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Digital Innovation and Sustainability: Transforming the Tourism and Hospitality Industry

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ABSTRACT

Digital technology has significantly impacted the tourism and hospitality industry, requiring companies to adapt to changing customer expectations. Advanced technology like AI, mobile apps, IoT, and VR/AR have empowered cutting-edge tourists seeking personalized, seamless, and immersive journey reviews that create unforgettable tales. The industry has moved far from conventional, uniform offerings, thanks to those upgrades, towards client-driven styles, enabling organizations to cater to man or woman picks in real-time. AI tools such as predictive analytics and chatbots improve customer by providing tailored hints and immediate assistance. A while has streamlined booking, pricing, and communication strategies, supplying a reachable and on-the-move experience for vacationers. IoT-enabled smart devices include room automation and voice control systems, catering to tech-savvy travelers; virtual and augmented reality technology allows customers to explore destinations and accommodations virtually, influence travel decisions, and increase satisfaction. This study explores how these digital technologies are shaping customer expectations and how the tourism and hospitality industry must adapt to remain competitive. It emphasizes the need for businesses to integrate these technologies into their service models to meet the increasing demand for convenience, privacy, and sustainability by examining these trends. This study provides valuable insights for businesses hoping to renew, customer loyalty in an increasingly digital marketplace. The study employs a systematic literature review methods to examine the impact of these technologies on the behavior and decisions of patrons. The increasing use of AI for predictive analytics is highlighted in industry papers and case studies instantaneous communication and customized recommendations. The results also explore the role of cellular-first techniques in further detail. This is done through features such as bookings app and virtual wallets. In addition to catering to tech-savvy travelers, this is to ensure easy interaction. The studies also examine how smart technology can enhance guest pleasure through computerized processes and room personalization.

Keywords: Digital Technologies; Customer Expectations; Tourism and Hospitality Industry; Artificial Intelligence; Sustainability; Innovation.

1. INTRODUCTION

The tourism and hospitality industry is witnessing a remarkable transformation. The main catalyst for these changes is the rapid development of digital technologies. It has not only changed the way people search for and book their travel but also changed the way they visit locations and interact with operators, ultimately changing client expectations in ways that have allowed the entire service ecosystem to be mobile, connected and customer-centric

(Buhalis & Law, 2008; Gretzel et al. 2015). Besides other technologies, Artificial Intelligence (AI), Big Data Analytics, Virtual Reality (VR), social media platforms, and digital applications allow customers to get information with higher speed, privacy, and convenience than ever before (Tussyadiah & Miller, 2019; Ivanov & Webster, 2019). Because of this, today's travelers desire a seamless, immersive, and highly tailored experience each time they interact with the travel service (Neuhofer et al. 2015;

Sigala, 2018). Such a fundamental change in thinking has compelled the tourism and hospitality businesses to roll out new technologies to stay competitive, increase customer satisfaction, and foster loyalty (Buhalis & Sinarta, 2019; Leung et al. 2013). One of the most significant effects of digital technology is the opening up of information to everyone. It has been the use of the internet and search engines that have changed the way travelers plan their trips. They are able to get very detailed information about destinations accommodations tourist attractions, and travel services with only a few clicks (Buhalis & Law, 2008; Xiang & Gretzel, 2010). Platforms such as Google Maps, TripAdvisor, and Booking.com have become decision-making tools that not only help consumers but also influence consumer behavior and travel choices mostly (Filieri et al. 2015; Marine-Roig & Clav, 2015). Based on Xiang et al. (2015), the internet has come to be the main source of travel information, enabling consumers to make informed choices and lessening the dependency on traditional intermediaries such as travel agents. Plus, the growing amount of user-generated content, online reviews ratings blogs and suggestions from social media has improved the level of transparency and trust in the tourism decision-making process (Litvin et al. 2008; Munar & Jacobsen, 2014). Customer expectations for transparency accuracy reliability and real-time information have risen dramatically. This, in turn, has forced tourism and hospitality companies to keep an active digital presence and provide consistent online experiences (Sigala, 2018; Gretzel et al. 2015). Customer expectations have been rising with the incorporation of mobile technology. The widespread use of smartphones and the availability of easy-to-use travel apps have empowered travelers to get travel information, make bookings, and communicate with service providers anywhere and anytime (Wang et al. 2016; Dickinson et al. 2014; Kim & Law, 2015). Mobile applications belong to a few companies like Airbnb, Expedia, and Marriott have been raising the bar for convenience and accessibility by giving customers digital booking capability, ability to check in through mobile, and receiving personalized recommendations based on their preferences (Neuhofer et al. 2015; Buhalis & Amaranggana, 2015). Wang et al. (2016) piece of work describes mobile technology as facilitating the customer experience through features like real-time updates, location-based services, and instant support. Customers have now become used to fast communication and expect rapid responses and solutions from the service providers (Kim et al. 2017; Tussyadiah, 2020). Personalizing guest experiences through AI and big data analytics is the core of today's hotel experience. Companies, by analyzing consumer behaviors such as web browsing, past bookings,

