



SUSTAINABLE TOURISM



PART A

Balancing Conservation and Progress in a Dynamic Industry

Edited by
**DISHA SHARMA
HAMID ABDULLAH
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Sustainable Tourism, Part A

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Sustainable Tourism, Part A: Balancing Conservation and Progress in a Dynamic Industry

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INVESTOR IN PEOPLE

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Brij Mohan Singh is a doctoral candidate at the Department of Tourism Management, Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh, India. He holds a Junior Research Fellowship. His academic background includes a Master's degree in Tourism and Travel from the Indian Institute of Tourism and Travel Management, and he completed his undergraduate studies in Mechanical Engineering at the National Institute of Technology Karnataka, Surathkal, India. Mr Singh has had his research published in esteemed journals listed in UGC CARE and subjected to peer review. He has also presented his research at various conferences and seminars, both at the national and international levels. His research interests encompass a diverse range of topics, including homestay experiences, entrepreneurship, tourists' satisfaction, community-based tourism and sustainable tourism.

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Foreword



Professor Dimitrios Buhalis

I strongly encourage you to delve into ‘Sustainable Tourism: A Comprehensive Multidimensional Perspective’, a meticulously curated volume that distinguishes itself in the academic discourse surrounding responsible tourism. Edited by a team of esteemed scholars, this book explores the intricate dimensions of sustainability within the tourism industry often with the contribution of innovative technologies. Each chapter offers valuable insights into the myriad challenges and opportunities linked to sustainable tourism. Expert contributors conduct thorough analyses on a range of topics, such as the socio-economic effects on local communities and the environmental considerations of tourist destinations. With its technological perspective, this book becomes indispensable for individuals interested in comprehending and championing responsible tourism practices.

Professor Dimitrios Buhalis
International Centre for Tourism and Hospitality Research,
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Editor in Chief, Tourism Review

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Preface

Sustainable tourism is at the forefront of discussions in the contemporary travel industry, demanding a delicate balance between progress and conservation. The book 'Sustainable Tourism: Balancing Conservation and Progress in a Dynamic Industry' delves into various facets of this critical intersection, presenting a comprehensive exploration of sustainable entrepreneurship, behavioural factors, homestay establishments, economics, digital technologies, smart tourism, internet's role in ecotourism, electric vehicles and more. The collection of chapters brings together diverse perspectives, insightful research and practical implications for industry professionals, policymakers, scholars and enthusiasts seeking to navigate the complex landscape of sustainable tourism.

Chapter 1: Does AI have an Effective Role in Applying Sustainable Entrepreneurship in the Tourism Industry?

The opening chapter by Bassam Samir AL-Romeedy and Shaymaa Abdul-Wahab El-Sisi examines the potential of artificial intelligence (AI) in promoting sustainable entrepreneurship within the tourism sector. By analysing current literature, the study offers valuable insights into utilising AI as a tool for driving sustainable practices and innovation, emphasising responsible and ethical AI implementation.

Chapter 2: Unveiling the Entrepreneurial Mindset: Behavioural Factors and Green Intentions among University Tourism Students

Viana Hassan's chapter delves into the behavioural determinants influencing university-level tourism students in developing economies, particularly India. Using the Theory of Planned Behaviour (TPB), the study sheds light on the role of attitude, subjective norms and perceived behavioural control in shaping entrepreneurial intentions, with a focus on environmentally sustainable practices.

Chapter 3: Homestay Establishments as a Strategic Business Tool for Sustainable Tourism Practices and Community Development

Authored by Brij Mohan Singh, Hitesh Tripathi Gyanendra and B. S. Johri, this chapter explores the significance of homestays in India as a tool for sustainable tourism, community development and cultural immersion. The research emphasises the positive impact of homestays on local communities and advocates for strategic development, supportive policies and awareness campaigns.

