Journal of Tourism & Development | n.º 36, vol. 2 | 2021 | [101 - 109]
DOI: 10.34624/rtd.v36i2.9201
e-ISSN 2182-1453

Wayfinding as an innovation in **preventing overtourism**

AUGUSTO JOSÉ WASZCZYNSKYJ ANTUNES DAS NEVES * [augustojw@ua.pt]

Abstract | To evaluate whether or not wayfinding can be considered as an innovative practice in the prevention of overtourism. For that purpose, a Systematic Literature Review (SLR) was conducted in order to map, characterize and synthesize documents published in the Scopus database that approached innovation, tourism and wayfinding. The reduced number of publications found, together with the results of these studies indicated the use of wayfinding as a corrective strategy to problems related to tourism activity, suggesting its application as an innovative practice to prevent overtourism.

Keywords | Wayfinding, overtourism, prevention

* **Master in Science, Management and Information Technology** from the Federal University of Paraná. **Professor** of Basic, Technical and Technological Education in Federal University of Paraná and **Researcher** at the Governance, Competitiveness and Public Policy Research Unit of the University of Aveiro (GOVCOPP-UA).

1. Introduction

According to the Amadeus IT Group (2015), by the year 2030 there will possibly exist six demographic segments (or tribes) of travellers: simplicity searchers, cultural purists, social capital seekers, reward hunters, obligation meters? and ethical travellers. Although there will be consumer needs that will have to be attended specifically for each of these tribes, they are interconnected and are not self-excluding. Each kind of traveller that takes part of these tribes is focused on living unique experiences with their touristic adventures (Same & Larimo, 2012). At the same time, when problems related to overtourism are increasingly frequent, a perspective arises to organize and make available the tourist supply so that there is a more uniform distribution of these tribes of travellers throughout a certain geographical area.

In this regard, and as a way of guiding policies and actions directly or indirectly related to tourism, the World Tourism Organization (UNWTO, 2018) suggests a set of 11 strategies, which are broken down into 68 measures to help better understand and manage tourist growth in cities. These include: a) stimulating new attractions and new itineraries for visitors (strategy 3); b) create experiences in cities that benefit residents and visitors (strategy 7); and c) promote the improvement of city facilities and infrastructure (strategy 8). These improvements suggested by the World Tourism Organization, point to better distribution and organization of spaces, attractions and resources. Once implemented, they could allow tourists to visit and get to know the places they travel to, while the sometimes intangible historical and cultural traces of the local populations are maintained and cherished by all stakeholders.

Considering the perspective of the organization of the supply directly or indirectly related to tourism, wayfinding emerges as an instrument that can assist in a more effective and efficient management of resources present in satellite accounts (Accommodation, Transport, Catering, Rent-a-car, Cultural Services, Recreational Services, and Travel & Operations Agencies) related to tourism (INE, 2018). Consequently, a question arises: can wayfinding be considered as an innovative practice to prevent overtourism?

Therefore, the present research aims to evaluate whether wayfinding can be considered as an innovative practice in the prevention of overtourism. The document is structured as follows: first, it presents a brief contextualization of the relationship between tourist activity and the concepts of territory, competitiveness and innovation. Second, it describes the adopted methodology, results obtained and their discussion. Finally, it ends with the proposition of a practical application as a way to prevent overtourism, followed by the conclusion and the used references.

2. Wayfinding, overtourism and innovation

As previously mentioned, wayfinding represents the way in which users arrive at a destination and how they locate themselves in space (Farr, Kleinschmidt, Yarlagadda, & Mengersen, 2012; Gibson, 2009; Ribeiro, 2009; Scariot, 2013; Smythe, 2014). This activity involves perceptual, cognitive and behavior processes and, when interpreted as a solution to a spatial problem, can be performed in three interrelated stages: (1) decision making, in which the user establishes a plan of action; (2) execution of the decision, in which the user puts into action the established plan; and (3) information processing, in which the user perceives, knows and understands the previous steps (Arthur & Passini, 2002).

