222	0.086
		W_3: Low level of adaptive ability among tourists and local communities in crisis situations	0.218	
		W_4: Low level of education and public awareness	0.185	0.084
		W_5: Low level of health infrastructure and facilities in controlling negative impacts of COVID-19 in tourism destinations	0.178	0.071
		W_6: Low volume of trips and flights to tourism destinations	0.164	0.063
Opportunities	0.132	O_1: Possibility of improvements in the environment and wildlife in tourism destinations	0.211	0.027
		O_2: Possibility of decreasing the amount of waste and sewage in tourism destinations	0.182	0.024
		O_3: Possibility of decreasing the consumption of water, energy and types of fuels in tourism destinations	0.177	0.023
		O_4: Learning opportunities provided by advanced countries in controlling COVID-19 in tourism destinations	0.166	0.021
		O_5: Possibility of institutional capacity-building in ecotourism destinations	0.154	0.020
		O_6: Using the capacity of informational networks to raise public awareness	0.148	0.019
		O_7: Possibility of forming new ideas and innovations about tourism development under COVID-19	0.128	0.016
Threats	0.157	T_1: Bankruptcy of tourism businesses	0.214	0.034
		T_2: High economic pressure among households in tourism destinations	0.194	0.030
		T_3: Decrease of income and employment levels in tourism destinations	0.174	0.027
		T_4: Lack of financial support from tourism communities during spread of COVID-19	0.163	0.025
		T_5: Increase of anxiety levels among government, tourists and local communities	0.158	0.024
		T_6: Probability of forming public demonstrations due to decrease of social resilience levels	0.146	0.022

4.4. Optimal Strategies to Mitigate the Impacts of COVID-19

As shown in Table 6, experts found the SO strategy (Aggressive Strategy), developed by combining strengths and opportunities, sufficiently aggressive; in particular, concentrating on institutional capacity-building and the development of local NGOs in public

education on crisis management. These measures can improve both the environmental situation and protect tourist attractions. Moreover, information and communication networks can provide an opportunity to harness the learnings of countries that implement progressive and innovative measures to deal with COVID-19 in tourism destinations. The second strategy is the ST strategy developed by combining strengths and threats. According to ST (Diverse Strategy), it is necessary to use the capacity of local NGOs for public education and support to increase social resilience, further, to reduce economic and financial pressure and bankruptcies, and to develop cooperation among local governments and NGOs in decreasing pollution levels and conserving tourism attractions.

Table 6. Matrix of strategies to mitigate the impacts of COVID-19 in Iran.

SWOT Matrix	Strengths (S)	Weaknesses (W)
	Aggressive strategy (SO)	Review strategy (WO)
Opportunities (O)	– Institutional capacity-building and development of local NGOs in public education and crisis management – Improvement of environmental conditions and protection of tourism attractions via control of population density, decrease of pollution, waste, and water and energy consumption – Harnessing knowledge and communication networks from the experience of countries adopting progressive measures for controlling negative impacts of COVID-19	– Revising rules and regulations to develop institutional cooperation in crisis management to control negative impacts of COVID-19 – Institutional capacity-building to develop education and raise public awareness of controlling negative impacts of COVID-19 – Improvement of environmental conditions and decrease in pollution levels via controlling the spread of COVID-19 to tourism destinations – Using successful experiences of advanced countries and new ideas in increasing adaption level in local communities during the crises
	Diverse strategy (ST)	Defensive strategy (WT)
Threats (T)	– Using the capacity of local NGOs in public education and financial support to increase social resilience and to decrease economic pressure and businesses' bankruptcy – Financial support by government for households – Controlling population density in tourism spaces to prevent the spread of COVID-19 – Developing cooperation among local governments and NGOs in decreasing pollution levels and conserving tourism attractions	– Development of institutional cooperation to prevent business bankruptcies and economic pressure to households – Increasing adaptive response in tourism destinations to decrease anxiety levels among government, tourists and local communities – Increase of financial support for households via developing necessary infrastructure and services – Increase levels of social resilience and prevent public uproar – Development of education and public awareness campaigns to increase employment and income levels of households

