

Emmanuel Ndhlovu
Kaitano Dube
Catherine Muyama Kifworo *Editors*

Tourism and Hospitality for Sustainable Development

Volume Two: Emerging Trends
and Global Issues

 Springer

Tourism and Hospitality for Sustainable Development


Emmanuel Ndhlovu • Kaitano Dube
Catherine Muyama Kifworo
Editors


Tourism and Hospitality for Sustainable Development


Volume Two: Emerging Trends and
Global Issues

 Springer

Editors

Emmanuel Ndhlovu 
Vaal University of Technology
Vanderbijlpark, South Africa

Kaitano Dube 
Vaal University of Technology
Vanderbijlpark, South Africa

Catherine Muyama Kifworo 
Vaal University of Technology
Vanderbijlpark, South Africa

ISBN 978-3-031-63072-9 ISBN 978-3-031-63073-6 (eBook)
<https://doi.org/10.1007/978-3-031-63073-6>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2024

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

If disposing of this product, please recycle the paper.

About the Book

This book shows how tourism and hospitality industries are rapidly undergoing disruptive transformation as a result of the advances in information and communications technology. The book showcases the social, economic, environmental, and ethical implications of the adoption and integration of digital tools in the tourism and hospitality industry. As we get into the future, the tourism and hospitality industry could continue to change as a result of digital transformation. Discussions about the environmental impact, labour markets issues, energy utilisation, global poverty, and growing inequalities in society as a result of digitalisation are gaining traction. This book adds to this literature.

The book comprises contributions that generate theoretical insights, empirical findings, and evidence-based recommendations by focusing on emerging and forecasted technologies that are used in the tourism and hospitality industry, such as blockchain, robots, artificial intelligence, virtual reality, big data, and analytics, among others. The book could be useful for future research to focus on the impact of different forms of digital technology by examining their socio-cultural and environmental effects. Building on prior research, the chapters in this volume extrapolate current studies on digital development to provide more linkage to tourism and hospitality.

Contents

1	Tourism and Hospitality Trends and Sustainable Development: Emerging Issues in the Digital Era	1
	Emmanuel Ndhlovu, Kaitano Dube, and Catherine Muyama Kifworo	
Part I Digitalisation and Sustainability in Tourism		
2	Assessment of the Adoption of Technologies to Promote Sustainable Development Goal (SDG) 13 on Climate Action by Wildlife-Based Tourist Destinations in Masvingo Province, Zimbabwe	25
	Gideon Walter Mutanda	
3	Tourist Perspectives on the Use of Electric Cars in Game Lodges in Sub-Saharan Africa	41
	Catherine Muyama Kifworo, Emmanuel Ndhlovu, and Kaitano Dube	
4	Innovation and Technology Integration in the Hospitality Industry in Response to Climate Change	55
	Emmanuel Ndhlovu, Tawanda Makuyana, and Kaitano Dube	
5	Digitalisation and Technological Integration for Sustainable Tourism in South Africa	75
	Emmanuel Ndhlovu, Tawanda Makuyana, and Kaitano Dube	
Part II Digitalisation and Socio-economic Security		
6	Information Security in the Zimbabwean Hotel Sector	95
	Tanyaradzwa Myra Masaire, Theo Tsokota, and Colletor Tendeukai Chipfumbu	
7	Digitalisation as Potential Tool for Post-COVID-19 Tourism Recovery and Resilience in South Africa	113
	Beauty Zindi, Impi R. Kuhlengisa, and Emmanuel Ndhlovu	

8	The Transformational Influence of Digitalisation on the Revival of Africa’s Travel and Tourism Industry in the Post-COVID-19 Era	131
	David Mhlanga and Varaidzo Denhere	
Part III Value and Financial Considerations		
9	The State of Technology Deployment in South Africa’s Tourism and Hospitality Industry	149
	Kaitano Dube	
10	The Use of Electronic Diaries in Qualitative Hospitality Research: A Methodological Reflection	163
	Erica Sao Joao, Tom Baum, and Charlene Downing	
11	The Fourth Industrial Revolution Technologies in the Tourism Sector in African Countries: Opportunities, Barriers, and Ethical Considerations.	179
	Favourate Y. Mpofu	
12	Exploring the Impacts of AI and IoT in South African Tourism and Hospitality Industry	203
	N. Madhav and Meera Joseph	
13	A Descriptive Analysis of Social Media Use by a Selected Sample of Generation Z Travellers	213
	Kholofelo Maserame Molefe, Uwe Peter Hermann, and Leane Grobbelaar	
Part IV Conclusions and Recommendations		
14	Conclusion: Digitalisation as a Driver of Sustainable Development in Tourism and Hospitality	233
	Emmanuel Ndhlovu, Catherine Muyama Kifworo, and Kaitano Dube	
	Index	249

About the Contributors

Tom Baum is a Professor of Tourism Employment in the University of Strathclyde, Glasgow, Scotland and Distinguished Visiting Professor in the School of Tourism and Hospitality, University of Johannesburg, South Africa. He holds two doctorates in the field of tourism employment and is a critical employment researcher, focusing on frontline services work. He has researched, taught, and consulted in over 50 countries and published extensively in his field of specialism.

Martin Chimbuya is Tourism and Hospitality practitioner for the public and private sector with keen interest in accommodation, food and beverages preparation, and service research. His published and unpublished research works include culinary and yield management systems and performance of Departments of Accommodation and Catering Services in Zimbabwean state universities.

Colletor Tendeukai Chipfumbu is a full-time Lecturer and acting Chairperson in the Department of Information and Marketing Sciences at Midlands State University, Gweru, Zimbabwe. She is a holder of a PhD in Information Technology from Nelson Mandela Metropolitan University (NMMU), South Africa (SA). Her areas of research are cyber security, artificial intelligence, and information security. She has published papers in reputable journals.

