



# Tourism Innovation in the Post-Covid-19 Era: A Systematic Review of the Literature

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**ABSTRACT:** The objective of this work is to carry out a systematic review of the literature that allows a summary and categorization of the knowledge [1], existing around the innovation practices used in the tourism industry to survive the post-era COVID-19. To carry out the proposed literature review, the following electronic databases have been used: Science Direct, Web of Science (WOS), and ABI / INFORM. In the Science Direct database, the search pattern formed by the following string of terms has been followed: "post-COVID AND tourism AND innovation".

However, in, WOS and ABI / INFORM, the terms "tourism" and "innovation" were replaced by the expressions "touris \*" and "innovat \*", respectively, thus allowing the search for terms with the same root to be broadened.

As a result, it can be seen that there is a reduced demand for tourism products and services as a consequence, among other reasons, of the lack of confidence of tourists due to the consequences of the health crisis caused by COVID-19, for which tourism organizations and Public institutions, as the main stakeholders, propose certain solutions that materialize in actions to achieve the desired results.

**KEYWORDS:** Tourism, COVID-19, literature review, innovation.

## I. INTRODUCTION

OMS on March 11, 2020, have generated a series of repercussions in different areas [2]. Among them, health, the economy, society and the business sector [3] causing the world population to face a new scenario.

Since then there has been a 73% drop in international tourism and in the last quarter of the same, arrivals of international tourists with overnight stays fell by 85% [4]. In fact, in 2020 international tourism fell back to levels of 30 years ago [5].

In January 2021, the number of international tourist arrivals fell by 87% compared to 2020 [6], and at the beginning of February 2021

there were 32% of tourist destinations around the world with total closure of their borders, and another 34% with partial closure, for which reason the World Tourism Organization estimated that during the first quarter of 2021 a total of 260 million international arrivals would be lost [4].

According to the latest Economic Impact Report published by the World Travel and Tourism Council [5,7] and compared to the year 2019, during the year 2020 the contribution of tourism to the Gross Domestic Product decreased by 49.1% or, what is the same, close to 4,500 million US dollars, assuming a cut of almost 62 million jobs, that is, 18.5% less compared to the previous year.

The health crisis caused by COVID-19 has hit the tertiary sector of the economy particularly hard, and tourism in particular. According to the World Health Organization, while in the year the number of international tourist arrivals around the world amounted to 1,500 million people, representing this data of arrivals of 4 million people daily and an increase of 4% in relation to 2018; the sector continued to contribute 1 in 10 jobs in the world; 7% of global exports; and more than 10% of world GDP. In May 2020, the number of international tourists had decreased, compared to the same month of the previous year, by 98%. Between January and May 2020, there was a 56% year-on-year decline in tourist arrivals, that is, 300 million fewer tourists and \$320 million lost in international tourism receipts. These amounts represent more than triple the income that was lost for the same concept during the global economic crisis of 2009.

Over time, pandemics have had a strong impact on the world tourism sector, since one of the main sources of contagion is related to international passenger traffic, which leads the authorities to close land, sea or air borders. In order to stop infections [8,9,10]. In addition, the fear of contagion on the part of tourists, together with the mobility restrictions caused by the confinements established by different governments to try to stop infections



[11,12,13] have led to the paralysis of world tourism activity over time [14].

At this time, the industry is immersed in the search for solutions, since the aid from the various public institutions is not enough for the recovery, and although the political leaders try to reinforce the resistance of post-pandemic tourism, its subsidies and other initiatives serve to maintain a fundamentally flawed market logic [15].

The challenge that tourism companies face involves the adoption of measures that require the adaptation of their resources, processes, and even their values. In this sense, innovative practices can help to face the current challenges of the industry, such as recovering consumer confidence, solving liquidity problems, optimizing the human and technological resources available to them, making the most of the relational capital, and make processes more efficient [16,17]. This is because once they are established in the organization, they materialize in specific and identifiable processes such as the development of products or services, decision-making or strategic alliances [17,18].

Innovation is a topic widely analyzed in the literature as it presents a positive effect on increasing competitiveness, profitability, performance, positioning and the development of competitive advantages [19,20]. In this way, COVID-19 offers public, private and academic agents, for example, a unique opportunity to design and consolidate the transition towards a more ecological and balanced tourism [15].

Similarly, innovation is a fundamental component of digital marketing, and tourism is one of the most dynamic sectors with the opportunities offered by digital technologies in the field of promotion and marketing. However, the high level of competitiveness that characterizes the industry requires companies to make effective and well-planned decisions to succeed.

Therefore, companies that propose proactive and innovative positions may be able to recreate market opportunities [21]. Innovation, therefore, is a pathway not only to economic growth but also to recovery.

## II. INNOVATION IN TOURISM IN THE POST-COVID ERA

The COVID-19 pandemic has caused a humanitarian crisis of devastating proportions and an economic disaster like no other. This painful experience should be a lesson, not only in the field of health, but also to accept the new paradigm that will emerge.

If there is a sector of activity most affected by the coronavirus pandemic, it is tourism and travel. Fragility situation that joins the weaknesses

The question, therefore, is what should be the new role that innovation should play in this new context?

But unfortunately, to answer this question, there is little literature to guide both practitioners and academics on how to redesign the most appropriate innovative approaches to reshaping large-scale tourism and lodging-related operations [22]. Therefore, various secondary research questions could be posed to help answer the main question, such as:

- What type of innovation is predominant in the post COVID-19 era?

- What are the innovation trends after the pandemic?