Chapter 4: Striking a Balance: Economics and Sustainability for a Prosperous Planet

Suravi Chatterjee, Anand Chatterjee and Disha Sharma analyse the role of sustainable development for a healthy future. This chapter explores the environmental impact of human activities, the relationship between economic growth and sustainability and initiatives taken by the Indian government to promote sustainable development.

Chapter 5: New Opportunities for Sustainable Development in the Tourism Sector with the Use of Disruptive Digital Technologies

This chapter investigates the impact of digital technologies, such as the Internet of Things (IoT), artificial intelligence (AI), cloud computing and big data, on the tourism and hospitality industries. It emphasises the importance of these technologies in achieving sustainability and enhancing customer engagement in the digital realm.

Chapter 6: Smart Tourism and Sustainable Bioeconomy: Designing a Resilient Future

Authored by Sejana Jose V, Sandhya H and Bindi Varghese, this chapter explores the synergy between smart tourism and sustainable bio-economy. It emphasises the role of energy-efficient technologies, green initiatives, investment strategies and agile leadership in creating a resilient and sustainable future for the tourism industry.

Chapter 7: From Pixels to Paradises: The Tourism Industry's Digital Evolution

This chapter, titled 'From Pixels to Paradise: The Tourism Industry's Digital Evolution', explores the transformative impact of digital technology on the tourism industry. Researchers examine how emerging technologies such as virtual reality, augmented reality, artificial intelligence and data analytics are reshaping the tourism landscape.

Chapter 8: Role of Internet in Sustainable Growth of Ecotourism

Authored by Kiran Shashwat, this chapter explores the evolving relationship between ecotourism and the internet. It examines how the internet can be leveraged to promote sustainable practices, facilitate eco-friendly choices and enhance the overall ecotourism experience while addressing potential concerns.

Chapter 9: Factors Affecting the Adoption of Electric Vehicles – Prospects and Challenges – With Special Reference to Maharashtra

Astha Sharma's chapter delves into the factors influencing the adoption of electric vehicles in India, with a focus on Maharashtra. The study evaluates various aspects impacting customer preferences and highlights the challenges and prospects associated with the adoption of electric vehicles in the context of sustainable transportation.

Chapter 10: Sustainable Tourism Practices: Evidence from Global Perspectives to Achieve Development through Economic and Environmental Balance

Pramendra Singh, Disha Sharma and Hamid Abdullah contribute a chapter that explores the intricate relationship between sustainable tourism practices and the pursuit of balanced economic and environmental development on a global scale. The study utilises a mixed-methods approach to investigate the impact of

sustainable tourism initiatives on local economies, cultural preservation, community engagement and environmental conservation.

Chapter 11: Exploring Sustainable Tourism Practices for Fostering Meaningful Travel Experiences: A Global Perspective

Sandeep Paatlan and Jayati Ranga present a qualitative study exploring the connection between sustainable tourism practices and meaningful travel experiences. The chapter delves into the importance of certification programs, environmental impact, community engagement and responsible traveller behaviour, emphasising the role of collaboration among decision-makers, destination managers, tour operators and tourists.

Chapter 12: The Impact of Destination Social Responsibility on Sustainable Development in Coastal Marine Tourism Destinations

Mona Fairuz Ramli, Azizan Marzuki and Nurwati Badarulzaman focus on the intersection of Destination Social Responsibility (DSR) and sustainable development in coastal marine tourism destinations. The chapter utilises qualitative interviews, content analysis of policy documents and quantitative surveys to examine how DSR practices influence environmental conservation efforts, community engagement and visitor satisfaction levels.

Chapter 13: Enhancing Cultural Sensitivity and Safeguarding Heritage Sites

This chapter underscores the significance of cultural sensitivity in heritage site management. It emphasises the need for a respectful approach to maintaining cultural authenticity while ensuring a high-quality traveller experience. Cultural sensitivity is portrayed as a cornerstone in heritage site management, guiding the balance between conservation and providing a memorable visitor experience.

