SMART TOURISM: DEVELOPING NEW BUSINESS ARCHITECTURES IN THE DIGITAL SOCIETY

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Abstract

ICT have reconfigured the way business is conducted, contributing to the development of new organizational architectures. Thus, the integration of ICT into the activities carried out by firms represents an adaptation to the changing business environment. At the same time, ICT have also reconfigured the way firms interact with their customers as a result of the latter having access to the same technologies as business organizations. In this context, terms such as smart business, e-business, e-commerce, intelligent enterprise, digital business and even smart tourism have become increasingly used to highlight the changes that have taken place in the organizational structures of business as a result of the use of ICT. With regard to smart tourism, as a subdivision of smart business, the use of various technologies has a major role to play in improving the quality of tourist experiences and the decision to visit a particular destination through access to information, more effective communication with business organizations in the sector, and the sharing of experiences through social media. It is therefore of interest how the strengthening of business infrastructures through the use of various technological tools has had positive effects both on firms in this sector and on tourists.

Key words: information technologies, tourism, competitivity, innovation, performance

JEL Classification: *M15, M19, O35*

I.INTRODUCTION

The high interest of business organizations to achieve a high level of performance and competitiveness in the market requires business decision-makers to identify business models that make their work more efficient, emphasize their advantages/strengths and improve their image among customers. Thus, the inclusion of technologies in current operations is an alignment of the tourism sector with other industries that have digitalized many components of their activities. In addition, technological advances in the field of information technologies have brought multiple benefits that have contributed to the intensification of firms' activities, which has also had positive effects on their profitability.

The aim of this paper is to highlight how digital technologies have influenced the way tourism companies operate, taking into account the perspective of customers, i.e. tourists/people who have visited certain tourist attractions or who plan to visit different areas/regions.

In order to carry our research, we choose a qualitative approach, namely we used a literature review to determine the state of the art on the selected topic. Subsequently, we opted for a bibliometric analysis using the Web of Science Core Collection Database and Bibliometrix (Biblioshiny App) to get an overview of the published works related to the topic included in the current research.

II.LITERATURE REVIEW

Our research strategy regarding the literature review was based on the Web of Science Core Collection Database, for the time span 2008-2023, on documents like articles and reviwe articles, selecting as WOS category business, management and economics. For the topic smart tourism we obtained 114 results, namely 114 papers. Further, we haver sorted them by the highest citations and we focused our research on the top 20 articles, based on the named criteria (table 1). The fact that there is a rather small number of papers published on this topic on WOS indicates that this area has not been sufficiently exploited. Therefore, this paper makes some clarifications that may prove useful in better understanding the issue under analysis and is of real interest to business decision-makers in the tourism sector.

In the figure below we have presented the situation regarding the corresponding author's country for the topic included in the current analysis. On the one hand, each work is associated with a country through its affiliation of the corresponding author (SGP – Single

Corresponding Author). On the other hand, the analysis is concerned with the proportion of papers in which at least one author has affiliation in a country other than that of the corresponding author (MCP - Multi Country publications, quantifies the intensity of a country's international collaboration). In this case, a paper is considered for each country according to the number of authors (e.g. if a paper was published by authors from Spain, Italy and Austria, the number of papers for each country is increased by 1).

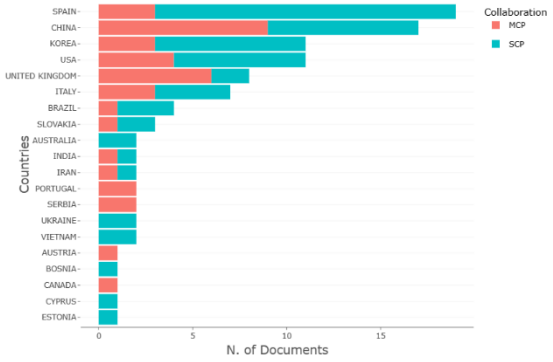

Figure 1 Corresponding Author's Country; SCP = Single Country Publications, MCP = Multi Country publications
Source: Author's creation using Biblioshiny App

On the topic of smart tourism, we observe that the intensity of international collaboration is high for countries like Spain, China, Korea, USA, United Kingdom and Italy (most international collaborations we observe in China and United Kingdom) For the other countries included in the chart, we observe a lower level of collaboration with foreign authors. We also note that there are countries where papers on this topic have been published only in international collaboration (e.g. Portugal, Serbia, etc.), but also only in national collaboration (Australia, Ukraine, Vietnam, etc.). We also note that the highest number of papers is in countries where authors have made most use of collaboration with authors from other countries.