- What kind of tourism organizations are implementing innovations to recover from the economic crisis, caused by the restriction of movement and the sanitary measures imposed to try to prevent the spread of the coronavirus?

To try to answer the above questions, literature reviews can be a good starting point, since they are capable of revealing inconsistencies in the current body of knowledge, they synthesize diverse results and, in general, offer other researchers a vision about what is the state of the art on a field [23,24].

For all these reasons, the objective of this work is to carry out a systematic review of the literature that allows for a summary and categorization of the existing knowledge [1] regarding the innovation practices used in the tourism industry to survive the post-COVID-19 era.

To carry out the proposed literature review, even when it is possible to use only one database to increase the rigor, clarity and replicability of the search processes [25,26], the discretionary option has been chosen. use of several of them in order to encompass a greater knowledge and ensure that the systematic review of the literature carried out is, according to [27], transparent, inclusive, explanatory, and of a heuristic nature. Specifically, the following electronic databases have been used: Science Direct, Web Of Science (WOS), and ABI/INFORM.

that it previously dragged. This situation has revealed that pandemic outbreaks have a much greater destructive impact on the travel and tourism industry than previous studies indicate [28]. Compared to previous crises, the COVID-19 pandemic, however, is different. In fact, and according to [28], the recovery of the tourism industry worldwide will take longer than the average expected recovery period of 10 months.

The crisis offers conditions to make certain changes possible; however, these will not be automatic. If it is not rectified, not only new health



but also social dangers are looming [29]. The COVID-19 pandemic is forcing organizations to undergo rapid, and even radical, transformations in order to survive. The changes associated with the pandemic that are beginning to be implemented give rise to both developing strengths (possibilities) and opportunities, as well as threats and weaknesses. Clearly, organizations do not remain impassive, and it is inevitable to wait for a paradigm shift [30] that will pick up or cancel the change initiatives that have arisen in the pandemic.

[31] raises the collapse of tourism as we know it, and shows that this should imply rethinking opportunities towards more sustainable, resilient and inclusive forms of tourism. But will there be a contraction in tourism? as suggested by [32].

Although the current pandemic is expected to fade gradually, the challenge that this situation has revealed is that the viral evolution will remain in the future, so it will be necessary to adapt to minimize its economic and social consequences. Public and private policy support needs to be coordinated to ensure capacity building and operational sustainability of the travel tourism sector during 2020-2021 [28].

In the field of tourism companies, their managers must carefully assess the effects of epidemics on them and develop new risk management methods to deal with the crisis [28].

"It is necessary to substantially increase investment in science, technology and innovation, an essential condition for intelligence to be incorporated into the transformation of production processes and add the essential value to diversify the production of goods and services" [29].

When considering the study of innovation, it is convenient to distinguish between green innovation [33,34,35], social [36,37] and the recently included, responsible innovation [38,39,40,41]. The literature on responsible innovation emphasizes a set of ethical values and behaviors that result from the relationship between technology, public and private policies, and associated modes of government [42].

The relationship between tourism, innovation and sustainability is the key. Although [42] state that "innovation is no longer what it used to be", innovation capacity is widely recognized as one of the main determinants of competitiveness of companies, regions and countries.

The tourism industry in Spain has been characterized by being the one that contributes the least innovation to its activities compared to other business sectors, in addition to presenting a lower level of digitization than other sectors. However, in order to survive this situation of economic crisis, innovation will be a crucial factor in the recovery of the tourism industry.

### III. METHODOLOGY

To develop this systematic literature review, which constitutes an integrative research design based on observation, of a retrospective and secondary nature, which synthesizes the results

obtained in multiple primary investigations regarding the same question(s) [43]. The stages of the method defined for this review are described below, which are schematized in figure 1.

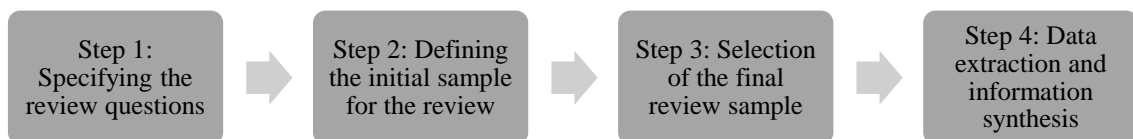


Figure 1. Process followed for the RSL. Sources: [44]



Consistent with the above, the search strategy was established through the use of electronic databases, which also made it possible to cover one of the three search areas proposed by [45]

The electronic database initially chosen was the ABI/INFORM Collection (ProQuest) for two reasons: 1) because it refers to international publications on business and management, contains summaries of published articles, and many of them appear in full text [46], and; 2) because the limitation to only one of them increases the rigor, clarity and replication of the search processes followed in the literature review [15].

Within the ABI/INFORM Collection, an advanced search was carried out that contained the terms "innovat\*", "touris\*" and "COVID-19" in any field, using "AND" as the logical operator allowed by it, thus restricting the search to the enforce compliance with three conditions at the same time [46]. This generated a search algorithm [47] made up of the string "innovat\* AND touris\* AND COVID-19".

In addition to the foregoing, the searched papers must have been "Evaluated by experts", thus ensuring an editorial approval process through peers, and it was indicated that the publication date of those should be after January 2020, taking 11 January as a reference. March 2020, at which time the WHO declared the coronavirus a pandemic [48].

However, given that, as will be seen, the final number of papers included for the review was relatively small, it was decided to also use the electronic databases Web of Science (WoS) and Science Direct (Elsevier).