Chapter 14: Reflecting the Unseen World – The Relationship of Photographs in Shaping Tourist Perceptions and Destination Choices

The concluding chapter investigates the components of photographs that shape tourists' perceptions of destinations. Utilising a quantitative approach, the study identifies key components influencing tourists' perceptions and provides insights for photographers and destination marketers to strategically use these components to increase tourism to specific destinations.

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Dr Disha Sharma: I would like to express heartfelt gratitude to my parents, Mr Sharad Sharma and Mrs Bina Sharma, and my husband Dr Ashish Singh, for their unwavering support, understanding and motivation throughout the journey of this book. I would like to dedicate this book to my Head Prof (Dr) Sumita Dave for her constant guidance and motivation.

Dr Hamid Abdullah: I dedicate this book to my late father Mr Ghulam Hussain, my mother Mrs Hasim Bibi, my brother Abdul Rahim and my guide Prof. Sunil K. Kabia who have been the force behind me in all my endeavours.

Dr Pramendra Singh: I would like to dedicate this book to my family for their unwavering support and motivation during the creation of this book. I would also like to thank my colleagues and friends for their guidance throughout the editing process.

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Section A

Business and Entrepreneurial: Cultivating Sustainability

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Chapter 1

Does AI Have an Effective Role in Applying Sustainable Entrepreneurship in the Tourism Industry?

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Abstract

This study explores the potential of artificial intelligence (AI) in fostering sustainable entrepreneurship within the tourism industry. The rapid growth of the tourism sector has raised concerns regarding its environmental impact, social equity and economic sustainability. Sustainable entrepreneurship offers a promising approach to address these challenges by integrating environmental, social and economic considerations into business practices. AI technologies, with their ability to process vast amounts of data, analyse patterns and make predictions, have the potential to support sustainable entrepreneurship initiatives in the tourism industry. By analysing the current literature, this study provides insights into the effective utilisation of AI to promote sustainable entrepreneurship in the tourism industry, while acknowledging the need for responsible and ethical AI implementation. The findings contribute to the understanding of how AI can be harnessed as a tool for driving sustainable practices and innovation in the tourism sector, ultimately leading to a more sustainable and responsible tourism industry.

Keywords: Artificial intelligence; sustainable entrepreneurship; tourism; tourism entrepreneurship; sustainability factors

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1. Introduction

Over the past few decades, the tourism industry has experienced remarkable growth on a global scale, emerging as one of the world's largest and most influential sectors. However, this rapid expansion has come with drawbacks, prompting concerns regarding its negative environmental and sociocultural consequences. In response, there has been an increasing acknowledgement of the importance of adopting sustainable practices in the tourism sector to address these issues and ensure the industry's sustainable future (Gössling, 2020; Higgins-Desbiolles, 2020).

The notion of sustainable entrepreneurship has gained traction as a strategy to tackle these challenges and foster responsible business conduct within the tourism industry. In this context, sustainable entrepreneurship has emerged as a pivotal concept, highlighting the importance of incorporating environmental, social and economic sustainability principles into business operations (Jones et al., 2016; Silajdžić et al., 2015).

Artificial intelligence (AI) is a rapidly advancing technology that holds promise in transforming the landscape of sustainable entrepreneurship. AI entails the creation of computer systems capable of performing tasks that traditionally necessitate human intelligence. Through the utilisation of AI technologies, entrepreneurs in the tourism industry can bolster their sustainability endeavours by optimising resource allocation, harnessing data-driven insights and making informed decisions (Gregurec et al., 2021; Lichtenhaler, 2019).

AI has the capacity to examine large volumes of information. This enables entrepreneurs to extract valuable insights into consumer preferences, market trends and environmental impact. Such information can serve as a guide for businesses in making sustainable decisions, including the identification of eco-friendly practices, waste reduction and optimisation of resource allocation (Wang et al., 2020).