In order to materialize wayfinding, to physically make available the information that helps in the process of locating carried out by users, there is

a need to create visual artifacts that, in this context, present functions such as identification, direction, orientation and regulation (Gibson, 2009). In public spaces such as airports, these artifacts are used for wayshowing - materialization of wayfinding that allows explicitly aggregate information of meanings that facilitate the users' spatial location - and can take the form of (Gibson, 2009; Ribeiro, 2009; Smythe, 2014; Symonds, 2017):

> (a) maps, in which routes can be identified to follow within a certain space (route maps) and/or the exact place where the user is in a certain space/time (maps with the indication "you are here"); and
>
> (b) signboards, in which pictograms and symbols are used as forms of communication.

Arthur and Passini (2002) consider that it is relevant that the signs are composed of two types of graphic information: verbal or typographic and non-verbal or pictographic. When used together, one ends up having the purpose of reinforcing the message of the other. The authors further emphasized that the information conveyed in these artifacts should present some flexibility due to possible itinerary changes that may occur in the user's movement inside closed spaces, such as an airport terminal.

For Berger and Eiss (2002) and for Ribeiro (2009), the design and construction of signs that are intended to indicate directions within a given urban context, whether open or closed as an airport passenger terminal, contemplate recommendations, such as:

> - avoiding the use of three or more colors;
>
> - use a minimum of 60% contrast between the source color and background color used;
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> - choose a simple and easily readable font style with proportional spacing;
>
> - use pictograms in conjunction with a text, configuring an understandable message; and,
>
> - do not pollute the board with many messages, aiming at its easy comprehension and readability.

Some of the problems that may occur with airport passenger terminals signs are: ineligibility at a distance, due to the misuse of fonts, colors and layout; inadequate location in decision points, making it difficult to define the route to be followed by users; or overlapping with boards used for advertising purposes, and may lead to the concealment or misinterpretation of information (Carpman & Grant, 2002).

The structuring and organization of the spaces, as well as their interpretation and applicability, thus give wayfinding a relevant status in the planning of tourist activity. Therefore, its applicability as a preventive strategy for overtourism-related phenomena is noticeable. UNWTO (2018) conceptualizes overtourism as the impact of tourism on a particular destination, or parts of it, that excessively influences the perceived quality of life of citizens and/or the quality of visitor experiences in a negative way.

As an activity that is made from people to people, it's constantly changing and updating, and its recent popularization may be, perhaps, one of its main challenges (Beni, 2019). More people traveling, more flights taking place, more easiness in finding and choosing accommodation can, on the other hand, lead to an accentuated individualization of the tourist experience, which may have consequences such as the alienation of residents from places where tourism is on the rise. All of this can, in extreme cases, turn tourist activity into something undesirable. Possibly one of the biggest challenges related to tourism is to establish innovative mechanisms that help prevent problems that are directly or indirectly related to tourism and/or

that may directly or indirectly influence tourism.

The Oslo Manual (OECD, 2018) indicates that innovation represents a new or improved product/process whose characteristics differ significantly from its latest version. This innovation can be classified as product, service, marketing or organizational (OECD, 2018). By applying these principles in tourism, it is found that tourism depends directly and/or indirectly on the development and implementation of innovative practices. For Hjalager (2010), innovations in tourism can be: product/service, process, organizational (management), marketing, institutional or by generating benefits for other sectors/local community.

Thus, considering that innovation can be characterized as an idea, practice, or object perceived as new by an individual (Aires, Brandão, & Valduga, 2017; Rogers & Schoemaker, 1971), the use of wayfinding could be envisioned as an innovative practice in preventing overtourism.

