

State of the art of Smart Destination (SD) research in Brazil: a systematic review

Estado da arte da pesquisa em Destino Turístico Inteligente (DTI) no Brasil: uma revisão sistemática

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ABSTRACT

Due to the growing importance, relevance, and topicality of the theme of Smart Destination (SDs) in academic research into the relationships and influences of the digital transformation of tourism, it is necessary to understand the current theoretical framework of the subject in the Brazilian context. Thus, this paper aims to analyze the state of the art of SD research in Brazil, through a systematic review of published studies on the subject. The study is characterized as a state of the art of knowledge produced around research on SD and its related themes in Brazil, considering thesis, dissertations, and articles published in the last eight years (2015 to 2022). The research used the technique of systematic literature review to draw up the state of the art, combined with the method of classifying studies on Smart Tourism. A lexical-textual analysis was also carried out using Iramuteq software to validate the proposed classification. The sample of this research included 84 studies and, as a result, it was found that research on SD in Brazil is still incipient and is in its early stages, with an emphasis on the topics of SD

Planning and Management and its conceptual development. It also found that topics related to the adoption of technology by suppliers, their understanding of the impacts of technology and consumer preferences are still under-researched. Finally, this study also suggests a research agenda for SD in Brazil, to consolidate the subject in Brazilian academia and to bring it closer to market practice.

Keywords: Smart Tourism Destination, Smart Tourism, Systematic Review, State of the Art.

INTRODUCTION

Information and communication technologies (ICT) have revolutionized tourism in various ways, influencing the generation of experiences for tourists and the management of companies, organizations and the destination itself (Mendes Filho, Mayer & Corrêa, 2022). With the advance of technologies and the adoption of innovative strategies in tourism as a whole, there has been a growing trend to transform the management of traditional tourist destinations into Smart Destinations (SDs) (Gretzel, Sigala, Xiang & Koo, 2015).

Smart Destinations are destinations that use advanced technologies and attractive practices to improve the quality of the tourist experience and promote more efficient and intelligent development (Albuquerque, Soares & Mendes-Filho, 2022). These destinations integrate digital and technological solutions to offer personalized services to tourists, making the travel experience safer, more comfortable, and convenient (Gretzel et al., 2015; Buhalis & Amaranggana, 2014).

The transformation of tourist destinations into SDs is a global trend that is gaining increasing strength in Brazil (Soares, 2023). With the use of technologies and the implementation of attractive practices, SDs have the potential to offer an innovative and high-quality tourism experience, conducive to the country's economic growth and sustainable development (Celdrán-Bernabeu, Mazón, Ivars-Baidal & Vera-Rebollo, 2018). In addition, the subject has become



relevant to researchers, companies in the tourism production chain and governments (in their various spheres) (Mendes-Filho, Mayer & Corrêa, 2022).

Because of all this relevance, research into Smart Destinations has gained prominence in the academic world and is currently one of the main themes in the scientific production of tourism technology (Soares, Albuquerque, Mendes-Filho & Alexandre, 2022), although it is still insufficient for the evolution of the area and the consolidation of SDs in the Brazilian context.

On the international scene, there are some scholars such as Wang, Li, & Li (2013); Buhalis & Amaranggana (2014); Gretzel et al. (2015); Mehraliyev, Chan, Choi, Koseoglu & Law (2020), among others, who are carrying out research in this area. In national research, there are the seminal studies by Miskalo-Cruz & Gândara (2016); Corrêa, Gosling & Gonçalves (2019) and Mendes Filho, Mayer & Corrêa (2022); which bring some introductory reflections on the subject and its development in Brazil, although still in an incipient way.

So, given the growing importance, relevance, and topicality of the subject, the question is: what is the state of the art and the main thematic lines of research on Smart Destinations in Brazil?

It is, therefore, necessary to carry out a systematic survey of scientific production on Smart Destinations in order to understand how the current theoretical framework is structured in Brazil, seeking to identify its progress, the most studied themes, the qualitative and quantitative development of academic productions, the thematic gaps in research and to find out where national studies stand in relation to foreign ones. Thus, the aim of this paper is to analyze the state of the art of Smart Destination (SD) research in Brazil, through a systematic literature review.

SMART DESTINATIONS: ORIGINS AND CONCEPTS

The concept of Smart Destination (SD) arises from the adaptation of the concept of Smart Cities to the reality of tourist destinations (Soares, 2023).

However, the investment in technology and intelligence made by smart cities is aimed at improving the quality of life of their residents and better



management and provision of public services, while in the SD concept, the focus is on improving the tourist experience and destination management as a whole (Buhalis & Amaranggana, 2014; Lima, Mendes Filho, Corrêa & Mayer, 2021).

The profound impact of smart technologies on tourist behavior, the tourist experience and the management of destinations and companies is the basis for the use of the term smart in the concepts of smart tourism and smart tourist destinations (Mehraliyev et al., 2020), mainly due to the strong link between ICTs and tourism planning (Mazo, Oliveira, Biancolino and Tomazzoni, 2021).

According to Albuquerque, Soares, and Mendes-Filho (2022), although there is still no consensus on the concept of Smart Destinations, the subject has become increasingly relevant in studies on Tourism and Technology, even provoking epistemological discussions on the concept of Tourism itself.

Among the definitions of SD, one of the seminal ones was that of the State Society for Innovation Management and Tourism (Sociedade Estatal para a Gestão da Inovação e Turismo – Segittur), which defined SD as: “an innovative tourist destination, consolidated in a state-of-the-art technological infrastructure, which guarantees the sustainable development of the tourist territory, which promotes accessibility for all, which facilitates the visitor's interaction and integration with the environment and increases the quality of their experience at the destination and improves the quality of life of the residents”. (SEGITTUR, 2015, p.31, translated from Portuguese).

For Femenía-Serra and Ivars-Baidal (2021), SDs are characterized by the use of different ICTs, allowing greater interconnection between all parties, generating greater "intelligence" for the destination, providing more assertive decision-making. Recently, the Brazilian Ministry of Tourism – Mtur (2022, p.21), defined SD as "a tourist destination that manages its processes and territory in an innovative and sustainable way, committed to pillars that positively impact the quality of life of residents and the experience of tourists".



Thus, it is understood that in SD, despite the fundamental role of technology, the main focus is on its application as a facilitating tool in the pillars of tourism destination management; the promotion and improvement of the tourist experience and the exchange and sharing of information between the tourism production chain (Gretzel et al., 2015).

THEMATIC FOCUS OF SMART TOURISM STUDIES

As there are no national or international reference studies classifying research specifically on Smart Destinations, we used the classes proposed by Mehraliyev et al. (2020) in the study "A state-of-the-art review of smart tourism research", in which the authors identified the thematic focus of smart tourism research, published in the Journal of Travel & Tourism Marketing.

