The Digital Revolution in Tourism and Hospitality: Emerging Technologies and Industry Transformation

JUAN ABELLA ASUNCION, JR.
President Ramon Magsaysay State University
Iba, Zambales
jasuncion@prmsu.edu.ph

Juan Abella Asuncion Jr. *is an Associate Professor III and Dean of the College of Tourism and Hospitality Management at President Ramon Magsaysay State University (PRMSU), Iba Zambales. He earned his Doctor of Business Administration from the Polytechnic University of the Philippines, Manila. He also completed a Master in Management major in Business Administration from Mondrian Aura College in the Subic Bay Freeport Zone, and a Master in Public Management from Columban College, Inc., in Olongapo City. He obtained his Bachelor of Science in Tourism from Columban College, Inc., Olongapo City. Prior to joining PRMSU, he served as Department Head of the College of Hotel and Restaurant Management at Botolan Community College (now Polytechnic College of Botolan), Botolan, Zambales. With extensive experience in tourism, hospitality, management, and higher education administration, he continues to contribute to academic excellence and institutional development as Dean of the College of Tourism and Hospitality Management. He is an active member of various professional organizations, including the Asia-Pacific Consortium of Researchers and Educators, Inc. (APCORE), Council of Hotel and Restaurant Educators of the Philippines (COHREP), Association of Administrators in Hospitality, Hotel and Restaurant Educational Institutions (AAHRMEI), Philippine Association of Researchers for Tourism and Hospitality (PARTH), Asian Intellect for Academic Organization and Development, EdukCircle, and Global Leadership in Hospitality and Tourism Management.*

Introduction

Industries are changing due to the digital revolution; Tourism & Hospitality are included in this change. Digital technologies are integrated with everyday operations through the digital revolution. Consequently, the way industries communicate with their customers and manage their operations will be different.

Tourism and hospitality are major contributors to the global economy by providing millions of jobs & representing a large portion of GDP. The change in consumer buying behavior and increased competition for tourism and hospitality businesses makes the implementation of digital technology essential for improving operational efficiency & enhancing customer experience.

Technological advances in Mobile Application, Online Booking, and Data Analytics tools are at the forefront of this transition. Technology allows tourism & hospitality businesses to be more personalized and provide better service delivery, enhance communications, and respond to customer requests in real-time. For example, mobile technology allows travellers to plan, book, and manage their entire travel experience using their mobile devices, enhancing convenience for travellers.

Therefore, as new technologies continue to develop, it will become apparent that mobile technologies will play a significant role in the future of tourism and hospitality. Mobile technology does not only improve how customers interact with tourism and hospitality businesses; it also allows businesses to collect valuable information to help make strategic decisions at the corporate level. This will set the stage for more in-depth discussions about how mobile technology is influencing the tourism industry and defining the future of travel & hospitality. (Kulakhmetova & Yespenbetov, 2023) The development of a comprehensive digital ecosystem (including many systems to improve tourism accessibility and operational efficiency) in Kazakhstan will revolutionize the worldwide tourism industry. (Kulakhmetova & Yespenbetov, 2023).

Impact of Mobile Technology

The development of mobile technologies has transformed both the tourism and hospitality industries. Mobile applications enhance the way customers engage with businesses through unique features that provide them with convenient, individualized, and real-time information about products or services based on their preferences and needs. One of the most commonly used features in many of these applications is the ability for companies to use location-based services (LBS) to send their customers timely and relevant content and/or offers depending on their physical location. For example, a tourist will be notified of nearby attractions, restaurants, and discounts while visiting an unfamiliar city, thereby creating a more immersive and enjoyable experience.

In addition, mobile technology has made it easier for customers and service providers to communicate seamlessly with each other by allowing travelers to read reviews, book hotels, and make reservations through their phones. This ease of use creates improved customer satisfaction, as well as a sense of empowerment for the customers. By allowing users to create their own travel plans with the simple touch of a button, creating a sense of ownership over developing their travel itinerary; making it easy for users to share their travel experiences on social media.