For this to happen, wayfinding must be perceived as a phenomenon that improves and modifies something quotidian (incremental innovation) and/or a phenomenon that provides a new practice or procedure related to tourism (radical innovation), even causing the emergence of new paradigms (Tigre, 2014). In this case, innovation through wayfinding would be induced by tourism demand (Tigre, 2014), with a view to generating positive impacts, such as: generation of new sources of profit within a given geographic space; increased demand for less sought after products and services; attract new tourists; opening new market niches; and/or contribute to the sustainability of tourism activity (Turban & Volonino, 2013).

3. Methods

This research is characterized by being quantitative and qualitative, assuming exploratory and descriptive character (Creswell, 2007). To achieve its objective, a Systematic Literature Review (SLR) was performed. This method enables the mapping, characterization and synthesis of documents published on a specific theme (Conforto, Amaral, & Silva, 2011).

Initially, the question that would guide the research was defined, and then selected the database to use. It was decided to look for documents published in Scopus, as it represents one of the largest databases of peer-reviewed abstracts and citations, articles published in scientific journals, book chapters, and congress proceedings (Elsevier, 2020).

The criteria for selecting the information and documents to be analyzed were: documents published until 2019 and retrieved from Scopus using the search field "article title, abstract, keywords" where the term "innovation" was entered. Then, in the search field "Search within results ...", and in order to reduce the amount of documents analyzed, the following terms were searched individually and sequentially: "touris*", to identify documents related to tourism activity; and "wayfinding" to identify those with the term wayfinding in their title, summary, and/or keyword.

The search for these documents according to the above criteria took place in October 2019, and the information obtained was stored in a Microsoft Excel spreadsheet according to the following indicators: author (s), year of publication, title, research objectives, keywords, data collection methodology, data analysis methodology, results. Secondly, after conducting a content analysis on the documents found, based on the assumption that wayfinding wasn't being investigated as a mechanism to prevent overtourism. Based on the results, a suggestion was made to develop an innovative practice for the prevention of overtourism, involving wayfinding.

4. Results

After entering the term "innovation" in the search field "article title, abstract, keywords", the Scopus database allowed retrieving information on 391.886 innovation documents. Then, within these results, we searched for documents related to tourism, using the term "touris*" in the field "Search within results...", and 8,825 results were obtained. Finally, in order to find out which of these could be about wayfinding, we searched for the term "wayfinding" in the "Search within results..." field, which only retrieved ten documents. Of these, three are in scientific article format, three are conference papers, two are books, one is a book chapter and one is a review. In order to perform an analysis based on the similarity of document structure and issues related to the representativeness of the results, only scientific articles and conference papers were selected to fulfill the objectives of this research. The articles analyzed are listed in Table 1.

Table 1 | Articles and conference papers submitted to analysis

	Authors	Title
1	Schilling, Coors & Laakso (2005)	Dynamic 3D maps for mobile tourism applications
2	Pantano (2014)	Innovation drivers in retail industry
3	Chen & Zheng (2017)	Meeting point design in the international airport based on travelers' meeting behavior
4	Tsai & Zheng (2017)	Retraction: Foreign tourists' wayfinding and circuitous behavior in Longshan Temple of Manka
5	Lee & Wu (2018)	Travel navigation design and innovative operation mode
6	Shiau, Huang, Yang & Juang (2018)	A derivation of factors influencing the innovation diffusion of the OpenStreetMap in STEM education
7	Cerdan Chiscano & Binkhorst (2019)	Heritage sites experience design with special needs customers

Source: Own elaboration

The first, published in 2005 by Schilling, Coors and Laakso (2005), describes how interactive three-dimensional maps can be implemented on mobile devices and how they can be exploited by tourism applications. This work, which discusses, topics related to three-dimensional images and wireless communication technologies, emerged as one of the results of the Norwegian-based Tell-Maris Project, which had as its main objective the development of a tourist information system for mobile clients. where it would be possible to display 3D maps. The results indicate that users could identify tourist points of interest, preferring to interact with the interface provided by 2D maps, over the one made possible by 3D maps. The pioneering nature of the work is remarkable, especially considering that the year it was published corresponds to the year in which the Google Maps application was made available to the public, opening a new era of territorial exploration related to tourist activity. At the same time, it is clear that this developed technology implies the application of the premises and characteristics that define the wayfinding.