Classification structure

In this methodological proposal, the authors used qualitative and quantitative methods to conduct a systematic review of smart tourism research from two perspectives: a) prominent research topics and b) knowledge and domains in smart tourism research, with the aim of understanding the current landscape of smart tourism research, identifying problems and proposing future research directions (Mehriliyev et al., 2020).

The result of the study was the classification described in Table 1 below:

SMART TOURISM RESEARCH APPROACHES	
Effects of smart tourism on consumers	Research into the role of smart tourism and its technological components, namely smart tourism technologies (STTs) on consumers in various aspects, including experience, satisfaction, among others.
Application or technology development	Involve studies on the development and experimentation of STTs using the technologies common in Smart Tourism.
Consumer adoption of smart tourism	Studies that identify the antecedents of consumer adoption and acceptance of smart tourism.
Conceptual development of smart tourism	Studies that explore the conceptualization and definitions of smart tourism and its components,



	contributing to the consolidation of the topic. This typology includes systematic reviews.
Smart tourism planning and management	Research that addresses the planning process and smart tourism management strategies and focuses mainly on the destination level.
Effects of smart tourism on suppliers	They study the effects on the suppliers being investigated, such as performance, value creation, and the supply chain, and also have a limited focus on companies.
Evaluation of intelligent systems or technologies	Articles and research revolving around the evaluation of intelligent systems and/or technologies.
Development of analytical methods	Research developing new data analysis methods for smart tourism
Consumer preferences on smart tourism	Studies that address consumer preferences in smart tourism.
Adoption of smart tourism by suppliers	Works that focus on the adoption of smart tourism and STTs by suppliers.
Suppliers' understanding of smart tourism	Research that focuses on suppliers'/companies' understanding of smart tourism.

Table 1. Structure of the classification proposed by Mehraliyev et al. (2020)
Source: Adapted from Mehraliyev et al. (2020)

This classification is intended to guide future research and structure smart tourism literature into dimensions, based on the object of study of each piece of published research. It will help in the analysis and classification of studies in the Brazilian context.

METHODOLOGY

This research is characterized as a study of the state of the art of knowledge produced around research on Smart Destination and its related themes, in the Brazilian context, based on a systematic review of the literature.

To this end, the database used was thesis and dissertations indexed in the Capes Catalogue of Thesis and Dissertations <<https://catalogodeteses.capes.gov.br/catalogo-teses/#!/>> and published articles indexed in the Publications in Tourism portal, a database maintained by the Graduate Program in Tourism at EACH-USP



<<http://www.each.usp.br/turismo/publicacoesdeturismo/>>, over the last eight years, 2015 to 2022.

According to Romanowski (2002), state-of-the-art research can make a contribution to the establishment of the theoretical field of an area of knowledge, as it can constitute a historical milestone for the subject, making it possible to verify its evolution. For Ferreira (2002), this research presents the challenge of mapping and discussing certain academic production in different fields of knowledge.

This methodology makes it possible to monitor changes in the sciences, demarcating the different strands and facets on which scientific knowledge has been constituted (Silva, Souza & Vasconcellos, 2020).

According to Romanowski and Ens (2006), this type of study aims to systematize production in a given area of knowledge and has become essential for grasping the breadth of what has been produced in a given subject area. They also reinforce that this type of research is of great importance to academic knowledge, as it helps to understand the state of knowledge on a given subject, its scope, theoretical trends, and methodological approaches.

Palanch and Freitas (2015) emphasize that this type of research can make important contributions to the theoretical field of the area studied, since it also seeks to point out the gaps in the research and studies found.

In addition, such studies seek to highlight which aspects and dimensions have been highlighted in that area in a given location in the most recent publications. The authors also corroborate the importance of state-of-the-art studies, as they consider the analysis of studies and research carried out on a given topic to be fundamental in these times of intense change associated with growing advances in science and technology (Romanowski & Ens, 2006).

This research used the method proposed by Romanowski (2002, p.15-16) for drawing up the state of the art, which comprises the following steps:

1. Definition of descriptors to guide the search for information;



2. Definition and location of research databases (articles, thesis, collections, etc.);
3. Establishment of criteria for selecting the material that will make up the corpus of the study;
4. Collection of research material;
5. Readings of the productions, with preliminary summaries;
6. Organization of reports involving summaries and highlight of trends in the topic covered;
7. Analysis and drafting of preliminary conclusions.

Following the steps proposed by Romanowski (2002), the following elements were used to construct the scope of analysis for this research:

Step 01 - Definition of descriptors to guide the search for information: for this research, seven (07) descriptors were chosen as the most relevant to the topic, and through which it would be possible to find the largest number of possible studies: Destino Turístico Inteligente; Destinos Turísticos Inteligentes; DTI; Turismo Inteligente; Smart Tourism Destinations; Smart Destination e Smart Tourism. In all the searches, the quotation mark (") was used next to the descriptors to help with the work, searching for all the terms exactly as described in the search, generating more accurate results.

Step 02 - Definition and location of research databases: the Capes Thesis and Dissertations Catalog was chosen as the database for the research, in which the aim was to identify more in-depth studies on the subject, with a focus on thesis and dissertations on the topic. To complement the search, the Publicações em Turismo portal database was also used as a source. This database is maintained by the Postgraduate Program in Tourism at EACH-USP and contains information on articles published in Ibero-American scientific journals in Tourism, which use the OJS (Open Journal Systems) system. The information is collected from the metadata registered and provided by the journals and currently has 51 Ibero-American tourism journals indexed.



Step 03 - Establishment of criteria for selecting the material that will make up the corpus of the study: at this stage it was decided that only research directly related to the theme of Smart Destinations, produced and published in the last eight years (2015 - 2022) would be considered, and repeated works that appeared in search results with different descriptors were excluded. Only thesis and dissertations and studies published in journals were considered. Papers presented at events or published in event proceedings were not considered for this sample.

Step 04 - Collection of research material: for this step, the descriptors identified in step 01 were used, following the order presented, to avoid duplication of studies, repeated studies were excluded. At first, a content analysis of the titles, keywords and abstracts was carried out in a superficial reading and those that were related to the topic were selected. To help record and monitor the survey, the Google Sheets table tool was used to record the descriptor used; the database of origin; the type of study (thesis, dissertation or article); the entity responsible for the publication; the title; the keywords; the abstract; the authors; the year of publication; the access link and the classification of the study.

Step 05 - Readings of the productions, with preliminary summaries: After the initial selection, the material was read in detail to identify those that actually addressed reflections on the development and application of the concepts of Smart Destinations, identifying their objectives, methodologies and results.

