

Emmanuel Ndhlovu
Kaitano Dube
Tawanda Makuyana *Editors*

Tourism and Hospitality for Sustainable Development

Volume Three: Implications for
Customers and Employees of Tourism
Businesses

 Springer

Tourism and Hospitality for Sustainable Development


Emmanuel Ndhlovu • Kaitano Dube
Tawanda Makuyana
Editors


Tourism and Hospitality for Sustainable Development


Volume Three: Implications for Customers
and Employees of Tourism Businesses

 Springer

Editors

Emmanuel Ndhlovu 
Vaal University of Technology
Vanderbijlpark, South Africa

Kaitano Dube 
Vaal University of Technology
Vanderbijlpark, South Africa

Tawanda Makuyana 
Vaal University of Technology
Vanderbijlpark, South Africa

ISBN 978-3-031-63076-7 ISBN 978-3-031-63077-4 (eBook)
<https://doi.org/10.1007/978-3-031-63077-4>

© 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 explores the intersection of digitalisation and sustainable development in the tourism and hospitality industries. It does so by offering theoretical comments about digitalisation and sustainable development as well as providing historical details pertaining to the development of digitalisation in the tourism and hospitality industries. The book sits at the intersection of two sets of scholarly literature, namely, literature on digitalisation in tourism and hospitality industries and literature on sustainable development. As a general trend, these two sets of literature do not adequately engage with each other, and this book contributes to addressing this problem through a number of case studies across the world. The book explores the adoption of and integration of digital technologies such as blockchain, robots, Artificial Intelligence, Virtual Reality, big data, and analytics, among others. This technology diffusion is studied from various angles, including topics that include Customer satisfaction; Automation Technologies and Employee-related Factors (Implications of technology on labour regimes; Employee views on technology; managers'/employees' attitude and usage intention; barriers to adopting digital technologies in enterprises; advantages of robots in tourism and hospitality enterprises); Focusing on New Technologies or New Applications (New technologies that might influence tourism and hospitality operations, the management or customers); and Accessibility and inclusion of disability within fourth Industrial Revolution (Universal accessibility upholds convenience among the ageing and persons with disabilities with propensity to participate in tourism and hospitality, management practices (destination management included), human capital, and experiences of various people with disabilities like blind, Deaf, mobility, intellectual, and those with multiple disabilities).

Contents

| | | |
|---|---|------------|
| 1 | Tourism and Hospitality for Sustainable Development in the Digital Era: An Assessment of the Impacts on Customers and Employees in Tourism Enterprises | 1 |
| | Emmanuel Ndhlovu, Kaitano Dube, and Tawanda Makuyana | |
| Part I Digitalisation in Tourism: Customer Experiences | | |
| 2 | Artificial Intelligence and Robotic Adoption by Customers in the Global Hotel Sector | 23 |
| | Emmanuel Ndhlovu and Konanani Constance Thwala | |
| 3 | Digital Twin and Tourism: Recreating and Reimagining Tourist Experience by Interconnecting Physical and Virtual Systems | 45 |
| | Andhika Galuh Prabawati, Gabriel Indra Widi Tamtama, and Halim Budi Santoso | |
| 4 | Technology-Enhanced Tourist Experiences | 67 |
| | Lisa Charmaine Welthagen | |
| 5 | Customers' Attitudes Towards the Functional Use of Service Robots in a Hotel Environment | 81 |
| | Vhugala Queen Kwinda and Nicola Wakelin-Theron | |
| Part II Automation Technologies and Employee-Related Factors | | |
| 6 | Application of Machine Learning in the Prediction of Employee Satisfaction with Support Provided in a National Park | 107 |
| | Martha Chadyiwa, Juliana Kagura, and Aimee Stewart | |
| 7 | Implications of Digital Technologies for the Global Hospitality and Tourism Labour Market | 121 |
| | Emmanuel Ndhlovu, Tawanda Makuyana, and Catherine Muyama Kifworo | |

| | | |
|--|---|------------|
| 8 | Automation and Human Resources Management in the Tourism and Hospitality Industry of Zimbabwe. | 139 |
| | Raymond Mapuranga, Eresi Muzvondiwa, and Sekai Shateyi | |
| 9 | Human Resources Aspects in Tourism and Its Technology Application: Kenyan Perspective. | 155 |
| | Wesonga Justus Nyongesa and Johan Van Der Westhuizen | |
| Part III Accessibility and Inclusion of Vulnerable Groups Within the Fourth Industrial Revolution | | |
| 10 | The Effects of Digital-Internet Technology on Restaurant Service Experience Among the Ageing in Southern Africa. | 189 |
| | Tawanda Makuyana, Emmanuel Ndhlovu, and Kaitano Dube | |
| 11 | Accessibility and Inclusion of People with Disabilities in the Tourism and Hospitality Industry Within the Fourth Industrial Revolution: A Review. | 201 |
| | Takalani Ramukumba | |
| 12 | Implications of Digitalisation on Leveraging Capabilities of Disabled Human Capital in the Sub-Saharan Tourism and Hospitality Industry. | 217 |
| | Tawanda Makuyana, Emmanuel Ndhlovu, and Kaitano Dube | |
| 13 | Implications of Digitalisation on Value Co-creation in Restaurant Service Encounters Among Disabled People in Sub-Saharan Africa. | 235 |
| | Tawanda Makuyana, Emmanuel Ndhlovu, and Kaitano Dube | |
| 14 | Using Technology to Attract Tourists and Enhance Customer Satisfaction. | 251 |
| | Nicola Wakelin-Theron and Sintu Santu | |
| Part IV Conclusion, Practical, and Policy Recommendations | | |
| 15 | Towards Inclusive and Accessible Tourism: The Diagnostic Potential of Digital Tools. | 275 |
| | Emmanuel Ndhlovu, Tawanda Makuyana, and Kaitano Dube | |
| | Index. | 287 |

About the Contributors

Martha Chadyiwa is a registered Environmental Health Professionals (EHP) with a PhD in Public Health and holds an MBA in Environmental and Energy Management. With an extensive academic background, she served as HOD for the Department of Environmental Health and played a key role in developing the online Master of Public Health at the University of Johannesburg, where she currently coordinates. Dr Chadyiwa, recognised as the 2021 winner of South Africa’s Inspiring Fifty women in STEM, has published papers on occupational and environmental health, supervised over 20 Masters students, and actively engages in international collaborations, focusing her research on the impact of artificial intelligence in these fields.

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 serves as a senate member in several senate subcommittees such as the Higher Degrees Committee and Senate Research and Innovation Committee Member, and is Faculty Research and Innovation Chairman, among others. His role is to promote research, innovation, and commercialisation in the faculty.

