

Circular economy business model for smart tourism: the case of Ecobnb

Business
model for
smart tourism

Pasquale del Vecchio

Dipartimento di Ingegneria dell'Innovazione, Università del Salento, Lecce, Italy

Caterina Malandugno

University of Salento, Lecce, Italy

Giuseppina Passiante

Dipartimento di Ingegneria dell'Innovazione, Università del Salento, Lecce, Italy, and

Georgia Sakka

University of Nicosia, Nicosia, Cyprus

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Abstract

Purpose – The paper aims to shed new light on the process of value creation and business model innovation resulting from circular economy in the context of smart tourism.

Design/methodology/approach – The study embraces a qualitative and exploratory approach related to a single case study. Data have been collected through the integration of web-based desk analysis, interviews and social big data analytics.

Findings – Findings are related to Ecobnb, a network-based tourism company, coherent with the principles of value creation and business model innovation in the context of circular economy and smart tourism.

Research limitations/implications – The study allows understanding of how smart tourism and circular economy can represent two important lenses for managing complexity and driving tourism companies and destinations toward sustainable and smart value creation processes.

Practical implications – Practical implications arise for managers and destination makers in terms of innovation of the tourism management and transition of the business models toward a circular configuration.

Social implications – The study offers social implications by contributing to the dissemination of a culture of sustainability in tourism management and active involvement of local stakeholders in the growth of a tourism destination.

Originality/value – The study provides an original contribution to the debate on tourism by highlighting the obsolescence of traditional models of management in tourism companies and destinations, seen during the recent pandemic emergence, could be solved through the virtuous integration of digital technologies and sustainable approaches.

Keywords Circular economy, Smart tourism, Ecobnb, Destination, Sustainability

Paper type Research paper

1. Introduction

The uncertainty that the tourism industry is experiencing in planning to restart after the lockdown phase, due to the pandemic emergence associated to the COVID-19, calls for new models of tourism management and innovative and sustainable approaches in value creation. In this frame, smart tourism and the circular economy can represent two important lenses for managing the complexity of the present situation, since they can be considered important drivers for guiding a paradigm shift in tourism management, by depicting new scenarios for creating sustainable value, for both tourism companies and destinations.

The large diffusion of digital technologies has caused tourism to radically innovate as companies and destinations must compete in their capability to use information and



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knowledge assets related to market, customers and competitors (Alcántara-Pilar *et al.*, 2017; Ardito *et al.*, 2019; Chierici *et al.*, 2019; Koo *et al.*, 2015).

A result of the interconnection of tourism destinations with multiple communities of stakeholders through dynamic platforms, knowledge intensive communication flows and enhanced decision support systems, smart tourism focuses on the creation of a tourism experience that leverages digital technologies to achieve personalization, context-awareness and real-time monitoring (Ardito *et al.*, 2019; Buhalis and Amaranggana, 2015; Del Vecchio *et al.*, 2018; Neirotti *et al.*, 2016).

If the final objective of a smart tourism destination is to enhance tourism experience, maximizing both destination competitiveness and consumers' satisfaction, this cannot be achieved without the guarantee of parameters of sustainability at social, economic and environmental levels that have to be preserved also for residents and local stakeholders (Presenza *et al.*, 2014; Serravalle *et al.*, 2019). As argued by Hansmann *et al.* (2012), these three dimensions of sustainability risk to be in conflict each other, but it is only their synergic combination that can allow to achieve successful and stable objectives of sustainable growth, economic development and societal wellbeing (Cappa *et al.*, 2020a; Centobelli *et al.*, 2017). The different perspectives associated to the sustainability have been largely analyzed in the context of the supply chains (Rodríguez-Serrano, *et al.*, 2017), but it seems to be yet low considered into tourism domain. A tourism destination's competitiveness is based on its capacity to continuously attract tourists by offering high quality and unique experiences, ensuring benefits for stakeholders, local community and the territory, and this requires to be grounded into the science of sustainability (Law *et al.*, 2014; Shams and Lombardi, 2016).

The importance of sustainability in tourism has also been recently underlined by the World Economic Forum (2015) in its report regarding the performance of world tourism destinations. In the same direction, the research has focused on the meaning of sustainability in the field of tourism management as well as in its contribution for the development and competitiveness of a tourism destination (Franco *et al.*, 2020; Sakshi, *et al.*, 2020; Iunius *et al.*, 2015). The full implementation of sustainable smart tourism can derive useful insights from the pillars and principles of circular economy. As a branch of sustainability science aimed to reduce environmental impacts and promote sustainable patterns of development (Schneider, 2015), circular economy redefines patterns of growth, by focusing on positive society-wide benefits, gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system (Ellen MacArthur Foundation, 2015). Furthermore, circular economy is recognized as a strategy of sustainable growth in respect of environmental and societal patterns (Ghisellini *et al.*, 2016; Urbinati *et al.*, 2017).