Step 06 - Organization of reports involving summaries and highlight of trends in the topic covered: In this step, the studies found were classified according to the classes proposed by Mehraliyev et al. (2020), as mentioned above. Even understanding that Smart Tourism research covers more elements than SD research, according to Gretzel et al. (2015).

It is noteworthy that steps 5 and 6 were carried out in pairs, for better use, quality and validity of the data.



Step 07 - Analysis and drafting of preliminary conclusions: In this stage, in addition to reflections based on the classification of studies based on the proposal by Mehraliyev et al. (2020), a meta-analysis of the summaries of the selected studies was also carried out, with the help of the Iramuteq software, version 0.7 alpha 2, which supports the performance of lexical statistical analyzes of the text, performing Text Statistics analysis and the Descending Hierarchical Classification (DHC). This is materialized through the analyses and conclusions presented in this article.

This methodology and its step-by-step approach can be better understood in Table 2 below.

METHOD STEPS	METHOD APPLICATION
1) Definition of descriptors to guide the search for information;	Destino turístico inteligente; Destinos turísticos inteligentes; DTI; Turismo Inteligente; <i>Smart Tourism Destinations</i> ; <i>Smart Destination e Smart Tourism</i> .
2) Definition and location of research databases (articles, thesis, collections, etc.);	Capes thesis databases and Tourism Publications Portal.
3) Establishment of criteria for selecting the material that will make up the corpus of the study;	Thesis, dissertations and articles directly related to the theme of Smart Destinations; published in the last eight years (2015 - 2022). Papers presented at events or published in event proceedings were not considered for this sample.
4) Collection of research material;	Initial reading and recording in spreadsheets.
5) Readings of the productions, with preliminary summaries;	Detailed reading of the selected material.
6) Organization of reports involving summaries and highlighting trends in the topic covered;	Organization of studies and applications of the classification according to Mehraliyev et al. (2020).
7) Analysis and drafting of preliminary conclusions.	Record of the results in the articles.

Table 2. Methodological stages of the study of the State of the Art of SD in Brazil. Source: Adapted from Romanowski (2002)

RESULTS AND DISCUSSION

The results of the research are presented below, organized into three topics, considering first the data on scientific production on SD in Brazil,



contextualizing the sample of this study based on the aforementioned methodological scheme. Then, the classification of studies and knowledge on SD by theme is presented and, finally, the lexical-textual analysis with the help of Iramuteq.

Contextualizing the sample of scientific production on SD in Brazil

The search for the descriptors mentioned above in the Methodology section, in the databases chosen for this research, resulted in a total of 252 studies, of which 95 were thesis or dissertations and 157 were articles published in journals.

In the first reading, removing duplicate articles and those that did not correspond to the SD theme, 151 studies were excluded, leaving 101. In step 05, after a detailed reading of the papers found, 17 more papers were excluded because they were not related to the theme, finalizing the corpus of this study with 84 selected studies to understand the state of the art of SD research in Brazil.

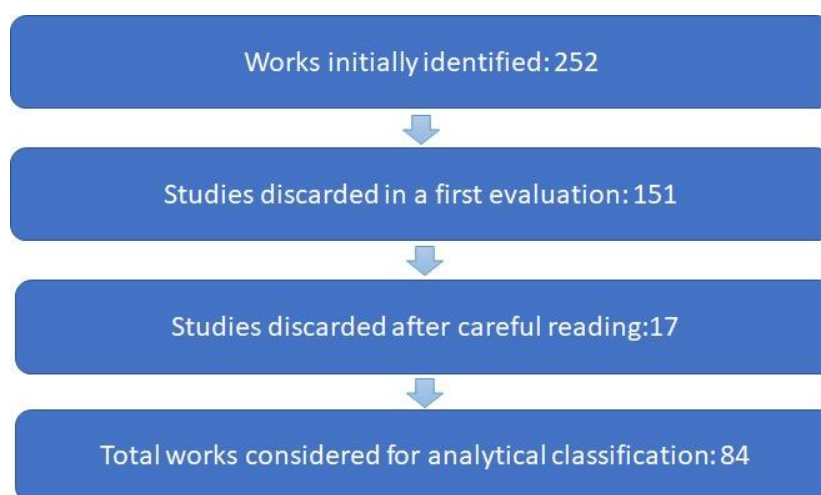


Figure 1. Study selection stages
Source: Elaborated by the author (2023).

Of these 84, 22 (twenty-two) are dissertations or thesis and 62 (sixty-two) are articles published in journals. Thus, this work consists of an analysis of 84 (eighty-four) publications that address the theme of Smart Destinations in Brazil,

indexed in the Capes Thesis and Dissertations Catalog and the Tourism Publications Database, published in the last eight years (2015-2022), as shown in Figure 1.

Thematic knowledge on SD in Brazil

To understand the state of scientific knowledge on SD in the Brazilian context, based on the classification proposed by Mehraliyev et al. (2020), the result is Figure 2.

Thematic knowledge on SD

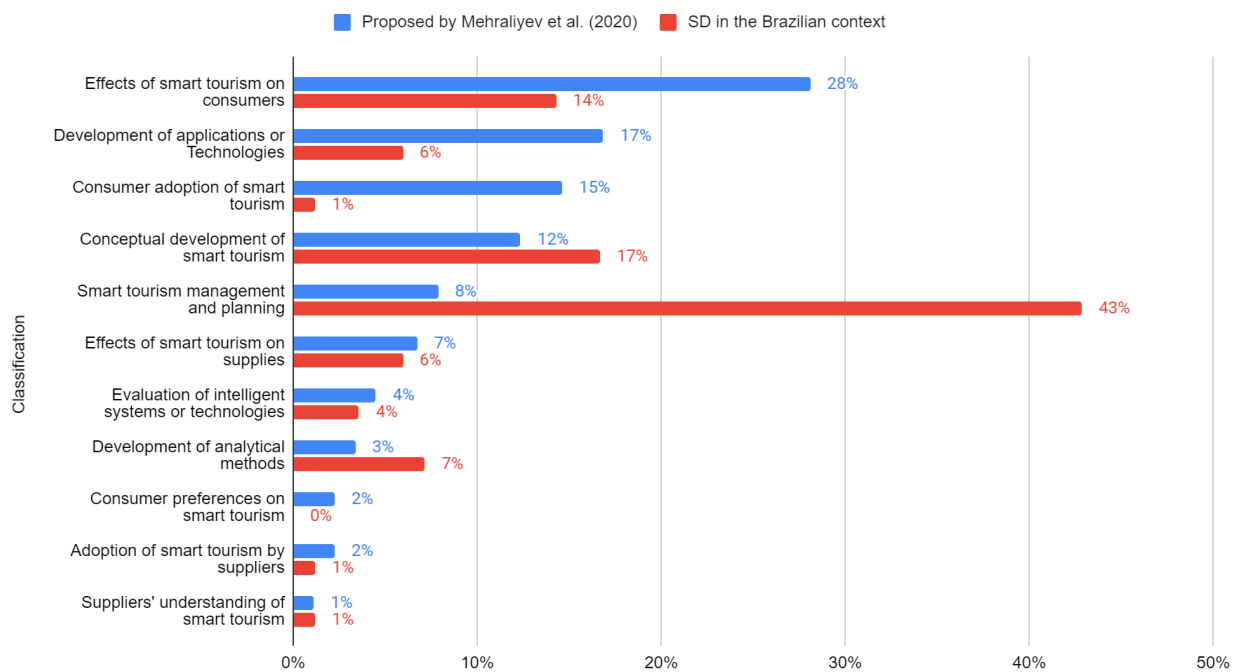


Figure 2. Comparison of the classification of Smart Tourism and SD studies
Source: Research data (2023).