By harnessing the capabilities of AI-powered recommendation systems, tourists can receive tailored suggestions that align with their preferences, interests and sustainability values. These systems can recommend eco-friendly accommodations, local sustainable attractions and low-impact transportation options, effectively encouraging the adoption of sustainable tourism choices (Kim et al., 2023).

Through the analysis of data collected from smart meters and sensors, AI has the capability to optimise energy consumption in tourist facilities. By taking into account factors such as occupancy levels, weather conditions and energy demand, AI can dynamically adjust lighting, heating and cooling systems, leading to minimised energy waste and cost savings. Furthermore, AI can contribute to the management of water resources, waste management and the implementation of sustainable practices in the supply chain (Himeur et al., 2023).

While AI offers substantial prospects for sustainable entrepreneurship within the tourism industry, it is essential to recognise the accompanying ethical considerations. These include concerns regarding data privacy, algorithmic bias and the potential displacement of human workers. This ensures that AI is utilised responsibly and in a manner that aligns with sustainable principles (Dogru et al., 2023).

The investigation into the application of AI in sustainable entrepreneurship within the tourism industry highlights its potential to drive positive transformation in the sector (Porter et al., 2018; Razzaque et al., 2021). Through the utilisation of AI technologies, entrepreneurs can make well-informed decisions, optimise resource utilisation and enhance the overall sustainability of their businesses (Gupta, Gaurav, et al., 2023). As AI continues to progress, its integration into the tourism industry holds the promise of promoting a more sustainable and environmentally conscious approach to travel and entrepreneurship (AI Kurdi et al., 2023).

The objective of this chapter is to investigate the possibilities offered by AI in advancing sustainable entrepreneurship within the tourism industry, as there are no sufficient studies examined the role of AI in entrepreneurship (Chalmers et al., 2021) there is a lack of studies that show the role of AI in applying sustainable entrepreneurship in tourism industry. Through an analysis of existing literature, this chapter offers valuable insights into the effective application of AI to drive sustainable entrepreneurship in tourism, while recognising the importance of responsible and ethical implementation of AI.

2. AI and Its Applications in Tourism Industry

AI is defined as ‘a system’s ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation’ (Haenlein & Kaplan, 2019, p. 17). AI involves studying how digital computers and algorithms solve complex problems that would normally require human-level intelligence (Giuggioli & Pellegrini, 2023). AI encompasses several technologies, including machine learning, computer vision, neural networks, language processing and other types of virtual agents (Davidsson & Sufyan, 2023). AI systems can learn, allowing them to adapt and improve based on experience, unlike traditional computer programs with a fixed set of instructions (Chalmers et al., 2021). AI collects data to put an accurate final decision and to provide more trustworthy outcomes to achieve the organisational goals (Dinh & Thai, 2018; Isabelle & Westerlund, 2022). Accordingly, AI plays a significant role in transforming both production systems and management (Mariani & Borghi, 2023). For instance, service industries mainly depend on AI applications to apply a digital transformation to their operations (Wang et al., 2022).

According to Roundy (2022), a global survey was conducted on 3,000 managers in various industries. The study found that 57% of them are either piloting or deploying AI programs. Regarding tourism industry, tourists use chatbot, virtual tours, interactive booking process for collecting information relating tourism destinations (Samala et al., 2020). Recently, hotels apply 3D videos which simulate the real experience of the services as tourists prefer to make sure that hotels meet their perceptions (Yung & Khoo-Lattimore, 2019). The hospitality industry relies on self-service kiosks for automated check-in and checkout, allowing guests to customise preferences and store information for future hotel

visits (Solakis et al., 2022). Online travel agencies operate AI chatbot during the consulting process to provide objective and accurate information about tourism products, schedules and reminders to potential tourists (Zhu et al., 2023).