Within WoS, a basic search was carried out for the terms "post COVID", "innovat\*" and "touris\*" among the topics of the papers, including the period between 2020 and 2021 as the reference period.

In the Science Direct (Elsevier) database, selected by the inclusion of academic journals and books related to the Social Sciences and Humanities, the following string of words and logical operators was indicated to find records: "post-COVID AND tourism AND innovation" (does not allow the inclusion of an asterisk, which however could broaden the search to terms with the same root).

On the other hand, and given that systematic reviews should include, if possible, unpublished research on a topic [44], papers

published in international organizations such as the World Travel & Tourism Council (WTTC) or the World Tourism Organization (UNWTO).

It is considered that the systematic review carried out does not present the biases of the same [49] as there has been an action protocol that, even if followed methodically, has not wanted to assume excessive rigidity, as some authors point out [44]. The selection of data has not been arbitrary, and all available information on the topic is understood to have been identified, having taken into account both that which was published in academic journals and that which was not.

Nor is the possible existence of a bias in favor of specific interventions relevant [50], as there are no authors with conflicting interests.

As the review has focused on the high-quality original research, and not on the interpretations of the findings reported therein, it can be understood that the results presented have been supervised and enjoy the necessary precision [51].

This systematic review suffers, however, from the bibliographic contributions with which it could have been nourished if it had considered the search for unpublished research on the subject [44], for example, in international organizations such as the Organization of the United Nations, or the World Travel & Tourism Council.

Given the existence of a problem in a specific context (C) (environmental factors, nature of the actors involved, etc.), a proposal is designed for its solution through a type of intervention (I) (always embedded in a social system that will affect the individual, their interpersonal relationships, the institutional environment, and the infrastructure system) which, in turn, generates a mechanism (M) thanks to which the desired results (O) would be achieved (improvement in performance, cost reduction, etc.) [52].

Figure 2 shows the process followed in the systematic literature review carried out, starting from the phase in which the electronic databases, the candidate records to be used, and the formulation of the review questions were identified. In the second and third phase, and through a screening process, the papers that will finally make up the sample would have been selected whose analysis, already in the fourth phase of the process, and through the application of CIMO logic, will offer answers to the questions raised.

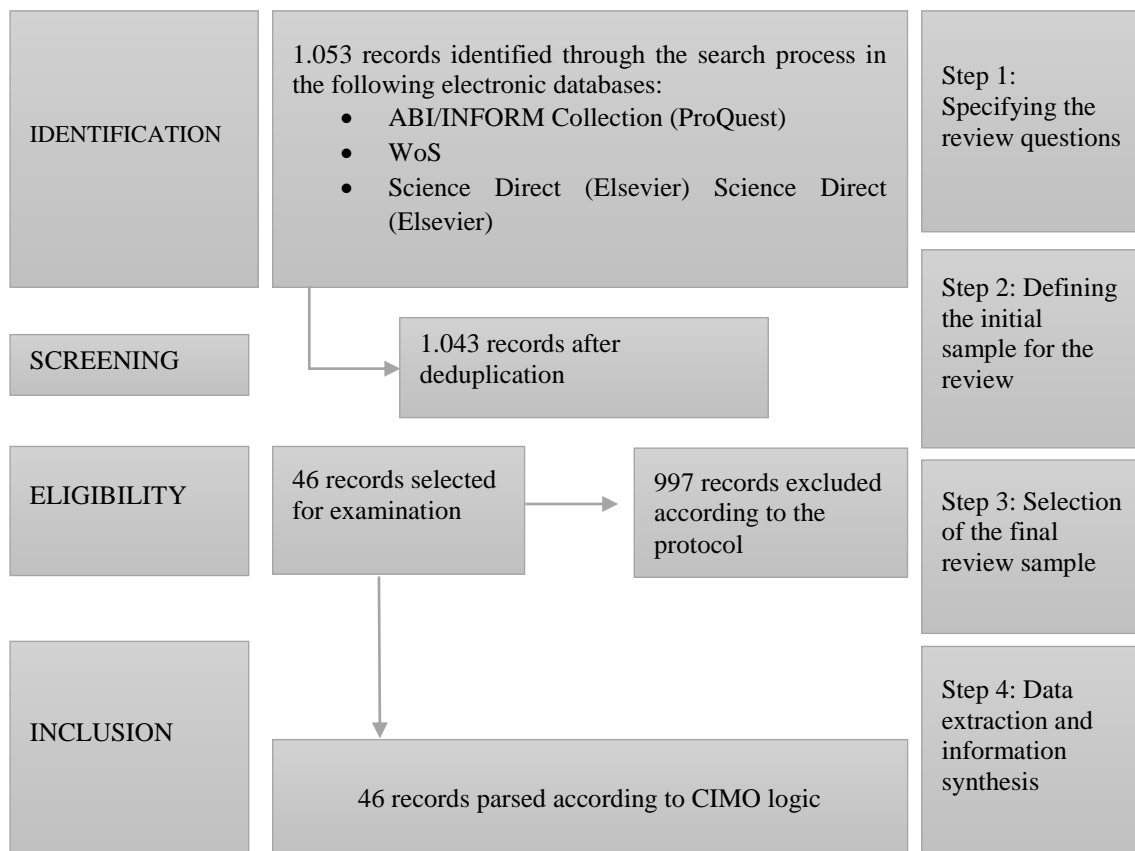


Figure 2. Information flow through the different steps of the RSL process.