Juliana Kagura is a professor and lecturer at the School of Public Health at the University of the Witwatersrand in Johannesburg, South Africa. She holds a BScHons, MMedSc, and PhD from the same university. She is an accomplished NRF-rated Researcher with over 10 years professional working experience in post-graduate teaching and supervision, health research, project design, proposal writing, and high-level data analyses in quantitative and qualitative research using various software packages like STATA. Her research interests are in non-communicable diseases (NCDs) epidemiology using life course approaches and implementation research. She has publications in peer-reviewed journals and has presented in international and local conferences.

Catherine Muyama Kifworo is a post-doctoral fellow under the Department of Tourism and Integrated Communication, School of Human Sciences at the Vaal

University of Technology, South Africa. She is a mixed methods researcher whose research interests include domestic tourism, climate change, sustainable tourism, and Tourism Policy. She has published in the same. She is also an experienced tourism management lecturer.

Vhugala Queen Kwinda is a master's student at the School of Tourism and Hospitality (STH) of the University of Johannesburg's College of Business and Economics.

Tawanda Makuyana is currently attached to the Vaal University of Technology, South Africa, as a researcher in the Tourism Research in Economic Environments and Society (TREES). 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, and Inclusive Sport Tourism and Accessible Tourism. Mixed-method research design is preferred.

Raymond Mapuranga is a dedicated and accomplished lecturer in Human Resource Management. With a passion for teaching and research and a commitment to academic excellence, Mapuranga completed his undergraduate studies in HRM at a prestigious university, where he graduated with honours and a master's. His exceptional academic performance and strong interest in understanding human relations led him to pursue a PhD in HRM, a programme he has yet to finish. For his doctoral studies, Mapuranga focuses on employee resourcing strategies and how they can be manipulated for improved organisational performance.

Eresi Muzvondiwa has been a lecturer in the Human Resource Management Department since 2020 to date. With a Master's degree, a Bachelor's degree in Human Resource Management, and a Postgraduate Diploma in Tertiary Education, Muzvondiwa E is passionate about shaping the minds of future HR professionals. She is also a member of a Consultancy institution specialising in environmental consultancy services, holding a Safety, Health, and Environmental Management diploma. Balancing her roles as a lecturer and an environmental consultant allows her to bring real-world experiences into the classroom, inspiring students to appreciate the connection between HR management and ecological sustainability. Her journey has been one of continuous learning, and is eager to continue pushing boundaries and leaving a lasting legacy in the fields of HR management and environmental consultancy.

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.

Wesonga Justus Nyongesa has over 18 years of experience working in institutions of higher learning. He is a very dynamic team player who is results-oriented and driven. He is an accomplished practitioner and a full Institute of Human Resources Management member. He is highly published and has authored books in Human Resources Management. He is a Senior Lecturer at Maasai Mara University, Kenya, and a Research Fellow at Vaal University of Technology, South Africa. He has held various positions at the University level, including Dean of Students and Director for Quality Assurance. He equally has many years of Human Resource Consultancy in both Public and Private Sector in Kenya.

Andhika Galuh Prabawati is a lecturer in the Information System Department at Universitas Kristen Duta Wacana, Yogyakarta, Indonesia. She is interested in teaching the topics of information technology governance, information technology management, and databases. In addition, several research topics have been carried out, such as developing data warehouses for academic purposes and digital tourism.

Takalani Ramukumba is an Associate Professor and Head of Department in the Department of Tourism and Hospitality Management at Walter Sisulu University, Ibika campus in Butterworth. He holds a Doctoral degree in Developmental Studies with a specialisation in Tourism and Local Economic Development. Prof Ramukumba worked as a Local Economic Development officer at Garden Route District Municipality before joining the University of Nelson Mandela and Walter Sisulu University. Prof Ramukumba is currently an advisory board member of the Tourism and Hospitality Management Department of the University of Venda. He is currently the coordinator of a team applying with CHE for the Postgraduate Diploma in Tourism Management for Walter Sisulu University. He is presently the Faculty of Management Sciences research chair and a Senate and Senate Higher Degrees committee member.

Sintu Santu is a master's student at the School of Tourism and Hospitality (STH) of the University of Johannesburg's College of Business and Economics.

Halim Budi Santoso is a PhD candidate at the Institute of Service Science, National Tsing Hua University. He is also a lecturer in the Information System Department Universitas Kristen Duta Wacana, Yogyakarta, Indonesia. His research interests are Immersive Multisensory Technology for Tourist Experience Journeys and Ecosystem Orchestration. He is currently doing his dissertation on utilising Virtual Reality in the Tourist Experience Journey.

Sekai Shateyi is a junior lecturer at Midlands State University in the Human Resource Department. With a strong educational background and a commitment to academic excellence, Sekai strives to inspire and educate students through engaging lectures, interactive discussions, research, and practical applications.

Aimee Stewart currently works at the Department of Physiotherapy, University of the Witwatersrand. Aimee does research in Physiotherapy. She coordinated post-graduate programmes and research till 2012. She teaches research methodology, supervises postgraduate research, and mentors young researchers reviewing papers and theses. Her current project is Phila Sonke—a community-based project involving the public and private sectors. The project aims to provide comprehensive rehabilitation to people with chronic disease and disability.

Gabriel Indra Widi Tamtama is a lecturer in the Information System Department at Universitas Kristen Duta Wacana, Yogyakarta, Indonesia. He currently teaches courses in decision support systems, data warehouses, computer networks, human-computer interaction, microservices architectural design, and data structure algorithms. His research interests are virtual reality and augmented reality for business purposes.

Konanani Constance Thwala is an emerging researcher with a wealth of experience in Tourism and Hospitality. She has 14 years of experience in Academia, including Senior lecturer and programme coordinator, Academic Manager, and lecturer in other private institutions of higher learning. Her research interests include marketing tourism products in the tourism industry using the latest trends (ICT), sustainability, and tourism development. She pursued her Diploma, BTech degree, and master's degree in tourism Management at Vaal University of Technology and PhD in tourism Management at Northwest University. At the time of writing, she was a Senior Lecturer and programme coordinator at the Vaal University of Technology (VUT).

Johan Van Der Westhuizen (Prof) has more than 20 years of experience in a multicultural environment, and is a results-driven, dynamic leader with substantial management experience in various industries and businesses, which include the Procurement officer and HR officer for a large steel company, the manager of a transport business and owner/manager of a portfolio of small businesses, the General Manager for a private higher education provider, and the National Manager focusing on academic excellence and improving operational efficiency for ten campuses.

Nicola Wakelin-Theron, PhD, is a senior lecturer in the Tourism Department at the School of Tourism and Hospitality (STH) of the University of Johannesburg's College of Business and Economics. She holds a PhD in Employment Relations (ER) and various industry-related qualifications. Nicola is currently lecturing on various tourism development modules. In addition to lecturing, she is also a supervisor for Masters, Honours, and B-Tech students in Tourism and Hospitality research projects and has a close working relationship with the industry. She has further published various papers on this topic. She has a keen interest in tourism employment, youth employment, knowledge and skills development, graduate employability, practical matters to the workplace, and the industry's creation. She has close working relationships with major stakeholders in the industry, such as ACSA,

Airlink, COMAIR, Hotel Sky, Thebe Reed, and Wilderness Safaris. She has published various papers in journals and presented locally as well as internationally.