As technology continues to develop, an obvious next step would be to design mobile applications that incorporate artificial intelligence (AI). Through AI, applications will be able to identify patterns from user activity and design a more personalized travel experience based on both the data collected and the unique characteristics of the customer. Increased personalization should lead to improved overall customer satisfaction by creating a completely unique and memorable travel experience for each customer. (McLean & Wilson, 2019) (McLean & Wilson, 2019)

Artificial Intelligence and Personalization

The travel and hospitality industries are using innovative AI solutions to change the way these companies deliver personalized service. The way guests engage with the company is changing too as property management systems and AI applications are driving increased customer engagement with hotels and other travel providers. In addition to enabling customer service requests to be resolved significantly faster through use of chatbots or virtual assistants, the ability for guests to receive personalized suggestions of activities/invitations based on prior actions and behaviors will help enhance the overall customer experience. Additionally, as hotels and other travel providers move towards providing more services through digitization, they are providing their employees time to focus on higher value tasks.

With the growth of AI-driven marketing strategies and the use of historical data analysis, hotel brands have much more capability to successfully market to potential customers than ever before. By analyzing past guests' behaviors and actions, hotel brands can design more effective marketing campaigns that are relevant to each specific guest. For instance, if a customer has previously booked a spa treatment package, then the next time that individual is staying with the hotel, they will receive a marketing email from the hotel that offers them that same spa treatment package. Not only will these tailored marketing campaigns lead to an increase in bookings but they will also help create increased customer loyalty.

As the hospitality sector continues to evolve through the adoption of AI-enabled personalized services to provide their guests with a more tailored experience, a careful balance must be achieved between providing guests with personalized experiences and providing guests with some amount of information about the guest that may violate their right to privacy. Providing guests with too much unwanted information will also create discomfort for the guest. Therefore, a proper balance needs to be struck within the hospitality industry's long-term success. (Ifraheem et al., 2024) As the hospitality industry continues to progress through the next evolution in technology, the industry will see the next wave of technology that will be associated with the evolution of the tourism industry; specifically, enhanced virtual/augmented reality experiences. Additionally, utilizing virtual and augmented reality will provide hoteliers and travel-related industry companies with additional opportunities to continue to enhance the level of personal service provided to their guests. Enhancing Customer Experiences in the Tourism & Hospitality Industry Through Virtual Reality (VR) & Augmented Reality (AR).

With advances in virtual and augmented reality technologies, the way customers interact with the tourism and hospitality sectors is evolving.

Virtual reality makes it possible to place users in completely simulated/created environments, while augmented reality allows the addition of digital content to the actual world around you. Both of these technologies are being used to provide visitors with rich and unique experiences, and to improve how customers plan their trips and explore the world once they arrive at their destination.

One notable application of VR is to provide potential guests with the ability to virtually "visit" faraway destinations before they decide to travel. With virtual tours of various geographical locations, potential customers have the opportunity to explore places they may be considering travelling to, without having to physically visit those locations. This ability helps customers make better choices about their travel plans, and creates a greater excitement level for the customer in relation to their eventual travel experience. Similarly, some hotel and tourism companies are beginning to employ AR as a method of enhancing visitors' experience on-site. Imagine if a tourist could simply hold their smart phone up to a historical landmark, and then receive information that explains the history and purpose of the landmark; or even provide the tourist with interactive navigational directions to their hotel or other places of interest. By providing visitors with these types of experiences, the visitor gains valuable context for the places they visit and experiences deeper connections with the places they visit.

As time progresses, there are indications that the integration of VR and AR into the travel planning process, as well as their utilitarian value in the hospitality sector, will continue to increase. Hotels may implement VR technology to allow customers to virtually view hotel rooms, and travel agencies may provide brochures with AR-enhanced visuals of various travel destinations in three dimensions. As it becomes easier for consumers to utilize these new technologies, these technologies will continue to create a new standard of expectations for tourists. However, as the tourism and hospitality sectors continue to adopt VR and AR

technologies, it will be important for all industry stakeholders to consider how VR and AR will be implemented in a manner that supports the industries' efforts to be sustainable and more environmentally aware. Technologies associated with sustainability and functionality are becoming broadly connected to the travel and hospitality industries. If businesses decide to incorporate eco-friendly technologies into their product offerings, many of which can help lower the carbon footprint and conserve resources in the operation of hotels' travel and hospitality industry. Likewise, many eco-friendly technologies help improve operational efficiency for companies in those industries. For example, technologies such as energy-efficient appliances, water-conservation appliances, and smart building systems not only provide an avenue for enhancing the operational efficiency of hotels and other travel-related businesses; these technologies also support and promote sustainable business practices that appeal to increasing numbers of environmentally-conscious consumers (Younus, 2024).

