

A Review on Smart and Intelligent Techniques for Digital Tourism

Pawan Kumar*, Shivani Dubey, Ajay Kumar Sahu

Department of Information Technology, Greater Noida Institute of Technology, Greater Noida, Uttar Pradesh, India

ABSTRACT

With its global impact on economies, sectors, and industries, digital innovation is revolutionizing the way people work, live, and conduct business. The launch of the Digital India programme in 2014 helped India join the League of Nations, a group of nations that are using technology to transform their governments and businesses. Since then, practically every area of our lives—from work, travel, and communication to commerce, education, and healthcare—has been impacted by Digital India. India will evolve into a digital country, and travel and tourism are not an exception. Today's technology has a significant impact on how the travel business is shaped. India's travel industry has grown recently as a result of increasing internet usage and the availability of smartphones. The tourism and hospitality sector have become one of India's key development engines among the service industries. India's tourism industry has been strengthened by the country's diverse flora and wildlife, historical heritage, and scenic locations [1]. The major developments in the travel industry revolve around five themes: artificial intelligence (AI), big data, mobile apps, social media, and virtual/augmented reality (VR/AR). Through open and flexible communication with clients, these innovations could improve the travel experience. This article tries to take a broad look at the economic impact of travel in India, trends, problems, and effects of digital travel, and the role of new technologies and automation in streamlining the business processes across the value chain, painting a picture of the digital travel revolution going to take place.

Keywords: Digital Tourism, Artificial Intelligence (AI), Technologies

Article Info

Publication Issue :

Volume 8, Issue 6

November-December-2022

Page Number : 617-624

Article History

Accepted: 05 Dec 2022

Published: 30 Dec 2022

I. INTRODUCTION

In India, one of the biggest service sectors is travel and tourism. India's tourism industries have been strengthened by the country's diverse flora and

wildlife, rich cultural and historical heritage, and numerous scenic locations. Increase the current tourism offerings, develop and promote tourism, and keep India's reputation as a location that caters to tourists. In India, tourism is a significant employer in

a variety of industries, including lodging, transportation, tourist attractions, tourist information centres, photography, etc. In India, it is a key source of foreign currency. The amount spent abroad on travel increased by more than 17% in April 2018 compared to April 2017 [2].

II. PURPOSE OF THE STUDY

1. To comprehend the economic role played by the Indian tourist sector.
2. To research how travel is changing due to technology.
3. To research the issues and the future of digital travel in India.

III. DEFINING THE ECONOMIC CONTRIBUTION OF TRAVEL & TOURIS

One of the key economic activities has a substantial direct economic impact in addition to indirect and induced effects. The economic impact of travel and tourism is depicted in the below figure.



Figure1. Shows Economic Contribution of Travel and Tourism

(a) Direct contribution to GDP

Gross domestic product (GDP) produced by industries that directly serve tourists, such as hotels, travel agencies, airlines, and other passenger transport services, as well as accommodations, food and beverage services, retail trade, and directly serving tourists cultural sports and recreational services [3]. It is

equivalent to the total amount spent on domestic travel and tourism within a nation less the amount spent by those businesses (including imports).

(b) Direct spending impacts

It covers the money spent on travel by foreign visitors to the nation for both business and pleasure excursions, but excludes money spent abroad on education.

(c) Domestic travel & tourism spending

Citizens of a nation spend the amount there for both business and pleasure. Consumer durables with many uses are not included because they are not exclusively bought for travel.

(d) Government individual spending

This is money spent by the government on travel and tourism services that are directly offered to tourists, including cultural services (like museums) or leisure activities (eg national parks).

(e) Internal tourism consumption

It is the entire amount of money made in a nation via tourist exports, domestic spending, and government expenditure by individuals in sectors that directly cater to visitors. It does not include what residents spend overseas.

(f) Business travel & tourism spending

It is the money spent by citizens and foreign tourists on internal business travel.

(g) Leisure travel & tourism spending

Spending on leisure travel inside a nation by citizens and foreign tourists.

(h) Indirect and induced impacts Indirect contribution

The following three elements influence GDP and employment:

- Capital investment: This refers to spending by all sectors of the travel and tourism industry. This

also qualifies as investment spending by specific tourist resources, such as new visitor lodging and passenger transportation infrastructure, as well as dining establishments and recreational facilities, specifically for tourism usage [4].

