An Overview of Digital Transformation Initiatives in Tourism, Aviation and Hospitality Industry

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Abstract

Digitalization is one of the most fundamental drivers of change today, presenting a unique chance to shape the future. There is widespread recognition among the leaders of tourism industry that the role of digital technology is shifting rapidly from being a driver of marginal efficiency to an enabler of fundamental innovation and disruption. It is the major cause of large-scale and comprehensive transformations across multiple aspects of tourism and hospitality business, providing unparalleled opportunities for value creation and capture, while also representing a major source of risk. Business leaders across all sectors are coping with the strategic implications of these transformations of their organisations, industry network and society. The economic and societal implications of digitalisation initiatives are contested and raising serious interrogations on the wider impact of digital transformation. The present paper discusses the various sources and their significance in tourism and hospitality sector in universal and Tourism, Hotel and Aviation sectors in specific. Digital technology is transforming most industries and creating new challenges that need to be understood. These include factors such as the pace of change, cultural transformation, outdated regulation, identifying the skills needed for the future, overcoming shortcomings in legacy systems, and the need to fund both digital and physical infrastructure.

Key Words: Digitalisation Initiatives, Technology & Transformation, Tourism, Aviation & Hospitality, New Trends

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Introduction

With a global economic contribution of more than 7.6 trillion USD in a single year alone, the travel and tourism represents one of the world's largest industry sectors. While the desire to see the world motivates people to travel, a number of convincing factors inspire millions of people to pursue careers in this booming field -- from the opportunity to work alongside collaborators from diverse cultures and backgrounds, to promoting sustainability. However, because the field of travel and tourism is rapidly evolving, it is imperative for aspiring workers in this space to keep up with the latest developments and hottest trends. One foremost impact on travel and tourism happening right now? Digitalization. Here's a closer look at why digitalization matters, along with one smart way to gain the skills you need for an inside edge with employers in tourism, Hotel and Aviation sectors. Digitalization is one of the most essential drivers of change today, presenting a unique chance to shape the future. The World Economic Forum is committed to helping leaders understand these implications and supporting them on the journey to shape better opportunities for business and society. For a while we have been hearing about the digital transformation in companies and industries, especially in the tourism and hospitality sector, where digital adaptation is not optional but rather an indispensable condition to continue being competitive and responding to new consumer demands. Advances in technology are spurring innovation, growth and globalisation in the tourism industry and redefining notions of travel altogether. High-tech advancements that contribute to an increasingly digital world are evident in almost every industry imaginable. Companies know to remain competitive, they must look for ways to keep customers happy and impress other stakeholders with their business prowess. The travel sector is rising to the challenge in fascinating ways that bring multiple benefits.

Objectives of the Study

- To understand the potential use of digital transformation in tourism and Hospitality sector.
- To envisage the available sources and their consequences on overall tourism and hospitality industry.
- To know the recent developments in tourism, aviation and hospitality sectors through adoption of effective digital technology.

Methodology of the study

The study involves the method of gathering data through the analysis of information from various sources such as, case studies, existing research articles, expert opinions and personal observation on contemporary digital transformation trends and tourism & hospitality sector.

Scope of the study

The current study confines to the adoption of digital technology various operational areas of Travel & Tourism, Aviation and hospitality industry with the consequences caused by the digital transformation globally. Study also involves the actual and potential sources of digital transformation initiatives across the world with respect to tourism and hospitality sector.

Contextual Study of the Digital Transformation

The number of studies in the past shows the potential impacts of digitalization in tourism and Hospitality industry.

According to the Fundación Orange study on Digital transformation in the tourism and hospitality sector**,** "the tourism and travel sector makes extensive use of both information and transactions in all stages of the value chain". Consumers search for information before a trip, they compare and check opinions of other travellers, and then they reserve tickets, hotels, and even tickets for shows and museums. During the trip, from online check-in to looking up information about restaurants and leisure activities. After traveling, they add their review to the information that other travellers will consult.

According to a recent World Economic Forum (WEF) whitepaper, "Digitalization is the cause of large-scale and sweeping transformations across multiple aspects of business, providing unparalleled opportunities for value creation and capture, while also representing a major source of risk. Business leaders across all sectors are grappling with the strategic implications of these transformations for their organizations, industry ecosystems, and society. The economic and societal implications of digitalization are contested and raising serious questions about the wider impact of digital transformation."