The level of openness to collaboration with authors from other countries is probably also influenced by the level of internationalisation of the organisations in which different authors work, but also by the relationships they have developed over time based on common research interests.

In the following we highlight the yearly evolution of the number of papers dealing with the topics included in this paper for the time period studied.

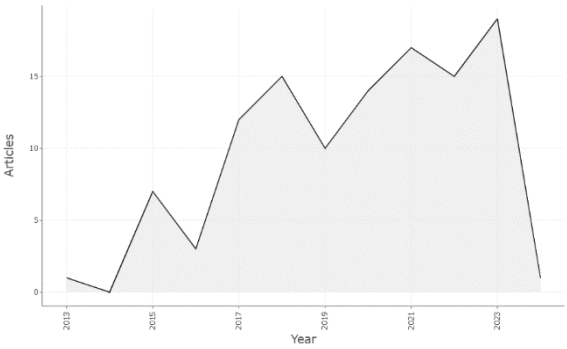

Figure 2 Annual scientific production
Source: Author's creation using Biblioshiny App

According to the data presented, there is a growing interest in this topic, which has intensified in recent years given the technological advances that have reconfigured business structures. In addition, the COVID-19 pandemic has highlighted the need to digitalize some activities and increase the use of technology to carry out certain activities.

Figure 3 shows the country scientific production indicator (with reference to published articles) for the topic studied, with reference to the period included in the research.

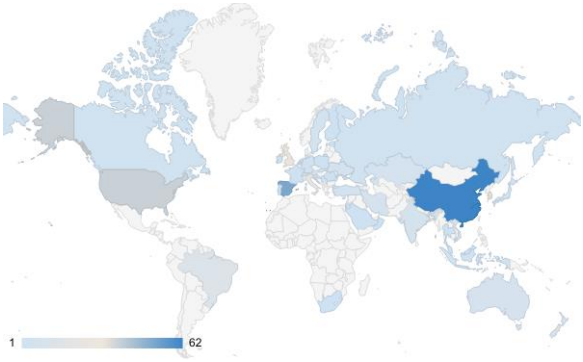

Figure 3 Country scientific production
Source: Author's creation using Biblioshiny App and Google Sheets

In terms of the number of papers published on the subject studied (based on the authors' country of origin), the highest level of this indicator is found for authors from China and Spain.

Regarding the number of citations at country level, we highlight in Figure 4 the situation for the papers including the topic of our research. Each bubble included in the figure represents citations; the size of the bubble is directly proportional to the number of citations; the higher the number of citations, the larger the bubble.

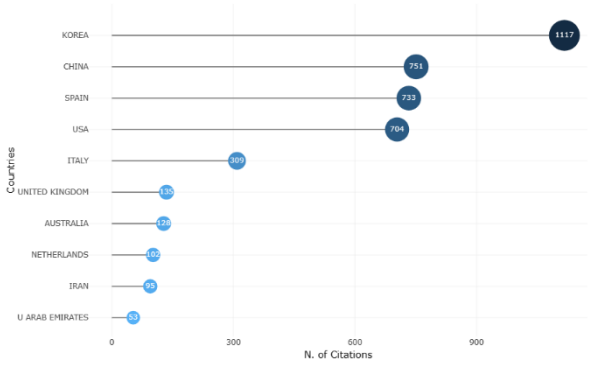

Figure 4 Most cited countries
Source: Author's creation using Biblioshiny App

According to the highlighted data, we find that most citations are of works from Korea (1117 citations), China, Spain and the USA, showing that authors from these countries have published a significant number of works in the analyzed field of interest.

Further on, in Figure 5, we present a situation on the trend in terms of theme/keyword for the more than 100 works analyzed through Bibliometrix (Biblioshiny App). Thus, each bubble in the diagram below constitutes a topic studied/researched; the size of the bubble is determined by the frequency of occurrence of a keyword. The trend topic graph has time on the x axis and the subject/topic on the y axis; the period/years in which a topic was studied is rendered by the length of the lines (Büyükkıdık, 2022).