3. Integration of Sustainability Into Entrepreneurship

In academic society, sustainability was integrated with entrepreneurship for the first time in the 1990s (Haldar, 2019). The sustainability core is intertwined with entrepreneurship principles (De Clercq & Voronov, 2011) as entrepreneurship is considered a momentum for sustainability growth (Provasnek et al., 2017). Entrepreneurship is considered a solution for ecological, political and financial crises (Biberhofer et al., 2019). To execute business in a sustainable way, the investment trend tends to apply principles of entrepreneurship (Konys, 2019). The entrepreneurial process in the context of sustainability is a set of prior knowledge and motivations; the former is related to knowledge about the natural environment, while the latter concerns enhancing society (Hermann & Bossle, 2020). Sustainability-related entrepreneurship takes many forms, including sustainable entrepreneurship, eco-entrepreneurship and green entrepreneurship (Filser et al., 2019). In this context, sustainable entrepreneurship is the most comprehensive form, as it focuses on enhancing economic, social and environmental aspects. Scholars suggest that having sustainability-oriented ideas, creating value and having a perception of business and social support are key to a successful entrepreneurship (Vuorio et al., 2018). Entrepreneurship can accelerate sustainable development by incorporating environmental and social transformations, with the potential to improve future generations' well-being (Lupoae et al., 2023).

4. AI and Sustainable Entrepreneurship

Digital technologies have an effectiveness on entrepreneurship (Nambisan, 2017) as it is the core of entrepreneurship (Kinnula et al., 2022). Thusly, AI is highly integrated with entrepreneurship (Safargaliev et al., 2020). Research on entrepreneurship admits that digital technologies enable to disseminate sustainable business (Gregori et al., 2023). Some businesses considered that AI is a substantial tool to reduce energy consumption (Hu et al., 2023). AI helps decision-makers for taking a suitable decision of long-term operations (Gupta, Mane, et al., 2023). AI is a solution for many environmental issues such as climate change (Cowls et al., 2021). In this vein, AI helps businesses to attain Sustainable Development Goal (SDGs) in different sectors (Holzinger et al., 2021). AI is one of the most important types of digital sustainability means that aims to achieve socio-ecological value for economies (George et al., 2021). Digital technologies enhance business model of sustainable entrepreneurship (Hinings et al., 2018), including value proposition, value creation and value capture (Laasch, 2018). Regarding value propositions, Gregori et al. (2023) revealed that digital technologies enable blending environmental, social and economic aspects with business, enabling community development, co-creation and stakeholder integration.

Digital artefacts enable sustainable entrepreneurs to enhance their value creation by making them more dynamic and more open to multiple actors (Caputo et al., 2019; Hahn et al., 2018). Digital technologies promote the value capture of sustainable entrepreneurship (Gregori et al., 2023) through increasing scalability and financial stability (Hahn et al., 2018).

5. AI and Sustainable Entrepreneurship in Tourism

Numerous studies have illustrated tourism has negative impacts on the sustainability of the environment and cultural sites (Zhuang et al., 2019) due to the spread of tourism places such as hotels and restaurants (Hilmi et al., 2015). Scholars illustrated that sustainable development is the way to conserve the environment (Rasoolimanesh et al., 2020). In this vein, Crnogaj et al. (2014) showed that applying sustainable entrepreneurship in tourism should include: eco-efficiency, eco-effectiveness, socio-efficiency, socio-effectiveness, sufficiency and ecological effectiveness.

In this sense, AI is a tool that has lately been used to reduce pressures on the ecology of destinations (Kashem et al., 2022) through its long-term impacts on enhancing tourists' awareness towards sustainability (Sharma & Arora, 2022). Intelligent automation may drive sustainability and improve environmental, social and economic indicators, as well as reduce resource use and predict tourist behaviour (González-Rodríguez et al., 2020). Although intelligent automation technologies and tools enhance travel, tourism and heritage industry (Tussyadiah, 2020), there are no sufficient studies that showcase the implementation of AI in travel and tourism industry (Tuo et al., 2021). Unfortunately, there are limited tourism organisations that applied AI technologies (Jabeen et al., 2022).