Figure 2 shows that the most relevant themes and those with the highest concentration of SD studies in Brazil are Planning and Management, Conceptual Development and Effects on Consumers. And the topics with the lowest concentration of research are those focused on suppliers, both in the Adoption approach and in Understanding the concepts. It should be noted that there was no research on consumer preference in this classification.



The research carried out in Brazil on each of these themes will be detailed below.

Smart Tourism Planning and Management and SD

Of the 84 studies considered for classification and analysis in this research, 36 were classified under the theme of Smart Tourism Planning and Management, representing 43% of the studies. This demonstrates the concern of research in Brazil to understand and evaluate how to implement SD concepts and models in the management of Brazilian tourist destinations. Many studies have sought to reflect on and explore whether certain tourist destinations in Brazil meet the criteria or have the characteristics determined in the smart destination models.

However, in the study conducted by Mehraliyev et al. (2020), this topic had only 07 studies, representing only 8% of the total number of smart tourism studies, and was the fifth most relevant topic.

The first studies on this subject are articles from 2016, when CULTUR magazine published a special issue on Smart Destinations (Soares, Albuquerque and Mendes-Filho, 2022). Among the first thoughts were concerns about monitoring and evaluating tourist destinations as "smart" destinations. The same happens in Miskalo-Cruz and Gândara (2016) work, that highlight the importance of choosing, defining, and using indicators for the management and monitoring of tourist destinations, as a challenge for understanding and monitoring their evolution and transformation into a smart destination, exploring more efficient strategies for developing and improving these places.

Guardia and Mendes-Filho (2016) consider smart destinations to be a new paradigm for tourism management. Considering the entry of the city of Natal-RN into the circuit of smart cities in Brazil, they seek to reflect on strategies for the development of the city as an SD in the light of what has been done in Las Palmas de Gran Canaria. Khomsi and Bedard (2016) emphasize that when implementing a smart tourism destination development project, it is essential to adapt government structures to meet the specific needs of the project, as well



as stressing the importance of the process being participatory, with the involvement of all stakeholders and especially the tourism sector, comparing the development of projects in three Canadian cities.

Another common approach in studies on this subject is the development and proposal of frameworks for the progression of destination intelligence. This is the case of Cavalheiro (2017), who proposes in his thesis the Smart Destination Development Model - SDDM, which aims to indicate a strategic path that a tourist destination should follow to become a Smart Destination, considering that it is not just by implementing technologies, but that, in addition to technologies, an SD project needs to be based on a sustainable paradigm to create public value for the local community and to increase the competitiveness of the tourist destination.

Guardia (2020) presented a framework for classifying SD governance levels, based on an evolutionary scale of five levels for improving governance processes, contributing to SD planning and management strategies. And Jardim (2019) created the smart tourism development framework focusing on the main difficulties facing Brazilian tourism, such as structuring local governance, continuity of public policies, non-digitization of the trade, the old mindset of the tourism trade, among other factors, and which helps to implement modern, technological and digital methods in tourism strategies.

In this area, one of the most common trends has been the concentration of studies using the Spanish models of the Instituto Valenciano de Tecnologías Turísticas (INVAT-TUR) and the Sociedad Mercantil Estatal para la Gestión de la Innovación y las Tecnologías Turísticas (SEGITTUR) and other similar methodologies, to assess the extent to which a tourist destination had the elements and characteristics to "transform" itself into a Smart Destination (Miskalo-Cruz, 2018; Mõndego, 2021; Bárcia, 2020; Lima, 2019; Monteiro, 2018; Pereira, 2021; Bonfato, Athiê & Pelegrinetti; 2019; Gomes, Gândara & Ivars-Baidal, 2017; Lima, Mendes-Filho, Corrêa, & Mayer, 2021; Sousa, Souza, Rossetto & Baidal, 2016; Santos et al., 2016; Pinto, 2018; entre outros). These studies



considered a variety of Brazilian destinations, such as Natal/RN, Curitiba/PR; municipalities in São Paulo/SP; tourist destinations in Paraná, Petrópolis/RJ, São Luiz/MA, Búzios/RJ, among others.

Conceptual development of smart tourism

The second most present theme in the studies considered in this work, with 14 studies, representing around 17% of the total. This representation is to be expected considering the fact that this is a recent topic in Brazil and the development of studies that seek to contribute to a greater understanding of the issue. Also because this type of classification includes systematic literature reviews. However, the reference study by Mehraliyev et al. (2020) identified 11 articles on this topic, representing 12% of the total number of articles analyzed, making it the fourth most relevant topic.

Corrêa, Gosling and Gonçalves (2019) identified that researchers have studied the topic of SD from the perspective of value co-creation, smart cities and smart tourism. And they noted that there are still gaps in research into tourist behavior and its consequences. Sustacha Melijosa, Baños Pino, and Valle Tuero (2022) pointed out that the "smart" paradigm has stimulated the growth of academic production on the subject of smart destinations in recent years. Academic production on the subject has grown since 2015, peaking in 2019, when they identified 112 published documents on smart destinations.

Academic production on the subject is concentrated in Europe and Asia, which account for 81.9% of publications (43.9% and 38% respectively). The countries with the highest production are Spain, the United States and Italy. However, the United States is the most influential country, with the most citations of studies published there. The work also identified Nahmo Chung, Chulmo Koo, and Ulrike Gretzel as the leading authors in the field and reveals a growing interest in the management of tourist destinations, the improvement of the tourist experience and the competitiveness of the destination and even a look at the issue of sustainability. This last point is also supported by Machado's research (2020), which highlighted the association of environmental issues with



improving the image and competitiveness of smart destinations, which become more attractive if they are labeled as sustainable.