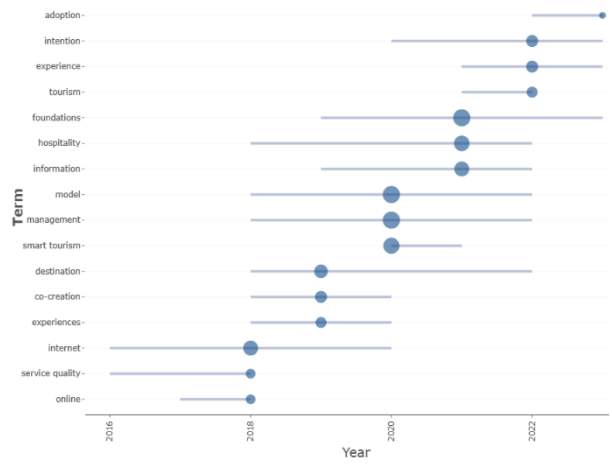

Figure 5 Trend topics for the papers on *smart tourism*
Source: Author's creation using Biblioshiny App

For the papers on *smart tourism* we can observe that terms like *hospitality*, *model*, *management* and *smart business* have high occurance but in different periods. We also need to specify that we can observ a high interes on the topic *smart tourism* starting 2020. Therefore, there is a recent increase regarding this subject thanks to the higher use of information technologies among tourists and individual generally speaken.

In Figure 6, we present the word cloud generated by the author's keywords highlighting the most used keywords in both smart tourism papers.

Figure 6 Word cloud
Source: Author's creation using Biblioshiny App

The most used words in the papers addressing the topic under analysis are: smart tourism (frequency 56), tourism (frequency 14), destination (frequency 10), smart (frequency 7), smart tourism destination (frequency 7), artificial intelligence, big data, destination management, innovation, smart destination (each of the last keyword had the frequency 6). Also, words like social media, technology, competitiveness and sustainability have also a significant frequency.

In the table below, we present a summary of the most cited papers published on WOS, addressing the topic of smart tourism.

Table 1 Top 20 papers on smart tourism by number of citations

Author/ Authors	Paper title	Main focus
Gretzel et al., 2015	*Smart tourism: foundations and developments*	It aims to identify ways of defining smart tourism, highlighting current trends in smart tourism, highlighting its connection with information technologies.
Roig & Clavé, 2015	*Tourism analytics with massive user-generated content: A case study of Barcelona*	It highlights the usefulness of big data analytics to support smart destinations by studying the online image of Barcelona.
Li et al., 2016	*The concept of smart*	It focuses on clarifying the concept of 'smart tourism',

	tourism in the context of tourism information services	highlighting its connection to information technologies, big data analytics as well as the role of government policies in the e-business field.
Chiappa & Baggio, 2015	*Knowledge transfer in smart tourism destinations: Analyzing the effects of a network structure*	It examines the extent to which technological advances have reshaped the tourism sector, highlighting the importance of real and virtual aspects in the analysis of a tourism destination.
Huang et al., 2017	*Smart tourism technologies in travel planning: The role of exploration and exploitation*	It analyses the extent to which the use of information technologies contributes to improving the experience of tourists/travelers, i.e. influences their level of satisfaction during a trip.
Wang et al., 2015	*How smart is your tourist attraction? Measuring tourist preferences of smart tourism attractions via a FCEM-AHP and IPA approach*	The aim is to identify/establish tourists' preferences for smart tourist attractions and their strengths and weaknesses.
Wang et al., 2013	*China's "smart tourism destination" initiative: A taste of the service-dominant logic*	It examines the implications of the development of smart tourism in China, highlighting the support of technologies in strengthening the smart tourism destination.
Marco et al., 2018	*Progress in information technology and tourism management: 30 years on and 20 years after the internet - Revisiting Buhalis & Law's landmark study about eTourism*	It compares progress in e-tourism, i.e. phenomena, trends and associated themes in the digital tourism field with an established study in the field.
Chung et al., 2015	*The influence of tourism website on tourists' behavior to determine destination selection: A case study of creative economy in Korea*	It analyses the correlation between tourism websites and the decision to visit a particular tourist destination in order to establish what tourists' expectations are, contributing to the materialization of the act of visiting a particular area.
Sigala M. 2017	*New technologies in tourism: From multi-disciplinary to anti-disciplinary advances and trajectories*	It focuses on the role of technology in transforming tourism, highlighting how it is helping to shape new business models.
Law et al., 2018	*A comprehensive review of mobile technology use in hospitality and tourism*	Analyses the use of mobile technology in the tourism sector, including hospitality, with a view to identifying new business practices that emphasize new technologies.
Brandt et al., 2017	*Social media analytics and value creation in urban smart tourism ecosystems*	It highlights the role of social media on ecosystems associated with smart tourism, highlighting the impact of online content on tourists' access to information.
Fermenia -Serra et al., 2018	*Towards a conceptualization of smart tourists and their role within the smart destination scenario*	It is emphasised that in the context of the development of smart tourism, or smart tourism destination, a new type of tourist is emerging, namely the smart tourist. The aim is therefore to identify the specific characteristics and behavior of this category of tourist.