Varaidzo Denhere is a Senior Research Fellow at the University of Johannesburg, South Africa, working on risk-integrated management control systems; the impact of AI on company failure prediction models; and opportunities to investors during times of economic crises or market crashes. Denhere's research interest is in the impact of AI on various Accounting and Auditing theories and functions.

Charlene Downing (Prof) is part of the Department of Nursing, Faculty of Health Sciences at the University of Johannesburg, and has lectured in research methodology at an undergraduate, post-basic, and postgraduate level since 2015. Her world of teaching and research is deeply rooted in the work of Jean Watson's Caring Science and the philosophy of Ubuntu. Prof. Downing is a Full Professor in the Department of Nursing and a C2-rated NRF researcher. Prof. Downing currently supervises 25 master's and 28 PhD candidates. Prof. Downing has published 50 articles since 2015; she is the first author of four research articles.

Kaitano Dube is an Associate Professor seconded to the Ecotourism Management Department. He hosts Postdoctoral Fellows and is acting as a Faculty of Human Science Research, Innovation and Commercialisation Professor. He is a senate member and several senate subcommittees such as the Higher Degrees Committee, Senate Research and Innovation Committee Member and Faculty Research and Innovation Chairman, among others. His role is to promote research, innovation, and commercialisation in the faculty Prof Dube is a visiting Professor at Emirates Aviation University, Dubai, UAE.

Leane Grobbelaar is a Lecturer in the Department of Tourism Management at the Tshwane University of Technology, Mbombela (Nelspruit) Campus. She holds a PhD in Tourism Management from North-West University in Potchefstroom. Her research interests include tourism marketing and value co-creation.

Uwe Peter Hermann is an Associate Professor in the Department of Tourism Management at the Tshwane University of Technology, Pretoria campus. He also serves as Section Head for research, innovation, and postgraduate studies within the same department. His research interests include heritage tourism and tourism curriculum development.

Erica Sao Joao is a Lecturer at the School of Tourism and Hospitality (STH), University of Johannesburg (UJ). She had 12 years of working in the hospitality industry before joining the STH Team. Her primary research areas are; hospitality, food and beverage management and control. She is keenly interested in green hotels, sustainability, hospitality graduate workplace readiness, club management, and crisis management.

Meera Joseph (Prof) is currently a Lecturer in the Independent Institute of Education and Adjunct Prof at VUT. She earlier worked as the Associate Professor at the DFC, Department of Electrical and Electronic Engineering Technology, School of Electrical Engineering, University of Johannesburg (UJ) and is a Professional Member of the Institute of Information Technology Professionals South Africa (PMIITPSA) and Full Member of IEEE Computer Society (CS). She is currently the IEEE Computer Society SA Chapter chair. She received her DPhil Degree (Engineering Management), UJ in April 2014, Master's degree in Computer Applications in 1998 from Bangalore University, India, and BSc. degree in

Chemistry (Physics and Mathematics sub.) from University of Kerala, India. She has authored 75 research articles and has 22 years lecturing experience. She founded and led the Information and Communication Technology for Development (ICT4D) research group at UJ's School of Electrical Engineering and has supervised 13 Postgraduate students to graduation within a short span of 4 years. Her research interests are ICT4D, smart grids, cloud computing, computational intelligence, computer networks, femtocells, ICT for renewable energy, ICT for power engineering research, ICT for empowerment, and the use of ICT in engineering education.

Catherine Muyama Kifworo (PhD) is an emerging Researcher and a tourism management lecturer at Maasai Mara University, Kenya. At the time of writing, she was a Post-doctoral Research Fellow at the Vaal University of Technology, South Africa, under the Department of Tourism and Integrated Communication. She is a mixed methods researcher whose research interests include domestic tourism, climate change, sustainable tourism, and tourism policy. She has also published several articles in these areas.

Impi R. Kuhlengisa is a PhD student in Public Policy at the University of Pretoria. He is also a PASGR and Carnegie Corporation Fellow. Impi is doing his PhD in Public Policy at the University of Pretoria. His research interests include local government administration, water governance, social policy, and governance.

N. Madhav is a Senior Programme Head of Programme at the Independent Institute of Education for the Faculty of ICT. She has over 23 years of lecturing experience in both public and private sectors. Her lecturing journey started at Boston City Campus and then went on to lecture at the University of Johannesburg. Her qualifications include a BSc (Information Systems) from Unisa and a BEd (Hons) and an MEd in ICT education from the University of Johannesburg. She is a co-author and has presented at various international conferences. Natasha's vision is to enable inclusive transformative learning, using ICT tools and technologies.

Tawanda Makuyana is currently attached to the Vaal University of Technology, South Africa, as a Post Doctoral Fellow. He is an accomplished researcher in the following areas: human capital development/human resources issues, vulnerable groups and disability issues (advocacy for socio-economic empowerment of disabled people), inclusive workplace and wellness, inclusive organisational policy and strategy development and implementation, accessible/inclusive destination competitiveness, inclusive- Community Based-Tourism, Nature (biodiversity)-based Tourism, Inclusive Sport Tourism, and Accessible Tourism.

Tanyaradzwa Myra Masaire holds a Master of Business Administration from Midlands State University (MSU). She has over 5 years in the tourism and hospitality industry, working in operations management. Her research interests are information security, cybersecurity, digital marketing, corporate governance, and entrepreneurship.

David Mhlanga is a Senior Research Fellow at the University of Johannesburg, South Africa. His research interests include Fintech, financial inclusion, poverty studies, Industry 4.0, and the application of artificial intelligence and machine learning in business economics and finance. His subject areas include development economics, digital economics, economics of artificial intelligence, health, and education economics. He holds a PhD from the North-West University, South Africa.

Livingstone Mhonda is a PhD candidate in Tourism and Hospitality Management with the University of Zimbabwe. He is a holder of a BSc degree in Tourism and Hospitality Management (2003) and an MSc degree in Tourism and Hospitality Management (2020). His research involves the interrogation of ecotourism framework to reconcile the rhetoric, narratives, and discourse of ecotourism with the practice in Zimbabwe. Mr. Mhonda is a founding member of the Tourism Researchers Association of Zimbabwe (TERAZ). He currently works as a Lecturer in the Department of Tourism and Hospitality Management at the University of Zimbabwe, Harare, Zimbabwe.