Another solution presented adopts the WO strategy (Review Strategy), which emphasizes revising some rules and regulations to develop institutional cooperation in crisis management and institutional capacity-building to develop education and public awareness in controlling the negative impacts of the COVID-19 crisis. This strategy was created considering weaknesses and opportunities. Other solutions in this regard target decreased pollution levels by controlling travel to tourism destinations, and also harness the learnings of progressive countries and their management of COVID-19. Undoubtedly, one major problem of tourism destinations is the low capacity for adaptation during COVID-19 which renders the development of adaptive management measures as necessary. Finally, the defensive WT strategy considers weaknesses and threats. This strategy attempts to develop institutional cooperation to prevent bankruptcies in businesses and economic pressure on households during the COVID-19 crisis. It also emphasizes the development of an adaptive management system in tourism destinations to decrease the anxiety experienced by government, tourists, and local communities. Indeed, the spread of COVID-19 has created a sense of apprehension among people, and local governments in Iran have not yet controlled this problem. To increase the level of social resilience, increased financial support of households may be necessary and measures that increase employment and income levels of households during this crisis. Further measures that complement this strategy include developing the

necessary infrastructure to increase the level of social resilience, and education and public awareness campaigns to deal with COVID-19 impacts on tourism-related occupations and the lives of local households (i.e., controlling the sudden crisis of COVID-19 outbreaks and reducing their effects on public life).

Afterwards, pairwise comparisons were conducted to select the best strategy based on the strengths, weaknesses, opportunities, and threat factors (Table 7).

Table 7. Matrix of weighted strategies using the ANP model.

Internal Factors	Factors Weight	SWOT Subfactors	Subfactors Weight	Strategies			
				SO	ST	WO	WT
Weaknesses (W)	0.388	W_1	0.128	0.184	0.145	0.184	0.114
		W_2	0.143	0.165	0.132	0.162	0.141
		W_3	0.167	0.142	0.149	0.147	0.126
		W_4	0.202	0.124	0.154	0.184	0.139
		W_5	0.173	0.178	0.136	0.119	0.146
		W_6	0.148	0.168	0.125	0.147	0.136
Strengths (S)	0.321	S_1	0.198	0.125	0.131	0.147	0.125
		S_2	0.156	0.137	0.147	0.127	0.133
		S_3	0.192	0.114	0.124	0.114	0.154
		S_4	0.175	0.138	0.172	0.138	0.178
External Factors	**Factors Weight**	**SWOT Subfactors**	**Subfactors Weight**	**Strategies**			
				SO	**ST**	**WO**	**WT**
Threats (T)	0.157	T_1	0.198	0.124	0.136	0.174	0.126
		T_2	0.203	0.138	0.152	0.163	0.136
		T_3	0.225	0.115	0.127	0.187	0.162
		T_4	0.215	0.132	0.116	0.119	0.147
		T_5	0.162	0.187	0.171	0.126	0.131
		T_6	0.117	0.130	0.125	0.176	0.165
Opportunities (O)	0.132	O_1	0.208	0.114	0.123	0.127	0.145
		O_2	0.198	0.138	0.145	0.135	0.138
		O_3	0.238	0.184	0.174	0.141	0.178
		O_4	0.185	0.165	0.126	0.169	0.115
		O_5	0.172	0.148	0.113	0.128	0.164
		O_6	0.205	0.136	0.122	0.143	0.175
		O_7	0.168	0.188	0.210	0.162	0.128
Strategies Final Weight				**0.178**	**0.265**	**0.321**	**0.378**

Building the ANP model helped reveal that the most important strategy for controlling the impacts of COVID-19 on tourism is the WT strategy, with a score of 0.378 (Table 6). The WO strategy is ranked second with a score of 0.321. The ST strategy with a score of 0.265 and the SO strategy with a score of 0.178 are ranked third and fourth, respectively (Figure 6).

