

Digital technologies as tools for the sustainable management of coastal tourist destinations: the case of Barra and Costa Nova

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Objectives | Tourism in coastal areas is one of the fastest-growing sectors, with an estimated 80% of global tourist flows occurring in these areas. Given their sensitive ecosystems, characterized by beach zones, coastal areas are considered highly vulnerable areas, exposed to natural or human-induced changes (Lins-De-Barros, 2017; Moritz et al., 2014), thus reinforcing the need for effective sustainable management practices (Ramos & Costa, 2017; Zadel et al., 2018). With the increasing implementation of technological solutions in tourism, it is important to analyze best practices in the use of these technologies to ensure a balanced approach in destination management for their sustainability (El Archi et al., 2023). Thus, based on a literature review, the main objective of this working paper is to examine how digital technologies have been adopted as drivers of sustainable management practices in coastal tourist destinations.

Methodology | The present working paper has an exploratory nature and is divided into two fundamental phases. The first one involved conducting a literature review on the current application of various digital technologies such as Artificial Intelligence (AI), Big Data, Internet of Things (IoT), Virtual Reality (VR), or Augmented Reality (AR) in destination management. Based on this initial phase, an interview script was developed. As a second phase, the semi-structured interviews will be applied to a set of diverse stakeholders in the geographical areas of Barra and Costa Nova (Ílhavo), namely: technology experts, visitors, private companies, and local public organizations. These interviews aim to address the following non-exclusive questions: (1) which technologies are applied to destination management practices; (2) what the most technology-oriented management strategies are; (3) evaluation of the effectiveness of implementing these technologies and corresponding management practices; (4) what kind of technologies could be applied in the future for the development of sustainable management practices at the destination. For the thematic analysis of the interviews, content analysis will be conducted using NVivo software. The integrated analysis of this data will allow the development of a more holistic understanding of how digital technologies can be effectively integrated into the sustainable

management of coastal destinations, while addressing the expectations and needs of various stakeholders.

Main results and contributions | So far in the scope of the current literature review, it has been possible to identify a set of technologies, namely digital collaboration platforms, websites, social media, IoT, and mobile applications, that have been applied in areas such as marketing, experience improvement, stakeholder collaboration and decision-making (Ammirato et al., 2018; Gomez-Oliva et al., 2019; Ramos-Soler et al., 2019). The results demonstrate a lack of literature in technology adoption in coastal destination management, reinforcing the need for exploratory interviews. By interviewing technology experts and various stakeholders, we aim to capture a variety of perspectives on the challenges, opportunities, and expectations associated with integrating emerging technologies into coastal destination management. The study seeks to contribute to an effective implementation of strategies guiding the integration of technologies, fostering a conscious and informed approach in coastal destination management, grounded in best practices of sustainability.

Limitations | Some limitations should be highlighted. Being a working paper, the main limitation is the lack of empirical results, due to the preliminary nature of the study. It is expected that with the application of the interviews more evidence about the technologies used in managerial practices towards sustainability will arise from. Data saturation point will be considered to draw necessary conclusions. Complementary quantitative study could be considered to enrich the results, inquiring through surveys the diverse stakeholders about their perceptions on technology adoption and consequent implications in sustainable management practices.

Conclusions | This study provides a comprehensive analysis of the integration of digital technologies in coastal destination management. Visitors are attracted to these areas for their beaches, landscapes, and the possibility to engage in various activities (Moritz et al., 2014). However, this tourism development in coastal regions increases the fragility of ecosystems, raising concerns related to environmental and social pressures (Lins-De-Barros, 2017; Moritz et al., 2014). The adoption and implementation of digital technologies in sustainable tourist destinations are still in their early stages, requiring further theoretical and conceptual research, as it is an area constantly evolving (El Archi et al., 2023; Özköse et al., 2023). Coastal tourism, being directly related to the quality of its environment, requires a balance between that environment and economic, social, and environmental development (Lu et al., 2019). For the sake of sustainable tourism development, it is crucial to have a carefully designed plan for the management of coastal areas, aiming to minimize the negative impacts that are often overlooked (Moritz et al., 2014). This study also emphasizes the growing importance of applying digital technologies in the tourism

sector, specifically in destination management. Digital technologies are imperative for the future of tourism, serving as a strategy to support the flow and organization of tourist information (Leung et al., 2013). The current digital transformation, characterized by the emergence of AI, Big Data, IoT, VR, AR, can pave the way for new opportunities, underscoring the importance of changing both strategies and skill sets of professionals in the field (Carlisle et al., 2023; Chaturvedi et al., 2023; Reinhold et al., 2023).

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