and social media engagement can find out more about individual preferences and tailor their offerings to work with AI tools like chatbots and virtual assistants (Ivanov & Webster, 2019; Mariani et al. 2018). Hilton and Hyatt resort to these solutions for helping customers quickly, suggesting what they need, and making sure that they are happy. So, it is emphasized by Buhalis and Sinarta (2019) the key role of artificial intelligence and big data in providing personalized, tailor-made experiences to customers, i.e. having the capability of going beyond their expectations. Apart from that, it is a clear indication how the travel and hospitality industry having implemented a broad strategy is now turning into a more consumer-centric and customer-focused approach (Sigala, 2018; Gretzel et al. 2015). Customer expectations are also being greatly reshaped by the introduction of virtual reality technologies like VR and augmented reality (AR). Through these technologies, potential travelers are given the opportunity to virtually tour destinations, lodgings, and attractions to better make their decisions (Tussyadiah et al. 2018; Yung & Khoo-Lattimore, 2019). For instance, tourism boards and hotel chains that have developed VR experiences allow users to "test drive" destinations, a method that is effective in arousing a travel desire, relieving some of the travel-related anxiety, and most importantly in reducing their uncertainty. Those that most directly enhance visitor interaction are AR applications such as city guides with a twist of gamification features and personnel who give regular updates; besides that, they also provide background information to tourists/adventurers (Han et al. 2019; Beck et al. 2019). Guttentag (2010) believes that the technologies of VR and AR improve customer involvement as they help bring the customer's expectations closer to reality. Considering these, these two also make the right tools for marketing and customer retention (Flavin et al. 2019). Instagram Facebook Twitter, etc. are not just being used as platforms for travel inspiration and source of community feedback and experience but more importantly, the user-generated content is the leading entity shaping the travelers' opinions and choices. Visually striking, they predominantly take the form of photos, videos, and reviews (Leung et al. 2013; Xiang & Gretzel, 2010). Companies are now being literally 'called to action', i.e. to be up to the challenge by turning themselves into social media stars, responding to customer's queries on time, and above all, engaging with their audiences by coming up with original and heartfelt content. Per Sigala (2018), one significant consequence of social media is the shifting of the power balance in the industry. It allows customers not only to voice their opinions but also to raise their expectations in such areas as responsiveness, accuracy, and social responsibility

(Munar & Jacobsen, 2014; Litvin et al. 2008). This has also led to the rise of influencer marketing; with travel bloggers and social media influencers playing a key role in impressing customers and driving demand (Djafarova & Rushworth, 2017; Lou & Yuan, 2019). Eco-conscious travelers want transparency about the environmental and social impacts of their choices. Digital platforms help businesses demonstrate sustainability initiatives, such as reducing their carbon footprint and supporting local communities using green practices (Buhalis et al., 2023; Gössling & Hall, 2019). Font and Lynes (2018) emphasize the importance of the benefits of digital communication being aligned with the values of consumers who are concerned about the environment. Furthermore, sustainability communication through digital channels enhances customer trust and strengthens destination competitiveness (Font et al., 2017; Sigala, 2020). In addition; the spread of COVID-19 accelerated the adoption of contactless technology and changed consumer safety and hygiene expectations. Examples of innovation include digital menus, contactless payment systems, and mobile check-in in the post-pandemic situation (Shin & Kang, 2020; Kim et al., 2021). It is common for customers to prioritize companies that reflect their increased awareness of health and safety. Gössling et al. (2020) observed that the pandemic has emphasized the need for flexibility and agility in the travel and hospitality business, and digital technology is crucial to retaining these traits. Despite several benefits, the integration of digital technologies presents challenges for the industry, including data privacy, cybersecurity, and the digital divide that should be addressed to ensure equitable access and build trust with customers (Martin et al., 2018; Buhalis et al., 2019). According to Tussyadiah et al. (2020), addressing these challenges is critical to fostering trust and building long-term relationships with customers. The impact of digital technology on customer expectations in the travel and hospitality sector which is always changing is very deep and complex. For one thing, digital transformation has empowered customers by providing access to information and enabling tailored services; Then again, it has raised customer experiences to unparalleled levels by using immersive technologies and social media (Buhalis & Law, 2008; Gretzel et al. 2015). Besides, it calls for an anticipatory stance towards the arising issues and the commitment to ethical and sustainable tourism (Sigala, 2020; Ivanov et al. 2020). As the sector is on its way of continuous development, companies that want to succeed in a digital world will have to innovate and be customer-oriented at the same time.