Despite the topics of sustainable smart tourism and circular economy being intuitively largely connected, the full comprehension of their meaning is under-researched and limited to the definition of strategic agendas of policy and destination makers (Rodríguez-Antón and Alonso-Almeida, 2019). Specifically, the comprehension of how circular economy can impact on the configuration of successful business models in tourism and the process of value creation is missed.

Framed by the above premises, this paper aims to offer evidence on the dynamics of innovation in the business model and processes of value creation, in the context of a sustainable smart tourism in coherence with the principles of circular economy, by focusing on the evidence of a single case study of Ecobnb, an innovative network-based company that promotes the offering of hospitality in accordance to the principles of sustainability and circular economy.

The remaining sections of the paper are structured as follows. In the literature background, the theoretical pillars addressing the study are presented in terms of sustainable smart tourism and circular economy business model. In the methodology section, the research approach embraced is presented in terms of research context, data collection and analysis. In the findings, the main evidences resulting from the case are described in business model

innovation and sustainable value creation. The discussion highlights the contribution offered by the theoretical debate, while the conclusions provide final remarks, implications for theory and practice, limitations and future research.

2. Literature background

2.1 Sustainability in smart tourism

Tourism is one of the world's main economic activities, intended to grow exponentially in the coming years thanks to the development of transport and information and communications technologies (Peeters *et al.*, 2019). However, it is a bivalent sector, since, on one hand, it contributes to the socio-economic development of a country, but on the other hand, it can determine the loss of local identity or environmental degradation (Jones and Wynn, 2019). That is why the tourist industry is considered one of the most polluting sectors (Merli *et al.*, 2019). In fact, travel is generally associated with high CO₂ emissions, since the destinations are often far away, and airplanes and cars are the most used transportation means to reach them (World Tourism Organization, 2019). Therefore, before reaching the destination, tourists are responsible for the release of harmful substances and high consumption, which questions the sustainable dimension of tourism. This problem is further highlighted by the recent trend toward more and shorter holiday travels, supported by low-cost international airline companies, which connect a growing number of destinations (Gössling and Peeters, 2015; Merli *et al.*, 2019).

To date, an increasing number of governments and public and private agencies aim at developing new policies and strategies to achieve sustainable development and economic growth (Cappa *et al.*, 2019, 2020c; Fortunati *et al.*, 2020; Michelino *et al.*, 2019), which are considered important sources of competitive advantage (Papa *et al.*, 2017; Boes *et al.*, 2015). This happens also in the tourism sector.

Even if technological changes have always been essential to tourism, recently, the big amount of data, which characterizes the tourism sector, and the high interdependence on information and communication technologies have determined significant changes so that it is now possible to talk about “smart tourism”. Seen as the logical progression from traditional tourism, smart tourism has also changed the way people interact, as well as the way consumer demand is presented, either directly or through the distinct participants of the tourism chain (Gretzel *et al.*, 2015).

According to Buhalis and Amaranggana (2015, p. 557), “bringing smartness into Tourism Destinations requires dynamically interconnecting stakeholders through a technological platform on which information relating to tourism activities could be exchanged instantly”.

Lopez de Avila (2015), instead, defined a smart tourism destination as an innovative view of a tourist destination, based on technology able to guarantee the sustainable growth of an area, larger accessibility enabling visitors' interaction and integration, the improvement of residents' quality of life and a pleasant experience for tourists.

In this regard, it is fundamental to adopt new technologies, such as intelligent devices or sensors that allow information to be collected and exploited, as well as to use social media, which represent the main source of big data for the tourism sector (Del Vecchio *et al.*, 2018).

In fact, tourists generate content when planning travel online, making reservations or giving feedback on social networks, specific websites or in blogs, which is the main driver for value creation. This is coherent with the smart tourism destination objective to create a “smart experience”, which is “technology-mediated and based on personalization, context awareness and real-time monitoring” (Buhalis and Amaranggana, 2015, p. 377).

In particular, the expression “big data” is used to indicate a set of data that cannot be detected, managed and analyzed with traditional information technologies and databases, because it would take a very long time (McAfee and Brynjolfsson, 2012; De Mauro *et al.*, 2016).

A set of critical dimensions has been defined in the literature to afford the complexity associated to Big Data in their technological and managerial implications (Cappa *et al.*, 2020a). Known as the 6Vs, these dimensions are related to the volume, velocity, variety, veracity, variability and value. While the firsts are more focused on the comprehension of technological perspectives of Big Data (Laney, 2001; McAfee and Brynjolfsson, 2012), while the latter ones are more relevant for the analysis of their managerial implications (Del Vecchio *et al.*, 2020; Visconti and Morea, 2019). In a recent study published by Cappa *et al.* (2020a), the research on these variables has been addressed to the exploitation of Big Data for the innovation strategy.