According to Forbes, the hospitality and tourism industry has been "completely turned on its head in recent years" by trends including mobile integration, Artificial Intelligence and chatbots, integration of the "Internet of Things", focus on data, online reputation and virtual reality.

In the recent report of Amadeus, a leader in travel and tourism innovation, it is stated that "In a world of digital interaction, where technology, data and traveler expectations mean that freedom and control sit hand in hand, the power today is with the corporate citizen. Change is upon us. New entrants are disrupting the norm, creating the need for significant innovation and heightened differentiation. Established players in managed travel are transforming themselves strategically and operationally in a bid to compete effectively in a virtual, digital and mobile marketplace." The report also stresses that the travel industry is moving forward, past innovations like self-booking technology and seamless desktop-to-mobile interaction, and on to game-changing technology like location awareness, preemptive solutions to travel disruptions, and other services that anticipate and react to customers in real time.

A 2016 report from the United Nations World Travel Organization declares, Digitalisation has left no segment of the travel ecosystem untouched. "Technology pervades every area of tourism and must be given the highest priority when developing the workforce for the industry". The report cites that fifty-two per cent of smartphones in the world are owned in Asia Pacific, and social media is becoming a customer service improvement tool for hospitality groups.

According to the World Tourism Organization (WTO) statistics which has been published, the countries which do not have adequate ICT infrastructure and growth will not be able to compete with their counterparts who have a sound ICT infrastructure in the near future. As ICT has become a key element for this industry, it motivates the consumers to decide and purchase tourism products. The ICT contributes an effective and substantial tool to the tourism and hospitality industry which encourages in strengthening the strategies and operations of the industry.

KPMG India Partner and Head - Transport, Leisure and Sports, Jaideep Ghosh said, "Digital revolution in the travel space is on. Brands are embracing technology to transform themselves into experience platforms while automating operations. Corporate and consumer travel boundaries are already blurred. Incumbents are adapting swiftly to the emerging bouquet of travel start-ups. Creative digital business models will continue to reshape the future of travel". While the adoption of these tools, technologies and platforms is rising across the travel and hospitality sector, it may not be considered to be directly correlated with innovation, as innovation is also about the minor tweaks in the ways these tools are utilised to add more value for customers.

Jim Peters, SITA CTO and head of SITA Lab, said: "Mixed reality, which combines augmented and virtual reality, is more than a new interface, it is a new way of looking at the world and allows things to be done in a new way. It enables digital and physical data to exist together. Our early

research shows that there are potential uses for airlines and airports – for operations, maintenance and training. We need to learn how to interact in this new environment. In the same way that we moved from computers to smartphones and voice recognition, now we can go beyond the screen".

"The rise of Chinese travellers as well as travellers from other emerging Asian markets like India should be considered another disruptive force driving digital transformation", said **Pansy Ho, Chairman of Global Tourism Economy Research Centre**, which organized the annual Global Tourism Economy Forum, coordinated by GTERC.

Frank Cuy pers of tourism consultancy and marketing agency Destination Think, said "Digital disruptors like social media, mobile devices and accessible information enable destination marketers to engage with consumers and stakeholders on a larger scale than ever before," on Redefining destination marketing strategy.

Significant impacts of Digitalization in Tourism and Hospitality sector

The travel industry is moving towards an increasingly connected future in which platforms, personalisation and integrated technology play a central role. Predictions for the near future are a wakeup call for all incumbent businesses. Travel and tourism continues to be a high-growth industry but the progress of digitisation is increasing the level of competition, putting pressure on revenues and profits. To take advantage of market growth, incumbent businesses need to understand the direction of change and the most promising strategies for success.

The direction of Change

- **Rapid technology adoption and innovation:** Digital technology is evolving with consumer adoption at an increasingly rapid pace. To understand where your customers are heading it is wise to pay attention to the early adopters.