2. LITERATURE REVIEW

The tourism and hospitality sector is clearly progressing towards rapid digitalization, as well as sustainable practices, to define their competitive value and ensure resilient future. The adoption of digital tools like AI, cloud computing and smart tourism systems, enhances the delivery of services, the efficiency of operations and the relationship with consumers. The implementation of sustainability initiatives contributes to the development of tourism, with modern customers and other stakeholders demanding more equitable growth (Oskam, 2018). The combination of digital and sustainable activities is demonstrated to increase resources efficiency, decrease the affected areas by tourism operations and generate value to both parties involved. And, the strategic planning of smart and sustainable tourism reinforces competitiveness (UNWTO, 2018; Porter & Heppelmann, 2014).

2.1. The Role of Online Platforms in Travel Decision-Making

Travel choices have been influenced by digital platforms making it very convenient for customers to get information and read reviews. Besides Online Travel Agent (OTA) Review Sites, Meta search engines greatly influence customer decisions. Xiang et al. (2015) contend that the Internet has made travel information accessible to everyone. They work as a channel for sharing helpful travel information via real-time reviews, ratings, and updates. For example, Trip Advisor and Booking.com have become essential instruments for travel planning. It features content contributed by users and price comparisons, which foster transparency and trust. Such transformations have led to the sharpening of competition among enterprises. The creation of new things and the meeting of high customer expectations for accuracy and reliability are the results of these developments. However, travelers increasingly depend on these platforms for personalized recommendations and seamless booking experience. As a result, firms operating in the tourism and hospitality sector will have to adjust to the dynamics of the digital world if they are willing to remain relevant and competitive (Xiang et al. 2015).

2.2. Mobile Technology and On-Demand Services

Mobile technology has had a revolutionary impact on the travel and hospitality sector, making customers' access to information on-demand almost impossible before. Wang et al. (2016) focus on the role of smart phones and mobile applications as tools that have profoundly transformed customer experience. Travel with real-time updates currently, location-based services and instant communication are two of the biggest changes contributing to convenience in the traveling experience. These help travelers by providing the ability to plan, book,

and manage their trips without any problems. For instance, the mobile apps from some of the biggest hospitality brands like Marriott and Hilton not only help you save time by making the whole process such as booking, check-in, and customer support easier but is also the best way to travel without stress. Besides that, it also increases consumer satisfaction and loyalty through personalized experiences. Switching to a Mobile-First Strategy Push notifications, virtual door keys, and live chatting are some of the ways that the industry is changing in response to consumers' increasing demand for speed, accessibility, and efficiency in travel services. The guest experience will be improved through speedy and effective service delivery. And as mobile technology keeps evolving, it is only natural that the role of technology in satisfying the needs of new-age travelers will grow and it. Those companies that are quick to embrace mobile innovation will find themselves ahead of the competition and will be capable of responding to the ever-increasing demands of the digital world (Wang et al. 2016).

2.3. Personalization through Artificial Intelligence and Big Data

AI and big data have revolutionized the travel and hotel industry by enabling companies to create more personal and enjoyable client experiences. Buhalis and Sinarta (2019) discuss the point that AI-based systems such as chatbots and recommendation tools are helping businesses. Detailed analyses of data sets enable the creation of products that fit individuals' tastes and behavioral characteristics (e.g. past bookings, internet habits, and social media interactions). Provide specific suggestions and quick assistance; for example, customer service chatbots at major hotel brands are able to instantly give answers to customers' inquiries. Besides facilitating service reservation, the technology can also recommend entertainment and other attractions to visitors, thereby improving the overall experience. Such technological advancements have a significant impact on improving customer satisfaction. And, they increase loyalty by anticipation and fulfillment of even the most unique and uncommon needs of clients. This definitely reflects the sector's move away from uniform service delivery towards customer-oriented strategies that focus on personalization. Apart from improving guest experience through personalization, AI-based instruments also result in operational excellence, since the automation of routine tasks liberates employees to build more personal guest relations. Since travelers want different and customized experiences, the use of AI and big data-driven services becomes a must for the companies that want to remain competitive in an ever-changing market. Personalization actually is one of the factors that make people's

engagement and satisfaction with the digital world quite different, and Buhalis and Sinarta (2019).