Big data refers to both data obtained from sensors and the physical world in general, also known as Internet of Things, and data obtained from social networks and the Internet, better known as Internet of People (Jin *et al.*, 2015). They represent a fundamental element of the process of value creation in many sectors and especially in the tourism sector, considered “information-intensive”, since they allow companies and organizations to get information “on customers’ opinions, preferences, needs, attitudes, etc” (Koo *et al.*, 2015). In fact, a better understanding of customers and market conditions is important for the development of competitiveness and of companies’ decision-making processes (Santoro *et al.*, 2019), and it is in this vein that big data is identified as a strategic driver for smart tourism (Del Vecchio *et al.*, 2018). That is why business analytics is important as well. In fact, it allows researchers to identify significant patterns of behaviors between variables, represented by tourists, within a complex set of data and to forecast future events and evaluate the opportunities offered by different lines of action (Fuchs *et al.*, 2014).

But being smart also means being sustainable. The smart destination represents a new way of thinking and experiencing tourism, and new technologies are able to support the paradigm of sustainability in this sector, for example, by reducing water consumption or saving energy, which may seem obvious but which are not irrelevant in places affected by tourist overload and excessive consumption of resources (Pan *et al.*, 2018; Park and Jang, 2013).

Any territorial unit has its own characteristics of climate, culture, infrastructure, politics, economy and services. But in order to satisfy tourists’ needs and improve the quality of life of citizens, good administrative and operational capacity are required (Falcone, 2019; Jones and Wynn, 2019).

According to the World Economic Forum (2015), a destination cannot be considered competitive unless it develops sustainably, underlying the importance sustainability has in this sector.

Considering competitiveness, sustainable tourism destinations must adopt smart or innovative strategies to exploit changes as opportunities for differentiated business or service (Gretzel *et al.*, 2015).

By being sustainable, a smart tourism destination must be able to leverage data and digital technologies to enhance competitiveness of companies and destinations, by preserving the territorial balance or restoring it when it has been altered. This is coherent with the circular economy.

2.2 Circular economy business model: depicting new roots of development in tourism

In the current debate on sustainable tourism, circular economy is a critical but still under-researched topic (Vargas-Sánchez, 2018). Recently, some issues and areas regarding the application of the principles of circular economy in tourism have been identified, but comprehending them remains limited to single features related to waste management, renewable energy usage and sustainable consumption and production (Falcone, 2019).

Despite this, the full comprehension of the meaning of transitioning from a linear to a circular configuration of the tourism industry, as well as how it is possible to create value in tourism, remains unexplored (Rodríguez-Antón and Alonso-Almeida, 2019). Sørensen *et al.* (2020) argued that tourism continues to present a linear logic, based on the model “take-make-dispose”. According to these authors, the transition towards a circular perspective in tourism is difficult to implement because of a large number of actors involved, as well as the hedonist model of consumption that characterizes tourism (Sørensen *et al.*, 2020).

On the other hand, the industry is more and more characterized by peoples’ major awareness of environmental sustainability and a growing demand for green accommodations (Merli *et al.*, 2019; Yi *et al.*, 2018). This trend is also confirmed by the growing number of eco-certification and eco-labels that are nowadays available (Gössling and Buckley, 2016; Merli *et al.*, 2019).

Circular economy claims for profound changes in firms’ business models and calls for new value propositions and drivers for competitive positioning (Urbinati *et al.*, 2017). Focusing on managerial issues, researchers have recently focused on the exploration of impacts and meaning of circular economy in firms’ business models and several taxonomies have been defined for understanding the dynamics of value creation, value transfer and value capture in circular business models (Antikainen and Valkokari, 2016; Centobelli *et al.*, 2020; Lewandowski, 2016).

Circular economy is a branch of sustainable science, studying the competitiveness of firms in an age that is evolving toward scenarios focused on social and environmental responsibility (Geissdoerfer *et al.*, 2017). Thus, firms are required to adapt their value network, their organizational structure, their relationship with supply chain partners and the value proposition toward customers to design a business model that puts circular economy principles into practice (Centobelli *et al.*, 2020).

However, extant research is still far from deeper comprehension of how companies can design their business models in coherence with circular economy principles, and it is necessary to explore the implications of circular economy in specific industries, especially those with larger environmental impact, such as tourism. It is in this perspective that there is fertile ground for additional research at the intersection between tourism and circular economy.

In a recent research (Centobelli *et al.*, 2020), a multidimensional theoretical framework was developed to derive a comprehensive model supporting the design of circular economy business models. Centobelli *et al.* (2020) categorized the dimensions of this framework into contextual factors (i.e. political and institutional frameworks), circular business model dimensions (in terms of value creation, transfer and capture), managerial practices (designing for x practice, product/service upgradability, commercial and promotional initiatives, take back system and product/service system) and cross-dimensional managerial practice (i.e. digital technologies, managerial competencies). Despite in its preliminary conceptualization, the framework is context independent, its large coverage of internal and external factors assumed as drivers of value creation makes it relevant for the comprehension of the dynamics of competitiveness for tourism industry in the transition towards a circular configuration. Specifically, the framework seems to be coherent with the complex articulation of the relationships, managerial practices and technologies that at micro-and macro-environmental levels can impact on the value creation in a sustainable and smart tourism.