Celdrán-Bernabeu, Mazón, Ivars-Baidal, and Vera-Rebollo (2018) identified that studies of technological applications, methodological contributions, and case studies are common in academic production on Smart Tourism. On the other hand, theoretical and conceptual works are scarce and critical reflections practically non-existent. The topics that showed the most growth in 2017 were information systems, technology platforms and data science, along with digital marketing. The approaches that have stood out the most are Smart Experience and Smart Destination.

Effects of smart tourism on consumers

With 12 papers, this theme represents 14% of the total number of papers classified. Their focus is on the effects on tourist behavior. In the research by Mehraliyev et al. (2020) this was the main theme, with 28% of the articles reflecting on the impacts of smart tourism on consumer/tourist behavior.

Among the works on this subject, there is a line of research related to the tourist experience and the changes it has undergone with the digital transformations implemented in the activity through the adoption of technologies, including the concept of the intelligent tourist experience, as presented by Correa (2021) who considers it "as an interactive experience, rich in digital accessibility and information and communication technology (ICT), which enables mobility, personalization of the experience, fun, sharing and searching for information in digital media".

His study found that technology-supported tourism services tend to be more personalized and socially interactive, favoring the development of the traveler's attachment to the destination (Correa, 2021). Bolzan (2020) sought to identify cognitive-affective dimensions of the memorable tourist experience (MTE) in user-generated content on the Internet (UGC), observing a predominance of perceived quality and the aesthetic dimension as elements



of the MTE present in the UGCs, with the gastronomic experience standing out as the element with the best evaluation.

Silva (2021) sought to understand consumer behavior in the context of emerging technologies, using the following theories: Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2), Dominant Logic of Service-Creation, and Brand Equity. He found that consumers evaluate prices, ease of use, the resources and support available on websites and applications, usefulness, and also consider brand equity, brand image and brand quality when purchasing tourism products and services through OTAs - Online Travel Agencies. The elements that most influence the intention to buy tourism products and services online are Price and Brand Equity.

Canela and Navarro (2017) studied the relationship between the profile of the responsible tourism consumer and their behavior in smart destinations since sustainability is one of the pillars of the SD development model of both SEGITTUR and INVAT.TUR, considering the personalization of services and products, based on the profile of the tourist, as a way to strengthen responsible practices in smart destinations.

Mendes Filho, Mayer and Corrêa (2022) identified that the indicators with the most influence on SD in the perception of tourists were: "New technologies used by companies in the tourism sector", "Innovation projects to improve tourism products and services", and "Urban planning of the city". Thus, these dimensions should receive more attention from public and private managers in SD investments, as they have greater potential for quick return and less risk for destinations, and contribute to the competitiveness of destinations.

Development of analytical methods

In this thematic approach, there is Sousa (2018), who proposed the Synergistic Competitiveness Model for Smart Destinations (Modelo Sinérgico de Competitividade de Destinos Turístico Inteligente — MSCompDTI) for the development of public policies and smart tourism strategies in a locality. This model is made up of eighty-eight indicators, divided into eight dimensions to



be evaluated: Tourist Attractions and Supply Conditions; Competitive and Social Constraints of the Urban Surroundings; Accessible Tourism; Governance and Strategic Management; Innovation; Demand and Economic Impact; Sustainability and Environment; and Information and Communication Technology, Marketing and Information System.

Lamelas (2017) and Celdrán Bernabéu, Mazón and Giner Sánchez (2018), both Spanish articles that appeared in the results of this study, since the Publications in Tourism database is made up of Ibero-American scientific journals in Tourism. It was considered important to include these works in the results of this study, as they are easily accessible and provide important reflections on issues related to data management, based on the concepts of Big data and Data open.

Lamelas (2017) reinforces the need to diversify and enrich the data sources of smart destinations in order to better understand tourism activity and tourist behavior, suggesting the use of new data sources, such as: card payments, mobile phone networks, the internet of things, the use of tools to monitor the image and reputation of the destination on the web and social networks, as well as tools to analyze the evolution of prices of accommodation in the destination.

On the other hand, Celdrán Bernabéu, Mazón and Giner Sánchez (2018) identified that the current level of use of open data in tourism is still low, requiring support actions for its dissemination. They also proposed the design of the Innovative Data Ecosystem in a smart destination, taking into account the data provided by tourists, who are increasingly digital, and the information-providing initiatives characteristic of SD, such as portals, sensors, the Internet of Things, among others, to improve the tourist experience and destination management.

However, they also identified a set of barriers that prevent the use of open data and big data in tourism from advancing, namely: political-institutional aspects; complex open data file formats (which make it difficult to use these



files); the lack of professionals with knowledge of big data and open data to encourage their use; legal aspects, with solutions not licensed for free use; the quality of the information available, which is often incomplete, as well as technical aspects, which would be the lack of support from institutions and entities to make data available in open format.

Muniz, Dandolini, Biz, and Ribeiro (2022) used SMARTUR - Smart Management of the Tourist Experience in the management of shared tourist experiences on TripAdvisor, to propose intelligent solutions in the city of Florianópolis (Brazil). This model has four dimensions of analysis, namely: Planning; Acquisition; Intelligence, and Value Generation, which aim to help map and analyze tourism experiences shared through user-generated content (UGC) on websites and digital social networks. The main aim is to make the destination and its attractions more competitive.

Still on the use of tourist data available online or captured by devices and applications, Masseno and Santos (2019) discuss the problems of protecting the use of this data, given the new data protection laws, and propose ways and reflections for the processing of personal data in the context of SD, mainly related to the creation of traveler profiles, indicating solutions of available compliance tools and reinforcing the importance of this care in current times.

Application or technology development

Compared to the original international study, the theme of Application or technology development was the second most relevant, concentrating 15 studies on this theme, or 17% of the studies classified in the reference study. In this study, there were only 5 studies on the subject, representing just 6% of studies in Brazil. This difference emphasizes the need for Brazilian studies to focus more on recording the development and experimentation of new solutions that contribute to the development and management of SDs.

Among these studies is Figueiredo's (2019) which presents a proposal for a solution to create personalized recommendations for a tourist or a group, using image classification techniques and fuzzy inference to map tourist preferences



based on social media photos. In this way, the technology would help visitors make decisions and plan their trip by suggesting attractions to visit at the destination.

Martins (2020) proposes a tool to analyze the current tourism situation of Brazilian municipalities, taking into account Brazilian federal public tourism policies and the concept of Smart Destinations based on the Design Science Research method. Muniz (2020) developed the concept of a framework for the Intelligent Management of the Tourist Experience - SMARTUR, based on customer knowledge management to help create intelligent solutions and promote Smart Destinations.

Borràs, Macià, Albuera, Pérez and Clavé (2020) presented the Trip&Kids platform applied to the Costa Daurada and Terres de l'Ebre destinations in Catalonia - ES, a technological solution developed specifically for family tourism aimed at facilitating family visits to certain tourist attractions, especially those related to beaches, cultural heritage and wine culture; and improving the experience of families during their visit to the attractions, increasing their level of loyalty.