Kholofelo Maserame Molefe is a graduate of the Tshwane University of Technology. She holds an MTech Degree in Tourism and Hospitality Management obtained in 2022, which focussed on social media usage in travel. The research focuses on the determinants of social media usage in the travel decision-making of those who purchase and experience travel.

Favourate Y. Mpofo is a researcher whose interests are in the areas of taxation in developing and emerging economies, development finance, and the Fourth Industrial technologies. She holds a PhD in taxation from the Northwest University in South Africa. She is currently a post-doctoral researcher at the University of Johannesburg.

Mugumo Joyce Munangwa is a Lecturer at the University of Zimbabwe, Harare, Zimbabwe. She is a holder of a BSc in Tourism and Hospitality Management and a Master of Business Administration from the University of Zimbabwe. Munangwa has vast experience in the hospitality industry. Having been a Director of the Department of Accommodation and Catering Services at the University of Zimbabwe, Joyce managed to resuscitate the catering department which had been closed for more than 10 years. Before then, she worked as a high school teacher, then as a manager at an upmarket restaurant, and lastly, as the Food and Beverage Manager at a hotel.

Gideon Walter Mutanda is a Postdoctoral Fellow in the Exxaro Chair in Climate and Sustainability Transitions, University of South Africa, South Africa, and a Lecturer in the Department of Physics, Geography and Environmental Science at Great Zimbabwe University, Zimbabwe. He completed his PhD in Geography and Environmental Science (Wits University, South Africa) and MSc in Natural Resources Management and Environmental Sustainability (Bindura University of Science Education). His research interests are environmental governance, environmental and climate justice, land reform, and sustainability issues.

Emmanuel Ndhlovu is a scholar and student of development. His research interests are in peasant and informal sector livelihoods, land reform issues, political economy, digitalisation of industries, and food sovereignty. He holds a PhD in Development Studies from the University of South Africa. At the time of writing, Emmanuel was with the Vaal University of Technology as a postdoc researcher.

Godwell Nhamo (PhD Rhodes University) is a Full Professor and Exxaro Chair in Climate and Sustainability Transitions at the University of South Africa (UNISA). He is a National Research Foundation C1-Rated researcher undertaking research in COVID-19 and tourism, climate change, and sustainable development. Prof Nhamo has published 18 books (14 edited and 4 co-authored), over 110 journal articles, and many book chapters. Since 2013, Prof Nhamo has graduated 13 PhDs and hosted 12 postdoctoral fellows. Prof Nhamo is also one of the experts for the Non-economic Losses Group under the UNFCCC Warsaw International Mechanisms on Loss and Damage.

Theo Tsokota is a Senior Lecturer in the Department of Information and Marketing Sciences, Faculty of Business Sciences, Midlands State University (MSU), Gweru, Zimbabwe. He is a holder of a PhD in Information Technology from Nelson Mandela Metropolitan University (NMMU), South Africa (SA). He has authored numerous peer-reviewed articles and much of his research is in ICT4D, IT governance, and ecommerce.

Beauty Zindi is a Post-doctoral Research Fellow at the University of Johannesburg, South Africa. Her research interests are local government administration, supply chain management, human resource management, strategic management, digital governance, institutional cultures, and integrity in public service. She has published scholarly articles in several peer-reviewed journals.

Chapter 1

Tourism and Hospitality Trends and Sustainable Development: Emerging Issues in the Digital Era



Emmanuel Ndhlovu , Kaitano Dube , and Catherine Muyama Kifworo 

1.1 Introduction

The global tourism and hospitality industry is going through a massive digital revolution spawned by the advent of the Fourth Industrial Revolution and its associated technologies. While these developments impact the tourism and hospitality industry, they have also significantly contributed to these changes (Ratten et al., 2020). For instance, some of the most popular new digital businesses, such as Airbnb and Uber, are directly located within the tourism industry. The digital revolution is essential for keeping up with the times and ensuring sustainable tourism and hospitality industry development. Globally, digital transformation makes customer experience a money-making business, presenting various opportunities in the tourism and hospitality industry (Tajeddini et al., 2019).

The digital technologies emerging from the 4IR can be categorised into three major types: adaptive, ideal, and potential. All these types of technology generate suitability in tourism from various angles. However, their implications are interconnected in generating particular trends in contemporary tourism. Adaptive technology is driven by social and market necessities, making them more pertinent to their citizens (Anggadwita et al., 2017). These technology types have established infrastructure, seek less dependence on government funding, and are more self-reliant. By focusing on the high growth potential in tourism, adaptive technology can generate more value-added services, which help stakeholders in the industry and deliver more flexibility with funding (Aithal, 2021). Ideal technology comprises innovation in the tourism and hospitality industry (Tajeddini et al., 2019). This implies filling a gap previously left unfilled by available products or services in the market. The technology is developed and adopted in response to a need for tourism services and

E. Ndhlovu (✉) · K. Dube · C. M. Kifworo
Vaal University of Technology, Vanderbijlpark, South Africa
e-mail: kaitanod@vut.ac.za

matches the requirements of businesses in the industry, hence sustainability (Thi Phan et al., 2021). Potential technology focuses on projected needs that are not satisfied by current demand (Ferreira et al., 2017). These technologies provide a means to look to the future to predict change and forecast innovations that can generate and ensure sustainability in tourism. In this context, sustainable tourism concerns principally essential aspects such as competitive and socially responsible tourism businesses, the opportunity for all citizens to participate in tourism, acquire better job opportunities in the sector, and benefit from tourism activities (Abouzeid, 2022; Filho et al., 2022). This requires preserving cultural integrity and integrating environmental protection and cultural heritage resources in tourism-related programmes (De Gasperi, 2021).