3. Methodology

The paper adopts the methodology of a single case study as a suitable investigative tool for the analysis of a contemporary phenomenon in its natural setting (Yin, 1994, 2003), by using data collected from multiple types. Consistent with the qualitative research approach

Strauss and Corbin (1990) and Yin (1994, 2003) described, case study methodology is preferred since the boundaries between phenomenon and context are not clearly evident and it relies on several sources of evidence (Glaser and Strauss, 1967; Miles and Huberman, 1984). As argued by Donmoyer (2000), case study provides better than other methods in the domain of social science the possibility of generalizability, since it allows to enrich evidences for theorists and practitioners (see Table 1).

In developing our case study, we referred to the typical phases of this method with the key decisions as synthesized in the table that follows (Yin, 2003):

3.1 Research context

Ecobnb is a community dedicated to sustainable tourism, to which people can voluntarily adhere their structures to for more visibility.

Ecobnb includes more than 3,000 accommodations, mainly in Europe but expanding worldwide. It promotes tourism with reduced environmental impact, the rediscovery of local places and organic food, aiming at making travel more sustainable and respectful of the environment. Even its servers are powered 100% by renewable energy. It is also partnered with companies operating in the green economy field and associations committed to promoting responsible tourism, such as Solidarity Purchase Groups and The International Ecotourism Society (TIES).

Ecobnb team is made up of three co-founders: Silvia Ombrellini, COO, content manager and ux designer, to whom the interview has been submitted; Simone Riccardi, CEO, IT project manager and customer service, as well as Silvia's husband; and Carla Soffritti, responsible for the Press Office.

The startup was launched in 2013, after Simone earned a degree in Business Management at UCLA (California) and the family had a year of experience in Silicon Valley. ViaggiVerdi also received a grant from Spinner 2013, a program for the development of innovative ideas and projects, which is promoted by the Region Emilia Romagna and the European Community.

In 2014, with seed money financing by Trentino Sviluppo and the European EcoDots, which co-finances sustainable tourism projects, the project became Ecobnb.

Phase of case study	Main actions
(1) Identification of research goal	Identify drivers and processes for sustainable value creation in smart tourism
(2) Selection of the case	Ecobnb Criteria for case selection <ol style="list-style-type: none"> (1) well-known brand, with a recognized image and reputation in the field of sustainable tourism (2) consolidated presence on web and social media
(3) Identification of case study's boundaries	Holistic view of the phenomenon in terms of sustainable offerings of hospitality and tourism services
(4) Selection of data sources	Interview protocol composed of 12 open questions Identify the official accounts of Ecobnb on Facebook and Instagram Select official hashtags and keywords
(5) Analysis of data	Combine web-based desk analysis, conducted on official web site and social network profiles of the company Analyze data collected from interview Monitor and track users' social experience and commitment
(6) Writing	Develop the case, in terms of context, main evidences, implications for theory and practice

Table 1.
Main phases of case study

The development of the skills necessary to create the new business and to develop the business plan, the possibility of dealing with an international environment, the consultations and courses offered by Spinner, and the interaction with different realities, associations and start-ups, as well as the team's personal and professional background and the interest in sustainability and new technologies, were very important for the development of the Ecobnb project.

3.2 Data collection and analysis

Data collection, monitoring and analysis rely on the combination of web-based desk analysis, interview and business analytics.

We contacted the key informant to request an interview and to clarify the research goals. We also explained the structure of the questionnaire, which was composed of 12 open questions (see [Appendix](#)).

Business analytics refers to data collected from two types of sources: the official social network profiles of Ecobnb (on Facebook and Instagram) and the official hashtag related to this brand. We analyzed the data using Keyhole and Brand24, which are social media listening tools for measuring real-time social media data and for tracking hashtags, keywords, URLs and accounts on Twitter, Instagram, YouTube and Facebook.

In particular, the analysis started in considering the performances of Ecobnb accounts in a data range of a year, from September 2018 to September 2019. Then, we identified a recurring keyword and tracked it over a month, from August 20, 2019 to September 20, 2019.

The analysis of the Ecobnb's social network profiles on Facebook and Instagram allowed us to understand the company's social media visibility in terms of number of likes or followers, number of posts, comments and shares, optimal post length, most frequent post for types (video, photo, link) and other insights related to the official accounts. Official hashtag monitoring refers to the analysis of digital contents published on social networks (Facebook, Instagram and Twitter) that contain the company's official hashtags, not only in the official social network page of the company but in all kind of social network profiles. This kind of analysis allows for insights to be gained into the geographical coverage of people that used the hashtags in their posts, the top sites used to publish, the keyword or theme-cloud associated with this hashtag, the mentions and so on.