2.4. Immersive Experiences with VR and AR Technologies

Immersive technologies such as virtual reality (VR) and augmented reality (AR) have made such a great impact on travel and hospitality that the changes brought by these technologies cannot be overstated. Traveling has always been a multi-sensory experience, but with these technologies, real and virtual experiences are not only mixed but also extended to other senses apart from seeing and hearing. Any combination of VR and AR can totally change the nature of storytelling, i.e. interactive involvement; lead the way to the visit, historical event's re-enactments, etc. Besides that, the element of enjoyment should not be neglected e.g. learning via personalized AR games and tasks. The environment keeps physical traces of virtual objects that are superimposed on it. Discovery comes in very exciting forms like interactive tour guides, allowing one to come up with new historical and game elements, etc. For example, an AR-enabled application can turn an ordinary visit to a historic site into an extraordinary adventure. This way, you can have multimedia materials and at the same time, receive explanations of the context. Such tools are capable of satisfying the ever-growing demand for immersive experiences that combine the virtual and real worlds. Besides, by showcasing realistic and engaging experiences, VR and AR enhance customer satisfaction and loyalty. That proves to be a very effective method for companies aiming at differentiating themselves in the market. When considering immersive technology developments, the places where segments of the travel experience are integrated are being redefined, and changes occur as to how people plan, discover, and have their trips.

2.5. Social Media and Customer Expectations

Social media serves an integral part in changing customer attitudes and determining their new expectations not only in the travel sector but also the hotel industries. Sigala (2018) points out that one of the main reasons why customers rely on social media is because of user-generated content such as customer reviews, photos, and videos which help users make their travel choices and at the same time, increase their engagement with a particular brand. Instagram and Facebook, to give some examples, apart from being sources of ideas, they also act as a means of validation. Nowadays, as plan their vacations, most travelers rely on friends for getting the best advice and also to be able to share their experiences. From a social media standpoint, the need for social proof has compelled businesses to come up with a proactive social media

strategy that will be inherently focused on brand exposure by publishing engaging content, responding to customers' queries, and gathering feedback instantly, to name just a few ways, businesses may enhance brand loyalty and trust. Besides, influencers prove that today's consumers' idea of who they can trust and whom they consider to be authentic has radically changed in the digital era. Being able to give such personal and really close travel experiences, influencers have gained a key position in determining consumer needs. Since social media is constantly changing, the significance of social media as a dynamic channel for customer engagement and expectation management challenges businesses to innovate and stay ahead of ever-changing digital landscape.

2.6. Sustainability and Ethical Practices in Digital Tourism

Sustainability has become a concern for many modern travelers; the use of digital technology has become a major instrument in promoting responsible tourism practices. Font and Lynes (2018), state that digital platforms are a great way for companies to communicate their sustainability initiatives and at the same time deal with the ever-increasing demand for transparency and ethical operations. Eco-friendly travelers want to get informed about the environmental and social effects of their travel options. Then again, businesses take advantage of digital tools to communicate their carbon footprint reduction plans. Those who support local communities and environmentally-friendly practices will be in a better position to attract and keep this rapidly increasing group of travelers. The platform through certification can emphasize such activities. Detailed report and interesting multimedia content - Combining technology and sustainability which permits responsible decision-making not only satisfies consumers' expectations but also strengthens the industry's dedication to conforming to the wider community by advocating ecologically sustainable practices and ethical standards. Companies can differentiate themselves from the competition and contribute to a more sustainable tourism environment.