- **Increasing Prevalence:** Research by Google shows that an increasing amount of time is spent researching trips on mobile phones, with 40% of US travel site visits coming from mobile in 2016. Visit session times are shrinking and yet conversion rates have grown by nearly 10% on mobile travel sites. Customers are using their phones to search for specific pieces of information and these figures suggest that if they don't find it they will quickly go elsewhere.

- **Consumer expectations are evolving:** The progression of digital technology continues to raise consumer expectations. Consumers are becoming increasingly empowered and discerning with the wealth of information available online. Trust and ease of fulfilment is key to decision-making and personalisation forms an integral part of this process. In a market where there is endless choice, and where customers are wary of being misled, established brands can succeed by easing the path to purchase. User experience (or UX) has become the top priority for both customer retention and advocacy. Customers are becoming accustomed to controlling their life from the palm of their hand, from their smartphone. The expectation of *being able to do that in other parts of their life should carry through to travel, either on business or for leisure.*

- **The new shape of Social media:** Messaging platforms, including Whatsapp, Facebook Messenger and others, have become an integral to the social media landscape. Whatsapp has replaced some of the functions of Facebook, Twitter, email and text messages for sharing photos, making plans and communicating with friends and colleagues

- **New interfaces and artificial intelligence:** Artificial intelligence and robotics will allow us to engage with the consumer in a way that we haven't done before; truly *understanding behaviours, needs and desires.*

- **Actionable insights from big data:** Improved data intelligence is being used to target consumers based on intent. Analysing preferences and buying behaviour enables targeted offers along the customer journey. The challenge lies firstly in capturing the right data and secondly in making it accessible enough to access at speed for decision making.

- **The continue rise of OTAs:** The power of online travel agents has grown rapidly. As the sector matures Priceline, Expedia and Ctrip have emerged as the three major players, outstripping the growth of their competitors. Google has entered the market with instant booking for hotels and restaurants, while the boundaries between OTAs and metasearch sites continue to blur.

- **Airbnb and the sharing Economy:** Disputes continue on the extent to which Airbnb bookings encroach on the hotel market. A recent report from Morgan Stanley showed rising Airbnb adoption; of those surveyed, approximately 49% said they had replaced a traditional hotel stay with an Airbnb stay in 2016 . The rate of growth since its foundation in 2008 has been phenomenal and follows that of similar sharing economy business models, such as Uber. The sharing economy has extended to reach both high and low ends of the market in travel.

- **Functional fragmentation and consolidation:** The growing number of travellers worldwide creates new opportunities for the provision of services. Limited service hotels with lower prices strike a balance in providing the basics with easy access to local amenities, allowing owners to focus on RevPAR. With this comes the potential fragmentation of traditional hotel services, including the provision of food, exercise facilities and entertainment.

- **Shifting from bricks to bits: the rise of online travel shopping:** The days of stepping into a brick-and-mortar travel agency or thumbing through travel guidebooks are dwindling fast. Caroline Bremner, head of travel and tourism research at Euromonitor International, said that online sales now account for 40 per cent of total travel product sales, up from 28 per cent in 2012 to digital travel sales will rise by 11.7 per cent this year to nearly US$613 billion, and to an estimated US$855 billion through 2021, worldwide according to a recent report by market research firm eMarketer.

- **Zooming in on hyper-personalisation**: One big advantage of digitalisation is the ability to harvest data and analytics. Consumers want to feel special and expect personalisation of service and experience. By capturing personal data from customers and learning more about their behavioural patterns, companies are increasingly optimising services across the customer journey.

- **Breaking boundaries and establishing bridges:** In previous decades, North America and Europe have dominated the travel markets, but this may not be the case for much longer. By 2030, most of the growth in international travel will come from Africa, Asia and the Middle East, according to the World Economic Forum. The rise of Chinese travellers as well as travellers from other emerging Asian markets like India should be considered another disruptive force driving digital transformation.

- **Redefining destination marketing strategy:** Digital disruptors like social media, mobile devices and accessible information enable destination marketers to engage with consumers and stakeholders on a larger scale than ever before.