- Collective expenditure by the government spending by the government on activities. This includes funding for regional and municipal governments. For instance, it covers administrative services, tourism marketing, and other governmental services as well as information Services [5].
- Supply-chain effects: They occur when many travel and tourism-related companies use domestic products and services as inputs to create their ultimate tourist output.
- Contribution that is induced is money spent by those who work in the travel and tourism industry, either directly or indirectly.

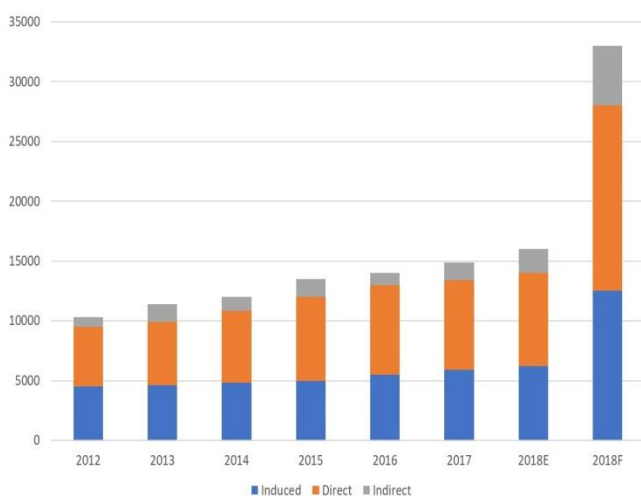


Figure 2. Graph Shows the total contribution of travel and tourism to Gross Domestic Product(GDP)

Travel and tourism's direct, indirect, and induced contributions to GDP from 2012 to 2017, 2018E, and 2028F are shown in the aforementioned table and graph. The graph's consistent upward trend indicates a promising future for the sector [6].

IV.DIGITAL TRANSFORMATION IN TRAVEL

The travel and hospitality industry is quickly evolving as more tools, technologies, and digital platforms are accepted, mostly to enhance customer experience, foster strong brand loyalty, and manage operations effectively. Mobile apps, social media, big data analytics, artificial intelligence (AI) and machine learning, virtual reality (VR), and augmented reality (AR) are some of these (AR) [7]. The findings of a global traveller survey conducted among 11,000 people throughout the globe by Travel Port, the top travel commerce platform, show the usage of digital tools for travel preparation, booking, and experience [8].

The results of the major Survey Conducted are as follows [9]

1. When researching a vacation:

- 81% of travellers turn to online websites.
- 47% utilise voice search on gadgets like the Amazon Echo and Google Home, when researching a trip.
- In order to plan a vacation, about 25% of those over 55 age use their smart phones.

2. When booking a tour:

- More than 33% of vacationers use a mobile device to make their reservations.
- 61% stay away from hotels with Wi-Fi fees.

3. While travelling:

- 70% of travellers think that using digital boarding tickets simplifies travel.
- 60% of visitors think that picking an airline based on a positive online experience is crucial.
- For directions, 44% of travelers rely on their smart phones.

Similar to foreign travellers, Indian travellers are growing more tech-savvy, as seen by the following

traits, according to several studies and data released in 2017 [10].

- 1) Most travellers use the internet to plan their trips, and 67% of them even use voice search. 71% of them book their trips using their smartphones, and 82% say it would be convenient to have digital boarding passes and e-tickets.
- 2) 83% of people utilise videos and pictures that friends have posted on social media as part of their research before travelling, and 83% think that being able to communicate while travelling is the most crucial aspect.
- 3) To locate bargains, 85% of people use price comparison websites, and 58% think that it takes a lot of time to find the best offer.
- 4) 91% use review sites, while 52% are dubious about their reliability. 75% of travelers favors lodgings without Wi-Fi fees.