The main aim of sustainable tourism for a particular area is to increase the number of tourists to generate sustainable development. This can be achieved through the pursuit of several specific objectives, such as coordinating all stakeholders interested in developing tourism in a particular area, tourism product inventory, concern and respect for the interests of local communities and the environment in shaping the tourism product and marketing activities; assessing marketing and product perception by potential buyers; vision development; and developing tools to evaluate progress in implementing the strategy (De Gasperi, 2021; Eskerod et al., 2019; Filimonau & Naumova, 2020). Since sustainability is considered in three contexts: economic, environmental, and socio-cultural, sustainable tourism is also debated in three contexts, as demonstrated by the chapters in this book.

In recent decades, particularly since the 1990s, there has been a rapid change in how businesses and customers interact. Social media technologies, such as social applications, are part of this change. These applications enable customers to be co-creators in tourism experiences (Kayumovich, 2020). The significant advantage of these novel applications is the access to real-time information, allowing knowledge creation and sharing among large numbers of people and cost reduction while increasing efficiency (Zlatanova, 2020). Real-time and instant communications are now possible in tourism services. This has intensified competition in the industry (de la Feria & Maffini, 2021). With the advent of digital tools, the tourism industry continues to experience expansion and diversification, thus becoming one of the largest and fastest-growing economic sectors worldwide.

In the tourism industry, digitalisation generates creativity and innovation and enables the customisation of visitor experiences (Filimonau & Naumova, 2020). According to Kindzule-Millere and Zevrte-Rivza (2022), in the tourism and hospitality industries, digitalisation improves visitor satisfaction; contributes to new destination configurations; stimulates new business models, new value chains, and new business ecosystems; and opens up new roles for consumers and producers.

Although the positive effects of digital transformation have received sustained scholarly interest, its adverse effects have attracted limited academic focus. The tourism and hospitality industry comprises numerous small and medium-sized businesses that enable change to occur frequently but are also easily affected by rapid and unplanned transformation. Notwithstanding these businesses' resource challenges, they have demonstrated creativity regarding service offerings (Ndhlovu &

Dube, 2023). This has resulted in large tourism businesses imitating some of the innovations of small businesses and capitalising on their potential (Ferreira et al., 2017). Digital technologies are used in various ways in tourism, such as online booking and the location and type of accommodation services. In the past, there was a time delay in terms of hotel booking, but now, with online instant feedback, this has changed the nature of the industry (Narayan et al., 2022).

Furthermore, changing social demographics, such as the ageing population, have transformed the type of hotel services needed (Ratten et al., 2020). Even though there has been a typecast of digital tool users being young (Tajeddini et al., 2019), this is not always the case, as older people have often been found to be making use of these tools. In addition, the rising middle class in emerging economies also means a growth in interest in tourism.

The tourism and hospitality industry could continue to change as we enter the future due to digital transformation. Discussions about the environmental impact, labour market issues, energy utilisation, global poverty, and growing inequalities in society as a result of digitalisation are gaining traction (Christou et al., 2020; Eskerod et al., 2019; Ramachandran & Ruthramathi, 2020). For instance, using robots and other digital tools impacts human labour requirements. In contrast, replacing human interaction with digital tools erodes society's social fabric (Ratten et al., 2020). However, using digital technologies has been observed to be sustainable regarding energy conservation and environmental sustainability (Arun et al., 2021; Youssef & Zeqiri, 2021).

Digital is, however, essential for a healthy community as, generally, in times of economic growth, there tends to be a high percentage of entrepreneurship in the tourism industry (Tajeddini et al., 2019). The main goal of digitalisation is to develop more integrated online services that can expedite economic growth. This entails encouraging an attitude of self-reliance by expediting inventiveness that then spurs more tourism start-ups.

Research on tourism and hospitality abounds due to the realisation that the environment is conducive to digital transformation. More studies that explore the nexus of tourism and digital transformation are needed as part of the effort to place digitalisation at the centre of analysis in the industry. This can open up new debates that can potentially change the field of tourism and hospitality.

This book aims to showcase how digital transformation is relevant for the realisation of sustainable tourism in terms of business development and usage. The chapters in the book explore the 4IR and various aspects such as the digitalisation of business, interconnectivity, the digital revolution, the ensuing transformation of management practices, and the disruption of traditional business operations and employment. The chapters also analyse digitalisation in tourism, highlighting the major trends, opportunities, and challenges using myriad research methodologies from which the diverse digital technologies are discussed. The book comprises contributions that generate theoretical insights, empirical findings, and evidence-based recommendations by focusing on emerging and forecasted technologies used in the tourism and hospitality industry, such as blockchain, robots, artificial intelligence, virtual reality, big data, and analytics. The book could be helpful for future research

to focus on the impact of different forms of digital technology by examining their socio-cultural and environmental effects. Building on prior research, the chapters in this volume extrapolate current studies on digital development to provide more linkage to tourism and hospitality.

The chapter is organised as follows: The next section discusses the various sectors constitutive of the tourism industry. A discussion of digitalisation and sustainable resource utilisation follows this. After that, the book outline is presented, and conclusions are drawn from the discussion.

1.2 Sustainable Development

The concept of ‘sustainable tourism’ emerges from the idea of sustainable development in the Brundtland Report. The Brundtland Report (1987: online) defines sustainable development as ‘that meets the needs of the present generation without comprising the ability for future generations to meet their own needs’. The definition identifies fundamental principles of sustainability, such as a holistic approach to planning and strategy; environmental protection (biodiversity) and man-made heritage; preservation of vital ecological processes; facilitation of public participation; production to be pursued in a manner that does not endanger the needs of future generations; and equality and opportunity between different countries. Sustainable development is built on three pillars: economic development, environmental protection, and social development (Zhang & Shang, 2022). Sustainable tourism emerges from these pillars. It is defined as all forms of tourism activities, management, and development that preserve natural, economic, and social integrity and guarantee the maintenance of natural and cultural resources (Guan et al., 2022). Implementing sustainable tourism principles requires the optimal use of environmental resources, the sustenance of vital ecological processes, and the conservation of natural heritage and biodiversity. It also requires valuing the socio-cultural legitimacy of host communities and preserving their built and living cultural heritage and traditional values (Koçak et al., 2020). In addition, implementing sustainable tourism requires tourism businesses to contribute to intercultural understanding and tolerance and ensure sustainable, long-term economic activities, fairly sharing socio-economic benefits with all stakeholders. This includes jobs, other income-earning opportunities, social services to host communities, and contribution to poverty alleviation (Abdou et al., 2020).