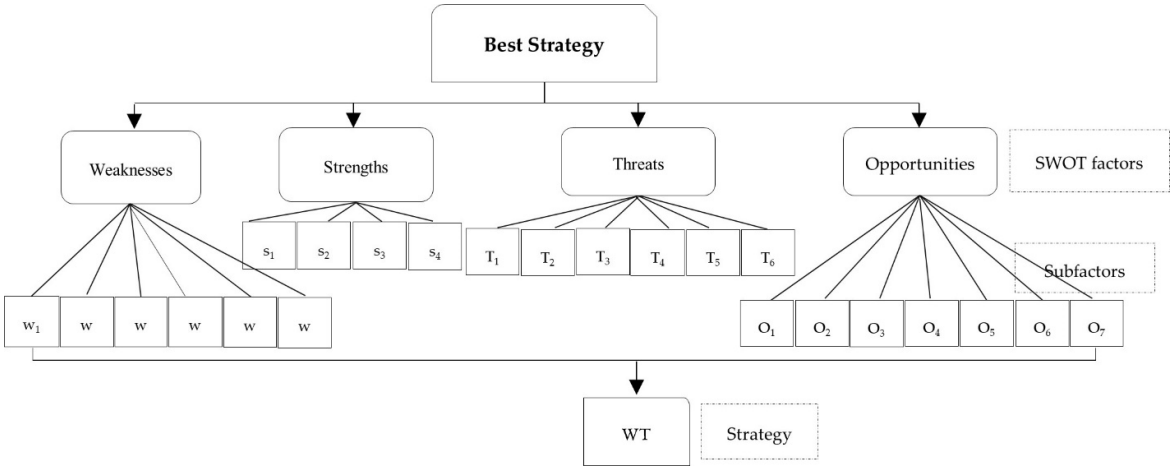

Figure 6. Selection of the best strategy.

4.5. Positive and Negative Impacts of COVID-19 on Tourism

The current study explored the impacts of COVID-19 on tourism along the physical-environmental, socio-cultural, and economic-institutional dimensions using the IP approach. The results highlighted two main impact pathways of COVID-19 in the tourism sector of Iran (Figures S1 and S2). The first pathway addresses the negative impacts of COVID-19, which are frequently manifested in the socio-cultural and economic-institutional dimensions in various forms, such as the recession of many tourism businesses, increased economic and financial pressures on tourism communities, and decreased travel motivation among tourists (Figure S1). The second pathway is the positive impacts of COVID-19, which have occurred mainly in the physical-environmental dimension (Figure S2). In this field, positive impacts include a reduction in different pollutions, improvement of ecosystems and vegetation conditions, and decrease of energy and water consumption.

5. Discussion

Kasare [57] stated that the tourism industry in Asia had suffered enormously from the COVID-19 pandemic, and the pandemic has caused unemployment, bankruptcy, revenue losses, and budget deficits in tourism. The form and nature of tourism offered will likely change post-COVID-19 [58]; hence it is essential to discuss tourism changes post-COVID-19. For this matter, the diverse reasons for the devastating impacts of COVID-19 on the Iranian tourism industry need to be understood. One major reason constitutes the lack of coordination among relevant organizations along with the inferior orchestration of a mitigation response. Relatedly, during the 2003 crisis in Southeast Asia caused by the SARS-CV virus, McKercher and Chon [59] warned how the lack of coordination and the incorrect decisions of those responsible for tourism had a significant impact on tourism flows. One of the lessons learned from that experience is the need for a strong collaboration and coordination at the national and international levels and across all departments involved in the tourism industry [60,61]. The lack of cooperation and institutional weakness has also been investigated by Nicola et al. [6], who substantiated numerous economic and social damages caused by COVID-19 for local communities in their research because of that, including unemployed workforces across all economic sectors and a decrease in the availability of different jobs.