Source: Adapted from [53]

It was decided to eliminate those records in which it was detected that, after reading their summary, they did not deal with innovation in the tourism industry during, or after the COVID-19 pandemic (figure 3), as well as all those that did not allow the reading of the complete text thereof. In this way, works whose themes were tourism and hospitality education, medicine, supply chain management without any connection to innovation or tourism, entrepreneurship education, etc.

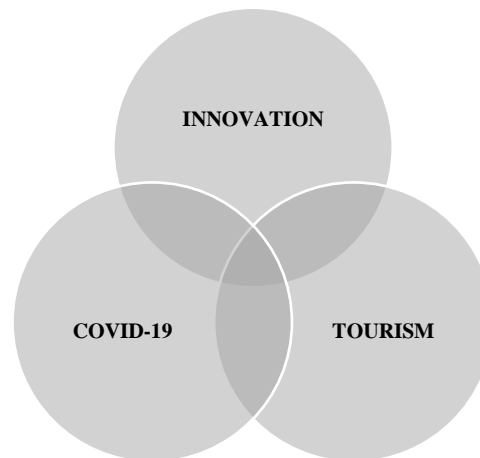


Figure 3. Basis of the record selection process.

#### IV. DEVELOPMENT OF THE FIELD WORK AND ANALYSIS OF RESULTS

The extraction and synthesis of the data, identified as one of the phases of a systematic review of the literature, must try to answer the review questions posed [54].

By extracting the information from each selected article using the standardized characteristics proposed in the CIMO logic, it has been possible to compare differences and similarities between the different studies, so it could be understood that the literature review carried out in this article is also cutting-edge. descriptive and, more specifically, focused on a narrative textual synthesis [55].

To carry out the proposed literature review, the use of several databases has been discretionally chosen in order to cover a greater knowledge and ensure that the systematic review of the literature carried out is, according to [52],

transparent, inclusive, explanatory, and heuristic in nature. Specifically, the following electronic databases have been used: Science Direct, Web Of Science (WOS), and ABI/INFORM. In the Science Direct database, the search pattern consisting of the following string of terms has been followed: "post-COVID AND tourism AND innovation".

In WOS and ABI/INFORM, however, the terms "tourism" and "innovation" were replaced by the expressions "touris\*" and "innovat\*", respectively, thus making it possible to broaden the search for terms with the same root

After eliminating those records that did not meet the requirements set out in the methodology and analysed in Illustration 3, we obtained the following number of articles for each database analysed (Table I)

<b>Results in Science Direct (Elsevier)</b>
The database, according to the defined search criteria, returned a total of 406 records. Of them, only 14 were selected for analysis.
<b>Results in ABI/INFORM Collection</b>
Of the 630 records provided by the database, a total of 22 of them were selected by applying the aforementioned exclusion protocol.
<b>Results in Web of Science (WoS)</b>
The WoS database returned 17 records after applying the "tourism" and "innovation" filters, of which only 9 meet the selected criteria.

Table I: Number of articles extracted from each database.

The 46 full-text articles finally included in the review were analyzed using CIMO logic [52] with the intention of trying to answer the review questions posed (see table, 2).

The table shows the results of the analysis

of the literature using the CIMO logic, and it can be seen in the approach of this article that there is a reduced demand for tourism products and services as a consequence, among other reasons, of the lack of confidence of the tourist due to the



consequences of the health crisis caused by COVID-19, as can be seen in the context column of Table 1, for which tourism organizations and public institutions as the main stakeholders, propose certain solutions, analyzed in the interventions column of the results table, which are materialized in actions (mechanisms column in table 1) to achieve the results (in English, outcomes) pursued, materialized in the introduction of innovations in the sector (type of innovation column in Table 1), responding with this analysis presented here, based on the results of the literature review, to the main research question presented in the introduction to this work: What should be the new role that innovation should play in this new context?

To deepen the main question of the investigation, which we have just exposed, three secondary questions were raised, the answers to which we find in Table 1:

- What type of innovation is predominant in the post COVID-19 era?

Table 1 offers a categorization of the different

types of innovation proposed, according to the categorization made from the Oslo Manual [56,57].

As can be seen in figure 4, based on the type of innovation column in Table 1, during the post-COVID-19 era, the implementation of innovations related to the product (for all purposes, also with services) predominates. These innovations On the other hand, they rely mainly on the use of technologies such as artificial intelligence, augmented reality, or the Internet of things, all of which are designed to minimize contact between people in order to prevent the spread of the coronavirus. And also, of course, to the reduction of production costs. It is also possible to identify the repeated existence of process innovation and improved innovation [57] in the post-COVID-19 tourism industry, that is, the one created when the value of a certain characteristic (a product in this case) is improved through the development of a technical characteristic (implementation of contactless technologies, for example).