Lisa Charmaine Welthagen, PhD, is an event management lecturer, subject head, and re-curriculation project leader for the Department of Tourism at Tshwane University of Technology. My teaching profile, coupled with my industry experience in tourism and events, spans over 26 years. I am an active member of SABS Health and Safety (SANS10366), Vice Chair of the Event Safety Council (ESC), Council member for Council of Event Professionals Africa (CEPA), Departmental member for the Advisory Board (TUT), Independent member of Southern African Association for the Conference Industry (SAACI), Departmental Committee member for Postgraduate Studies (DCPS), Departmental Committee member for Research and Innovation (DCRI), and a Faculty member for Recognition of Prior Learning (RPL). I supervise and co-supervise postgraduate research dissertations (master's and doctoral) and have published and presented research in local and international books, conference proceedings and accredited journals.

Chapter 1

Tourism and Hospitality for Sustainable Development in the Digital Era: An Assessment of the Impacts on Customers and Employees in Tourism Enterprises



Emmanuel Ndhlovu , Kaitano Dube , and Tawanda Makuyana 

1.1 Introduction

This chapter introduces the book *Tourism and Hospitality for Sustainable Development—Volume Three: Implications for Customers and Employees of Tourism Businesses*. The theoretical premise of the book is that digitalisation now pervades all fields of human activity and plays a central role in the development of the tourism sector. The unprecedented digitalisation changes have led to the incorporation of different technologies that support how employees discharge their duties and how consumers experience tourism services and products. Globally, in hospitality and tourism, digital transformation has made it possible for customer experience to become a profitable business, presenting a variety of opportunities (Christou et al., 2020; Montaudon-Tomas et al., 2021). In the contemporary world, the tourism economy is significantly driven by information technology (IT) and telecommunications. All tourism-oriented enterprises, such as travel agencies, rental agencies, tour operators, cruisers, and hotels, experience the growing impact of what is commonly known as digitalisation. Tourism represents the information-intensive industry characterised by an intense, long value chain significantly influenced by the information collected through digital technologies. Information collection, creation, storage, retrieval, and transfer remain within the core activities of all tourism enterprises. Every innovation in the IT sector can change the strategy followed by tourism companies in running a business. Such changes are also imposed by the behaviours of tourists and employees, which keep altering under the influence of information technology (Pindzo & Brjaktarovic, 2018). Tourists purchase tourism products and services based on information collected through various

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

channels, such as travel agencies, brochures, word-of-mouth, or websites offered by tourist service suppliers, which are currently gaining much importance (Montaudon-Tomas et al., 2021). Since direct service booking has become possible through digital technologies under the Fourth Industrial Revolution (4IR), the consumer decision-making process in the tourism sector has been transformed into an online one.

The popularity and wide acceptance of digital technologies in tourism industries are demonstrated by the sustained broad interest and adoption by tourism companies worldwide. The high technology acceptance and integration trajectory by tourism companies is also being observed by academics across the world who argue that in addition to increasing the profitability of the industry, technology is enabling the tourism industry to positively respond to contemporary pressing global challenges such as pandemics, climate change, energy crises, staffing challenges and hyperinflation, among others (Bisoï et al., 2020; Hassan, 2023; Youssef & Zeqiri, 2021). Technological infrastructures strengthen, expedite, and, in most cases, are the basis of numerous aspects of tourism and hospitality enterprises, both within and without the enterprise's physical boundaries. Some technologies serve as managerial tools, others operate externally, beyond managerial control, and others facilitate the reorganisation of existing business models (Christou et al., 2020; Youssef & Zeqiri, 2021), whereas others have a revolutionary character that radically disrupts the industry (Filimonau & Naumova, 2020). Technologies are, however, not a perfect-finished whole or a straightforward process, as the 'human touch' and escapism remain the pull factors for one to participate in tourism and hospitality. The opportunities, costs, and challenges of technology access, utilisation, and preference differ depending on geo-political and socio-economic contexts (Phan et al., 2021). With the drive towards inclusion in tourism, digitalisation and technological innovations can play a significant role in universal design and reasonable accommodation for the aged, disabled, poor, and families with young members. Digitalisation and technology can help enterprises to compete with other companies for customers. The diagnostic potential of digitalisation to increase the competitiveness of tourism enterprises is widely acknowledged (Christou et al., 2020; Filimonau & Naumova, 2020; Hassan, 2023; Pindzo & Brjaktarovic, 2018). Filimonau and Naumova (2020) describe digitalisation as a novel way of engaging, attracting, and interacting with customers. Christou et al. (2020) posit that digitalisation enables enterprises to reach new customers. In addition, digitalisation can also reinvent customer engagement around service and convenience. Digitalisation equally impacts the employees within enterprises. The chapters in this volume show that, more often than not, employees within enterprises need to be trained and retrained to respond to the trends, opportunities, and challenges accompanying digital transformation.

Digitalisation and technology integration can also enable tourism to respond positively to contemporary pressing issues such as climate change, inflation, recessions, and high global unemployment rates. Koçak et al. (2020) and Pereira-Doel et al. (2019) prescribe digitalisation and technology integration as the best approach to reduce CO₂ generated in tourism and hospitality through transportation, heat generation through cooking and boiling equipment, and food waste, which cause

climate change. The International Labour Organisation (ILO) (2022) posits that enterprises across the tourism and hospitality sectors are adopting and implementing a data-driven digital economy and are reshaping the world of work. Calderón-Gómez et al. (2020) aver that the new digital tools brought about by the advent of 4IR have decisively reconfigured labour processes, which now have to increasingly rely on the intermediation of technological tools connected to the Internet. Therefore, digitalisation has the potential to assist the tourism and hospitality sectors in responding to issues related to sustainable tourism (defined as ‘tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities’ (World Tourism Organization (UNWTO), 2013:10)).

In the context of the above and in response to the thoughtful need for new and sustained study of the developments, interrelationships, potentialities of the topic, and synergies, this edited book explores the impact of digitalisation and technology integration for employees and customers in the tourism and hospitality industry. The aim is to understand better how disruptive technologies and digitalisation are being utilised, how they currently and potentially influence the various stakeholder groups, and their future possibilities and impossibilities.

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 (AI), Virtual Reality (VR), big data, and analytics, among others. This technology diffusion is studied from various angles, including topics that include Customer experiences (Customer responses to technologies); Impacts on different enterprises, such as hotels and restaurants; impact on travel types, such as leisure, business, and family; Customer satisfaction; Automation Technologies and Employee-related Factors (Implications of technology on labour regimes; Employee views on technology; managers’/employees’ attitude and usage intention; barriers to adopting digital technologies in enterprises; advantages of robots in tourism and hospitality enterprises); Focus on New Technologies or New Applications (New technologies that might influence tourism and hospitality operations, the management or customers); and Accessibility and inclusion of disability within Fourth Industrial Revolution (Universal accessibility upholds convenience among the ageing and persons with disabilities with propensity to participate in tourism and hospitality, management practices (destination management included), human capital, and experiences of various people with disabilities like blind, Deaf, mobility, intellectual, and those with multiple disabilities).

