



HOTEL

EDITORS

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DIGITAL DISRUPTION IN HOSPITALITY,
AI, AND EMERGING
TECHNOLOGIES

A ROADMAP TO PERSONALIZED EXPERIENCES,
ENHANCED OPERATIONS, AND REVENUE GROWTH

Digital Disruption in Hospitality, AI, and Emerging Technologies

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Digital Disruption in Hospitality, AI, and Emerging Technologies: A Roadmap to Personalized Experiences, Enhanced Operations, and Revenue Growth

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Emerald Publishing Limited
Emerald Publishing, Floor 5, Northspring, 21-23 Wellington Street, Leeds LS1 4DL

First edition 2025

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British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN: 978-1-83608-797-7 (Print)

ISBN: 978-1-83608-796-0 (Online)

ISBN: 978-1-83608-798-4 (Epub)



INVESTOR IN PEOPLE

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Preface

The hospitality industry is undergoing a profound transformation driven by digital disruption and emerging technologies. *Digital Disruption in Hospitality, AI, and Emerging Technologies: A Roadmap to Personalized Experiences, Enhanced Operations, and Revenue Growth* explores this evolution, focusing on how advancements in AI, the IoT, big data, and Generative AI are reshaping the sector. These technologies offer unparalleled opportunities to deliver personalized guest experiences, streamline operations, and unlock new revenue streams. At the same time, they present challenges that require thoughtful solutions to maintain the industry's essence – human connection and exceptional service.

This book is inspired by the hospitality sector's pivotal role in global economies, particularly in regions where tourism is a cultural and economic cornerstone. As countries like Saudi Arabia embrace forward-thinking initiatives such as Vision 2030, adopting digital innovations is no longer optional but essential. This book provides a practical and strategic guide for navigating these changes, tailored to the unique needs of the hospitality and tourism industries.

Purpose and Scope

The purpose of this book is to bridge the gap between technological innovation and the human-centric nature of hospitality. Unlike works that focus solely on individual technologies, this volume provides a comprehensive roadmap, integrating cutting-edge tools with actionable strategies to enhance operations and customer engagement. Topics range from AI-powered travel tools and workforce transformation to IoT-enabled efficiency and revenue optimization.

By blending theory with practical applications, this book addresses the needs of diverse audiences, including academics, industry practitioners, and policy-makers. It incorporates insights from computer science, business, and social sciences, ensuring a multidisciplinary perspective on the implications of digital disruption in hospitality.

The book offers a comprehensive exploration of AI and digital transformation in the hospitality and tourism industries, organized into three primary themes. The first theme, "AI Revolution in Hospitality and Tourism," delves into AI applications in travel, examining its potential to transform online travel markets and enhance guest experiences. It explores technological innovations from check-in to check-out processes, highlighting how AI can improve operational efficiency. The second theme,

“Digital Transformation and Innovation,” investigates AI’s broader impacts, including its role in HRM, digital advertising, and B2B IT strategies for hospitality companies.

The third theme, “Economic Impact and Customer Experience,” provides a deeper analysis of the broader implications of these technological advances. It explores AI’s potential to impact workforce costs, particularly in emerging markets like Saudi Arabia, and examines the connections between AI, financial inclusion, and economic development. The book also focuses on building customer trust through innovative technologies like blockchain and contactless payment systems. Throughout its chapters, the book maintains a strong focus on the Indian market while providing insights into emerging technologies, addressing both the challenges and opportunities presented by digital transformation in the hospitality and tourism sectors.

Vision for the Future

As the hospitality industry continues to evolve, it faces a dual challenge: embracing technological advancements while preserving the human touch that defines it. This book serves as a guide for navigating this balance, emphasizing innovation that is both forward-thinking and aligned with the principles of sustainability and service excellence.

We are deeply grateful to the contributors whose expertise and insights have enriched this work. It is our hope that this book serves as a valuable resource, sparking meaningful conversations and guiding impactful decisions in the rapidly evolving world of hospitality and tourism.

Theme 1

AI Revolution in Hospitality and Tourism

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Chapter 1

Artificial Intelligence: Applications and Implications for Hospitality, Travel, and Tourism

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Abstract

The travel and tourism industry has recently been affected by artificial intelligence (AI). Robots, conversational systems, intelligent travel agents, prediction and forecasting systems, personalization and recommender systems, and speech recognition and natural language processing systems are all examples of AI applications. Recent advancements in big data, algorithms, and computing power have fueled significant AI advancements.