Consumer awareness has played an important role in the increasing integration of sustainability and technology. More potential customers are becoming aware of the negative consequences of many of their choices and are actively in search of goods and services that are eco-friendly. As a result, retailers that develop and promote sustainable business practices will have better opportunities to compete in the marketplace. An excellent example of this phenomenon dealing with travel and hospitality industries is that hotels that implement recycling programs or use renewable energy sources will have a greater opportunity to compete for customers who are motivated to make eco-friendly choices.

Despite the rapid development of eco-friendly technology and increasing public awareness regarding the negative impact of those technologies on the environment, the integration of sustainable technology into the operations of travel and hospitality businesses is not without its difficulties. For example, the consumptive costs associated with the

implementation of eco-friendly technologies at the beginning may be high and, therefore, the return on investment associated with adopting such technologies may take longer than anticipated. Also, the relatively high level of consumer awareness about environmental issues increases the threat of businesses engaging in "greenwashing," which occurs when companies overemphasize the environmental benefits of their business practices. Consequently, many consumers will quickly identify discrepancies between a business's representation and its actual practice (Younus, 2024).

It is expected that the increase in technology associated with sustainability will lead to attention to those challenges, as well as to further the integration of sustainability within travel and hospitality industries as the digital revolution continues. Identifying challenges involved in digital transformation will be vital to helping businesses use technology effectively to meet consumer demand and environmental obligations (Ma & Dai 2024). Additionally, organizations involved in digital transformation of tourism and hospitality face numerous challenges and risks to their success in this new environment.

A major area of risk for the organizations involved is protection of customer data through data privacy practices. With businesses collecting so much consumer data, issues of how and when to use that data arise as there are risks for businesses of breaching that data or using sensitive data negatively. Without appropriate safeguards in place, organizations risk losing their customers' trust and can create significant financial and reputational damage.

The gap between the organization's capability to utilize technology due to a disparity between technological capabilities of large and small organizations, and access to useful tools or resources diminishes the competitiveness/success of smaller organizations creating an additional challenge for those smaller organizations. The rapid rate of technological

change can also create challenges for many organizations to remain competitive and to be able to adapt to the implementation of new technological systems and processes.

Finally, challenges of adapting employees to the new technologies will also make the digital transformation process challenging for many organizations. Many employees have not utilized the technologies involved in digital transformation; therefore, they may have some resistance to the change as they are unfamiliar with respectively using the new technologies. The ultimate goal of providing training for staff is to equip them with the tools to use for successfully and efficiently operating the new systems of the organization. Organizations that do not focus on human resources development alongside technology will likely experience less than anticipated success with their digital investments (Bamidele et al. 2024) (Bamidele et al. 2024) (Bamidele et al. 2024). As the industry faces new and ongoing issues, it is evident that organizations need to have a strategic and forward-thinking approach. Organizations need not only to address these problems but also to capitalize on opportunities that arise from innovation going forward to remain competitive in an increasingly digital marketplace.

In conclusion, the digital revolution has radically changed both the tourism and hospitality industries, redefining how they function as well as their interaction with their customers. Some of the key technological advancements that have taken place in these industries are mobile technology, artificial intelligence, virtual/augmented reality, and sustainability initiatives; all of which have created an improved customer experience and increased operational efficiencies. These technologies will generate and create new options to further enhance our ability to deliver services and operate in an environmentally responsible manner.

In looking ahead, the industry will have a positive growth curve and means of adaptation. Organizations must not only be prepared to

embrace these changes but actually pursue innovative solutions to meet the growing demand for their offerings from an increasingly technologically savvy consumer base. Data analytics and customer personalization will become increasingly commonplace in the industry and sustainable practices will become more of a priority; creating an industry that promotes customer satisfaction and sustainability (Philip et al. 2024).

The need for adaptation is evident; organizations that remain agile and adaptable will succeed while those that are resistant will have difficulty keeping up with developments and advancements in their respective industries. As organizations will continue to be challenged by digital advancements and opportunities presented by digital technology, it will be critical to their success to remain committed to ethical practices and responsible innovations. Moving forward will require a balance between the benefits associated with technological progress, environmental stewardship, and trust from consumers. This future will only be realized through collaboration and a shared future vision amongst all industry stakeholders.

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