Sustainable tourism entails predominantly imperative aspects such as competitive and socially responsible tourism businesses, the opportunity for all citizens to participate in tourism, favourable job opportunities in the sector, and host communities benefit from tourism activities (Abouzeid, 2022). This calls for the protection of cultural integrity and the incorporation of environmental protection and cultural heritage resources in programmes related to tourism (Liutikas, 2023). Eco-tourism is one branch of tourism which entails responsible travel to natural areas that protect the environment and maintain the welfare of the local people (Mudasir et al., 2020).

It includes elements of both rural and cultural tourism. In addition to subscribing to sustainable tourism principles, eco-tourism has its specific principles: it actively contributes to the conservation of natural and cultural heritage; it involves local communities in planning processes, development, and operation activities; it contributes to the welfare of host communities; it protects the natural and cultural resources of communities; and it is targeted mainly to individual visitors and also to small organised groups (Yiu & Cheung, 2021).

According to Zhang and Shang (2022), however, the principles of sustainable development are relatively rarely applied in tourism enterprises globally. For Mudasir et al. (2020), in the economic calculation, tourism enterprises do not include, to a limited extent, the social costs and costs related to environmental protection. The critical barriers to the execution of the principles of sustainable tourism by enterprises include a lack of awareness of the problem of climate change, the need to reduce costs (Ndhlovu & Dube, 2023), the general lack of conviction (Mudasir et al., 2020), and the lack of education and training by staff (Ndhlovu & Dube, 2023). This undercuts efforts to mobilise tourism enterprises to help deal with climate change by reducing CO₂ emissions. The chapters in this volume propose integrating digitalisation technologies as having much potential to enable tourism enterprises to be more responsive to climate change (Pereira-Doel et al., 2019).

1.3 Sectors of the Tourism Industry

The tourism industry is vast. It comprises many sectors and sub-sectors. The chapters in this book cover these sectors. As a result, the unfolding digital revolution will likely be immense for the industry as different and context-specific impacts are made in particular sectors and sub-sectors. This raises sustainability concerns, particularly about using resources such as energy and water, environmental effect, and employee lives and livelihoods. The embrace of digital tools in the industry is necessitated by the need to satisfy the needs and wants of travellers in a rapidly digitalising world. Travellers have different needs and expectations that businesses must meet to satisfy customer needs and remain competitive in a highly globalised world. Tourism or tourism is not merely about visiting a particular; it is about the entire experience of a tourist on a journey (Walton, 2020). The ability to adapt and meet emerging trends and requirements of travellers guarantees the sustainability of tourism enterprises in the future. According to Barykin et al. (2021), the need for a wholesome travel experience motivates most travel businesses and agencies to adopt digitalisation to improve their service. This attracts a constant flow of customers to the business and, thus, enhances business profitability. The following subsections summarise the main sub-sectors of the tourism industry.

1.3.1 Transportation

Transport is one of the indispensable components of tourism activities. The link between transport and tourism development is essential because it contributes considerably to the development of tourism (Brusiltseva & Akhmedova, 2019). Transportation overcomes human beings' physical, social, and economic development (Pellegrino, 2021). It overcomes the physical restrictions of distance and satisfies the human need for movement over space (Ouariti & Jebrane, 2020). Transportation links the origin and destination of tourism. The movement of people at national and international levels is possible because of various means of transport. Transportation, therefore, plays a central role since tourists would not be able to visit many tourist sites without it. People travel from one point to another to enjoy whatever tourism activity they want. The destination of travellers and the intended experience often determine the transport to use. In tourism, the transportation industry's role is to help get tourists to their required destination by providing them with the most suitable and reliable means of transport. Among the several functions and duties of the transportation industry is providing travellers with the means to get to their destinations. Once travellers arrive at their destinations, the industry may be responsible for shuttling them from their base to the different locations during their whole touring experience. Transportation could be by air, sea, land, or rail.

Air transport and tourism are closely linked (Chakamera & Pisa, 2021). The airline sector is crucial for ensuring domestic and international tourism travel. The airline sector provides services in two primary forms: chartered and scheduled flights. While some sections of tourism may not use air transport due to short distances involved (such as in domestic tourism) or touring preferences (such as coach, rail and boat trips, including cruises), the very advent of mass leisure tourism and business travel since the past five decades has been primarily related to the rise of jet aircraft and market developments in air transportation (Papatheodorou, 2021).

The demand for air transport is primarily derived, and it is strongly dependent on spatially fixed activities mainly related to tourism for leisure, business, and other purposes. Air cargo is essential, particularly in thriving yet remote tourism regions (Antwi et al., 2020). Air transport and tourism are primarily cyclical and are very sensitive to changes in the economic, social, and political environment, and hence, sustainability concerns in tourism. Improvements in accessibility which emerge from new/additional airport infrastructure and the development of direct airline connections can boost tourism in a destination by reducing monetary and time-related costs. On the other hand, if inbound tourism flows in a remote area exceed a particular threshold, investors may become persuaded to invest in that specific area. However, sustainable tourism requires that tourism activities and investments not make a destination a victim due to over-tourism or poor management (Peeters et al., 2018).

For air transport enterprises, new business strategies to deal with contemporary and old challenges have included massive digitalisation (Shiwakoti et al., 2022). The air transport sector is rapidly moving towards increased digitalisation.