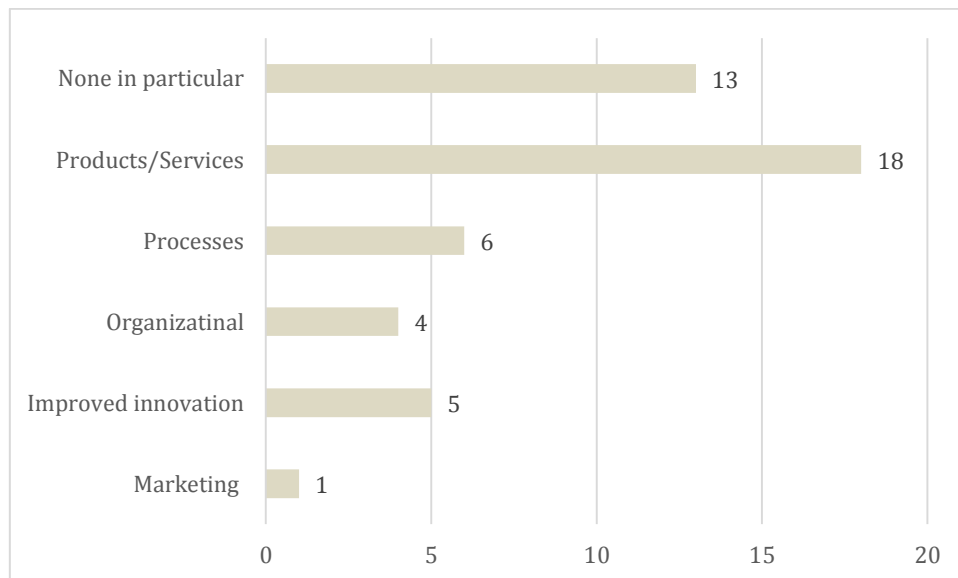


Figure 4. Types of innovation detected in the literature review



Authors	Context	Intervention	Mechanism	Results	Type of innovation [56,57]
[58]	Proposal of mechanisms that can be included in the recovery strategy of the travel and leisure industry	Change and innovation to return to normality in the industry	E-tourism proposition	Are not inferred	No particular one is proposed.
[59]	Change of orientation in the generation of national income. Economic losses due to COVID-19. Looking towards geotourism as a safe post-COVID-19 vacation spot and income generation.	. Promotion of Geo-tourism as sustainable tourism and a broader concept than Eco-tourism.	Increase in the number of applications submitted to UNESCO for the declaration of a place as a World Heritage Site.	Geological destinations as a safe vacation spot after COVID-19. Tourism innovation, in view of recent agreements and projects. Notable increase in the number of visitors to these destinations. The tourist flees from modernization and would look for more natural and less crowded destinations. Trend towards the search for more isolated tourist destinations to maintain social distancing.	No particular one is proposed.
[60]	Due to the characteristics of lodging services, in which contact with the client and physical meetings are necessary to generate memorable experiences, the use of advanced technologies is not enough to convey confidence in the hygienic safety of the establishment.	Innovate and transform the customer experience, highly concerned about their safety when traveling and staying in a hotel.	. Trying to avoid the fear and lack of confidence of customers towards the hygienic-sanitary measures of hotels after the pandemic	Redesign of hotel services in Malaysia by introducing effective disinfection, sanitation and cleaning activities, redesign of hotel infrastructure (rooms with less capacity, spaces with air inlets, etc.), and introduction of promotional offers.	Product/service
[61]	How COVID-19 has influenced the design of the customer experience in hotels	Application of security measures	Protection and hygiene, reorganization of internal work, investments in technology and digital innovations, reorganization of customer waiting times and services offered, staff training and updated	It is expected that the proposed measures will affect the customer experience in terms of speed, proximity and privacy, generating a safe experience model for the customer.	Organizational product/service





Authors	Context	Intervention	Mechanism	Results	Type of innovation [56,57]
			communication.		
[62]	Drop in hotel sales around the world due to the COVID-19 crisis	Adaptation of business models to the new reality	Innovation in hotel business models	Through a case study, it is shown that innovation in the business model of a hotel serves to create new income, and get out of the crisis	Organizational
[63]	Changes in tourism in light of the effects caused by the response to COVID-19.	How fast will the tourism industry recover?  How changed will tourism be in the coming years?	Integration and cooperation among all tourism stakeholders, from governments to international corporations or small local businesses, for a quick and safe revitalization of the tourism industry.	Ignore the old ban on aid to airlines. Opposition to mass tourism and other traditional patterns. Avoid the inconvenience of tourism to local residents. Sustainable tourism.	No particular one is proposed.
[64]	Development of a tourism that, while mitigating the effects of COVID-19, allows generating a more inclusive and sustainable society.	Obtaining five key principles.		Try to achieve a more inclusive and sustainable society through tourism, while mitigating the impact of COVID-19.	No particular one is proposed.
[65]	]Search for a new relationship between tourism and capitalism as a result of the COVID-19 pandemic, aimed at generating a new business model in tourism.	Tourist destinations, through their operating system, must be more resilient and regenerative.	Change the system of tourism operations carried out so far around labor, property, transactions and finances.	Generation of different types of economy around the tourism industry: indigenous ecotourism, collaborative economy.	Organizational
[66]	Lack of knowledge of post-pandemic tourism recovery strategies.	Creation of favorable environments for the development of small-scale businesses, and support for the provision of resources and capacities.	Destination marketing organization strategies.	Increased competitiveness and innovation of tourist destinations, stimulating cooperation and work networks.	Marketing
[22]	Impact of COVID-19 on the accommodation sector and how to get out of the crisis.	Changes in daily operations to build resilience.	Improvement of safety and health, paying special attention to safety protocols.	Proposal of a theoretical framework to be able to build resilience, adapt and prepare for changes,	No particular one is proposed.