Effects of smart tourism on suppliers

This theme also obtained only 05 studies in the survey and classification of studies in Brazil, representing 6% of the studies, tied for fifth place with the previous theme, being among the most covered themes in Brazil.

On this subject, there is the work of Soares (2018) who studied how isomorphic pressure, an element of institutional theory, is present in hotels in Natal/RN with regard to the adoption of information and communication technologies (ICTs). He identified that hoteliers seek to adopt technology in order to appear legitimate in the market, especially among consumers. To do this, they imitate the competition and seek to be well-evaluated in the virtual environment so that they can be accepted and prolong their survival in the market.



Alvares and Soares (2019) focused their study on innovative initiatives related to the promotion of startups in Brazil, Spain and Portugal, in the context of smart destinations (SD). Herrera and Ramos (2018) studied the use of technology by companies in the tourism sector and came up with the concept of intelligent tourism organization, which has three elements as its basis: the Human Talent of employees, the Technologies adopted in the company and Competitiveness as an agent of innovation and adaptability of companies to the new demands of the tourism market.

Araújo, Farias and Ferreira (2020) studied Tourism 4.0 as a new paradigm with the use of new technologies (Artificial Intelligence, Internet of Things, Cyber-Physical Systems, Big Data, Data Security, Augmented Reality, Virtual Reality, Autonomous Robots, Cloud and Horizontal and Vertical Integration of Information Technology Systems) applied to tourism. However, they identified that there are few studies in this area and that the concept of Tourism 4.0 in Brazil is still moving slowly. And in the face of so many technologies and advances, it is clear that the Brazilian tourism market is still obsolete in the face of this new era. This was also highlighted in the study on ICT in Tourism by Soares et al. (2022).

Meanwhile, Cerdá-Mansilla, Rubio, García Henche, and Campo (2022) analyzed the impacts of the Airbnb platform and the touristification of neighborhoods in cities, considering the area of Madrid - ES through the variables of number of dwellings, number of dwellings/km² and average rental price. They reaffirm that the availability of vacation rental options on the Airbnb platform has a strong impact on rental prices in the surrounding area, on the displacement of the local population, on coexistence in the neighborhood and on the transformation of local commerce, influencing the transformation of residential neighborhoods into tourist attractions. This highlights the need for public authorities to intervene in the spatial distribution of the supply of vacation rentals on online platforms such as Airbnb, in order to stimulate the decentralization of tourism in certain neighborhoods.



It should also be noted that both in Brazil and internationally, there is a need for greater understanding of the impact of new technologies and the concepts of SD and Smart Tourism on suppliers/companies in the segment, due to the lack of studies on this subject.

Evaluation of intelligent systems or technologies

This theme had the same low representation in both reviews, with only 4% of the studies. This is due to the fact that there are still few intelligent systems and technologies implemented and properly operating in the tourism sector to be evaluated, but it is necessary to develop this line of research, seeking to evaluate the application of technologies in tourism, considering what has already been implemented with intelligent experiences in tourism.

We only found Silva (2019) analyzing the accessibility of information in e-commerce in commercial aviation based on the Web Content Accessibility Guidelines [WCAG 2.0] - World Wide Web Consortium International [W3C], identifying that 102 (one hundred and two) airlines failed the accessibility standard, only Asiana Airlines (Star Alliance) and Azores Airlines were approved, noting that as accessibility to information is limited, the consumer's right to choose is also limited.

Sanabre, Vinyals-Mirabent and Pedraza-Jiménez (2019) defended the application of two analysis systems to fully assess the quality of a tourist site. One focused on a more strategic analysis and the other system focused on an evaluation of technical requirements, thus guaranteeing a comprehensive analysis of its quality.

Jaelani, Firdaus, Sukardi, Bakhri and Muamar (2021) associated the use of technology in tourism with support in controlling and monitoring Covid-19 outbreaks. They consider that the presence of technology in services associated with Halal Tourism can help prevent the transmission of Covid-19. They also consider that smart destinations can qualify the services offered to the public, through quick access to information on Halal Tourism, and thus contribute to the control and management of the Covid-19 pandemic in tourist



locations, increasing detection, mitigating outbreaks and making effective decisions when situations are critical.

Consumer adoption of smart tourism

This theme behaved quite differently between the studies, while in Brazil we found only one work, in the reference study by Mehraliyev et al. (2020). This was the third most relevant theme, with 15% of the articles. Even considering that smart tourism is broader than the universe of Smart Destinations, this is one of the thematic lines of research in SD that needs to be developed by Brazilian scholars, developing research directly with tourists, directly addressing the acceptance and adoption of technological solutions in SDs.

Of particular note is the study by Guebel (2020), which analyzed the acceptance process of wearable devices applied to tourism, focusing on the use of cashless payment bracelets and using the Technology Acceptance Model, identifying that the acceptance of wearable technologies in tourism is influenced by utilitarian factors (usefulness, ease, security and privacy), hedonic factors (fun and aesthetics), social factors (self-image and social influence) and rejection factors.

Adoption of smart tourism by suppliers and Suppliers' understanding of smart tourism

These thematic lines had negligible representation in both systematic reviews. In Brazil, only 1% of the research addressed each of these themes, i.e. only 1 study was found on each topic. This represents the need for a better understanding of the impacts, adoption of technologies and digital transformation of companies in the sector.

In line with the adoption of smart tourism by suppliers, Araújo (2020) investigated the relationships between variables capable of influencing the business performance of travel agencies based on relationships facilitated by the use of ICTs based on variables and dimensions based on the Balanced Scorecard (BSC) theory and the Relationships and Business Performance (RE-BP) theoretical model, concluding that travel agencies should use ICTs to



facilitate their relationships with their employees, suppliers and customers, whose strategies enable better business performance.

And in the line of suppliers' understanding of smart tourism, we find González, Luque, López and Pérez (2018), who sought to analyze the level of understanding of tourism stakeholders regarding the concepts of smart tourism destinations and their impacts. The study's first conclusion is that the general outlook for SDs is very optimistic. The interviewees had a high degree of agreement that SDs will be a reality in the near future, considering that increased efficiency and social benefits will go hand in hand with the implementation of SD projects.

However, they highlight the risk of creating inequalities due to different levels of access to technology by destinations. And despite the fact that destinations face barriers to the development of SD projects, the ability to generate innovative management and business structures and models will be the driving force behind the development of SDs. The main consequences will be an increase in the competitiveness of destinations and the renewal of business models, as well as stimulating innovation in the sector.