Considered to be some of the most common KPIs (Key Performance Indicators) for measuring the impact of social media campaigns, the dimensions analyzed with the two tools were useful items for identifying and evaluating the critical success factors of a virtual and social network-mediated user-experience as well as for suggesting areas for immediate intervention ([Alberghini et al., 2014](#)). During the monitoring and data collection phases, particular attention was given to the different forms of engagement (likes + comments + share / post), as critical indicators of customers' engagement and the effectiveness of the company's communication strategy ([Buhalis and Amaranggana, 2015](#); [Pino et al., 2019](#)).

4. Findings

4.1 Ecobnb: strategic approach

The idea of the community at the basis of Ecobnb was born as a consequence of the difficulties that Simone had experienced looking for a sustainable accommodation for a short stay during a university conference. So, after two years, working to develop a website for a bed and breakfast association in Parma, he suggested to include a specific search filter to highlight the sustainability of the accommodations. It turned out to be quite effective. As a consequence, he thought to collect all the Italian sustainable accommodation facilities in a specific network, involving colleagues and friends in the development of "ViaggiVerdi".

In the conception and implementation of its business strategy, Ecobnb pays particular attention on comprehending emerging trends in tourism. As highlighted during the interview, UNWTO estimates by 2020 there will be 1.6 billion ecologic trips taken and a growing demand for more sustainable travel experiences, especially by the younger generations, as registered by tourist operators. In fact, using business analytics tools and approaches, Ecobnb outlined its users and found that the typical user is a woman, between 25 and 45 years old. Many users travel in pairs or with small children, and many are vegans or vegetarians and love cycling.

So, accommodation facilities should update and improve their ecological and green commitment in order to be able to satisfy the needs of the new travelers.

In the next five years, for example, travel accommodations should provide the possibility to recharge the electric car, to choose a vegan or vegetarian menu or to organize a cycling holiday. Moreover, it will be increasingly important for them to highlight what initiatives they have adopted to reduce their environmental impact (renewable energy, organic food, etc.) and to provide benefits to places and local communities.

Thus, Ecobnb supports the accommodation facilities of the community to transition toward a more sustainable approach, which is suitable to the new way of travelling and is respectful to the environment and more responsible. The company provides suggestions about the actions the owners should implement to improve the places' sustainability. Promoting a new way of travelling, Ecobnb represents a meeting point between responsible travellers and eco-friendly accommodations, which are involved in the development of a better future.

Nowadays, Ecobnb also makes suggestions about what the accommodation facilities could do to face the new challenges that the recent emergence of COVID-19 has also caused in the tourism sector, and about how social media could be exploited to communicate the continuous updates about the security measures implemented by the accommodation facilities.

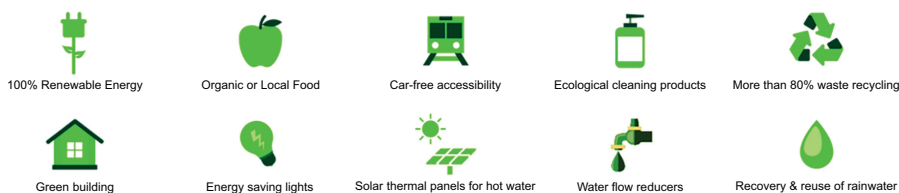
In particular, Ecobnb stands out for its rapid search system integrated with social media and developed for smartphones, which highlights the eco-sustainability requirements of each accommodation facility in a simple way so that tourists from all over the world can easily find and book an eco-friendly accommodation.

Working with the European partners of the EcoDots project (including Germany, Serbia, Slovenia), Ecobnb made a comparison between the most important energy certifications, such as Ecolabel and GreenKey, and identified the main recurring requirements and defined 10 fundamental criteria of environmental sustainability, which are internationally recognized (Figure 1).

Ecobnb includes places that meet at least five of the 10 main criteria of environmental sustainability, regardless of whether or not they have a specific label or certification. The criteria that are present are indicated on the accommodation's page.

Ecobnb shows the environmental sustainability of an accommodation by adding one or more green leaves near its name: the number of the green leaves varies according to the

Figure 1.
Criteria for assessing
environmental
sustainability in
tourism



number of requirements satisfied: from 0 (if it has 5 of the 10 core requirements) to 5 green leaves (if it has all 10 main requirements).

The owners certify their accommodations' environmental commitment, which is then reviewed by the travellers, who can also review the guest housing on the website. Since it is translated into five languages, it is accessible to foreign tourists.

4.2 Ecobnb: business model and value drivers

Being interested in the philosophy of Ecobnb, owners of sustainable accommodation facilities can join the community, by signing up to one of the three membership strategies provided (Basic, Pro and Plus), which represent the current business model of the community.

In particular, the basic membership is free and guarantees to list the accommodation facilities on the Ecobnb website and to offer support via email. In this case, Ecobnb receives a 10% commission, which is not required in the remaining two kinds of membership.

In fact, the Pro membership is an annual subscription that requires a monthly payment of €12.50 but no commission. The places, which appear on the top of the search, can add their offers and be promoted on Ecobnb social networks as well as on priority email messages.