The chapter looks at how the travel and tourism industry's fundamental processes have been and continue to be transformed by AI. The chapter also looks at the AI technologies and applications that are currently in use in the business. The chapter delves deeper into the impact on the hotel industry because the majority of these systems are implemented there. The text comes to a close by outlining the difficulties that AI faces in the travel industry, recommending a research program, and imagining a possible future for AI in travel.

Keywords: Artificial Intelligence; hospitality; tourism; forecasting; personalization; travel

1. Introduction

Automated thinking (mimicked insight) relies upon huge data, taking care of cutoff points, and estimations. All of these three parts have experienced immense redesigns as of late, a couple of examples have been orchestrated: in the first place,

the refinement of a development in PC-based knowledge estimations; second, gigantic redesigns in dealing with limits; besides, third, in the exceptional situation of huge data, the development of new and every one of the more striking information foundations and designs that consider the taking care of and treatment of tremendous proportions of data (Aarts & Wichert, 2009). These redesigns have, subsequently, filled basic upgrades in PC-based knowledge systems moreover, mechanical innovation, in a cycle known as the Fourth Current Bombshell (Li et al., 2019).

At this point, emulated information applications are being made and endeavored in each piece of the improvement also; the development business consolidates personalization and recommender structures, individual travel partners, robots, suspicion and checking frameworks, language grasping applications, voice certification, and customary language managing frameworks. Man-made insight is especially pertinent to travel and the development business for several reasons Farheen, (Farheen et al., 2024). Vacationers need to make development choices about future trips, for instance, picking an objective, transport, solace, and exercises, notwithstanding different things. These choices will impact voyagers' fulfillment with their excursions. In any case, the degree of fights, transport, solace, and exercises present a limitless bundle of choices requiring support. The development business affiliations and specialists face a comparative test to find the best match among clients and travel packs changed to their essentials.

Affiliations have a vast stock of likely clients. Along these lines, planning a solicitation with a thing is an extremely puzzling cycle that has all the earmarks of being suitable to the capacities of man-made knowledge. Once at their goal, travelers ought to investigate the area of the dark, portrayed by changing inclinations, vernaculars, social norms, and food, among various components that may be different from them. Yet again man created knowledge can help travelers in such "odd" conditions, for example, by proposing a development plan or helping with language and social checks (Achary & Albuquerque, 2024). Moreover, recreated insight can assist relationships by altering the involvements to fit the requirements of travelers. According to a systematic literature review conducted by Sousa et al. (2024) from 1990 to 2022, AI applications in tourism and hospitality are diverse, including customer service robots, chatbots, business intelligence tools, and virtual reality (VR). Despite initial adoption, AI has significant potential to further enhance the sector.

While the movement business region has been seen as an early adopter of most turns of events, veritable occurrences of reenacted knowledge use stay inadequate. Most existing composing interfaces with lab circumstances and improvement cases. Man-created knowledge can at this point be viewed as embedded in data taking care of structures in certified conditions and during the creation period of various game plans, for instance, measuring systems, robots, conversational structures, and voice affirmation schemes. In any case, computerized reasoning is most likely going to become related to all areas of movement and the movement business soon.

In this part, we study how man-made brainpower has changed and is changing the chief cycles in the development and the movement business. We envision what

is going on where the current and future PC-based knowledge structures have advanced, sent, facilitated, and interconnected. We furthermore dissect the business' troubles, especially security subjects, working climate issues, and the association of fundamental accessibility.

For enhancing the customer experience through personalized services, streamlining operations, and optimizing marketing and sales strategies, research on artificial intelligence (AI) applications and implications for the hospitality, travel, and tourism sectors is essential. AI makes it possible to make decisions based on data, increases safety and security, and encourages sustainability by maximizing the utilization of resources and supporting eco-friendly practices. Businesses can stay ahead of the competition in a market that is changing quickly by investing in AI research. In addition, the research proposes solutions for the responsible use of AI and addresses issues like data privacy, ethical considerations, and job displacement. Research that anticipates future AI trends prepares the industry for technological advancements and shifts in consumer behavior, ensuring sustainability and long-term competitiveness.