This introductory chapter is organised as follows: The next section provides a background concept of 4IR. A discussion on the link between sustainable tourism and digitalisation follows this. After that, a conceptualisation of ‘customer experiences’ is made. This is followed by a discussion on how digitalisation can impact customer experiences. This chapter then explores the impact of digitalisation on the tourism and hospitality labour market and summarises the research methodology. Lastly, the volume outline is presented, followed by a chapter conclusion.

1.2 The Fourth Industrial Revolution

Digitalisation emerged following the advent of the 4IR—a term used to describe a system of connected devices such as sensors and communication networks that use an internet connection to transmit data and not human intermediation (Khan et al., 2021). Unlike its previous cousins (Industrial Revolutions I, II, and III), the 4IR is more intrusive and disruptive in its innovation powers and technological spread. It affects almost all areas of human existence, discharging desirable and sometimes undesirable results. The 4IR entails a switch from mass manufacturing to mass customisation, which is more well-organised, flexible, and economical (Mhlanga et al., 2021). It is characterised by 3D printing (additive manufacturing), new material development, and more brilliant customisation methods related to the digitalisation of manufacturing. The 4IR has been accompanied by better-quality and value-added data processing aptitudes and the enriched assimilation of customer inclinations into procuring, manufacturing, and logistics (Danielle & Masilela, 2020). Behind 4IR are enormous developments in intelligence (computing power, big data, and image and speech recognition), connectivity (sensor technology, the IoT and mobile devices), assimilation of different platforms, and flexible automation. Under the 4IR, once unconnected sectors are now inter-reliant and rely on consistent connectivity and power, unified supply chain management, and direct engagements with end consumers (Robb & Paelo, 2020).

The 4IR comprises a system of technological developments such as the Internet of Things (IoT), Artificial Intelligence (AI), Cyber-Physical Systems (CPS), Virtual Reality, augmented reality (AR), big data, robotics, blockchain, and 3D printing (Eskerod et al., 2019; Mhlanga et al., 2021; Mhlanga & Ndhlovu, 2023a, b; Rushambwa & Ndhlovu, 2023). In recent years, there has been an increasing academic interest in the links between the 4IR-based technologies and tourism (see Adedoyin & Bekun, 2020; Alawamleh et al., 2022; Citaka et al., 2021). CPS is considered the central pillar of 4IR-based technologies (Alawamleh et al., 2022; Citaka et al., 2021). CPS are integrated and unified physical and virtual systems that use computation, communication, and control systems (Mhlanga et al., 2021). CPS facilitate access to real-time data and smart data management, analytics, and computational capability. These systems mainly use sensors, 3D scanners, cameras, and radio frequency identification instruments to collect data (Bisoi et al., 2020). CPS facilitate data exchange in smart networks (Zeqiri et al., 2020). In the contemporary world, almost every tourism enterprise has CPS on its facilities, either in the kitchens and service points or outside, in the form of cameras meant to improve security.

The IoT is another pillar of 4IR technologies. The IoT is based on the interconnection between CPS and the Internet (Narimawati & Pangestu, 2020; Mhlanga & Ndhlovu, 2023a). It comprises the interconnection of various physical instruments, including laptops, mobile phones, sensors, actuators, and their communication through networks or the Internet, which expedites the integration of the physical and cyber worlds (Mhlanga et al., 2021). In the hospitality industry, the IoT enables the integration of security, communication, computing, and entertainment (Ndhlovu &

Mhlanga, 2023; Zeqiri et al., 2020). In the hospitality industry, the IoT facilitates enterprises' connections with tourists and assembles real-time tourist data (Priatmoko & Dávid, 2021; Ndhlovu & Dube, 2023). According to Shimmura et al. (2020), IoT enables prompt, personalised, and localised services and precisely appraises tourist behaviours and likes in the hospitality industry.

Data Analytics is another pillar of 4IR. Data analytics increases the amounts and rates at which enterprises can generate data (Tajeddini et al., 2019). Big data analytics are fast-replacing traditional data collection, processing, and analysis (Kitonsa & Kruglikov, 2018). Big data analytics enable enterprises to gather, process, and analyse vast volumes of data on consumer behaviours and preferences through AI (Youssef & Zeqiri, 2021). Big data comprises internal data stored in central databases and external data gathered from the Internet through sensors (Mhlanga et al., 2021). After processing and analysing data and placing it into categories according to their characteristics and type, tourism enterprises, for instance, can use the data to develop strategies to attract customers and improve services and products (Arun et al., 2021). Big data analytics enables these enterprises to understand tourist preferences, behaviours, patterns of travel, and locations to offer personalised services.

AR is also another essential pillar of 4IR. It comprises a blend of natural and virtual objects in a real environment, synchronisation of real and virtual objects, and interface in 3D and real-time (Alalwan, 2020). AR technologies include marker-based, markerless, GPS-based, projection-based, and superimposition-based AR (Bisoi et al., 2020). Marker-based AR involves capturing physical images using a camera and visual markers, which readers can use (Calderón-Gómez et al., 2020). Markerless or GPS-based AR provides data that generates location precision. Projection-based AR enables the projection of artificial light on the surface of physical objects. At the same time, superimposition-based AR allows incomplete or complete replacement of the original object view by an augmented one and by providing patrons with more personalised services (Narayan et al., 2022).

According to Shimmura et al. (2020), while AR augments components in the physical environs, VR simulates that actuality. Mhlanga et al. (2021) aver that VR is a computer-simulated (3D) environment that provides users with the experience of being present in that particular environment. AR allows tourists to travel virtually, and, thus, it contributes to the realisation of sustainable tourism by enabling tourism establishments to offer products and services at low costs and provide environmentally friendly travel (Narayan et al., 2022). VR enables travellers to visit areas that may be difficult to access virtually and yet still enjoy tourism (Youssef & Zeqiri, 2021).

Another 4IR pillar is AI and robots. These could generate more personalised and distinctive experiences at reduced costs (Mhlanga & Ndhlovu, 2023b). In tourism and hospitality, service robots help enterprises offer services at any time of the day, mainly when the human workforce is not around (Priatmoko & Dávid, 2021). For example, robots are being deployed in hotels and airports as traveller information centre agents and to assist with tasks that do not require the sophisticated touch of people (Shimmura et al., 2020). Hotels also use robots to support staff and patrons

(Youssef & Zeqiri, 2021). The use of AI and intelligent robots is more affordable, faster, and even more reliable (Zeqiri et al., 2020).

The integration of digital technologies in tourism and hospitality is linked to the continued commitment to ensure that the activities in the industry are pursued sustainably. This commitment speaks to the issue of sustainable tourism, as discussed next.