In the Plus formula (annual subscription, with a payment of €29/month), there are additional tailored marketing strategies, and the accommodations become part of the B2C marketing plan of the company, online marketing mentorship is also offered, as well as posts on the blog to promote both the facility and the surrounding areas.

The eco-hospitality of the buildings is promoted on the web, social media and in main events about ecotourism in Europe and in the World. Participation in the annual Ecobnb congress and dinner is also included, to meet the staff.

The interview also highlighted that, in order to gain visibility in Italy and abroad, Ecobnb has focused above all on digital marketing and on the presence of Ecobnb online. This is representative of how important the social media as well as the Internet are for the companies to enter new markets and achieve a competitive advantage.

Ecobnb has official accounts on both Facebook and Instagram, which are used to promote the holiday places that are part of this community and to provide news and fun facts about sustainability. The next section discusses the findings from the business analytics approach we carried out on Ecobnb's social networking accounts.

4.3 Ecobnb: a business analytics perspective

In order to better understand some specific issues related to the case analyzed, a business analytics approach was applied to Ecobnb official social network accounts, which present recurring hashtags having to do with sustainable tourism, ecotourism or to the green characteristics of the accommodation facility (Figure 2, Part a).

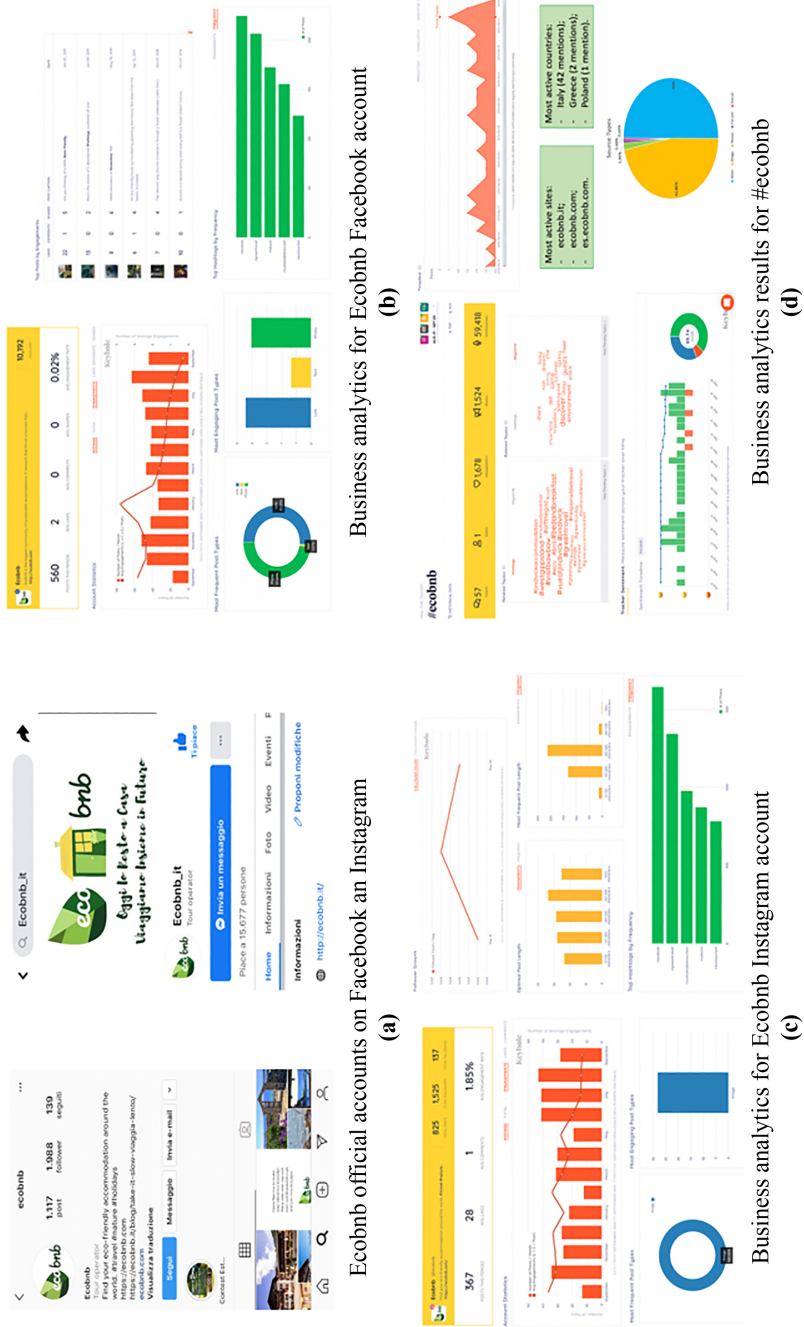
Part b of Figure 2 offers an example of the results of the analysis of Ecobnb's Facebook account. In the period considered, we identified 560 posts characterized by a low engagement rate and analyzed the trend of the number of posts per month with respect to various parameters, including average engagement, as represented in Figure 1.