According to Ratten (2020), presently the research focus is on sustainable tourism entrepreneurship without paying attention to the role of innovation, so the future of research will concentrate on applying AI to tourism entrepreneurship. AI systems can operate tourism enterprises efficiently by reducing energy consumption and promoting waste management, which results in reducing the negative footprint of tourism operations (García-Madurga & Grilló-Méndez, 2023). AI applications contribute to the environmental protection of oceans by detecting and classifying marine litter, especially at the bottom of the oceans (Isabelle & Westerlund, 2022). Regarding hospitality, digital systems in hotels work on saving energy and reducing costs from 25%–80% (Chen et al., 2022). AI as a big data analytical tool is used to support sustainable tourism types such as ecotourism (García-Madurga & Grilló-Méndez, 2023) by collecting data related to ecotourist behaviour, natural attractions and visitor impacts on the nature (Rahmadian et al. 2022). Regarding green tourism, digital technologies highly affect clusters such as those related to green tourism (Yekimov et al., 2021). AI promotes sustainable tourism practices (Kirtil & Aşkun, 2021) in cultural heritage sites to conserve this heritage from irresponsible attitudes of tourists (Loureiro et al., 2022). According to Fernandes et al. (2022), the use of digital technologies in entrepreneurship can lead to sustainable development in societies. Tourism entrepreneurs who depend on new technologies contribute to enhance the

competitive advantage of destinations (Pencarelli, 2020) as digital applications enhance the sustainability of the urban development of the tourism destinations (Varotsis, 2022). Finally, Utami et al. (2023) mentioned that innovation is a prerequisite to apply sustainability principles in sustainable tourism forms such as – rural tourism – to ensure sustainable solution.

6. Theories Related to AI and Sustainable Entrepreneurship

Various theories and frameworks can guide the understanding of how AI can effectively contribute to sustainable entrepreneurship in the tourism industry. One such theory is the innovation diffusion theory, which offers a framework for comprehending the adoption and diffusion of innovations, including AI technologies, within a particular context (Almaiah et al., 2022). These theories provide a foundation for comprehending the implications of AI on sustainability initiatives. The innovation diffusion theory presents a model that elucidates the diffusion of innovations within a population over a specific timeframe. When applied to the context of AI in sustainable entrepreneurship, this theory aids researchers in comprehending the decision-making process of businesses regarding the adoption of AI applications for sustainability objectives. It considers various factors such as the attributes of the innovation, communication channels, social systems and adopter categories (Atkin et al., 2018). As well, the theory classifies adopters into distinct groups according to their readiness to embrace innovations at various stages. These adopter categories encompass innovators, early adopters, early majority, late majority and laggards (Murray, 2009).

The second theory, known as the resource-based view (RBV) theory, establishes a connection between the studies of AI's effectiveness in implementing sustainable entrepreneurship by highlighting AI as a strategic resource that contributes to sustainable competitive advantage. RBV is a strategic management theory that prioritises a firm's internal resources and capabilities as the fundamental drivers of competitive advantage (Enriquez de la, 2015). It proposes that firms possessing resources that are valuable, rare, inimitable and non-substitutable can attain sustainable competitive advantage (Madhani, 2010). Within the RBV theory framework, AI can be regarded as a strategic resource. The utilisation of AI technologies' capabilities and applications can equip businesses with distinct and valuable resources that foster sustainable entrepreneurship (Stroumpoulis et al., 2022). By leveraging the RBV theory, one can analyse the contribution of AI as a strategic resource to sustainable entrepreneurship (Chowdhury et al., 2023).

The third theory is institutional theory, which investigates the impact of institutions, encompassing regulations, norms and values, on organisational behaviour and decision-making (Herold, 2018). It is crucial to comprehend the institutional context and assess how AI aligns with or challenges existing regulations and norms for sustainable entrepreneurship. Institutional theory emphasises the influence of external institutional forces, such as laws, regulations, societal norms and industry standards, on shaping organisational behaviour and