2.7. The Impact of COVID-19 on Digital Transformation

The COVID-19 pandemic has really sped up the integration of digital technologies within the tourism and hospitality sectors, mostly as a way of addressing health and safety concerns (Gossling et al. 2020). The use of such technologies minimizing physical interactions but at the same time they are able to instill a sense of safety and security in travelers. In fact, the sector is highlighting the need for agility and versatility in the face of never-before-seen challenges. Because of the pandemic, the industry's

turning towards contactless services, so the companies are quite quickly getting on board with these changes. The industry will have a stronger stance in continuing their operations and in comforting customers even during the most uncertain scenarios. The use of universally accepted digital tools will not only enhance operational efficiency but also help to cater to the changing needs of the customers. Yes, the role of technology goes far beyond disaster management; it is the main ingredient for introducing more creativity and staying competitive in the ever-evolving industry (Gossling et al. 2020).

2.8. Challenges of Digitalization in Tourism and Hospitality

Integrating tourism and hospitality with digital technology come with plethora of serious problems. Of all the problems, two that are most pressing are data privacy and cyber security. People as customers who are more aware of their digital footprint are also demanding transparency over how their data is collected and used. Security and ethical data practices are foundational to not only gaining trust but also maintaining it, points out Tussyadiah et al. (2020), client loyalty. Also, companies ignoring these issues face losing customers and their brand image may get damaged. Another major problem is the digital divide which prevents equal advantage of digitization for all in particular in poor countries where access to technology is limited the small and medium-sized enterprises in the developing countries. Digital inequality is mainly affecting how communities and businesses are engaging in digital economy which in turn is a roadblock for the adoption of new tools. Making sure that technology is used in an ethical and prudent manner is one of the most important aspects of both unleashing its full potential and ensuring that benefits go to all the stakeholders. The tourism and hospitality sector can leverage digital transformation to build a future that is equitable and environmentally conducive. It deals with privacy, security, and accessibility issues (Tussyadiah et al. 2020).

2.9. Balancing Technology and Human-Centric Approaches

Although the digital technology in the travel and hospitality industry, has improved the efficiency and proved to be more private, but that can't replace the feeling of human touch and empathy of a big interaction. Ivanov and Webster (2019) focus on the organization should balance between automation and human touch. It implies that user-first strategy for delivering a value-added experience to customers. Innovation has to continue to respond for behalf of changing customer expectation quickly. As the digital technology advances, corporations can shift their strategy to make the most of it. Innovate

Emerging like blockchain, the Internet of Things (IoT) and the virtual reality offers fascinating opportunities to improve customer experience and operation efficiency. As von Hippel (2014) stated that a proactive strategy to innovate is recommended. Nurturing industry focusing efforts on R&D is essential for staying ahead of industry trends since the convergence of digital technology has revolutionized business processes and customer expectations. Which include the digital gap and the human interaction, the privacy problem also raises concern. It will be tremendous benefits for service and customization. To business be able to succeed the technology and customer oriented with combine to produce distinctive and captivating experiences for the customers' needs.

3. RESEARCH METHODOLOGY

This study used a Systematic Literature Review (SLR), which is an organized and thorough way to summarizing current information. SLR allows .researchers to locate, assess, and incorporate findings from relevant. studies in a systematic manner, assuring transparency, dependability, and rigor. Given the enormous amount. of research on the subject, this technique is especially well-suited to investigating the influence of digital technology on consumer expectations in the tourist and hospitality industries.

3.1. Research Objectives

1. To examine existing studies on the adoption and integration of digital technologies in the tourist and hospitality industry.
2. To identify major trends, issues, and opportunities linked with digitalization.
3. To Understanding how digital technologies impact and change client expectations (fig 1)

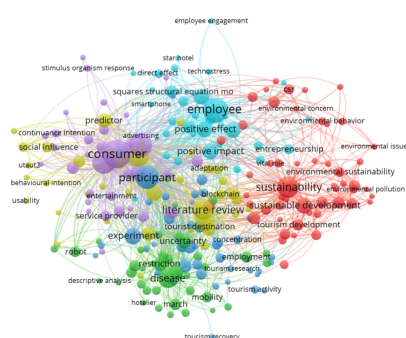


Figure 1. Co-word map for articles on digital technologies on evolving customer expectations in the tourism and hospitality industry (Source: VOSviewer)

3.2. Research Process

The SLR process was designed around three major phases: planning, implementation, and reporting. Phase 1: Plan the