Molchanova (2020) posits that the aviation industry deploys digital technologies, such as blockchain technology, artificial intelligence, actual reality, virtual reality, beacon technology, big data and analytics, and biometrics, to increase efficiency and competitiveness. Molchanova (2020) also notes that the sector has adopted hi-tech innovation in managing air traffic, aircraft maintenance, and monitoring flights and airport control.

Airlines adopted digital contactless services in response to the coronavirus (COVID-19) safety requirements. In 2020, several airlines, including Honeywell, adopted an Ultraviolet Cabin to reduce the spread of viruses and bacteria on targeted surfaces, including COVID-19 (Shiwakoti et al., 2022). Similar technologies were also implemented within the aviation industry to sanitise airports and cabins. Digital technologies were also used to increase competitiveness and profitability (Sun et al., 2021) and increase traveller satisfaction (Moon et al., 2021). Inflight digital entertainment facilities are the primary consideration for some travellers when choosing airlines (La et al., 2021). Park (2019) also found that digital services and inflight technologies, such as onboard entertainment and Wi-Fi, improved overall satisfaction and customer loyalty towards an airline. Digital solutions have also enabled airlines to cut costs by providing automated non-remunerated technologies, digital marketing platforms, paperless invoicing, self-check-in and out, and remote reservations. Digital technologies such as artificial intelligence and robots help airlines offer services anytime. AI and intelligent robots work faster and are more reliable (Zeqiri et al., 2020). Solar-powered technologies have also allowed airlines to save on electricity, water, and fuel usage and thus reduce greenhouse gas emissions. This eventually translates to sustainable tourism.

Another sub-sector of transportation is rental services. In the contemporary world, most tourists prefer to rent cars to visit new places, allowing them to plan their journeys without worrying about relying on the public transport system (Bayram, 2021). Car rental services enable tourists to travel to their choice of places conveniently. Tourists prefer renting cars to taking their vehicles (Papatheodorou, 2021). Airport rentals are the most popular as tourists rent a car soon after landing in a new country and keep the car with them for the entire duration of their visit or drop them off where they want to go (Gierczak-Korzeniowska, 2020).

Along with many other factors, car rental agencies are essential in providing a service that enables tourists to easily travel within their destinations (Shabrina et al., 2020). According to Bayram (2021), the importance of travel services, especially the car rental business, will continue to gain more attention, with car rental owners providing more wide-ranging and better quality services to meet tourists' growing needs and expectations. In most cases, car rental services are located close to airports or rail stations, and in some cases, they operate in partnership with some travel agencies and airlines. In this sector, with the advent of digital tools and the Internet, mobile devices are increasingly used to look for personalised real-time information about non-privately owned forms of transport. Traditional actors, such as rental operators in the transport service industry, have embraced digitalisation to improve strategic planning and operational tasks (Wang & Mu, 2018). Shirgaokar (2018)

posits that cost reduction while increasing effectiveness and service quality has been a significant reason for implementing digitalisation in rental transport services.

Concerning the impact on travellers, digitalisation is revolutionising how travellers organise their mobility and how they can be assisted. In this sector, digitalisation has resulted in the emergence of shuttle services such as Uber and Bolt. Digitalisation has also conspicuously translated into the development of new paperless ticketing methods and other forms of improved travel information details. Digital tools allow travellers to conduct other activities while travelling and teleworking.

Water-based transportation is another type of transportation. Water transport is one of the oldest known forms of transport. It is a sector responsible for travelling on the water. Water transport is an important industry that facilitates water-based tourism and activities. Under the water transport category are ships, ocean liners, ferry transport, and many more. In the contemporary world, water tourism transportation is mainly in the form of cruises, moving from a primary mode of travel into a recreational one. Cruise travel is a tourist product consisting of a specially designed ship that offers travellers maritime voyages, special treats, and recreational conditions, including visiting ports and localities in and outside the country's borders (Prideaux, 2023).

Water transportation provides travellers with the best possible experience while on water. According to Budnyk and Lernichenko (2019), most of the world's wonders are located on coastlines and can only best be appreciated by travelling on water. Locations rich in water landmass have their water transportation sector significantly engaged to suit their visitor's needs (Tanko et al., 2019). Providing pertinent digital information is, therefore, very important as it eventually affects decision quality, efficiency, and sustainability of operations (Niedzielski et al., 2021). In this context, sustainability refers to the capability to lessen the negative impacts of business activity by providing socially inclusive working conditions, economic performance, and environmentally-friendly transport services (Tijan et al., 2019).

Although concepts such as River Information Services, for instance, already offer a general outline for digital information services operated by port and waterway authorities, experts such as Punter and Hofman (2022) claim that existing implementations do not adequately allow the full exploitation of the potential of digitalisation. Thus, 'to ensure the competitiveness of the inland waterway system in the medium and long term, a significantly more intensive orientation of inland navigation towards digital trends will be indispensable in the future' (Specht et al., 2022: 1). The potential impact of digitalisation and technology integration on water transport business has been acknowledged in the research community (Durajczyk & Drop, 2021 Verbergh et al., 2022). This highlights that future trends in the water transport sector will likely 'go digital' as part of the effort to remain competitive and sustainable.

The rail transportation service is the other type of transport used in tourism. From the nineteenth century, the railway system was the primary transport system that helped steer the industrial revolution and enabled investors and workers to move from one place to another. Some ancient trains, such as the Orient Express,

the Trans-Siberian, the Ghan, and the Blue Train, became iconic for their luxury and have retained their appeal in international railway history (Peira et al., 2022). Railways provide tourists with a safe and fast means of travelling to their destination on the ground or underground. The railway's travel option allows tourists to commute across significant cities and towns (Yiamjanya, 2020). However, global challenges such as climate change, energy crisis, and air pollution mean that it is now essential to encourage more travellers to use a sustainable mode of transport. It is also no longer enough to provide comfort during a journey. Operators also need to improve the passenger experience from source to destination.