The relevance of ICT in Tourism and Hospitality Industry

The speedy and significant growth of the Information Communications Technology (ICT) and vast development and use of internet plays a vital role in tourism and hospitality industry all over the world. The new technology has, in fact, already revolutionized the tourism and hospitality business processes internationally. According to the UNWTO (2015), tourism is a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their

usual environment for personal or business/professional purposes. Given the information-intensity of tourism and the resulting high dependence on information and communication technologies (ICTs) (Law et al. 2014; Koo et al.2015; Werthner and Klein 1999; Benckendorff et al. 2014), it is not surprising to see the concept of smart being applied to phenomena that encompass tourism. In many ways, digital tourism can be seen as a logical progression from traditional tourism and more recently e-tourism in that the ground work for the innovation sand the technological orientation of the industry and the consumers were laid early with the extensive adoption of information and communication technologies (ICT) in tourism, for instance in the form of global distribution and central reservation systems, the integration of Web based technologies that led to the emergence of e-Tourism (Buhalis 2003; Werthner and Ricci2004). This developmental trajectory continued with the wide spread adoption of social media (Sigala et al. 2012), and a move towards realizing mobile tourism in recognition of the high mobility of tourism information and of tourism consumers (Buhalis and Law 2008; Wang etal.2012).

However, smart tourism is certainly a distinct step in the evolution of ICT in tourism in that the physical and governance dimensions of tourism are entering the digital playing field, new levels of intelligence are achieved in tourism systems (Gretzel 2011), the fabric of the industry is yet again changed and the ways in which tourism experiences are created, exchanged, consumed and shared are fundamentally different. Digital tourism involves multiple components and layers of smart that are supported by ICTs. On one hand, it refers to Smart Destinations, which are special cases of smart cities: they apply smart city principles to urban or rural areas and not only consider residents but also tourists in their efforts to support mobility, resource availability and allocation, sustainability and quality of life/visits.

Digitalisation Initiatives and Destination Management Organisations

Tourism is a sector of economy that affects the global development of a region or a country. Tourism development has environmental and social consequences upon national and global communities. Meanwhile the viability of the investment must be assured. As we know that, the tourism development matrix is the tourist destination. The role of destination management is to manage and support the integration of different resources, activities and stakeholders through suitable policies and actions. It implies then both governmental/decisional and functional competences (planning, organisation and control of business activities), which should be generally performed by the public sector. Destination management must ensure the balance between the economic, social, cultural and environmental activities. Competitive destination management organisation means a

harmonious combination between planning, lobby, coordination and marketing (promotion). The issue of destination management has been brought light in the last few decades as a consequence of the steady development of tourism from both the demand and the supply side and has been developed in the tourism market. The main objective of this approach, then, is to manage the various components of a tourist destination in a way that ensures its economic profitability while avoiding degradation of the factors that have created its competitive position.

Therefore, digitalization is the cause of large-scale and sweeping transformations across multiple aspects of tourist destinations and businesses, providing unparalleled opportunities for value creation and capture, while also representing a major source of risk. Destination management organizations and business leaders across many other sectors are grappling with the strategic implications of these transformations for their organizations, industry ecosystems and society. The economic and societal implications of digitalization are contested and raising serious questions about the wider impact of digital transformation at major tourist destinations globally.

Tourism Destination Organisations (DMOs) need to be upgraded with the adoption of digital transformation time to time. The organisations can be classified as Public sector entities such as, Government, Quasi-governmental organisations, Private sector entities like, Multi-national organisations having interests in a number of industries, Major leisure companies, Developers who include leisure as part of mixed-use development, Small and medium-sized private enterprises, Individual entrepreneurs and Voluntary sector organisations include, National bodies, Trusts, Local charities, Cooperatives and NGOs.

A look at digital transformation initiatives in Travel & Tourism, Aviation and Hospitality

If you wanted to book a flight back in the 1950s, it would have taken 90 minutes to manually to process the reservation, and the ticket would have cost more than today in real terms. Once on the plane, beyond the inflight magazine, there was a lack of in-flight entertainment. In today's digital age where bookings are confirmed in a split second and an entire trip can be planned with a few taps of the finger, it's hard to imagine life back in the "golden age of travel". Thanks to technology, travelling today is more affordable, accessible and convenient than ever before.