Review. Defining Research Questions: The review was led by the following research questions. What are the main digital technologies changing the tourist and hospitality industries? How do these technologies affect customers' expectations and behaviors? What difficulties and possibilities arise from the use of digital technologies? Developing the Review Protocol: A thorough procedure was developed to assure uniformity and neutrality during the evaluation process, this protocol included criteria for research selection, data extraction, and analysis. Developing Inclusion and Exclusion Criteria: The following criteria were used to choose relevant studies: Inclusion criteria include peer-reviewed publications, conference presentations, and high-quality industry reports published between 2014 and 2025. Exclusion criteria: Non-English language publications, inadequate empirical and theoretical studies and articles outside the scope of the research objectives. phase 2 Conduct a review. Search Strategy: Several academic databases such as Scopus, Web of Science, Research Gate, and Google Scholar to find relevant literature. Keywords include digital technology in tourism, customer expectations in hospitality. AI in Hospitality, VR/AR in Tourism, Exclusion Criteria after reading full paper, 38 studies was selected for in-depth review. Data extraction: From the selected articles, obtained key details such as the research aims and questions, methodological system main findings and contributions to the literature uncovered gaps and proposed new research directions. Quality assessment: The quality of each publication was evaluated against a set of standards established beforehand - for example, methodological soundness, clarity of research goals and alignment with the research question. Phase 3: Reporting the findings and synthesis of results: We looked at the data through the lens of the major themes that emerged with a focus on ones that were recurrent in the text, trends and patterns. Thematic analysis highlights several major ways in which the use of digital technologies changes customer expectations. Presentation of Results: The results have been structured around major themes, such as sustainability, mobile-first strategy, realistic technology and personalization. Each theme is illustrated with evidence from the research articles.. The assessment process, unbiased, and comprehensive then can it be repeated with the same results. SLR is effective in understanding the research problem deeply by aggregating data from different sources and pointing out the areas that require further investigations. SLR has a major contribution to research but also has some shortcomings. Only high-quality studies in English were included in the review, which is a limitation. Besides, doing secondary analysis limits the possibility of studying the subtleties of

the research. SLR course of action can be shown to the preliminary stage that the procedure of SLR is in agreement with ethical research guidelines which recognize the sources properly. Being open in the method and acknowledging the limitations are the main factors in ensuring the ethical standards of secondary research. The setup developed by the SLR approach is ideal for determining the effect of digital technologies on the customer expectation changes in the travel and hospitality industry. It is through the synthesis of research results and reviews that we realize how technology is something important in this fast-changing industry. (fig2) (fig 3)

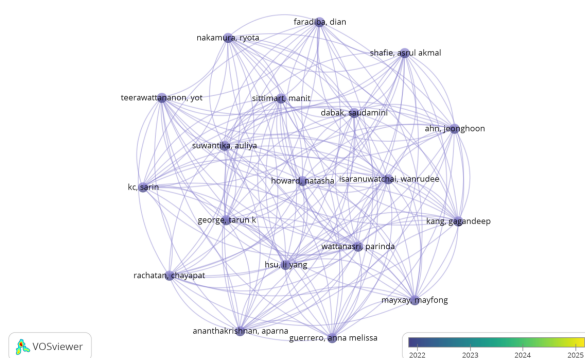


Figure 2. Co-citation authorship map focusing on Customer expectation in Tourism and Hospitality (Source: VOSviewer)

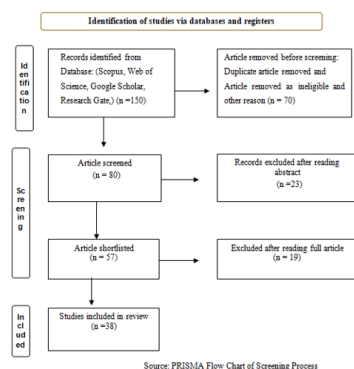


Figure 3. PRISMA flow diagrams illustrating the systematic article selection process, resulting in the inclusion of 38 studies for the final review.