Authors	Context	Intervention	Mechanism	Results	Type of innovation [56,57]
				and learning.	
[67]	Need to keep in the mind of the tourist the attractions of Egypt as a tourist destination.	Survey to find out the degree of tourist acceptance of virtual reality technology.	Conducting virtual tours during the pandemic as a promotional tool.	The intention that the tourist adopt this technology is positively related to their tendency to visit the place.	Product/service
[68]	Air navigation industry. Influence of COVID-19. Lack of data to make predictions. High number of variables to consider. Demand forecasting systems are obsolete.	Stop using historical data to forecast demand after COVID-19.	Increase flexibility and speed in decision making.	New ways to manage reservations. New revenue management models for airlines. Demand forecast through Artificial Intelligence.	Process
[69]	Impact of COVID-19 on e-Tourism research. Effect of COVID-19 on the use of NICTs in tourism.	Redesign research on e-Tourism.	Incorporation of 6 factors to redesign e-Tourism research: historicity, reflexivity, transparency, equity, plurality, and creativity.	Regarding the creativity factor, as a proximity to the concept of innovation, it is proposed that e-Tourism research not focus exclusively on current IT solutions (T <sup>a</sup> based on the Technology Acceptance Model), and their subsequent acceptance in the tourism.	No particular one is proposed.
[70]	Effects of the COVID-19 pandemic on the income of the accommodation sector globally.	Establishment of special health and safety protocols.	Reject the accommodation of tourists from countries with a high risk of contagion.  Promote domestic tourism.	Restoration of customer trust	No particular one is proposed.
[71]	How the mobility restrictions caused by COVID-19, and technology, affect the future practices of the tourism industry.	Digital nomadism.	I work remotely in places that, at the same time, are tourist destinations.	There are tourist destinations that offer long-term visas to employees of companies that work remotely. Promotion of digital nomads.	Product/service
[72]	Augmented reality and facial recognition. Application to the tourism industry during the COVID-19 pandemic.	Virtual tourism.	Augmented reality. Use virtual reality to offer innovative tourist experiences. Use technology based on facial recognition.	Possibility to try before you buy. Experience the service, prior to contracting.  Increased security for tourists due to less contact with other people (payments	Improved



Authors	Context	Intervention	Mechanism	Results	Type of innovation [56,57]
				through facial recognition, for example).	
[73]	Effects of COVID-19 on hotel management and marketing practices.	The application of BigData to Artificial Intelligence and robotics, hygiene and cleaning, and health and its care is suggested.	Artificial intelligence. Customer perception of hygiene and cleanliness. Hotel-health sector relationship.	Recovery and sustainability of the hotel sector. Trend to digital transformation in the industry.	Improved
[74]	Avoid physical contact when paying for hotel customers due to the COVID-19 pandemic.	Use of means of payment through mobile devices to avoid physical contact.	Implementation of MPS technologies (Mobile Payment Services).	Existence of barriers that delay the adoption by tourists of payment technologies through mobile devices	Process
[75]	Fear of catching it from the clientele of a hotel, as a result of contact with the staff of the hotel due to COVID-19.	Proposal for the use of technologies based on artificial intelligence and robots.	Operations management in hotels through the use of robots.	Positive attitude of customers to the provision of services by robots in hotels	Improved
[23]	Crisis in the accommodation sector as a result of COVID-19	Redesign of production operations of lodging goods and services.	Innovative strategies. New protocols. Collaborations with renowned health and hygiene experts.	The redesign of hotel strategies affects the client's perception of perceived risk.	Product/service
[76]	Effects of COVID-19 on cruise companies, hotels, travel agencies, and tourist attractions. Perception of those who work in these sectors.	Control of internal costs. Government aid.	Not inferred.	Adjust tourist products and/or services. Transform business structures. Public policies to restore market confidence.	No particular one is proposed.
[77]	Application of crisis management theory. Practices for crisis management in tourism micro- and SMEs during COVID-19. It is intended to know what were the practices carried out to minimize the impact of the crisis.	Cost control, labor used, organizational support, and marketing strategies.	Evaluation of 27 management practices in times of crisis in a sample of tourism companies in Slovenia.	According to the authors, there are significant differences between the application of crisis management practices among the companies in the sample. The most used management practices are those related to cooperation, in order to obtain support for the organization.	Process



Authors	Context	Intervention	Mechanism	Results	Type of innovation [56,57]
[78]	Losses among Malaysian SME restaurants as a result of movement restrictions imposed by the Malaysian government during COVID-19. The adaptations made by the directors of said restaurants are reviewed. Limitation of products and adaptation of the menus to those that exist.	Incorporation of takeaway food service in prestigious restaurants.	Creativity in the development of menus.  Reputation and brand maintenance. Maintenance of profitability.	Simplification of the menus. Chefs are seen as designers in the face of product shortages due to confinement. Temporary closure of businesses to dedicate themselves to refining their skills, and R&D. In food delivery services, introduction of instructions for the consumer. Meal kits to prepare yourself. Cook for the community, hospitals and food Banks.	Product/service
[79]	Practical management of the COVID-19 crisis in the accommodation sector.	Review, innovation and transformation of the hotel business.	Modification of the business model through the diversification of income and the automation of hotel services	They are not exposed. Rather, a refinement of the crisis management model is presented.	Organizational
[80]	Concern of the hotel management for the survival of their businesses during COVID-19, the offer of "humanized" services, and social distancing.	Application of technology based on artificial intelligence.	Encuentros inteligencia artificial-clientes-empleados.	Smart contactless services applied by some hotels. Virtual reality. Self-Check-in. Robot-tourist talks. Tourism "in the cloud".	Product/service
[81]	Trade relations between Türkiye and the USA after the pandemic.	Creation of safe conditions within airports, hotels, restaurants and tourist attractions to attract tourists for the summer season in Turkey.	Expansion of airports to ensure the maintenance of social distance.	Distinction of Türkiye as a safe tourist destination.	No particular one is proposed
[82]	Relaunch of tourism after the pandemic.	Maintaining social distance and less mobility. Digital transformation of global tourism. Sustainable restart of tourism. Use of technology to carry out safe and contactless trips.	Use of Augmented Reality, as interactive technology, to improve the experience of tourists, and sustainability.	Replacement of tourist guides, virtual tours of tourist attractions. Offering sensory experiences to the tourist without the need for their physical displacement to any place. More accessible tourism for people with disabilities. Fewer trips, fewer greenhouse gas	Product/service