Shafiee et al., 2019	*Developing a model for sustainable smart tourism destinations: A systematic review*	It focuses on proposing a sustainable business model in the tourism sector, namely smart tourism destination, highlighting the importance of the information provided by this model for policy makers in establishing strategies that support sustainable development.
Kim et al., 2017	*What makes tourists feel negatively about tourism destinations? Application of hybrid text mining methodology to smart* destination management	It aims to apply sentiment analysis using AI to determine what tourists' perceptions/emotions are about destination tourism and hospitality services, with a focus on tourists who were not satisfied with their experience in a location (in this case, Paris).
Yoo et al., 2016	*Improving travel decision support satisfaction with smart tourism technologies: A framework of tourist elaboration likelihood and self-efficacy*	It analyses the role of technologies associated with smart tourism on travel decision satisfaction, highlighting that tourists feel more informed when they rely on trusted sources when making a decision about a future trip. In addition, it points out that those who travel more often feel better supported by technologies.
Bae et al., 2016	*Shared experience in pretrip and experience sharing in posttrip: A survey of Airbnb users*	It studies how the experiences shared online influence the decision to choose a certain destination and to what extent the differences between the expectations made and the reality lived determine the actual sharing of a tourist's experience on various platforms in the field.
Hao et al., 2015	*A genetic algorithm-based learning approach to understand customer satisfaction with OTA websites*	It analyses customer satisfaction with the websites of online travel agencies by developing a specific algorithm.
Egger et al., 2020	*Digital free tourism – An exploratory study of tourist motivations*	It explores the motivation behind tourists' decision to reduce their use of technology while travelling, against the background of connecting with nature/environment and disconnecting from technologies.
Tavitiyaman et al., 2021	*The influence of smart tourism applications on perceived destination image and behavioral intention: The moderating role of information search behavior*	It looks at how tourists respond to the use of technologies associated with smart tourism and how they can influence their view/perception of a destination and also their decision to visit that destination. In fact, it is highlighted that as travelers' awareness of certain tourist areas increases, so does their interest in visiting that area.

III. DISCUSSIONS

In the literature on the subject under review, a great deal of attention is also paid to tourists, i.e. the customers of companies operating in the tourism sector, and not just business organizations. In fact, smart tourism is also approached from the perspective of how information technologies have beneficial effects on those who have decided to visit certain tourist locations/destinations.

Business organizations, regardless of the field in which they operate, are trying to become more and more innovative by adopting different practices that give them certain advantages in the market, which increase their competitiveness. In a recent ranking by BCG of the 50 most innovative companies globally, we also find companies operating in the tourism sector (for example, in the 2019 report in the ranking we find companies such as Hilton and Marriott) (BCG, 2019). The level of innovation of firms in this sector is attributed to actions taken towards digitalization, i.e. the adoption of different technologies in their

operations. Although traditionally most of the associations made with innovative activity, i.e. innovations, are for companies engaged in more productive activities, whose results are easier to quantify, we note that significant importance is attributed to other categories of innovation than technical ones. Thus, the literature shows that the impact of social innovations on society is as high or sometimes even higher than that of technological innovations (Drucker, 1959; Drucker, 1986). This is mainly due to the way in which it brings improvements to the lives of individuals. The concept of smart tourism could therefore be considered a social innovation, since it reconfigures the way potential tourists travel, the way they communicate with travel agencies, the way they make reservations (accommodation, other services), the way they communicate with other tourists (reviews, blogs), etc.