4. RESULTS AND DISCUSSION

The report gives an in-depth understanding of the role of digital technology in revolutionizing customer expectations and operations in the travel and hospitality industry. A thorough analysis of recent publications outlines the primary opportunities and difficulties in this industry. It highlights the importance of digital transformation being done in a balanced way to be effective. Data analytics and AI are examples of technologies that allow digital technology companies to benefit from the significant changes in customer expectations. It also leads to a demand for a more uniform and smooth real-time experience that not only anticipates the needs of users but

also gives customized recommendations, and AI-operated chatbots improving customer satisfaction and loyalty. This is in line with the findings of Buhalis and Sinerta (2019) and is also corroborated by Mariani et al. (2018) and Neuhofer et al. (2015), who discuss the importance of data-driven personalization for an improved customer experience. Immersive (AR) technologies, including augmented reality and virtual reality, provide a richer on-site experience by offering interactive and contextual information, at the same time, VR helps to clarify by enabling virtual navigation of the space. Consumer interest needs to be rekindled; Guttentag (2010) endorses the idea of research for finding a way to the very opposite of one's expectation. Beck et al. (2019) But, are advocating Truth is immersive technologies prove to be the most effective medium for tourism marketing and destination promotion. Using social media technology, user-generated content and the degree of trust have a very large impact on customers' decisions. Sigala (2018) points out that the best way to market a product is by using peer recommendations and influencer marketing. These two together are the main factors for not only getting visible but also managing a good reputation. This is even more convincingly proven by the study of Leung et al. (2013), who consider social media as the major source of consumer engagement and travel decision-making. Sustainability is significant theme that will be continuously changing and evolving into the future; digital platforms offer businesses with ways of communicating their green and environmentally conscious initiatives to the customers who are increasingly demanding ethical and transparent practices. This evidence supports the work of Font and Lynes (2018) who stress the significance of alignment with social values. Besides, Gssling and Hall (2019) believe that digital technologies can be a catalyst for the development of sustainable tourism through increased resource efficiency and improved communication among stakeholders. Still, some problems are in the areas of data privacy, cyber security threats, and the digital divide, which among others, reduce the equal access to technology for SMEs and emerging economies. Ivanov and Webster (2019) point out the urgency of finding a balance not only for an increasingly automated service environment which in turn, helps to preserve the human element, but also beyond this. The aim of this research is to study the dramatic impact of digital technology in changing people's expectations and business operations mainly by giving priority to customers, ethical aspects, and sustainability. Stakeholders could capitalize on the digital transformation for designing both impactful and unforgettable experiences and at the same time, deal with the complexity. In fact, these conclusions are in line with those of Buhalis and Law (2008) who

recognized the pivotal role of information technology as something important in changing the face of tourism and hospitality in the modern age.

5. CONCLUSION

This study's conclusions give operational insights into how to best use digital technologies to fulfill the evolving client expectations in the travel and hospitality industries. Integrating artificial intelligence (AI) with big data analysis enables organizations to give tailored services. Improve client happiness and loyalty Buhalis and Sinarta (2019). Customers may experience places and services using immersive technologies like virtual reality (VR) and augmented reality (AR) Virtually Reduce uncertainty and provide valuable experiences Guttentag (2010). Social media platforms and user-generated content play a key role in shaping customer perception. Highlighting the need for businesses to adopt innovative digital marketing strategies (Sigala, 2018), sustainability has become a key focus with digital platforms that are environmentally friendly initiatives. This is in line with customer demands for ethical and environmentally responsible practices Font and Lynes (2018) in addition, the adoption of contactless technologies such as contactless payment systems and digital verification. Helps increase safety and convenience especially in the post-pandemic context, however, to build customer trust. Businesses must address data privacy and cyber security concerns (Ivanov & Webster, 2019), for small and medium-sized enterprises (SMEs), bridging the digital divide through support and training of government helping to create inclusiveness and innovation in all sectors. In an industry that is rapidly evolving stakeholders will be able to create a better customer experience and competitive advantage.

5.1. Practical Implications

This research results provide important and practical perspectives to the tourism and hospitality sector to the practitioners, policymakers, and destination managers who are in a dilemma about which one to prioritize: technology or sustainability. Using digital technologies, like artificial intelligence, big data analytics, cloud computing, Internet of Things (IoT), and mobile applications, hotels and restaurants can not only improve their everyday operation but also have less environmental footprint. Besides reducing energy consumption and waste generation, smart energy management systems, digital check-in/check-out processes and paperless operations can be highly convenient to customers. In fact, tourism businesses have great chances to increase their profits by acquiring and analyzing data on consumers' behavior and preferences which can further help them to promote sustainable travel by orienting and motivating travelers to environmentally

friendly behaviors. And, digital technologies not only open ways to meet sustainability goals but also enable implementers to get instant feedback on their impact with the direct consequence of being aware of and following standards for sustainability in the environment. Besides, the Internet marketing and social media give very cheap means for marketing sustainable tourism products and inform tourists about responsible travelling. Then, the policy makers can find in this research some arguments to continue developing the digital infrastructure, to make the innovation adoption more attractive by the market and to set up the training programs which are going to increase the digital competencies of the tourism stakeholders. Besides, the cooperation between governments, industry partners, technology providers, and local communities is something important in promoting smart and sustainable tourism ecosystems. Due to the combination of digital innovation and sustainability measures, the tourism and hospitality industry may have a better competitiveness, give the visitors a higher satisfaction and at the same time, do well to the environment and society.