Nine years later, Pantano (2014) develops a work that contributes to the enrichment of the literature, identifying to what extent there are similarities and differences between the main drivers of retail innovation and those related to other sectors, such as education. Among the topics discussed in the paper are: the plurality of innovation drivers and innovative retail management practices. The simple and well organized form of the text contributes to its comprehension. However, this document has no direct relation to the scope of wayfinding, and may have been used as a practical example for better illustration and visualization of the applicability of the worked / developed concepts.

Chen and Zheng (2017) clarify that a well-identified meeting point within an airport space can provide an increase in the identification effi-

ciency of individuals who use it and wish to be located in it. Through the use of surveys, observations and questionnaires, the authors identified that the recognition and color of the signs, the application of signs that indicate a way forward and the accessibility to the information available in the surroundings, are factors that should be considered when designing meeting places in airport spaces. Generally speaking, this paper presents an application of a wayfinding information system in built environments. Concomitantly, it is perceived that it is used as a proposal for solving a problem, within a closed, dynamic, busy space, where most of its users enjoy it for short periods of time and where practicality and interpretation of information are treated as priorities, considering that there is always a need to move between at least two points.

Through the use of surveys and observations, Tsai and Zheng (2017) identified that, by observing religious behaviors and those related to wayfinding, it becomes possible to improve the information of the worship circuit indicated in a particular religious space. Thus, the authors recommend making maps available in areas where visitors can interpret the data available on them as accurately and as expected as possible, suggesting the implementation of QR codes and directional signs as a way to reduce costs and customize the location information in religious spaces. In this research it's clear the application of wayfinding in a more current, technological and with a more significant use of artifacts (maps, smartphones, cards), in an open space where, once again, it is intended to solve an existing problem that is possibly related to the lack of planning of the use of the studied religious space.

Collecting requirements and problems faced by users in geographic location while traveling, Lee and Wu (2018) propose indicators for the realization of a human-computer interface, supported by contextual research, in order to enable an innovative travel navigation mode. Focusing on the issue of displacement by tourists between the different components of tourism supply (attractions, services, food, among others), the authors contribute to the development of a technology related to the usability of applications, in which its users, intuitively and fluidly, meet their information needs. However, even presenting the link with the issue of displacement, this article focuses on the usability of the application and not on the wayfinding issue, leaving aside the motivations and restrictions that lead the tourist to travel and to know specific spaces to the detriment of others.

Shiau et al. (2018) have proposed a new integrated analytical framework that allows us to examine factors that may influence the diffusion of innovation and acceptance of OpenStreetMap (OSM) technology in the context of science, technology education, engineering and math. Similar to that investigated by , Lee and Wu (2018), this research focuses on the issue of software development and its usability. Nevertheless, the authors direct their efforts on the learning issue of geographical location systems related to students in the field of exact sciences, neglecting the themes implicit in wayfinding.

Finally, Mika et al. (2019) use service design and co-creation to assess the inclusion of tourists with visual and learning difficulties, in Barcelona (Spain) heritage walking tours. In this research, wayfinding appears as part of the initial studies regarding the routes design, serving as an instrument that aims for greater autonomy and safety during the tourist experience of users with visual and learning disabilities in the city of Barcelona. In this scenario, the wayshowing process takes place through tactile objects, which are elaborated with the help of Braille writing system or with the help of 3D models, enhancing and intensifying the touristic experience. Therefore, this study offers an account of an immersive experience through the use of co-creation, where wayfinding emerges as a key tool in solving an inclusion-related problem.