India Key Data		
2019	2020	2021
Total contribution of Travel & Tourism to GDP:		
7.0% of Total Economy INR 15,729.3BN (USD 212.8BN)	4.3% of Total Economy INR 9,164.9BN (USD 124.0BN) Change: -41.7% Economy change: -6.5%	5.8% of Total Economy INR 13,161.1BN (USD 178.0BN) Change: +43.6% Economy change: +8.1%
Total contribution of Travel & Tourism to Employment:		
40.10MN 8.4% of total jobs	29.14MN 6.3% of total jobs Change: -27.3%	32.10MN 6.9% of total jobs Change: +10.2%
Visitor Spend:		
International:		
INR 2,532.6BN 5.8% of total exports (USD 34.3BN)	INR 1,072.6BN 2.8% of total exports (USD 14.5BN) Change: -57.6%	INR 653.4BN 1.4% of total exports (USD 8.8BN) Change: -39.1%
Domestic:		
INR 11,515.6BN (USD 155.8BN)	INR 7,170.7BN (USD 97.0BN) Change: -37.7%	INR 11,166.6BN (USD 151.1BN) Change: +55.7%

Figure3. This figure shows the total contribution of tourism & travel to GDP of India

V. TECHNOLOGIES USED IN DIGITAL TOURISMS

The introduction of technology is encouraging changes in the travel and tourism sector with relation to how businesses engage with clients. According to industry-leading data and Company, as a result, travel companies are implementing a variety of technologies

to increase operational efficiencies and satisfy customers. Mobile apps, social media, big data analytics, artificial intelligence, machine learning, virtual reality, and augmented reality are some of the tools and technologies that are finding widespread use in the travel industry [11].

(a) Mobile applications

The majority of client contacts take place on mobile devices. From 2013 to 2019, the data reveals the amount of mobile phone subscribers in India. India is anticipated to have 730.7 million mobile phone users in 2017. The number of smart phone users in India is anticipated to reach 340 million in the same year and might reach about 468 million by 2021. An online travel agency (OTA) is a website dedicated to selling consumer travel goods. Some travel agencies offer a wide range of travel-related goods, such as flights, lodging, vehicle rentals, cruises, activities, and packages [2].

(b) Big Data analytics

- 1) A company's most valuable asset is its data. This is another key factor driving businesses in the tourism and hospitality sectors to invest more money in Big Data solutions.
- 2) Big data analytics aids in the development of structured decisions. It uses dynamic pricing, personalises the user experience, and channels marketing activities. It enables companies in the travel and tourism sector to act quickly in response to changing customer needs.
- 3) Modern hotels and travel agencies to track consumer behaviour and preferences more efficiently are using big data technologies. Later, this data is employed to enhance the visitor's experience [13].

(c) Artificial Intelligence

- 1) In the tourism industry, AI in the form of chatbots, virtual assistants, and even robots is being used more and more. Additionally, machine learning helps to enhance the user experience by gradually making these products smarter.
- 2) Online travel businesses have used AI and ML to effectively leverage recommendation mechanisms to give a positive user experience over channels including vacation packages, auto rentals, hotels, and cruise lines, among others.

(d) Virtual Reality (VR) and Augmented Reality (AR)

- 1) VR might provide you a panoramic picture of your holiday. With a specific gadget, augmented reality, often known as AR, alters how a person perceives their immediate environment. While augmented reality and virtual reality are similar, the former adds digital elements to the latter's physical surroundings rather than replacing it. In order to create the physical surroundings they are truly attempting to convince clients to visit by incorporating rooms, motels and other businesses working in this space have grown increasingly popular [14].
- 2) Before making a trip there in person, folks can have a peek of a certain exotic location through virtual tours. To further control customer expectations, well-known travel websites like Booking.com can create virtual hotel room previews.

(e) Contactless Payments

- 1) Among the most recent developments in tourism technology, contactless payment systems take the lead. When utilising them, an RFID-enabled payment app on the user's mobile talks with the reader.
- 2) Visitors to Disney World can purchase personalised bracelets called MagicBands. Visitors

can easily and quickly make purchases by swiping their wrists when they attach their credit card to their MagicBands.

- 3) From a commercial perspective, this technology gives Disney an unrivalled chance to track user behaviours in order to better optimise its operations. Undoubtedly, it is a trend that is spreading throughout the travel business.

(f) Artificial Intelligence Chat bots

- 1) The development of AI chat bots has advanced significantly in recent years. It may also have a big impact on how the travel and tourism sector grows. With the help of text-based interactions on numerous websites and services, AI chat bots inspire human discourse. Their main goal is to reduce call centre congestion by offering 24/7 customer service that is at least basic.
- 2) Air Asia is a wonderful example of how to use a chat bot effectively when it comes to the travel and tourism sector. Their sophisticated chat bot, AVA, can perform a wide range of tasks, from assisting travelers with seat selection and ticket booking to addressing more challenging inquiries about the most recent COVID-19 regulations [15].