5.2. Theoretical Implications

This study contributes to the emerging knowledge about the convergence of digital innovation and sustainability in the tourism and hospitality sector. After reviewing the existing literature, it helps us grasp fully how new technologies support environmentally friendly business practices and change companies' ways of working. The paper goes beyond the conceptual discussion by joining the ideas of innovation theory, sustainability theory, and digital transformation systems, Because of this illustrating that technological progress and sustainable development are mutually dependent. And, the results reveal that digital technologies are critical factors in helping the environment, society, and economy (Triple Bottom Line foundation) and so can be used as a guide for sustainable planning. Besides improving our knowledge of technology adoption in tourism and hospitality, the research recognizes primary digital tools as well as their contribution to sustainable value creation. It calls for multidisciplinary approach that merges the technological, managerial, and sustainability aspects to depict the company transformation. Besides highlighting the accurate theoretical foundations, the paper also identifies differences in the literature such as limited exploration of the long-term impacts of sustainability, stakeholder collaboration, and challenges connected to digital implementation. These insights act as a starting point for future theory building and empirical studies. By associating digital innovation with sustainability goals, the paper enhances the understanding of concepts and furnishes a strong guide for analyzing sustainable

transformations of tourism and hospitality industry.

5.3. Limitations of the Study

This study provides valuable insights into the role of how digital change can act as a catalyst for sustainability in tourism and hospitality, it also has shortcomings. For one thing, its study hinges on a literature review which confines findings to the range, the quality, and the accessibility of the prior research that had been published. Because of this, maybe the findings are swayed by the selective publishing and the different research methods employed in the studies that were reviewed. Second, the review concentrates mostly on academic articles that are available in major academic databases and the authors might have missed important industry reports, conference papers and gray literature which could provide more views on digital creative changes and sustainability practices. Third, because of the rapid changes in digital technologies, some of the results may become obsolete as new technologies change the way the industry works. So, this review reflects knowledge up to a point rather than a complete appraisal of future development. Also, the paper does not attempt a hands-on investigation of the relationship between digital creativity and sustainability results.

5.4. Future Research Directions

Future research should explore further the direct impact of digital innovations on the sustainability performance of tourism and hospitality organizations through empirical studies rather than literature reviews. As more and more organizations rely on technological means to deliver their products and services, it is important that research initiatives be set to assess the long-term effect of technologies including but not limited to artificial intelligence block chain big data analytics, the Internet of Things (IoT), and virtual reality on environmental, social, and economic dimensions. And, cross-country/destination/tourism-sector comparative studies can shed light on regional variations in technology adoption and sustainability practices. Besides these, ones of the roles that research should be granting to the stakeholders' collaboration are governments, local communities, technology providers, and tourism businesses, for how this will lead to sustainable digital transformation. Besides that, researchers should be looking at the barriers to technology adoption for example, financial constraints, digital skill gaps, cyber security concerns, and organizational resistance to change. Future research can even focus on developing and validating theoretical systems that integrate digital innovation, sustainability, and organizational performance to deepen the knowledge about the sustainable transformation of the

tourism and hospitality industry.

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7. ETHICAL STATEMENT

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8. AUTHORS' CONTRIBUTIONS

Madhu Kumari: Conceptualization, literature review, methodology design, data collection, data analysis, manuscript writing, and overall coordination of the study.

Pooja Rani: Literature review, data interpretation, manuscript drafting, critical review of the content, and editing of the final manuscript.

Chander Gopal: Research design, methodological guidance, validation of findings, supervision, and critical revision of the manuscript for intellectual content.

Aarti Saini: Data organization, synthesis of literature, manuscript formatting, proofreading, and assistance in preparing the final version of the manuscript.

All authors contributed to the development of the study, reviewed the manuscript, approved the final version, and agreed to be accountable for all aspects of the work.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

All data generated or analyzed during this study are included in this published article (and its supplementary information files).

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