The results described above allow us to infer that, although it is considered as the main database related to research and scientific work, Scopus has limitations regarding its operability and reliability. The results obtained were scarce and, therefore, may not represent the totality of researches that relate innovation, tourist activity and wayfinding. In this context, it is considered questionable that the first study identified is dated from 2005 and the second study only appeared in 2014. Withal, there may be problems in the way authors and/or journals index published works, provoking the obtention of results that do not correspond to the reality of the research actually performed.

Of the seven documents retrieved and analyzed, three present researches directly related to the use of wayfinding as an innovation in tourism (Chen & Zheng, 2017; Schilling et al., 2005; Tsai & Zheng, 2017). However, in all of them wayfinding emerges as a practice to solve an existing problem and not as a practice that helps in the prevention of problems that may be directly or indirectly caused by tourism, which can be characterized as a research gap, particularly if we consider the possibilities that the World Tourism Organization document provides (UNWTO, 2018).

5. Wayfinding as prevention of overtourism: a proposal

Through the Inskeep (1991) model it is possible to identify the elements to be considered in the planning of the tourism activity of a given space and which reinforce the importance of the seven satellite accounts of tourism activity - within a given natural, cultural and socioeconomic environment, there are tourist attractions and activities, accommodation, transportation, institutional elements, other infrastructures and other tourist facilities/services which, in turn, can be enjoyed by the tourist demand and the native community.

In this scenario, a practical application could be the conception and implementation of an integrated wayfinding information system, characterized and suited for the reality in which it operates, that can be used by any individual (resident, visitor, disabled or not). Allowing people to move across a geographic space, regardless of their area, feeling confident and expecting to know a particular culture and/or tourist attraction would be the goal of such a system.

Nevertheless, it would be possible to stimulate new attractions and new itineraries for visitors; create experiences in cities that benefit residents and visitors; and promote the improvement of city facilities and infrastructure, as previously cited and suggested by the World Tourism Organization (UNWTO, 2018).

However, issues such as the characterization of the social, cultural, environmental and economic reality/identity of the geographical space; the inventory of the tourist offer; the creation of visual identity of the tourist destination; and the creation of a signaling system, aiming at the accomplishment of the wayfinding through wayshowing, must be approached to achieve such purposes. When addressing the operationalization and realization of these issues, consideration should also be given to factors such as, for example, the size of geographic space; the aptitude for the tourist activity; or the presence of infrastructure (i.e.: are there roads, railways, ports and airports?).

In view of the above, it is envisaged the creation of a solution that allows public organizations to obtain, manage and make available information, enabling not only its use by tourists in the process of wayfinding in tourist destinations; as well as its use for the creation of individualized itineraries according to the needs of each one, without, however, disregarding the desired tourist experience and without harming the culture and the local population.

6. Conclusion

From the current perspective of easy access to tourism and the frequent occurrence of phenomena and events that characterize overtourism, there is a need to organize and make available the tourist offer so that there is a more even distribution of tourists throughout a geographical area. In this sense, the construction of wayfinding information systems could allow this type of action, while preventing the rejection of tourism and valuing the culture and identity of a given place. Therefore, it is found that wayfinding can be considered as an innovative practice in the prevention of overtourism, which indicates that the proposed research aim was achieved.

Supported by the paradigms of the systemic view of tourism and the economy of experiences, the analyzed articles that relate wayfinding with innovation in tourism, as well as the model of integrated management of tourist destinations of Inskeep (1991), it is expected that among the contributions to be achieved through the use of wayfinding as a preventive practice in relation to overtourism are: incentive to preventive, and non-corrective, practices regarding the public power; creation of management models and organization of information related directly or indirectly to tourism activity; and/or offer services that allow the capture and management of information, aiming to generate and manage knowledge related to tourism.

It should be noted that this document has limitations such as: only the Scopus database was used to perform the systematic literature review; and that only scientific articles and conference papers, published in English, were selected to be analyzed. As a way to broaden the discussions conducted in the present work, it is suggested to perform a systematic literature review in other databases in order to build a more accurate scenario about the use of wayfinding as an innovative practice in tourism.

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