(g) Digital Recognition

- 1) Facial recognition software categorises a single face based on gender, age, emotion, or other traits in order to validate a person's identification. It is currently one of the most effective surveillance techniques ever developed.
- 2) As an advanced security measure and potential deterrent, facial recognition technologies are beginning to appear in airports around the world.
- 3) "U.S. Customs and Border Protection (CBP) aims to drastically expand its Biometric Exit programme to encompass 97 percent of outbound aviation passengers within four years," according to a recent study from the Department of Homeland Security [16].

VI. CHALLENGES FOR DIGITAL TRAVEL IN INDIA

(a) Inadequate supporting infrastructure: High speed Internet access, smooth digital payment methods, and a solid legislative and policy framework are all important components in the digitization of travel. Even while progress is being made in each of these areas, India still trails behind the majority of other countries internationally.

(b) Disintegrated payments: The problems Concerns with payments include a lack of connectivity between bank, merchant, and mobile wallet payment systems, a high cost of digital transactions, and a lack of support for payments made in foreign currencies.

(c) Privacy and data security risks: Data security vulnerabilities are only going to increase as travel becomes more and more digitised, particularly with the emergence of mobile wallets, the Unified Payments Interface (UPI), online banking, and other similar government-led digital projects.

VII. FUTURE OF DIGITAL TOURISM

With the development of technology, it is anticipated that the travel and hospitality industries in India will increasingly offer cutting-edge products and services like augmented reality city tours, smart tourism, robots for security and housekeeping, smart luggage, RFID/facial recognition technology to open hotel doors, driverless/self-parking cars, and air taxis in the near future. The government and industry participants are anticipated to take specific actions moving forward in light of these developments, which include

(a) Government

1) The availability of internet connectivity and cellular networks, increased access to financial infrastructure and point-of-sale (POS) devices,

and simpler identification through Aadhaar are some measures that can enable travellers to have an ideal experience.

- 2) IT literacy is a requirement for the general public to adopt digital services. It is imperative to act to impart the necessary skills for a digital economy at an early age, notably in schools.
- 3) Phishing assaults are more likely to occur during business and financial transactions. The Indian government may consider enacting its own General Data Protection Regulation [17].

(b) Businesses

- 1) It is anticipated that branded hotel chains in India would keep investing in digital platforms and technologies. It would be crucial to improve both the pre- and post-booking experiences.
- 2) For hotels, airlines, and OTAs, loyalty would come first. India would continue to be a market with high price sensitivity.
- 3) Activities to do when visiting a destination should be a notable area of concentration for online travel companies, especially meta search engines, as they are stepping into it as merchants — allowing them to earn bigger profits.
- 4) Hotels and airlines would place a greater emphasis on direct bookings.
- 5) Hotels and airlines would emphasize direct bookings more.

VIII. TOP SOLUTIONS FOR DIGITAL TOURISM

The entire tourism cycle and customer journey can be supported by digital technologies. Some of the solutions used in the industry are as follows:

1. **Booking applications:** allowing you to book plane tickets, hotel rooms, or rental cars
2. **Travel search engines:** assisting us in selecting the holiday or trip that best meets.
3. **A Travel App:** Makes easier to discover tourist information, restaurants that provide dishes for those with various food

intolerances, pointing out nearby stores and restrooms, or showing a schedule of future cultural events in a certain location.

4. **Virtual guides** -It can be applications or interactive guides supplied by government and other important institutions.
5. **Money Conversion Apps** - When travelling these apps can be quite useful, especially when converting currencies.
6. **Apps for transportation plan** -When travelling to other regions of the world, it is frequently required to employ local modes of transportation, which is where applications that help with buying train tickets, ordering cabs, or renting automobiles come in handy [17].