Also, in Iran, local governments failed to implement the necessary safety and health measures for tourists by developing effective health protocols. Robina-Ramírez et al. [60] highlighted that the development of safety protocols plays a key role among tourism authorities and communities to facilitate the recovery process of a tourism destination. Moreover, tourism needs health measures to protect tourists and to create perceptions of safety which contribute to a satisfying visitor experience [62]. Destination and tourism

service providers need to be selected carefully for their commitment to be compliant and trained in the implementation of protocols [63].

Furthermore, the low social resilience and adaptation capacity of tourists and local communities in the Iranian workforce have intensified the severity of the crisis. It has previously been shown that policymakers are crucial to achieving disaster resilience in the tourism industry, and effective collaboration among stakeholders is essential for the sustainability and enhancement of resilience [64,65]. Policies need to be implemented to establish workplace safety protocols, which could include providing masks, social distancing, physical workspace modifications, and screening and tracing protocols [66]. Finally, inadequate education, poor infrastructure development, and financial problems have further exacerbated the situation. These are however more complex societal and urban management planning issues that are beyond the discussion of this paper.

Villages and small towns where tourism is a main source of income faced a particular challenging situation without receiving government support. Certainly, the negative impacts of COVID-19 have not been limited to small settlements; many large cities, tourism businesses (such as travel agencies, hotel companies, etc.) have gone bankrupt, and as a result, the number of unemployed community members has increased. In this crisis business owners have faced severe financial problems to the point of no recovery. This problem is not limited to Iran, of course, and has occurred in most countries worldwide as confirmed by other studies [6,67–71]. The social and economic effects of COVID-19 in Iran are mainly negative and in some cases irreparable, which is also consistent with findings elsewhere [36,72–75].

According to our results, the COVID-19 pandemic had dramatic adverse effects on many tourism businesses in Iran, and similar results were obtained in other countries [70,76,77]. The tourism industry is one of the world's largest employers and is highly sensitive to the COVID-19 pandemic [78], and due to COVID-19, employment in this sector is decreasing [79]. The tourism and travel industries have and continue to be greatly affected by COVID-19, especially airlines and the retail segments, with very substantial reductions in income and liquidity [37]. Also, our findings showed that one of the most negative impacts of COVID-19 was the decrease in employees' income across different tourism sectors. COVID-19 impact studies suggest that the loss of income, unemployment, and growing COVID-19 health concerns negatively impact tourism employees' experience of well-being [80–82], and their consumption sentiment and habits [83]. The bankruptcy of tourism businesses is noticeable across all regions of the world [84], similar to our results. For example, Nguyen [85] claimed that large hospitality enterprises are likely to be more resilient to the effects of the pandemic, and small businesses are at a greater risk of closing down and bankruptcy. Also, it has been documented that large airlines worldwide are facing bankruptcy due to the COVID-19 pandemic [86]. Recovery was most easily achieved where financial assistance was provided.

However, some positive impacts of COVID-19 were also noted along the physical-environmental dimension. These include reduced pollution, waste, consumption and deterioration of ecosystem and vegetation conditions due to lower visitation numbers, and consistent with findings elsewhere [5,6,35,70,87–90]. For example, due to decreased visitor arrivals, lockdowns, curfews, and social distancing, visitation to beaches and other natural spaces around the globe have decreased. Consequently, waste in these places [91], and other environmental issues were reduced [92]. Also, there has been a reduction in noise levels in tourism attractions due to a decrease in transportation use [91]. Moreover, many countries have experienced a reduction in NO_2 [93–96] CO and $PM_{2.5}$ [94], and better Air Quality Index [97] levels after the lockdown. We showed that tourist behavior was changing due to COVID-19, which is in line with previous findings [98–102]. For example, Kim et al. [101] showed that COVID-19 positively influences biosecurity travel behavior. Also, Parady et al. [103] found that Japanese people adopted self-protective behaviors, such as reducing their 'eating out' frequency, travel frequency, and leisure activity participation. Moreover, the lockdown rules have allowed wildlife to freely move in areas once frequented

by humans [5] and disturbance of wildlife in national parks was reduced [104]. In line with our findings, LeTourneux et al. [105] found reduced wildlife hunting during the COVID-19 pandemic. At the same time, multiple authors have found that park visitation increased during the pandemic such as Geng et al. [100], which confirms a change in tourist behaviours and the need for more parks and outdoor green areas to equip for future crisis.