However, the most interesting aspect concerns the two graphs at the bottom of Figure 2: the posts published with greater frequency and with greater user engagement are those including photos and links. This highlights that, for any strategic or promotional activity, these posts should be preferred to those containing only text, which attract lower levels of engagement.

As for hashtag frequency, the most used one is #ecobnb, which is included in more than 200 posts. It is followed by #greentravel, #nature, #sustainabletourism and #ecotourism.

On the other hand, the Instagram account of the community contains fewer posts, but there is a higher average engagement rate (Figure 2, Part c). The account statistics have also

Figure 2. Business analytics in the case of Ecobnb



been analyzed in this case, which highlighted the growth in the number of account followers in just two days.

Since Instagram is a social network mainly used for photo-sharing, it is not surprising that photos are the most frequent and engaging post type. Although posts made up of 561–1,120 characters have greater engagement, Ecobnb usually publishes shorter posts.

According to the frequency, the top hashtag is #ecobnb, which has been used in more than 300 posts during the period analyzed. It is followed by the hashtags #greentravel, #sustainabletourism, #nature and #ecotourism, which are all related to the sustainable tourism sector. As a consequence, the second part of the analysis focused on #ecobnb, which a single user included in 57 posts in a month (Figure 2, Part d).

As highlighted also from the timeline, at least one post per day had been published containing this hashtag. Other hashtags associated with #ecobnb, by frequency, are #greentravel, #responsibletravel, #sustainabletourism. Among the keywords, only “environment” is useful for the purpose of the investigation.

We then analyzed the sentiment associated with each post and observed that users’ positive perceptions were greater than negative ones.

Finally, considering the types of sources in which the hashtag has been identified, the percentage related to social media is very low compared to that of the web.

5. Discussion

The analysis of the Ecobnb case study demonstrates how digital technologies and big data can be addressed toward a sustainable value creation process, consistent with the perspectives of smart tourism and circular economy. In this direction the study provides a contribution to the current debate on tourism management by demonstrating as sustainability and smartness can be assumed as new lens for the development and competitiveness of tourism companies and destinations (Franco *et al.*, 2020; Sakshi, *et al.*, 2020; Del Vecchio, *et al.*, 2018; Iunius *et al.*, 2015).

Specifically, the analysis of data collected highlights the strategy embraced by Ecobnb as a good practice of company that manage big data and sustainability principles to identify its successful positioning in a niche market (Buhalis and Amaranggana, 2015; Del Vecchio *et al.*, 2018) by serving people interested in green hospitality. This arises as new emerging trend and profitable segment of demand of growing relevance for the promotion of local experiences (Festa *et al.*, 2019; Merli *et al.*, 2019; Yi *et al.*, 2018), and the creation of a personalized and technology-enhanced offering of services (Neuhofer *et al.*, 2015).

Further elements of coherence with the smart tourism perspective can be identified in the company’s network-based strategy as well as in the large number of parameters included in the requirements for affiliation. Characterized by a knowledge-intensive perspective and the possibility to be purchased online as ancillaries of the hospitality solutions, these factors are clearly aligned with the concept of smart tourism as experience, and technologically mediated with the larger definition of the destination (Alcántara-Pilar *et al.*, 2017; Ardito *et al.*, 2019; Koo *et al.*, 2015). Data collected through business analytics have allowed us to identify predictable patterns for creating personalized tourist experiences and to optimize companies’ positioning (Del Vecchio *et al.*, 2018; Koo *et al.*, 2015; Pimo *et al.*, 2019). As suggested by the case at Ecobnb, business analytics can extract elements for improving decision-making, for sensitizing tourists and local stakeholders to sustainability issues (Presenza *et al.*, 2014; Serravalle *et al.*, 2019) and for tourism companies to form competitive strategies regarding environmental sustainability (Falcone, 2019; Merli *et al.*, 2019; Yi *et al.*, 2018).

Referring to Centobelli *et al.*’s (2020) circular economy business model, we note that the case study fits well with the framework dimensions. Ecobnb offers interesting evidence for the comprehension of the process of sustainable value creation in tourism. Value creation in

Ecobnb is affected by the political and institutional environments, as seen in the different funding programs that supported the creation of the company, but also by environmental protection standards, which Ecobnb follows for energy savings, plastic and paper reduction. Ecobnb implements core activities in the processes of value creation, transfer and capture, focusing on a data-driven strategy that incorporates the principles of networking, affiliation, profiled and personalized solutions, user engagement and listening (Del Vecchio *et al.*, 2020). About the managerial practice recalled in the framework of Centobelli *et al.* (2020), Ecobnb offers membership upgrades to affiliated companies and a composition of products and services to customers. It also integrates providers of different products and services at the destinations. Ecobnb's managerial practice has cross-dimensional elements in its usage of digital technologies and social networking. Further, it is well grounded in the practices of social media analytics, online recommendations and techniques for profiling users for creating a business strategy based on external knowledge assets (Santoro *et al.*, 2019). In this direction, the case has allowed to prove the reliability of the conceptual framework of Centobelli *et al.* (2020) by demonstrating as the designing of a circular economy business model fits well with the transition of tourism business models toward a smart and sustainable configuration.