In a world where many countries are focused on reducing emissions of greenhouse gases, the rail industry plays a vital role in achieving this goal. The system always transports many people at a time and reduces the emissions generated when other modes of transport are used. Factors such as low cost and comfortable seating are why many travellers prefer rail transport (Carnicelli et al., 2020). Cost is not always money; it can also include the travel duration to reach the destination, which can be an essential factor for passengers depending on their plans (Dragan & Gierczak, 2020). Train operators are, therefore, becoming increasingly creative in considering ways to give travel time back to passengers as an encouraging factor. Novel technology and digitalisation trends are helping operators achieve this goal and build trust with passengers. For instance, providing reliable Wi-Fi connectivity onboard allows passengers to use their travel time more flexibly, such as preparing for an upcoming meeting or completing an assignment or a presentation on the way to a conference or workshop. With the latest digital technologies, passengers can watch movies, read the daily newspaper online on their way to work, and listen to podcasts and music or any combination of these entertainment options during their journey.

The coach and bus service is another critical transport sub-sector in the tourism industry. The bus service helps ensure that newly arrived tourists get to their prepared accommodation without hassle. The coach service is also responsible for travels that involve groups of travellers who might prefer to share a touring experience in the form of events like daily trips to locations of local attractions and popular destinations, as well as commuting to close towns and within cities.

In this sector, with other digital advancements such as big data and crowdsourcing, the Internet can be a powerful enabler of sustainable development (Chowdhury et al., 2021). Digital tools can improve tourists' efficiency and security as they move. Travellers and operators can use the tools to locate vehicles and check occupancy levels and vehicle status. Travellers can also use the tools to check the time and location of entering and leaving coaches, individual preferences, final destination, ticketing data, and congestion. The data can be gathered automatically through different types of sensors and machines or the travellers through diverse smartphone applications (Radicic & Petkovi'c, 2023).

1.3.2 The Accommodation Industry

The accommodation sector operates closely with the hospitality sector. When tourists arrive at their destinations, they always need a place to settle for them to lodge, sleep, rest, and generally unwind. Under the accommodation, several divisions serve travellers' different needs and demands.

Hotels are the most common form of accommodation for tourists, and there is always a strong link between the hotel and tourism industries. Fundamentally, hotels serve the purpose of providing travellers with lodging options. Beyond providing basic lodging facilities such as beds, bathrooms, and resting facilities, hotels provide tourists with a wide range of other services. Hotels differ in their service delivery. This makes up the distinguishing factor among several hotels (Abiola-Oke, 2020). The tourism industry is, in the first place, responsible for the kind of experience tourists get when travelling. Therefore, hotels must ensure that visitors get the best hotel experience.

Shared accommodation, known as Airbnb, has also gained popularity recently. Shared accommodation allows users of the Airbnb platforms to list their available spare rooms for renting out for a short while (Wang et al., 2021). The shared accommodation can be by an individual or in shared spaces with a few others.

There is also hostel accommodation. This type of accommodation is usually less costly than other types of accommodation. This type is suitable for people seeking to reduce the total cost of their travel (Oke et al., 2017). Hostel accommodation is different in that it is socially stimulating, and many users only get to rent beds but share the bathroom and kitchen facilities (Tayo & Omotosho, 2021).

Other types of accommodation include outdoors, bed and breakfast, cruise lines, agritourism and farmhouse, and timeshare camping. All these types fall under the accommodation sector, and they seek to satisfy the needs and wants of travellers.

1.3.3 The Food and Beverage Sector

The other important sector is the food and beverage sector. The sector contributes significantly to tourist experiences. Food and beverages are an integral part of socialising and, as such, characterise the identity of a people and are, thus, closely associated with tourism (Durajczyk & Drop, 2021). Food's role is attractive, especially in serving as a refreshment to travellers at the different stages of their travel experience. Besides food is essential, it is also an excellent material for socialisation (Alalwan, 2020). The food sector is divided into four categories: restaurant services, where people approach the enterprise to buy and eat food or get takeaways; catering services, where individuals are employed to render food services; and facilities, such as bars, cafes, and nightclubs. All these operate in different ways that raise sustainability concerns regarding their impact on the environment and socio-economic activities.

1.3.4 The Entertainment Sector

Most tourists usually pursue recreation, motivation, and entertainment this recreation. Entertainment enables the tourism industry to provide travellers with the most exciting experience (Carnicelli et al., 2020). Digitalisation and technology integration could, therefore, assist officials in tourism in ensuring that information is distributed to visitors in a timely and precise manner. Examples of entertainment activities involve festivals, which can revolve around the culture and arts of the location of the visit. Shopping is also another source of entertainment for travellers. It is some situations' first tourist attraction point (Tajeddini et al., 2019). The retail industry works in hand with tourism since many travel destinations will have to provide tourist shopping facilities. However, all the sectors described above have diverse socio-economic and environmental implications (Kindzule-Millere & Zevverte-Rivza, 2022).

1.4 Digitalisation and Sustainable Resource Utilisation

The tourism industry has been observed to contribute to climate change through greenhouse gas emissions. The industry contributes to as much as 8% of global greenhouse gas emissions (Filho et al., 2022; Friedrich et al., 2020; WTTC-UNEP-UNFCCC, 2021). These emissions come from the different sectors of the industry, as summarised in Fig. 1.1 below.