According to the European Commission, smart tourism is associated with smart tourism destination, being connected to the sustainable development and cultural enhancement of different destinations through the use of innovative information technologies for the provision of tourism services (from accommodation, food, to the purchase of tickets to public transport or museums) (European Commission, 2022). Other views highlight that smart destination is a component of smart tourism. From this point of view, smart tourism is/is based on three pillars that refer to the smart component: smart destinations (closely related to what smart city is, a status to which many cities both nationally and internationally aspire through their investments in transport infrastructure), smart experience (the extent to which technologies contribute to improving the experience tourists have in a tourist area) and smart business (the network of different economic actors developed at the level of a city/region with the aim of providing a combination of services that ensure a positive experience for tourists) (Gretzel et al. , 2015).

Regarding the behavior of tourists in the locations they choose to visit, some studies highlight that they resort to the use of information technologies when considering the purchase of goods/services (Garcia-Milon et al, 2020). Therefore, the entire ecosystem formed by companies in the tourism sector should optimize their business models by developing various applications, websites that support travelers.

From the perspective of the use of technology by business organizations in this sector, we note that more and more hotel chains are using robots, i.e. artificial intelligence for certain activities (messaging, room allocation, passport verification, room service, etc.) with the aim of reducing costs, increasing productivity and increasing revenue (Nam et al, 2020). The business model adopted by many companies today involves the use of robots because of the benefits gained, but also because the use of artificial intelligence can often be cheaper than human resources.

Firms in this sector have adapted their businesses by ensuring that they offer tourists ways of meeting their needs in terms of information technology, which means attractive, user-friendly websites, virtual tours, efficient booking platforms, internet access in accommodation, sensors, etc. In fact, they have reconfigured their business models to the challenges imposed to some extent by a new type of tourist: the smart tourist. At the same time, these measures have had positive effects on the performance and competitiveness of firms.

New technologies and disruptive innovations (a phrase originally used by Christensen in a paper published in 1995) contribute to the development of new business architectures including in the service sector (including tourism) through the development of new ecosystems. Currently, there are several technologies influencing innovations in the service sector both from a customer interaction and management perspective among which we mention the 5G mobile network, artificial intelligence, mobile devices, smartphones, apps, etc. (Buhalis et al, 2019).

The adoption of new technologies, i.e. smart tourism technologies, has various benefits for tourism operators: it can contribute to improving the efficiency of activities, increasing performance, raising attractiveness to tourists through the technologies used and improving competitiveness in the market (Shen et al, 2020). Regarding the role of adopted technologies in boosting customer attractiveness, it is necessary to point out that they increase interest in a destination/location through access to information. For example, the use of interactive maps, the scanning of a QR code, the existence of an app indicating, for example, the sights of a city, etc., play a significant role in the decision to visit that tourist destination. Perhaps one of the characteristics of the smart tourist is his need to be very well informed and to have access to all the information he needs to enjoy his holiday just a click away.

Also, the development of mobile technology plays a very important role in providing the necessary support to tourists when they need information, but also for tourism companies that promote their services through applications that allow them to collect data or communicate directly with potential customers. In addition, social media platforms have mobile friendly apps that allow tourists to be always connected to all the news regarding certain properties/locations or various services they are interested in (Kim&Kim, 2017). At the same time, they are able to access information from reviews made by other tourists on various accommodations, places to visit, destinations, etc. at any time, as long as they have a smartphone connection to the internet. In this way, they can base their decisions on the destinations they choose to visit. At the same time, the review systems provide business organisations with the opportunity to continuously improve their services. We therefore find that information technologies have a signficant influence on the decision of those who plan to travel to visit a particular destination, on their experience during the trip (by accessing various applications that facilitate

access to information) as well as on their satisfaction (Costa Liberado et al, 2018).

IV. Conclusion

Information technologies have had a significant influence on how the tourism sector has developed in recent years. At the same time, IoT (Internet of Things), big data, social media have reshaped the way tourists plan their itineraries/trips or tourism companies run their businesses. As we have seen, access to these technologies brings a number of benefits to both business organizations and customers. However, there are situations where tourists choose journey destinations that allow them to disconnect from technology in favor of connecting with nature. It is therefore up to the companies in this sector how they optimize their business architectures to meet the different needs of tourists. However, it can be said that technological advances have played a major role in the development of smart tourism and in increasing the performance and improving the competitiveness of firms operating in this sector.

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