Travel drives technology

Digitalisation has left no segment of the travel ecosystem untouched. "Technology pervades every area of tourism and must be given the highest priority when developing the workforce for the industry," said a 2016 report from the United Nations World Travel Organization. The report cites that fifty-two per cent of smartphones in the world are owned in Asia Pacific, and social media is becoming a customer service improvement tool for hospitality groups. In 2016, for the sixth consecutive year, the travel and tourism sector's contribution to world GDP outpaced the global economy, rising to a total of 10.2 per cent of world GDP (US$7.6 trillion), according to the World Travel & Tourism Council. The UN World Tourism Organisation projects that international tourist arrivals worldwide will grow at a rate of 3-4 per cent this year, up from 1,235 million in 2016. With such steep demand for travel, further digitalisation will be vital if the expectations of tomorrow's consumers are to be met. The travel industry has been at the forefront of digital innovation and continues to be transformed at an exponential rate across the globe. According to the World Economic Forum's Digital Transformation Initiative (DTI), from 2016 to 2025, digitalisation in aviation, travel and tourism is expected to create up to US$305 billion of value for the industry through increased profitability, migrate US$100 billion of value from traditional players to new competitors, and generate benefits valued at US$700 billion for customers and the wider society.

The factors convey an idea of the full potential of digitalization:

- **Searching for information before the trip:** perhaps the most widespread use, since today more than 90% of users check information on the Internet before reserving a trip or hotel. This translates into a responsive website and even into versions directly envisioned for mobile devices, apps, and useful, quality content creation for the user, such as the NH Hotels group blog.

- **Checking recommendations:** although this is part of the process of searching for information before the trip, in many cases, it is done via other channels, not on the company's website, therefore following up with and responding to reviews, especially negative ones, regardless of whether they are justified requires separate handling.

- **Online check-in and check-out:** among the most pragmatic functions, especially for reserving hotels and flights, the possibility to check in online saves time and paperwork for the customer and improves the company's internal management. In some cases, such as when reserving flights with some airlines, you must check in online in order to avoid an additional cost to do so at the check-in counter; this does not fit well with loyalty strategies, but in most cases, it is an added value.

- **Secure reservation and purchase process:** increases in online reservations and purchases have also brought with it increased user concern for the security of their personal and financial data. One of the main challenges for any company is to implement disruptive solutions that offer high security in data handling while not causing a poor user experience, since this leads to high percentages of abandonment in the reservation and purchase process.

- **App development:** users also search for information during the trip, which has fostered development of both general and specialized apps. In the case of hotels, they can serve to provide information about places and activities both in and outside of the hotel, with mobile services customized according to user preferences. There are also apps developed by tourism organizations such as Paradores of Spain or virtual tourist offices, and by city governments themselves to promote local tourism.

- **Smart cities:** some towns, taking a step further in developing apps, have begun to implement geolocating smart systems with beacons that provide useful information for tourism: weather, hotels, culture, transportation, and even additional services such as supervision systems for children.

- **Connectivity:** free mobile connectivity is essential now for many users, both Wi-Fi and 4G, for example. Internet connections are not only offered now in most hotels and other establishments such as restaurants and airports, but there are also areas implementing free Wi-Fi throughout the whole city.

- **Access to devices:** some chains offer their clients devices such as tablets or smartphones during their hotel stay as a courtesy or for a small rental fee, offering access to tourist information and entertainment and practical information. For example, the Casual Hoteles chain offers the Mobile Pack service, which includes a device with Wi-Fi connection, portable battery, and selfie stick, free to customers who reserve directly on their website.

- **New business models:** the high availability of users and the ability to geolocate them allow for additional, much more customized services, even new services such as reservations at the destination. This trend is even higher both among young people who travel without a set plan and reserve a hotel when they are already at their destination, and in business trips, which are often subject to last-minute changes.

- **Sector-based focus:** apps focused on specific sectors are yielding excellent results in the entertainment and tourism sector, since they meet very concrete needs, such as the third sector, family tourism with children, the elderly, singles, the LGBT community, and even interest-based travel such as ornithology, hiking, scuba diving, or literary tours.

- **Augmented and virtual reality:** beyond mobile devices, augmented and virtual reality experiences are now being offered, such as the digital observatory of the Barcelona Skyline at Terraza 83,3, which provides information about the monuments thanks to augmented reality technology, and which also allows immersive visits to some of the monuments with virtual reality goggles.