1.3 Sustainable Tourism and Digitalisation

Sustainable tourism has been an emerging topic as environmental, economic, and social challenges have risen in recent decades while tourism remains a fast-growing industry. The concept of sustainable development first appeared in 1969 at an international gathering titled the International Union Conservation of Nature, where developing countries deliberated on how development could be more sustainable (Strydom et al., 2019). Sustainable development is a notion of integrating the environmental, social, and economic dimensions into all steps of the decision-making process (Yiu & Cheung, 2021). Swarbrooke (2000:13) defined sustainable tourism as 'economically viable but does not destroy the resources on which the future tourism will depend, notably the physical environment and the social fabric of the host community'. Therefore, sustainable tourism makes optimal use of environmental resources and respects the socio-cultural environment of local communities while also enhancing the economy of the host countries. Lastly, sustainable tourism can maintain high satisfaction with the tourists' experiences. Digitalisation directly speaks to the three key factors of sustainable tourism: Economic, environmental, and social factors. By deploying digital technologies, tourism enterprises can better achieve their socio-economic and environmental welfare.

While an enormous body of literature emphasises sustainability in terms of business profitability (economic) and environmental welfare, the chapters in this edited volume draw attention to the need to place an equal level of attention on the social aspect of sustainable development on customers and employees within enterprises. The reviewed literature agrees that despite the rapid expansion of the tourism sector, technology is redefining this sector and that the existing kind of traditional tourism is in jeopardy due to technological advancement. The shift from traditional to virtual tourism and customer and employee attitudes towards this change necessitates new techniques that employ cutting-edge service delivery methods.

1.4 Conceptualising Customer Experience in Tourism

Technological advancement redefines the tourism experience both in terms of accessibility and value. Due to technological advancement, tourism customers receive memorable experiences throughout their journey through digital tools. Experience

is regarded as memorable when it adds value outside its functional provision and imprints the customer's mind and heart (Bec et al., 2019). The experiences are significant because they influence a tourist's future travel decisions (Buhalis et al., 2022). The tourism and hospitality sectors have seen improvement in global coverage due to easy accessibility through the use of digital technology as compared to traditional tourism (Bisoi et al., 2020). However, to create an impact for customers, there is a need for new ways of making the tourism experience memorable. Some scholars argue that these experiences can be improved using technology at every stage of the tourists' journey, and these high technologies help create a powerful experience for tourists (Giaccone & Bonacini, 2019).

The concept of 'customer experience' first emerged in the mid-1980s alongside mainstream consumer behaviour literature that considered customers as rational decision-makers (Osei, 2022). However, the many-sided nature of experience makes it considered as an event that drives individuals personally. Schmitt (2010), however, argues that experiences are existing conditions that customers form to contact with a product or brand on the market when the product is being consumed and the memories customers gain from experience. Khader and Madhavi (2017), on the other hand, define customer experience as entailing managing customers' interactions with a brand or company strategically to ensure a 'superior customer experience', which will create positive perceptions and willingness in customers' thinking towards a product or service to achieve a long-term benefit. Grønholdt et al. (2015) posit that customer experience is defined by how value is created and co-created during the pre-purchase, purchase, and post-purchase stages.

Some scholars, however, argue that experience is not the only approach that can be used to understand how people interact with things, services, environments, or cultures (Huang & Liu, 2021; Jennings et al., 2009; Lee & Kim, 2021). In the tourism and hospitality industries, experiences have become a key concept. This is because tourism is based on a high level of contact between the tourism system, its people, and individual tourists. Individual visitor experiences are produced because of such interactions, which occur when tourism production and consumption clash at the site of value creation (Kim & Kang, 2020). Customers' buying habits alter with time. Therefore, Customer experience management goes beyond brand management to incorporate market research, promotion, and advertising for enterprises. As a result, the most holistic definition of customer experience is the one presented by Godovykh and Tasci (2020, p. 2), who describe the experience as 'the comprehensive constructive or adverse reasoning, feeling, corporeal, and conative responses enthused by all stimuli met in the pre, during, and post phases of consumption, as sieved through situational and brand-related factors, eventually resulting in differential outcomes related to customers and brands'. This conceptualisation (see Fig. 1.1) is based on five factors that are often not captured in other conceptualisations.

Given the ongoing discussion, customer experience can be defined as the psychological impact (emotional arousal) that customers derive from the interaction with external factors of a product or service that they can recall and which has the potential to affect their decision-making in the future.



Fig. 1.1 Component of customer experience. (Source: Godovykh and Tasci (2020))

1.5 Digitalisation and Customer Experience

With the advent of the 4IR and its associated tools, it is now possible to assist tourism customer experiences using digital tools. Technology-assisted experiences are experiences that come with increasing technology implementation. Technologies come in the form of websites, booking systems, emails, and other tools that customers use to communicate and carry out other activities. This experience is characterised by Web 1.0 technologies, such as non-interactive websites, distribution systems, reservation systems, and many technological applications which help assist the tourism experience while not allowing tourists to interact or co-create their experiences (Huang & Liu, 2021).

Technologies not only assist in developing a customer experience but can also enhance this experience. Experiences that are enhanced by technology go beyond the technology-assisted experience by utilising Web 2.0 technologies to allow customers to participate in and shape the creation of their experiences actively (Troshani et al., 2018). Customers interact with businesses via social media sites such as Facebook, Twitter, Flickr, and Tripadvisor and review sites, comments, and media to share their experiences (Pindzo & Brjaktarovic, 2018). The level of customer involvement in the experience is high due to the interactivity of Web 2.0 technologies, which timeously links the company, the tourist customer, and consumers. Given the potential of social networking tools to enhance co-creation, levels of co-creation can be amplified across multiple spaces and between multiple parties, resulting in higher tourist value. Customer experiences can also be technology-empowered.

Several scholars indicate that successful experiences include high degrees of technology and experience co-creation (Marx et al., 2021; Nirere, 2022; Opute et al., 2020). Unlike technology-assisted and enhanced experiences where technology plays a supporting role, technology-empowered experience is defined by combining both elements of technology enabling and being an integral part of the experience (Narimawati & Pangestu, 2020). Technology is essential for the experience (Kindzule-Millere & Zeverte-Rivza, 2022). Technology exists at all stages of travel, service interactions, and touchpoints in the physical tourism destination or

online space with various stakeholders, distinguishing it from other experiences. Immersive technologies, therefore, add value to clients through high levels of interaction and co-creation options (Flavián et al., 2019). Digital technology benefits customers by enhancing their travel experiences and making it easy for them to access tourist sites (Giaccone & Bonacini, 2019). Digital technologies influence the behavioural components of the customer in terms of patronising a tourist site or intention to patronise it, brand loyalty, and satisfaction (Osei, 2022).