Consumer preferences on smart tourism

There were no studies on this subject in the survey of works here in Brazil. The international study also had a low level of representation (only 2%, i.e. only 2 articles identified). This also demonstrates the importance of more relevant studies on the subject, both nationally and in international publications.

To make it easier to identify the research and understand the distribution of SD studies in the Brazilian context, Table 3 summarizes the research analyzed here.

State of the art of SD studies in Brazil	
Smart tourism planning and management	Miskalo-Cruz and Gândara (2016); Guardia and Mendes-Filho (2016); Khomsi and Bedard (2016); Cavalheiro (2017); Guardia (2020); Jardim (2019); Miskalo-Cruz (2018); Mõndego (2021); Bárcia (2020); Lima (2019); Monteiro (2018); Pereira



	(2021); Bonfato, Athiê & Pelegrinetti (2019); Gomes, Gândara & Ivars-Baidal (2017); Lima, Mendes-Filho, Corrêa, & Mayer (2021); Sousa, Souza, Rossetto & Baidal (2016); Santos et al. (2016); Pinto (2018); Cruz (2021); Santos (2018); Fernandes & Bernier (2021); Santos, Souza Neto, Pereira, Gândara & Silva (2016); Bárcia (2020); Freitas & Mendes Filho (2020); Pinto & Nakatani (2020); Mendes Filho, Silva & Silva (2019); Ramos & Campo (2022); Santos-Júnior, Augusto-Biz, Almeida-García & Mendes-Filho (2019); Vázquez-Martínez (2019); Ruíz, Burgos & González (2019); Romero, Esteban Curiel & Antonovica (2019); Santos-Júnior, Mendes-Filho, Almeida-García & Manuel-Simões (2017); Cardoso & Ruiz (2021); Marín & Sánchez (2022); Fernandes & Bernier (2021); Perea-Medina, Andrade & Rosa-Jiménez (2018).
Conceptual development of smart tourism	Corrêa, Gosling and Gonçalves (2019); Sustacha Melijosa, Baños Pino and Valle Tuero (2022); Machado (2020); Celdrán-Bernabeu, Mazón, Ivars-Baidal and Vera-Rebollo (2018); Lima and Mendes Filho (2021); Luque Gil, Zayas Fernández and Caro Herrero (2015); Cornejo, Núñez and Valdez (2016); Moraes (2019); Fuster Uguet (2020); Fernández Alcantud and García Moreno (2021); Dieckow (2020); Mazo, Oliveira, Biancolino and Tomazzoni (2021); Carballido and Guevara-Plaza (2021); Soares, Cesario & Araújo (2022).
Effects of smart tourism on consumers	Correa (2021); Bolzan (2020); Silva (2021); Canela and Navarro (2017); Mendes Filho, Mayer and Correa (2022); Silva (2020); Corrêa and Gosling (2020); Santos, Souza Neto, Pereira, Gândara and Silva (2016); Ballina Ballina, Pélaez, and Valle Tuero (2019); Torres and Aparicio (2021); Perinotto, Santos, Araújo and Tavares (2021) and Santos and Gândara (2019).
Development of analytical methods	Santos and Gândara (2016); Souza (2018); Lamelas (2017); Celdrán Bernabéu, Mazón and Giner Sánchez (2018); Muniz, Dandolini, Biz and Ribeiro (2022) and Masseno and Santos (2019).
Application or technology development	García, Mendes Filho and Santos Júnior (2016); Figueiredo (2019); Martins (2020); Muniz (2020); Borràs, Macià, Albuera, Pérez and Clavé (2020).
Effects of smart tourism on suppliers	Soares (2018); Alvares and Soares (2019); Herrera and Ramos (2018); Araújo, Farias and Ferreira (2020); Cerdá-Mansilla, Rubio, García Henche, and Campo (2022)
Evaluation of intelligent systems or technologies	Silva (2019); Sanabre, Vinyals-Mirabent and Pedraza-Jiménez (2019); Jaelani, Firdaus, Sukardi, Bakhri and Muamar (2021)
Consumer adoption of smart tourism	Guebel (2020)



Consumer preferences on smart tourism	<i>There are no studies on this subject in Brazil.</i>
Adoption of smart tourism by suppliers	Araújo (2020)
Suppliers' understanding of smart tourism	González, Luque, López and Pérez (2018)

Table 3. Studies on SD in Brazil, by thematic area
Source: Research data (2023).

LEXICAL-TEXTUAL ANALYSIS WITH IRAMUTEQ

To help with the lexical-textual analysis of the 84 abstracts of the articles selected to form the corpus of this analysis, we used the work of Porte and Trindade (2021) as a reference. As we used the abstract of the papers to carry out the lexical-textual analysis, one of the selected papers did not have its abstract available, so it was not considered in these analyses.

Thus, with the analysis of the Iramuteq software, 83 texts were identified that made up the corpus, which were grouped into 498 text segments, with 411 being used for analysis, which represents a retention of 82.53% in the Descending Hierarchical Classification (DHC) using Reinert's method, which is adequate for the analysis to be carried out given that the expected use of text segments in a corpus is at least 75% (Camargo & Justo, 2013).

The corpus also identified 3,184 textual forms, which generated 17,664 occurrences (words within the corpus). In addition, 1,969 words forms were identified, of which 236 were supplementary and 749 were active, forming the 498 text segments for analysis. After processing the Descending Hierarchical Classification (DHC) using Reinert's method, a dendrogram of the classes was drawn up (Figure 4). Descending Hierarchical Classification is the method in which the texts segments are classified according to their respective vocabularies, so the set of texts is divided and grouped according to frequency, and the relationships between the classes are illustrated in a



dendrogram (Figure 3). This method aims to obtain classes of text segments that have similar vocabulary and meaning to each other, as well as different vocabulary from the text segments in the classes (Camargo & Justo, 2013).

From the DHC processed by Iramuteq, five distinct classes were obtained. The first grouping was split, giving rise to Class 5. The second grouping was subdivided into Class 1. The third grouping was split again, giving rise to Class 4 and the fourth grouping gave rise to Classes 2 and 3.