IX.CONCLUSION

This research paper sought to determine how technology has affected the travel and tourism industry. The tourist sector has seen significant changes as a result of the quick development of ICT solutions. The younger generation of commercial activities in today's digital age takes place in virtual reality (VR) or augmented reality (AR) areas, and the rapid analysis of the customer's emotions and behavior promote the improvement of their purchasing willingness. Personalized offerings are progressively taking the role of conventional decision-making procedures, which highlights the significance of AI even more. Although technology advancement cannot be halted, tourist firms may get ready for the challenges ahead by being sufficiently adaptable and open. The new tourists will bring with them new goals and demands for the industry.

X. REFERENCES

- [1]. Auroubindo Ganesh and Dr. Madhavi, C Jan-June, "Impact of Tourism on Indian Economy - A Snapshot" *Journal of Contemporary Research in Management*, Volume-1, No.1, 2 2.
- [2]. Honey, Martha and Gilpin, Report, (2009), "Tourism in the Developing World -Promoting Peace and Reducing Poverty".
- [3]. Gyimóthy S., Ana María Munar. 2013. "Critical Digital Tourism Studies" in *Welcoming Encounters*.
- [4]. Digital Framtidstrender, Hans Gelter 2015," Rethink digital tourism".
- [5]. <https://home.kpmg.com/.../ficci-expedition-travel-hospitality-technology-inovation> Mar 20, 2018.
- [6]. Zsarnoczky, M. (2017a). How does Artificial Intelligence affect the Tourism Industry? *Vadyba Journal of Management* 31 (2): 85-90.
- [7]. Molchanova, V.S. (2014). The Use of Online Service Booking in Tourist Activity. *European Journal of Social and Human Sciences*, 2(2), 75-80.
- [8]. Rejeb,K. and Rejeb,A. (2019).Block Chain Technology In Tourism: Applications And Possibilities . *WSN* 137 (2019) 119-144- EISSN 2392-2192, World Scientific News, An International Scientific Journal.
- [9]. J. A. Ivars-Baidal, M. A. Celdrán-Bernabeu, J. N. Mazón, and Á. F. Perles-Ivars, "Smart destinations and the evolution of ICTs: a new scenario for destination management?", *Curr. Issues Tour.*, vol. 22, no. 13, pp. 1581–1600, 2017.
- [10].J. Tribe and M. Mkono, "Not such smart tourism? The concept of e-lienation," *Ann. Tour. Res.*, vol. 66, pp. 105– 115, 2017.
- [11].X. Wang, X. L. Robert, F. Zhen, and J. Zhang, "How smart is your tourist attraction?: Measuring tourist preferences of smart tourism attractions via a FCEM-AHP and IPA approach," *Tour. Manag.*, vol. 54, pp. 309–320, 2016.
- [12].R. Baggio, R. Micera, and G. Del Chiappa, "Smart tourism destinations: a critical reflection," *J. Hosp. Tour. Technol.*, vol. 11, no. 3, pp. 407–423, 2020.
- [13].N. Azis, M. Amin, S. Chan, and C. Aprilia, "How smart tourism technologies affect tourist

- destination loyalty,” *J. Hosp. Tour. Technol.*, vol. 11, no. 4, pp. 603–625, 2020. 14 M. Kay Smith and A. Diekmann, “Tourism and wellbeing,” *Ann. Tour. Res.*, vol. 66, pp. 1–13, 2017.
- [14]. Alfonso Vargas-Sánchez, “Exploring the concept of smart tourist destination,” *Enlightening Tour. A Pathmaking J.*, pp. 176–198, 2016.
- [15]. Starkov, M. (2019). *Hospitality Digital Technology: Challenges, Priorities, and Buzzwords*. Retrieved From: <https://www.nextguest.com/blog/hospitality-digitaltech/HARE>.
- [16]. Sun. Zh and Zhang. L, (2019), The Application of Artificial Intelligence Technology in the Tourism Industry of Jinan, *Journal of Physics: Conference Series* 1302 032005, Retrieved From: <https://iopscience.iop.org/article/10.1088/1742-6596/1302/3/032005>.

Cite this article as :

Pawan Kumar, Shivani Dubey, Ajay Kumar Sahu, "A Review on Smart and Intelligent Techniques for Digital Tourism", *International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT)*, ISSN : 2456-3307, Volume 8 Issue 6, pp. 617-624, November-December 2022. Available at doi : <https://doi.org/10.32628/CSEIT228651>
Journal URL : <https://ijsrcseit.com/CSEIT228651>