In spite of these examples for positive impacts, such changes are likely temporary: as the pandemic ends and industrial and economic activities are being resumed, environmental impacts will follow. Monitoring programs by government and education programs to raise public awareness of tourism impacts are urgently needed in Iran and put in action prior to the resumption of the usual tourism activity to preserve the natural and other heritage of the country that attracts visitors [106]. At least some efforts were made to seize the opportunity of the past year to repair some of the damaged attractions and to develop better services to attract tourists in the future.

6. Conclusions

To develop strategies, the SWOT model was developed to discuss measures to manage the impacts of COVID-19. The results revealed that the WT and WO strategies highlight the need for better institutional cooperation to control the negative impacts of COVID-19 and to strengthen the positive ones. Revising some rules and regulations to develop an integrated management system and to increase institutional cooperation is critical and would enhance a coordinated response of institutions in the face of a crisis. Secondly, adaptive management measures need to be implemented to decrease the anxiety experienced among stakeholders (local governments, tourists, and tourism communities) and to enhance adaptive capabilities. The experience of recent months has revealed that alongside economic damages, public anxiety increased exponentially during the spread of COVID-19, and this issue has affected all aspects of social life. Therefore, the development of an adaptive management program that emphasizes resilience over complexities and uncertainties can mitigate the severity of the negative impacts of the COVID-19 crisis. Local governments must increase their investment in developing such programs, and public education to deliver them, to enhance social resilience and the sense of security felt by tourists and communities. Offering NGOs more opportunities to support the otherwise highly centralized government system of community support in Iran is an important avenue to explore as the pandemic continues. Fostering institutional capacity-building and creating a cooperation platform between government and non-government stakeholders would help with the delivery of education to tourists and local communities and increase their participation in overcoming the crisis. Our research has revealed multi-faceted and insightful findings around the issues we examine. Our attention has been primarily focused on two issues: first, a conceptual one, which is linked to identifying several reasonable and measurable factors associated with identifying impacts and possible mitigation strategies of COVID-19 on tourism; second, proposing a strategy for resilience and adaptation in Iran. While the strategy is specific to Iran, it can also be seen to provide a template against which to plan for the recovery of tourism in other countries. One of the future lines of research will be to analyze the result of our strategies for tourists, the perception of Iran as a tourist destination amongst Middle-East countries, and the recovery of the tourist industry sectors.

Because of the high degree of uncertainty in tourism, our limited understanding of the consequences of actions, and the possibility of a new pandemic, challenges and fears will always exist. Research indicates that the challenges of the pandemic require similar measures to tackling sustainability challenges by fostering resilience, adaptivity, flexibility, collaboration, and co-creation. Despite some limitations, our findings provide a good starting point for further research at a national level. In a few years, it will be possible to reconsider our methodology applied in this article using other indicators and evaluating the COVID-19 impacts on various tourism sectors. It is also suggested to use the same indicators but other MCDA methodologies (e.g., TOPSIS, fuzzy-TOPSIS, fuzzy-AHP, and fuzzy-ANP) to compare the results or develop a ranking system for different

countries. Also, our study surveyed national experts that entail potential bias, assuming that participants might be influenced by social desirability. Therefore, future studies could consider sourcing opinions from international focus groups to explore additional avenues of analysis.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/su14095508/s1, Figure S1: Negative impacts of COVID-19 on tourism in Iran; Figure S2: Positive impacts of COVID-19 on tourism in Iran.

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