2. Artificial Intelligence-Defined

Before characterizing simulated intelligence, we accept that it would be intriguing to initially explain what knowledge implies. Insight can be characterized as a progression of capacities: the capacity to comprehend the climate and the peculiarities that happen, the capacity to take benefit of previous encounters, and the capacity to join the information accessible to answer fittingly to another test (Rudas & Fodor, 2008). Gretzel (2011) sums up these capacities and says that savvy frameworks can detect the climate, learn, and use what has been realized in later circumstances. Computerized reasoning is typically characterized as a bunch of innovations that can copy human knowledge during the time spent on critical thinking (Lai & Hung, 2018). Integration of AI in tourism offers significant opportunities for innovation, enhancing personalization, customer service, and safety, thus shaping the future of travel. In the same vein that planes get a similar outcome (flying) as birds yet use various systems, AI attempts to acquire comparative outcomes (thinking) as people however through various instruments.

The idea of computer-based intelligence has advanced after some time (Buhalis et al., 2019), from introductory conceptualizations in which simulated intelligence was characterized as having some type of knowledge to later descriptions and conceptualizations in which simulated intelligence is characterized as being ready to act independently on a lot of information (Sterne, 2017), toward a future where simulated intelligence could surpass human insight. This occasion has been known as the innovative peculiarity (Kurzweil, 2005). In such a manner, the man-made intelligence impact (McCorduck, 2004) depicts the peculiarity whereas a simulated intelligence application becomes standard; it quits being viewed as simulated intelligence. This is a result of the inclination to envision that the application doesn't contain computer-based intelligence (doesn't think) however

simply an aspect of ordinary is processing. In this way, simulated intelligence's items and cutoff points are dynamic over the long run.

Buhalis et al. (2019) allude to the four sorts of computer-based intelligence referenced by Hintze (2016). The main sort is responsive AI, which has no reminiscence or utilization of the past. Dark Blue is the best illustration of responsive AI. The subsequent sort is restricted memory simulated intelligence, which has specific/restricted review. A model is the way a self-driven vehicle treats the items around it. The third sort is the hypothesis of the brain. These machineries can address different kinds of articles and their feelings, permitting the machines to associate informally. The fourth sort is simulated intelligence with mindfulness or cognizance. Both Buhalis et al. (2019) and Hintze (2016) concur that the ongoing difficulties with man-made intelligence are in the space of expanding man-made consciousness' memory, working on the capacity to use past recollections and encounters to go with better choices, and fostering the ability to deal with feelings and instincts (Gretzel, 2011). Rising above these four sorts of computer-based intelligence is the idea of genius (Bostrom, 2016). Genius is characterized as machine knowledge that outperforms general human insight.

Wang and Uysal's (2023) study makes three key contributions. First, they conceptualize a framework for AI-assisted mindfulness, detailing its progression from AI interventions to state mindfulness and then to trait mindfulness. Second, they identify opportunities for AI-assisted mindfulness interventions through two strategic approaches: mindfulness-focused niche markets and AI-facilitated devices and platforms. Third, they propose 18 themes for future management research and marketing-oriented AI-assisted mindfulness. The paper highlights research limitations and offers directions for further exploration in the tourism, hospitality, and events industries.

The latest computer-based intelligence frameworks are space-explicit. That is, they are frameworks fit for tackling issues connected with explicit regions and explicit errands, like spam sifting, understanding inquiries presented by people, outwardly exploring a known climate, or in any event, driving an independent vehicle. This sort of simulated intelligence has been characterized as "Feeble-simulated intelligence" or "Restricted AI" (Russell & Norvig, 2016). Future turns of events will make universally useful simulated intelligence or "solid man-made intelligence" (Russell & Norvig, 2016), that is computer-based intelligence of the third and fourth sorts referenced in the past passage (frameworks that know more than one region, with awareness and the ability to think). As of late, the idea of "crossover AI" (Wirth, 2018) has arisen. Hybrid AI is arranged into areas of strength between feeble-simulated intelligence, to incorporate simulated intelligence that surpasses frail-simulated intelligence yet, without every one of the limits serious areas of strength for the movement and the travel industry area requires cross-breed man-made intelligence and solid man-made intelligence because of the huge swath of errands and components that should be coordinated to foster the most ideal experience for travelers (Bostrom & Yudkowsky, 2014).

AI, characterized as advances that mirror human insight, has developed from fundamental critical thinking abilities to possibly unparalleled human knowledge.

Innovation, personalization, customer service, and safety are all enhanced by its incorporation into tourism.

3. The Gap in Literature Review

The long-term effects of AI on job roles, skill requirements, and workforce dynamics are understudied. Understanding these impacts is critical for retraining projects and systems to forestall employment misfortunes. Consumer trust and recognition of simulated intelligence are understudied across societies and socioeconomic classes. Designing user-friendly AI systems and fostering consumer trust through targeted marketing strategies requires an understanding of how various demographic groups perceive AI, the factors that influence their trust, and how cultural acceptance varies.