Several studies found that digital technology plays a vital role in the cognitive, affective, and conation response of a customer's memorable experience (Huang & Liu, 2021; Narimawati & Pangestu, 2020; Schmitt, 2010). The cognitive experience formed by customers is based on the knowledge which customers gain from an encounter with a digital tool (Osei, 2022). The destination image was also found to be able to form a mental picture that influenced the customers' memorable experiences (Giaccone & Bonacini, 2019). According to Osei (2022), the affective response of the customer, which forms a memorable experience with using digital technology, is based on the customers' happiness derived from using a digital tool, their involvement or engagement with its usage, and how excited they are using the device. The conative response of customer usage of digital technology was the ability of the device to have an impact on the intention of a customer to act.

The use of digital technology in the tourism industry has also helped tourism industries increase revenue, reach a larger audience, and overcome crises affecting accessibility, such as COVID-19 (Chihwai et al., 2023). However, the challenges associated with digital technologies include poor internet connectivity and lack of computers, reduced human interaction, and the inability to have experience as in traditional tourism.

1.6 Digitalisation and the Tourism Labour Market

Digital tools are rapidly being adopted and integrated into tourism and hospitality enterprises (Ndhlovu & Dube, 2023). Digital tools are adopted in enterprises to perform manual jobs such as cleaning and intelligent tasks such as payroll, reporting, and analytical decision-making tools. These digital tools and their deployment in the workplace have significant implications for the labour market attributes and generate new opportunities and challenges for workers. Digitalisation transforms how the labour market functions, thereby having enormous implications for the welfare of employees. Even though existing data on the impact of digitalisation on workers is complex to measure (International Labour Organisation, 2022), scholars and policy institutions are now increasingly becoming aware of the implications of digital tools on the welfare of workers (Calderón-Gómez et al., 2020).

The 4IR and its associated tools have reconfigured society by overcoming conventional space-time obstacles that hampered trade in the past. In the context of labour, productive processes increasingly rely on the intermediation of technological tools connected to the Internet. Tourism is one of the industries for which the

advent of digitalisation has had mixed results (Esposito et al., 2022). The tourism industry continues to experience expansion and diversification with the advent of digital tools, thus becoming one of the largest and fastest-growing economic sectors worldwide (ILO, 2022). The industry continues to generate jobs and improve business owners' and employees' lives and livelihoods (Crumo, 2022). Several scholars have celebrated the tourism industry's performance regarding its impact on the workforce as related to sustainable tourism (Chang et al., 2020). According to Brouder et al. (2020), sustainable tourism positively impacts the livelihoods of owners and workers in enterprises and communities in which these businesses are located. Sustainable tourism also drives prosperity and generates economic and social benefits in destinations (Chang et al., 2020). Kayumovich (2020) argues that the tourism industry can enhance economic expansion and create job opportunities when managed sustainably through the integration of digital technology.

Digitalisation has had a significant impact on the tourism labour market. For instance, digital tools have led to new forms of work organisation (flexible production and interconnected businesses) (Bănescu et al., 2021). Digital tools facilitate utilising a wide range of business practices, such as offshoring or different forms of outsourcing (Calderón-Gómez et al., 2020). This increases the magnitude of connection along the different stages of the production chain, making flexibility and essential adaptability requirements for workers. Furthermore, digital tools can be applied across various processes and tasks of the productive system, thereby having direct implications for workers.

The debate on the implications of digitalisation on the global labour market is ongoing, as demonstrated in this edited book. The central belief is that the digital transition could substitute humans for machines, leading to technological unemployment (Mhlanga et al., 2021). It is also generally believed that digitalisation could worsen labour challenges regardless of the long-term benefits (Cortis et al., 2021). Robertson (2018) believes that digitalisation will destroy jobs but not work. The McKinsey Global Institute (2017:3) posits that '... automation is not a new phenomenon, and fears about its transformation of the workplace and effects on employment date back centuries, even before the first Industrial Revolution in the eighteenth and nineteenth centuries'. For some scholars, a technological revolution could lead to the 'end of labour', economic growth without employment, or 'jobless growth' (Sandri et al., 2022; Xia & Pei, 2021). For other scholars, the digital revolution will generate new jobs in the informational sector or create other jobs that will absorb the surplus population rendered redundant by automation (Kindzule-Millere & Zevrte-Rivza, 2022). For Calderón-Gómez et al. (2020), the labour market will likely be separated into two main groups during the digital revolution. On the one hand, there will be 'integrated workers' comprising hyper-qualified individuals (or groups) working in highly productive, information-rich tasks. On the other hand, there will be 'excluded workers' who will be displaced from regular employment, poorly paid, and alternate insecure work with recurring periods of unemployment. This segmentation of labour could worsen social polarisation between the technologically skilled labour and the mass of abundant and insecure workers (Calderón-Gómez et al., 2020).

The polarisation of the labour market under the 4IR comes in many forms as the revolution unfolds. For example, routinising work processes will eventually shatter the capacity for job creation in the workplace. With smart technologies, jobs based on routine tasks could disappear as automation takes over. Lack of job interest could increase non-STEM (Science, Technology, Engineering, and Mathematics). This could disrupt the industrial sector, which has always provided many intermediate jobs that limited labour polarisation. Digital skills play a significant role in these labour market polarisation processes. They contribute to the decomposition and codification of work tasks, which enables their routinisation and eventual automation (Braña, 2019). However, it should be noted that the extensive integration of digital tools in industries resulting in the mediation of electronic devices is necessary even in manual jobs, with almost any job now requiring some basic knowledge or skill in using new technologies.

Other skills needed in the digital era include technical, creative, knowledge production, and management skills that are very much valued by the market and are, thus, well-recognised in the labour market (Bozhuk et al., 2020). Digital skills are, therefore, occupying a central role in the digital dispensation. Thus, digital knowledge and capabilities are among the key factors determining the chances of individuals in the labour market (Calderón-Gómez et al., 2020). For this reason, the advent of digital tools has generally impacted the social welfare of workers in industries. There have been several studies on the transformation of the labour market through digitalisation and the advent of an information society (Bănescu et al., 2021; Bozhuk et al., 2020; Calderón-Gómez et al., 2020; Esposito et al., 2022). However, there has been no adequate focus on the impact of digitalisation on employees' lives and livelihoods. Available studies that somehow investigated the livelihoods of workers focused on the digital skills and proficiencies needed to adapt to the digitalised job market (Kindzule-Millere & Zeverte-Rivza, 2022; Zeqiri et al., 2020). As a result, there is no clear understanding of digitalisation's implications on workers' lives and livelihoods, which remains embryonic. The chapters in this edited book close this scholarly gap.

1.7 Methods and Materials

The chapters that make this third edited volume use various research methods and approaches, which helped to understand how digitalisation impacts customers and employees in the tourism and hospitality sectors. The chapters take a multidisciplinary approach, utilising historical, sociological, development, and political economy approaches as they engage contemporary pressing issues of sustainable tourism, digitalisation, and the welfare of humanity (customers and employees of tourism enterprises). The chapters use quantitative, qualitative, and mixed methods research methodologies to provide detailed discussions on digitalisation and the welfare of customers and employees in the industry. The qualitative methods used in various chapters ranged from document analyses, in-depth interviews, conceptual

analyses, focus groups, descriptive analyses, and systematic literature reviews. The quantitative methods used included a bibliometric analysis, sentiment analysis, Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach, and bibliometric analyses. The chapters in this book use these methodologies, thus making practical and theoretical contributions and significant contributions to research methods. As a result, this book, the third in a series of three volumes, can generate theoretical insights, empirical findings, and evidence-based recommendations.