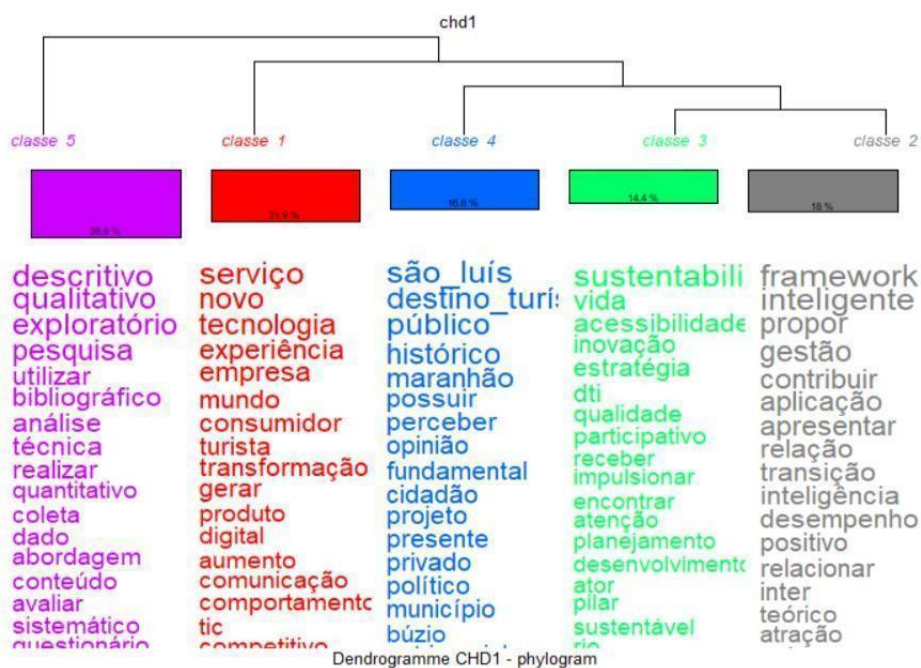


Figure 4. Class Dendrogram
Source: Iramuteq (Research data, 2023).

Class 5 grouped 119 of the 411 text segments, representing 28.9% of the total. In this class, the segments of texts related to the Methodological Processes of research into Smart Destination stand out. Class 01 accounted for 90 of the 411 text segments analyzed, representing 21.9%. The terms related to the Impacts and Transformations of the development of SDs were grouped here.



In Class 4, 69 text segments were grouped together, representing 16.8% of the total, and this set consisted of terms alluding to the Dimensions of SD Research Analysis.

Class 2 compiled 74 of the 411 text segments, or 18% of the total. These were related to Reflections on SD Implementation. Class 3 accounted for 14.4% of the text segments, or 59 of the 411, and these segments were related to the Elements, Models, Pillars, Dimensions and Indicators of SD, as identified in Table 4.

Class 5	Class 1	Class 4	Class 3	Class 2
Methodological processes for research on Smart Destinations	Impacts and transformations of SD development	Dimensions of SD Research Analysis	Elements, Models, Pillars, Dimensions and Indicators of SD	Reflections on the Implementation of SD

Table 4. Identification of Dendrogram Classes

Source: Elaborated by the author (2023).

CONCLUDING REMARKS

The study identified that research into SD in Brazil is still in its infancy, with conceptual and methodological approaches and the effects of technology on the consumer. This is to be expected, as the research is recent, with the first records dating back to the last decade. However, despite being a relatively new concept, it has seen rapid growth in tourism research, as presented by Sustacha Melijosa, Baños Pino, and Valle Tuero (2022).

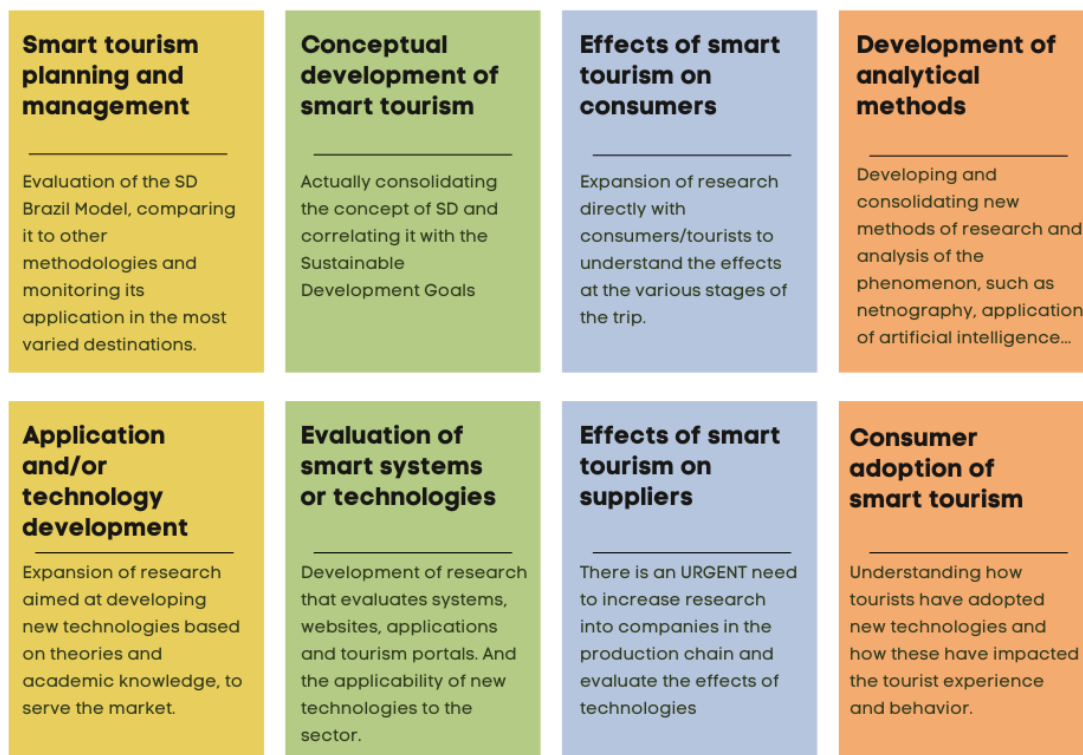
For this reason, the thematic lines of Smart Tourism Planning and Management and Smart Tourism Conceptual Development were the most prominent in the Brazilian context. However, as identified, many of the studies



carried out here are characterized as case studies on the evaluation of tourist destinations and their adherence to SD concepts. Further development of other lines of research is needed to strengthen and consolidate the theme as a line of research and a methodology for working with destination management.

The research also identified that market-related topics dealing with consumer preferences, technology adoption by suppliers and consumers, and suppliers' understanding of SD are still under-researched, and an effort is needed to develop research that focuses on these audiences. However, this lack of research into the smart business ecosystem advocated by Gretzel et al. (2015) was also identified by Soares et al. (2022).

Thus, as a contribution to the scientific development of the subject in the Brazilian context, the following research agenda is suggested:



<p style="text-align: center;">Consumer preferences about smart tourism</p> <hr style="width: 20%; margin: auto;"/> <p style="text-align: center;">Developing research to understand what tourists want and how to meet their travel needs and preferences</p>	<p style="text-align: center;">Adoption of smart tourism by suppliers</p> <hr style="width: 20%; margin: auto;"/> <p style="text-align: center;">Expanding knowledge about the digital transformation of tourism companies and their levels of maturity.</p>
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Table 5. SD research agenda for Brazil

Source: Elaborated by the author (2023).

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