The ethical implications of AI use and privacy concerns are understudied. It is important to direct investigation into information assortment, stockpiling, and usage as well as the potential for computer-based intelligence to intensify predispositions or make unreasonable benefits. It is essential to address these concerns to establish moral guidelines and ensure compliance with information assurance guidelines. While man-made reasoning has been shown to additionally foster organization adequacy, little is had huge familiarity with how it affects purchaser dependability, steadiness, and up close and personal responses in different help settings. With this information, organizations could tailor man-made intelligence applications to further develop positive client encounters and stay away from possible traps. There is a shortfall of perception of the coordination and interoperability of various PC-based insight systems inside a singular affiliation or across various organizations, regardless of the way that assessment a large part of the time fixates on individual reenacted knowledge applications. Optimizing AI and ensuring a smooth operational workflow requires efficient integration.

A significant portion of the writing focuses on large organizations' use of simulated intelligence. For small and medium-sized organizations (SMEs), the advantages and downsides of executing AI advancements are inadequately perceived. We can find out more about how AI can help SMEs and what kind of assistance they might need to bridge this gap. It is unclear whether man-made intelligence can contribute to practices that are supported in hospitality, travel, and the travel industry. To find out how AI can promote eco-friendly practices, cut down on waste, and make better use of resources, more research is needed. Around here, it is fundamental to decrease the ecological effect of these ventures and adjust AI applications to worldwide manageability targets. The hospitality, travel, and tourism industries have not done enough research on the role that AI plays in crisis management and building resilience. To figure out how AI can help these industries respond to and recover from crises like pandemics, natural disasters, and economic downturns, additional research is required. Businesses can develop more robust strategies for crisis preparedness and recovery with this understanding.

There is an absence of exploration on how AI applications adjust to and are getting in various social and territorial settings. It is necessary to carry out research into the efficacy of AI and its application across a variety of geographical locations. This knowledge is necessary for adapting AI solutions to local preferences and needs, which will ensure their wider and more successful adoption. A lack of research exists on the dynamics of human–AI collaboration in the workplace, particularly service interactions in the hospitality and tourism sectors. To comprehend how employees and AI systems can collaborate effectively and how this collaboration affects service quality, additional research is required. Experiences here can be beneficial to AI frameworks that complement human workers and advance generally speaking assistance delivery (Li et al., 2019). If these gaps in the literature are filled, future research and industry practices can be guided by a deeper understanding of AI’s potential and challenges in the hospitality, travel, and tourism industries.

In conclusion, understanding the long-term effects of AI on employment, consumer trust, ethics, customer satisfaction, system integration, sustainability, crisis management, cultural adaptation, and human–AI collaboration in hospitality, travel, and tourism necessitates additional research. Future AI applications and business practices will be influenced by these gaps.

The application and transformative impact of AI on travel, tourism, and hospitality is highlighted by recent industry trends. AI-based algorithms are driving personalization and customization by offering individualized travel experiences and recommendations. AI-controlled chatbots and menial helpers offer quick, nonstop client assistance, which further develops administration productivity. Prescient examination, which speculates on travel patterns, requests, and evaluations, makes it possible to develop better asset designation and estimating systems. Voice-sanctioned organizations and voice-search are ending up being dynamically typical, allowing pilgrims to hold a spot and access information with voice orders.

The usage of robots as air terminal aides, attendants, and receptionists offers exceptional encounters and works on functional efficiencies. Ivanov and group (2017) in light of man-made brainpower’s ability to separate client data, assigned displaying techniques are taught by critical encounters into explorer direct. Smart proposal motors use client preferences to suggest exercises and food choices, improving the movement experience. In addition, augmented reality (AR) and VR applications powered by AI provide immersive travel experiences and enhance security by detecting and avoiding fraudulent activities. The efficiency of cycles, like planning the chiefs and enlistment motorization additions, and feeling examination enables associations to see the value in client input and go with informed decisions. Marriott Global has created “teleporters” that empower possible visitors to encounter a virtual visit to Marriott inns overall by using computer-generated reality (VR) innovation. Travelers can more confidently choose their destinations and visualize their stay thanks to this immersive experience. Similar to this, Iberostar Hotels & Resorts uses AR applications to give guests interactive experiences. Guests can, for instance, look around the hotel’s