Authors	Context	Intervention	Mechanism	Results	Type of innovation [56,57]
				emissions.	
[83]	Tourism in India after the COVID-19 pandemic.	No particular one is proposed.	Introduction of sustainability fees for tourists. Protection of vulnerable populations and tribes. Biodiversity conservation.  Increase access to drinking water.	are not inferred	No particular one is proposed
[2]	It identifies the relationship between tourism and innovation as the paradigm that exemplifies the damage done to the planet by capitalism. He points out the COVID-19 pandemic as one of the biological manifestations that make the current energy production-consumption model climatically unsustainable.	A model (ST.i – Territorial Singularity. innovation) is proposed to pursue global sustainable tourism through the territorial dimension of innovation. Tourism innovation model based on the uniqueness of the territory.	Establishment of ecological principles to reduce the impact of tourism in the selected destination. Innovations free of carbon dioxide emissions, related to adverse effects on the environment.	Experiencias turísticas que generan una mínima huella de carbono en el entorno. Edificaciones ecológicas, utilización de materiales reciclados, consumo de productos locales, uso de energía solar y eólica, etc.	Product/service
[84]	Conservation of fortifications and buildings dedicated to defense	Settlement of camps inside these buildings	Reconciliation between tourism businesses and conservation.ists	Maintaining the safety principles of post-COVID tourism, this new form of accommodation allows the conservation of this type of building	Product/service
[85]	The confinement caused by COVID-19 has forced the tourism industry to rethink its business model, so tourist destinations had the opportunity to move towards more selective and sustainable business models.	Government measures to rescue tourism, based on the activation of demand and the maintenance of supply, but oriented towards sustainability.	Smart specialization of tourist destinations based on innovation, accessibility and technology. Use of Bigdata for the promotion of exclusive tourist products.  Participatory governance (tourists, tourism business owners, and local residents of tourism destinations).	Offer of tourist products specifically adjusted and prepared for a specific tourist. Proliferation of the number of motorhome trips. Nature and rural tourism.	Product/service
[86]	Study of the role that technology plays in the hygiene and cleanliness of	Improve the efficiency of hotel operations through collaboration between humans	Use of the so-called Industry 5.0 technologies (Internet of Things, Internet of Services, and the	Assurance of hygiene and cleanliness in hotel facilities through 5.0 technologies to	Product/service



Authors	Context	Intervention	Mechanism	Results	Type of innovation [56,57]
	hotel operations	and machines.	human-cyber-physical system)	improve the perception of those by customers	
[87]	Development of sustainable rural tourism in Russia facing the challenge of the COVID-19 crisis.	Correction of the Sustainable Development Goals dictated by the UN, as a result of the effects of COVID-19.	Government policies aimed at increasing the productivity of agriculture, the participation of rural areas in the economy, promoting the culture of rural areas, optimizing the use of natural resources and preserving the environment, etc.	Generation of a resource inventory. Establishment of a unified system of indicators. Increased attractiveness of tourist destinations. Improvement of the quality of tourist services offered by rural destinations. For Russia, the promotion of rural tourism as another piece of its economic engine. Digitization at an incipient level yet.	Product/service
[88]	Paralysis of the cruise industry as a measure to prevent the spread of COVID-19.	Assurance of the health and safety of cruise passengers	Implementation of a hygiene and cleaning protocol.	Creation of a Safe Travel badge by the World Travel & Tourism Council.	Product/service
[89]	Constriction of the tourism industry due to the COVID-19 pandemic.	Creating a resilience-based framework to revive the tourism industry.	The implementation of technological innovations is proposed to achieve resilience in the industry.	The generation of resilient tourism will make it sustainable for society.	Process
[90]	Hotel customers perceive a high risk to their health, due to the COVID-19 pandemic, when they visit a destination or stay in a room.	Estrategias de innovación para la reducción del riesgo percibido para la salud	Utilizar innovaciones tecnológicas para mejorar productos o servicios ya existentes, o crear unos nuevos	Convertir la experiencia “alto contacto y baja tecnología” del turista, en otra del tipo “bajo contacto y alta tecnología”	Product/service
[91]	Fear of customers of contagion by coronavirus through contact	Adaptation of daily hotel operations to the new situation	Contactless check-in and check-out of customers. Text messages to request services.	Greater efficiency and cost savings for hotels.	Product/service
[92]	Collapse in hotel occupancy rates in North East England due to the COVID-19 pandemic.	Attraction of another type of clientele due to the absence of business.	Introduction of aggressive and innovative pricing strategies to attract young tourists.	The price reduction attracted a younger and lower-quality crowd by making internal trips without considering the risks of the pandemic.	Process
[93]	The daily commercial traffic of a tourist	Innovation in service organizations	Use of BigData in tourist organizations for the personalized	Generation of strategic value through the offer of	Product/service