- **Better Management of Airport Operations Through Mixed Reality:** Anyone who has ever been in an airport for more than a few minutes can tell it's a highly coordinated facility with tight management of airplanes, passenger needs and more. Recently, the Helsinki Airport and SITA, an air transport IT provider, used a device called the Microsoft HoloLens to evaluate ways to improve airport operations. The HoloLens is the first self-contained tool in the world that lets users interact with digital content and holograms in their environments. For this airport project, the participants used mixed reality, which combines virtual reality and augmented reality, to visualize and view the airport's operations. They could watch people move through the building, check aircraft positions and more. It was even possible to see how long an individual passenger spent in an airport store. The technology provided by the HoloLens is still in its early stages. However, the people involved in the trial said that the visuals were not disorientating. They also liked how the device had a long battery life and did not get too hot during use.

- **Using Past Data to Recommend Future Travels:** When people arrive at their destinations, they often feel unsure of what to do and where to go first. In other cases, they feel ready to go globetrotting but are so overwhelmed that just getting started seems like an insurmountable obstacle. Solving both of these problems, Tickets Round The World compiled frequent around-the-world trips based on customer data. Their customers can book multi-destination trips and efficiently travel the world, seeing the most destinations for the least amount of money.

- **Delivering Relevant Information Through Digital Signage:** The tourism board of Pendle, a borough in the United Kingdom, installed a 65-inch digital panel that doubles as a brochure rack. The screen above the printed travel materials shows footage of some of the top sights in Pendle, plus helps visitors understand why people from the area are so proud of it. The tourism authorities placed the piece in a local coffee shop and reported that its presence has delighted the visitors frequenting the retail outlet. Additionally, there is evidence that the digital board has boosted traffic to the official Pendle tourism website. Airports also use digital signs to help customers get their bearings and take care of necessities that they'd otherwise need

human help to accomplish. For example, a video screen can show a person how to get between terminals or locate the nearest restroom. Alternatively, a digital panel could also display details about sales at nearby shops or let people know what to expect when eating at a particular restaurant.

- **Crowdsourced audio guides for tourists:** A platform/service where anyone can create audio guides - relatively short audio files on different cities and places in them. They could be thematic, e.g. poetic, funny, informative, historic etc. Users can download them and use while travelling or listen directly from the web depending on mobile internet prices and users. People wouldn't have to pay for those boring standard audio guides that are available in most touristic places anymore.

Key Influential Factors and Global Digital Trends

1. The tourism industry as a whole is undergoing a dramatic change in which technology empowers consumers to perform functions previously fulfilled by intermediaries.

2. Tourists involve in the co-creation of their information, booking and experience through new information streams, social media, user-generated content(UGC) and location-based services(LBS).

3. Effects of digitalization on the structure network and market of tourism industry include the growing dominance of a few large online travel agencies and Google, the low cost of information or sometimes free and low barriers to entry into market by the intermediaries.

4. These changes pose prevailing risks to small & medium enterprises in Tourism sector using traditional business models, but create opportunities for new trends; especially those adopted the digital solutions, data analytics or highly personalised tourist experiences.

Conclusion

Tourism and travelling are awe-inspiring at times. As this service has become available on our fingertips, every organization and people associated with this industry will be benefited, whether it is consumer or supplier, major stakeholders of tourism industry or hotels, transporters or others. So a knowledge-based e–tourism system or tourism through digital kit should be designed and developed to get the maximum possible revenue from this sector. However, thanks to digital enhancements like these, people are more equipped to enjoy smooth transitions regardless of their destination and how long they'll be away. Two main forces of in digital transformation are changing the tourism, aviation and hospitality sector: First, the increasing participation of consumers/tourists in searching, purchasing, evaluating and communicating about their tourism experiences and changes in the production of these components. Second, the dynamic changes in access to information and products have enabled more engaged, dynamic behaviour by tourism consumers. We could say that digital technology is developing so quickly that it is hard to get an idea of all the potential it holds for the tourism and hospitality sector. The digital transformation clearly happens when you listen to clients, understand them, and constantly offer them unique experiences.

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