1.8 Volume Outline

The book has 16 chapters, including this introductory chapter and the conclusion. The following 14 empirical chapters appear in four parts: *Digitalisation in Tourism: Customer Experiences; Automation Technologies and Employee-Related Factors; Accessibility and Inclusion of Vulnerable Groups Within the Fourth Industrial Revolution; and Conclusion, Practical, and Policy Recommendations.*

Part I comprises four chapters which focus on digitalisation in the tourism and hospitality industries with a focus on customer experiences. Chapter 2 by Emmanuel Ndhlovu and Konanani Twala explores the adoption and acceptance of AI and robots in the hotel sector. The chapter adopted thematic data analysis. The synthesis of findings draws upon the factors affecting AI and robot adoption, such as individual, service, technical, performance, social, cultural, and infrastructural factors. The chapter also identifies the key barriers that hinder the consumer's adoption of AI and robots in the hospitality and tourism industry: psychological, social, financial, technical, and functional. The chapter concludes that the adoption of AI and robots in the hotel sector is still in the embryonic stage.

In Chap. 3, Andhika Galuh Prabawati, Gabriel Indra Widi Tamtama, and Budi Santoso offer conceptual and critical thoughts on applying Digital Twin (DT) in the tourism context by considering the nature of the business. In challenging this conceptualisation of DT utilisation, the chapter explores how the tourism sector can elevate tourist experiences—cognitive, affective, conative, and sensory through reimagining and recreating. The chapter also applies the proposed framework to the Borobudur temple in Indonesia as a use case. Theoretically, the chapter extends the existing literature on how DT can reshape and enhance tourist experiences, mixed with other emerging technologies. This research also provides some potential applications of DT for destination managers and service designers to optimise the advantages of DT for tourist destinations.

Chapter 4 by Lisa Charmaine Welthagen explores customers' responses to technology and its impacts on the hospitality and tourism industry in leisure and business tourism. The findings reveal that leisure visitors must still be more willing to embrace technology. However, business attendees tend to expect technology in the business tourism environment.

In Chap. 5, Vhugala Queen Kwinda and Nicola Wakelin-Theron investigate customers' attitudes towards the functional use of service robots in various operational areas of a hotel using a quantitative research approach. The current study found that South African hotel customers had positive attitudes towards service robots, albeit partially. In addition, the hotel customers acknowledge the functional use of service robots in a hotel and believe they will benefit them.

Part II comprises four chapters focusing on automation in tourism and hospitality enterprises and the impact of automation on employees. Chapter 6 by Martha Chadyiwa, Juliana Kagura, and Aimee Stewart develops a model that can predict employee satisfaction with the support provided after an occupational injury in the Kruger National Park. The data were collected from 241 employees who experienced an occupational injury between 2006 and 2016 in the Kruger National Park in South Africa. The chapter suggests that both the XGB classifier without oversampling and the XGB classifier with oversampling techniques perform equally well in predicting whether employees are satisfied with the support provided. Therefore, management at the Kruger National Park can use these predictions to focus their interventions on the support provided to employees after an occupational injury to enhance employee satisfaction.

In Chap. 7, Emmanuel Ndhlovu, Tawanda Makuyana, and Catherine Muyama Kifworo explore the implications of digital transformation on the labour market, in general. Underpinned by the conceptual research approach, the chapter draws on existing literature, personal abstraction, and sectorial expertise. It shows that integrating digital technologies in enterprises disrupted labour relations, compromised workers' collective bargaining power, altered income, and working conditions, distorted working time and work intensity, generated discrimination in digital work, and worsened worker surveillance and control. The chapter concludes that while highly digitally skilled workers benefit from integrating digital tools in their operations, non-skilled, independent, and contracted workers seem to be on the losing end. It recommends that the welfare of employees be prioritised as enterprises move into digital transformation.

Chapter 8 by Raymond Mapuranga, Muzvondiwa Eresi, and Shateyi Sekai explored the potential value of Human Resources Information Systems (HRIS) in tourism and hospitality. Underpinned by a qualitative approach and utilising semi-structured interviews and documentary sources to gather research data. The research findings showed that HRIS significantly enhanced overall organisational efficiency and its sub-dimensions (HR functions, time management, cost management, and managerial satisfaction with the system) in an interrelated and holistic manner. It was also found that HRIS inclusive of big data analytics, block chain technologies, and virtual realities among others facilitated strategic value generation by helping design and implement internally consistent policies and practices that ensure human assets contribute to achieving business objectives.

In Chap. 9, Wesonga Justus Nyongesa and Johan Van Der Westhuizen explored human resources and technology and how the two interact for the benefit of the tourism sector. The study employed a qualitative research design to collect in-depth data. The chapter reveals that employees and management had negative attitudes

about technology usage; for instance, they were concerned about job loss or a low return on investment. The chapter further reveals strategies to treat employees' and managers' fears through training and involvement. Additionally, the study noted a number of available technologies that can be used in the tourism industry and the challenges of their implementation.

Part III comprises five chapters that explore the impact of the technologies associated with the Fourth Industrial Revolution on people living with disabilities, the elderly, the poor, and families with young members. Chapter 10 by Tawanda Makuyana, Emmanuel Ndhlovu, and Kaitano Dube explores the causes behind technology acceptance and rejection by different vulnerable population categories using systematic review. The chapter shows that while digital tools are readily accepted by tourism customers in the Global North, in the Global South, these tools remain underutilised. The chapter recommends pathways that incorporate insights unveiled for restaurant managers to design their service processes and interface, including pre-purchase, purchasing, co-production, post-purchase, and co-consumption, to include ageing patrons. In addition, restaurant service encounters vary among the ageing population. Generally, urban-based baby boomers are more inclined to digital internet technology than their rural-based counterparts. It implies that managers and investors should consider the location of their restaurants as one of the determinants of the level of digitalising the service interface for their outlets. The chapter further reveals that the research community should streamline the types of restaurants and the demography of its targeted patrons within the co-creation of value.

In Chap. 11, Takalani Ramukumba explores how the tourism and hospitality sector can promote inclusion and accessibility for older people and people with disabilities. This chapter adopted the review of available literature on accessibility and inclusion as the methodology and examined the seven components of Scheyvens and Biddulph's (2018) conceptual framework for inclusive tourism development. Only literature on accessibility and inclusion of people with disabilities in the tourism and hospitality industry was reviewed together with the conceptual framework for inclusive tourism development as assessed by various authors. The results show challenges for inclusion and accessibility in the tourism and hospitality sector. It is recommended that the Fourth Industrial Revolution be used to revolutionise the tourism and hospitality sector and expand access and inclusion for older people and people with disabilities.