The literature on smart technologies and digitalisation in the tourism and hospitality industry indicates that reducing gas emissions in the industry may need to start with a reduction in the total energy used by the industry (Koçak et al., 2020; Youssef & Zeqiri, 2021). The activities in the tourism industry have ignited sustainability

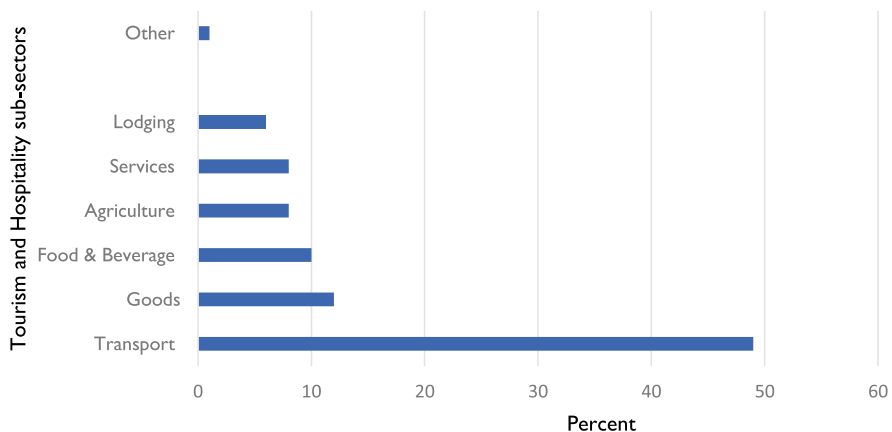


Fig. 1.1 Carbon footprint of global tourism. (Source: Authors, various sources)

issues in terms of energy and water efficiency and climate change, among others. These issues are also linked to ethical issues in development debates (Koçak et al., 2020).

Youssef and Zeqiri (2021) argue that energy use consumption by the industry can be reduced by using modern technologies that can monitor heating, lighting, ventilation, and cooling technologies and record and report on energy use. This will enable tourism entities to use energy more efficiently and, thus, reduce carbon emissions. Abouzeid (2022) posits that technology and digital solutions are indispensable for reducing energy usage by the industry through the deployment of digital technology and new energy-efficient equipment. Zeqiri et al. (2020) posit that transitioning from non-renewable to renewable energies needs to be a priority for the industry. This will enable the industry to realise greater energy efficiency and implement sustainable practices.

Digitalisation could provide staff in tourism enterprises with essential data and send alerts on where energy is being used too much or is no longer needed. This will help them switch off or reduce where little or no energy is needed, thus helping increase sustainability (Abouzeid, 2022). Eskerod et al. (2019) found that using smart technologies could cut hotel energy expenses by between 20 and 25%. Tajeddini et al. (2019) found that globally, smart technologies were enabling enterprises, such as hotels and guesthouses, to make use of heating, ventilation, and air conditioning (HVAC) technologies that enabled them to use energy in more efficient ways by adapting to external weather temperatures.

While using smart technologies to realise energy use efficiency is commendable, for sustainable energy utilisation, intervention strategies that enable many enterprises to transition to these technologies to attain sustainability must be implemented. It is not enough to applaud some pockets of enterprises that are implementing these technologies while the majority are failing to do so. Efforts are needed, not only in policy but also in providing incentives to enterprises and financially supporting technological transitions to speed up the process. This is particularly important for enterprises in developing countries where technological transitions are slow for several reasons, including socio-economic constraints (Ada et al., 2021).

The tourism industry is also implicated in using high volumes of water (Koçak et al., 2020; Youssef & Zeqiri, 2021). This has mainly been the case in the accommodation sector, where tourist activities increase carbon footprints and negatively impact water resources. Youssef and Zeqiri (2021) estimate that the water used by each tourist daily ranges between 84 and 2000 litres or up to 3423 litres per room per day, much of which is used for showering and laundry. Besides the need for sustainability through reducing gas emissions, these large water consumptions are also enormous costs for enterprises. Thus, smart technologies that could help lower water use have been welcomed in this sector. Thus, some hotels and other accommodation facilities are adopting innovative water-saving technologies that enable them to collect and use rainwater and separate 'grey' water for flushing toilets and water recycling (Youssef & Zeqiri, 2021). In the South African tourism industry, Dube (2022) observed that technology adoption in hotels assisted in reducing water and energy use in hotels amidst a growing challenge of climate change threat.

Several 4IR-based technologies can be utilised to utilise water efficiently. These technologies range from IoT-powered water quality monitoring systems and remote sensing devices to monitor the quality of water (Priatmoko & Dávid, 2021). Youssef and Zeqiri (2021) report that a recycling shower, which the OrbSys Company designed, saves 90% on water use and 80% on energy compared to a regular shower. In South Africa, Dube and Mearns (2019) found that the Hotel Verde, for instance, had installed energy-saving and water-saving technologies in hotel rooms. A study conducted in Spain in a hotel that had adopted smart technology in 20 of its rooms showed that real-time feedback reduced water use by patrons by 12.06% on average (Pereira-Doel et al., 2019).

While smart technologies wield much potential in ensuring reduced water usage to reduce contribution to GHG emissions, it must be pointed out that the success of these technologies depends on humanity's positive response, that is, the guests in facilities, the employees, and the community at large. Thus, it is also crucial that devices that can reach beyond the tourism facilities be installed as part of the collective and continuous effort to be sensitive to climate change. This argument aligns with Youssef and Zeqiri (2021), who posit that water savings in tourism and hospitality facilities depend on tourist behaviour. These scholars propose the installation of prompts in the areas that tourists frequent to alert them to the importance of careful water use. The chapters in this book explore pressing global issues of climate change, sustainable tourism, and responsible digitalisation, among others.

1.5 Methods and Materials

The chapters in this volume used various research methods, which helped to understand how the wave of digitalisation is unfolding in the tourism and hospitality industry and how it impacts businesses, employees, customers, and the environment. Quantitative, qualitative, and mixed methods research methodologies were used by contributors to provide detailed and grounded discussions on digitalisation in the industry. The qualitative methods used in various chapters ranged from document analyses, in-depth interviews, focus groups, descriptive analyses, and systematic literature reviews. The adopted quantitative methods included a bibliometric analysis, sentiment analysis, and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach. PRISMA is a fast-growing method in research, where it is used mainly to review content. In using the method, reviewers categorise studies according to the study's methodology following a journal index search using specific keywords based on predetermined inclusion and exclusion criteria. A bibliometric analysis is another method that is gaining popularity in research. The method involves a quantitative analysis of publications to gather a citation analysis to show researchers' impact on a particular research field. The various chapters in this book use these methodologies, thus making not only practical and theoretical contributions but also significant contributions to research methods.