6. Conclusions

The paper aimed to contribute to the debate on smart tourism and circular economy from the perspective of the business model. As important, actual constructs for reinvigorating the tourism industry after the current emergence of COVID-19 and the situation of lockdowns it caused, smart tourism and circular economy are intuitively interconnected, since both focus on the creation of sustainable value, although their mutual implications are still not often investigated. With the intention to contribute in this direction, the paper presented evidence from a single case study of Ecobnb, a network-based company operating into the promotion of green hospitality and an example of a successful circular economy business model for smart tourism. The case was studied through web-based desk analysis, an in-depth interview and business analytics. The results have allowed us to identify the coherence of the company's business model with the main features of smart tourism such as technology-enhanced experience, big data analytics for the innovation of personalized offerings of tourist services, the destination as context to be preserved and constructed based on knowledge-intensive dynamics and the composition of products and services. Ecobnb has demonstrated a large coverage of the main issues related to the principles of circular economy, i.e. reuse, reduce and recycle. Specifically, through the application of a recent framework on circular economy business model, it was possible to analyze the specific feature of value creation at Ecobnb supported by political and institutional framework, strategic organization and technological issues.

These results can offer an original contribution to the advancement of research at the intersection of smart tourism and circular economy by shedding new light on the process of value creation.

Despite the triangulation of data collected from different sources, the nature of single case study can represent a limitation that could be overcome by being replicated in other cases and through a cross-comparison analysis to identify common and distinctive patterns. In the same direction, scenarios for future investigation can be identified in the several implications for theory and practice that the paper presents.

6.1 Implications for theory

Implications for theory arise in terms of the contribution to the better understanding of meaning of sustainable development in the context of tourism as well as in the enlargement of

the debate on smart tourism at the light of the actual paradigms of circular economy and sustainability. Specifically, the study has offered a momentum for the integration of emerging and well-known approaches, such as sustainability, circular economy, big data, that are still low integrated in the investigation on smart tourism management. In this direction, the evidences collected through the case study on Ecobnb discloses news roots for the agenda of a large community of scholars and researchers and it is an interesting starting point for the identification of a larger settings of analysis and the integration of different investigative approaches.

6.2 Implications for practice

From the practical point of view, several implications can arise for managers and policy makers. The study has demonstrated how it is possible to conceive and implement data-driven business models in tourism by combining digital technological development and sustainability. The case has also highlighted as the adoption of sustainability in its larger definition is promising in terms of positioning on a niche market with growing margins of profit and that the usage of big data is useful for a tailor made and personalized offering of service. In the meantime, the conception of a sustainable tourism offering is in the case grounded into a community-based perspective including a plurality of stakeholders. This offers to destination and policy makers evidences and inspiration for the conception and implementation of new development strategies able to support the transition of tourism destinations toward a smart and sustainable configuration.

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Further reading

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Appendix

Questionnaire for interview – Ecobnb

- (1) How and when was the idea of Ecobnb born? In addition to what is explained on the website, is there any other aspect or detail that is particularly important for you? It would be also interesting to know something more about you and how useful your background/training path has been for the development of the network.
- (2) How many accommodation facilities has Ecobnb and how many of them are in Italy?
- (3) What kind of strategies have you adopted to make your network known in Italy, which difficulties have you encountered and what is currently your business model?
- (4) In which foreign countries does Ecobnb exists? How has it gained visibility abroad?
- (5) How has the 10 main sustainability criteria been defined? Have you been inspired by existing standards?
- (6) There are many structures that meet at least 5 of the 10 criteria defined by Ecobnb and that would be suitable for joining the network. Is there someone who is responsible for the acquisition activities in the area or is it possible to join the network only by voluntary membership? And, moreover, how important social media are in Ecobnb user acquisition and management strategy?
- (7) All Ecobnb facilities provide a self-certification and then are verified by travelers. Does Ecobnb also verify the characteristics and commitment of the structures in a sustainability perspective? And if so, how does it?
- (8) How did the collaboration with international partners start?
- (9) How did the collaboration with the certification bodies, as The Green Key, start?
- (10) Does Ecobnb also act as intermediary between the accommodation facilities and the certification bodies?
- (11) What is, nowadays, the typical user of Ecobnb and who is more sensitive to environmental sustainability issues (families, students, business travelers)? Do you adopt any business analytics approach/tool to outline users and innovate the offer and the receptivity network?
- (12) In the last period, people talk always more frequently about sustainable tourism and responsible tourism. How do you think the tourism sector will change by the next 5 years?

Corresponding author

Pasquale del Vecchio can be contacted at: pasquale.delvecchio@unisalento.it

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