Chapter 12 by Tawanda Makuyana, Emmanuel Ndhlovu, and Kaitano Dube explores the implications of the digitalisation of technology in integration, offering new capacities and reinventing and leveraging capabilities among diverse disabled human capital within the sub-Saharan hospitality industry. The chapter adopts the capability approach worldview for the study. The findings unveiled that digitalisation could leverage capabilities among diverse disabled human capital in the tourism and hospitality industry; however, the extent varies due to employee-to-employee and management-to-employee attitudes, behaviours, aptitudes, and the extent of inclusivity of the environment arrangement, management, and operational processes (business intelligence included) and workplace practices. The chapter

concludes by postulating a framework-based system to nurture resilience to enable digitalisation to leverage capabilities among diverse disabled human capital in the sub-Saharan tourism and hospitality industry.

Chapter 13 by Tawanda Makuyana, Emmanuel Ndhlovu, and Kaitano Dube explores the implications of on value co-creation in restaurant service encounters among the disabled people in sub-Saharan Africa. The chapter also unpacks insights for managers to review their management and operational practices and policies from an accessible tourism and hospitality lens. The chapter concludes that digitalisation has mixed value co-creation in restaurant service encounters among various disabled people in sub-Saharan Africa due to the diversity of impairments and their digital support/needs during service encounters, attitudes, and level of digital inclusion. It implies that digitalisation does not uphold disability inclusion unless it embeds a universal design with the context of the type of restaurants and their access-need target market segments.

In Chap. 14, Nicola Wakelin-Theron and Sintu Santu explore the different types of technological media used to improve visitor experiences at tourist attractions—a qualitative research design employed structured interviews for data collection. SCI-BONO and the Cradle of Humankind are the case study tourist attractions. The authors purposely recruited managers for the interviews. The findings suggest that tourist sites use different types of technology to increase visitor numbers and enhance visitor experiences, as the displays and information they communicate differ. The findings also suggest that attractions are exploring new technological media to attract visitors in the future. However, the future technology type still needs to be clarified. Technological media may considerably improve visitors' experiences at tourist attractions. This chapter can conclude that the two attractions considered advance their technological infrastructure to satisfy tourists.

Part IV comprises two chapters. The first provides practical and policy recommendations while the second concludes the book. Chapter 15 by Emmanuel Ndhlovu, Tawanda Makuyana, and Kaitano Dube analyses the obstacles that lead to excluding other populations from tourism services and products and proposes a potential solution. It outlines potential pathways for making the tourism and hospitality industries more inclusive. Chapter 16 by Emmanuel Ndhlovu, Tawanda Makuyana, and Kaitano Dube concludes the book. This is achieved through providing summaries of the key themes covered by the chapters in the book.

1.9 Conclusion

This chapter introduced the book *Tourism and Hospitality for Sustainable Development—Volume Two: Emerging Trends and Global Issues*. This has been achieved through historicising and theorising digital transformation and sustainable development in the tourism and hospitality industry. This chapter shows that a technological revolution is unfolding globally and that the tourism and hospitality sectors are among the leading sectors that are adopting and integrating digital

technologies. The era of the digital revolution has succeeded in integrating the physical world with the digital world.

There are several technological trends currently occurring in the world that have a significant impact on the entire tourism sector. The chapters in this book provide details on these technological trends. The chapters also highlight the challenges and opportunities for adopting and integrating digital technologies into the activities and operations of tourism and hospitality enterprises.

References

- Adedoyin, F. F., & Bekun, F. V. (2020). Modelling the interaction between tourism, energy consumption, pollutant emissions and urbanization: Renewed evidence from panel VAR. *Environmental Science and Pollution Research*, 27, 38881–38900. <https://doi.org/10.1007/s11356-020-09869-9>
- Alalwan, A. A. (2020). Mobile food ordering apps: An empirical study of the factors affecting customer e-satisfaction and continued intention to reuse. *International Journal of Information Management*, 50, 28–44.
- Alawamleh, M., Al-Hussaini, M., & Ismail, L. B. (2022). Open innovation in the food industry: Trends and barriers: A case of the Jordanian food industry. *Journal of Global Entrepreneurship Research*. <https://doi.org/10.1007/s40497-022-00312-6>
- Arun, T. M., Kaur, P., Ferraris, A., & Dhir, A. (2021). What motivates the adoption of green restaurant products and services? A systematic review and future research agenda. *Business Strategy and Environment*, 1–17. <https://doi.org/10.1002/bse.2755>
- Bănescu, C., Boboc, C., Ghiță, S., & Vasile, V. (2021). Tourism in digital era. In R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, & C. Vasiliu (Eds.), *7th BASIQ International conference on new trends in sustainable business and consumption* (pp. 126–134). Foggia, Italy, 3–5 June 2021. ASE. <https://doi.org/10.24818/BASIQ/2021/07/016>
- Bec, A., Moyle, B., Timms, K., Schaffer, V., Skavronskaya, L., & Little, C. (2019). Management of immersive heritage tourism experiences: A conceptual model. *Tourism Management*, 72, 117–120.
- Bisoï, S., Roy, M., & Samal, A. (2020). Impact of artificial intelligence in the hospitality industry. *International Journal of Advanced Science and Technology*, 29(5), 4265–4276.
- Bozhuk, S., Pletneva, N., Maslova, T. & Evdokimov, K. (2020). Problems of transformation in the tourism industry in the digital economy. *SHS Web of Conferences*, 73, 0100, IES201, 1–9.
- Braña, F. J. (2019). A fourth industrial revolution? Digital transformation, labor and work organization: A view from Spain. *Journal of Industrial and Business Economics*, 46, 415–430.
- Brouder, P., Teoh, S., Salazar, N. B., Mostafanezhad, M., Pung, J. M., Lapointe, D., Higgins Desbiolles, F., Haywood, M., Hall, C. M., & Clausen, H. B. (2020). Reflections and discussions: Tourism matters in the new normal post COVID-19. *Tourism Geographies*, 22(3), 735–746. <https://doi.org/10.1080/14616688.2020.1770325>
- Buhalis, D., Lin, M. S., & Leung, D. (2022). Metaverse as a driver for customer experience and value co-creation: Implications for hospitality and tourism management and marketing. *International Journal of Contemporary Hospitality Management*, 35(2), 701–716.
- Calderón-Gómez, D., Casas-Mas, B., Urraco-Solanilla, M., & Revilla, C. J. (2020). The labour digital divide: Digital dimensions of labour market segmentation. *Work Organisation, Labour & Globalisation*, 14(2), 7–30.
- Chang, M. X., Choong, Y. O., & Ng, L. P. (2020). Local residents' support for sport tourism development: The moderating effect of tourism dependency. *Journal of Sport & Tourism*, 24(3), 215–234.