Authors	Context	Intervention	Mechanism	Results	Type of innovation [56,57]
	organization generates a high volume of data that is not converted into profitability for it.	through the use of ICTs. Implementation of technologies that efficiently manage the data they obtain.	proposal of new products.	personalized tourist services to clients. Dynamic reservation prediction. More viable and appropriate pricing strategies.	
[94]	Strategic positioning and product policy of destinations.	Achieve resilient tourist destinations.	Offer of tourism products based on local resources and skills to achieve resilient tourism (mental and spiritual well-being)	The promotion of resilient tourist destinations generates attractiveness and increases their competitiveness, at the same time that it supposes the appearance of a new business model in the industry.	Process
[95]	New conditions in the hotel industry as a result of the restrictions imposed by the COVID-19 pandemic. Literature review on technology applied to the hotel industry.	Mobility proposal for hotels towards a 4.0 version of the same (industry 4.0).	Implementation of technologies (delivery robots, Voice Response Kiosks, Secure Kiosks, Tourist drones, Virtual/Augmented Reality, etc.) in the hotel industry that allow maintaining social distancing, and interaction between people, during the COVID-19 pandemic. 19.	Co-creation (together with the client) of value to offer tourist products and services adapted to clients.	No particular one is proposed
[96]	Reviving Vietnam's tourism industry after the COVID-19 pandemic.	Use of devices for human-machine interaction.	Application in the hotel sector of technologies based on artificial intelligence and virtual reality	Increase in the quality and safety of tourist services, social innovations leading to sustainable tourism and a sophistication of the tourist experience	Product/service
[97]	The accommodation sector, after reopening as a result of its closure due to the COVID-19 pandemic, encounters problems when it comes to resolving routines.	Application of different dimensions of social capital to solve problems related to the way in which hotel management deals with COVID-19.	Use of social capital generated through contact networks to develop innovation, both radical and incremental.	The hotel management relies on its contact networks to face the COVID-19 crisis. You must know how to strategically manage these networks.	Process
[98]	. Managing the impact of the COVID-19 pandemic on hotels in Lebanon.	Call for public-private innovation measures to regain the trust of both national and international	Establishment of new safety and hygiene measures for employees and customers. Specific offers for local	There is a lack of preparation of the managers of the hotels in Lebanon to deal with the crisis caused by the	No particular one is proposed



Authors	Context	Intervention	Mechanism	Results	Type of innovation [56,57]
		travelers, and the support of companies and workers in the tourism industry.	customers.	pandemic.	
[99]	Challenges of the tourism industry in the face of the COVID-19 pandemic, and response strategies.	Inglés  Improve knowledge of the challenges that companies face, and the responses offered by the tourism industry.	Analysis of user-generated content from Twitter to identify the main concerns of the hotel industry during the COVID-19 pandemic.	. Inglés  Increased attention paid to the fact of how new technologies (Virtual Reality or Internet of Things) can be used to solve the challenges of the tourism industry. Changing the focus of attention from a microeconomic, or operational level of the organization, to a macroeconomic level of the hotel industry	No particular one is proposed

Table II. Application of the CIMO logic to the selected articles.

## V. CONCLUSION

Tourism is one of the most important activities of the Spanish economy, since the country's main source of income comes from the services sector, tourism being the one that offers the greatest contribution to GDP. However, this industry is highly vulnerable to crises such as the one caused by COVID-19. With the advent of the global pandemic caused by SARS-CoV-2, GDP has suffered a large drop due to the total stoppage of both the tourism industry and other sectors that influence it, since the circulation of citizens both internationally and nationally, which caused a drop in income in the tourism industry, and an increase in unemployment, as well as a great change in the hotel and accommodation sector, since they have had to adapt to a totally different modality, which they would never have thought that they would have to use it, which is the online modality. The crisis caused by COVID-19 has caused innovation challenges that companies have had to face, such as changes in consumer preferences and restrictions established by the Spanish Government.

In this work, a systematic review of the literature has been carried out that allows for a summary and categorization of existing knowledge

regarding the innovation practices used in the tourism industry to survive the post-COVID-19 era.

This systematic literature review has attempted to answer questions such as what is the predominant type of innovation in the tourism industry in the post-COVID-19 era, what are the innovation trends posed by it, or what type of organizations carry them out. cape.

The above from a theoretical point of view, but also from a practical one. In this way, both professionals and academics are provided with the specific types of innovation implemented by tourism organizations after COVID-19.

Consequently, the management staff of these organizations may consider relevant the fact of knowing that improved innovation [57], through the addition of emerging technologies to tourism products and services such as virtual reality, augmented reality, or artificial intelligence, is a feasible strategy to overcome the economic crisis caused by COVID-19 in the industry. Innovations that are already being carried out by hotels, travel agencies, or catering establishments.

With the above, it is pursued, on the one hand, to offer confidence to tourists regarding the preservation of their health and safety in the destinations against possible infections of the





SARS-CoV-2 coronavirus, not yet eradicated. One means to achieve this is the elimination of unnecessary personal contacts with the staff of the tourist organization, or social distancing with other clients. Some examples of this would be the automation of tasks (check-in and check-out in hotels, through mobile devices), the establishment of stricter cleaning and hygiene protocols (aided by new technologies), tourist visits to monuments through reality virtual, or the interaction tourists-robots.

But, and, on the other hand, these innovation measures also aim to reduce costs in the operations of tourist organizations, whose resources have been reduced as a result of the mobility restrictions imposed by the COVID-19 pandemic, and social distancing measures.

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