

Digital Transformation in Tourism – The Case of Virtual Tourism

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Received: 09/09/2025

Accepted: 26/10/2025

Abstract:

The aim of this research paper is to study digital transformation within the tourism industry, especially as it relates to virtual tourism as a viable model. The study considers its increasing relevance during the COVID-19 pandemic and the later restrictions, like lockdowns and quarantines, when global tourism underwent a devastating slump. Virtual tourism could represent a legitimate substitute, and various creative methods for minimizing the consistent losses to this sector will continue to evolve. Yet, clearly Algeria is way behind other Arab and nearby countries in this type of tourism as shown by the findings.

Key Words : Digital Transformation, Tourism, Virtual Tourism.

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1.1 Introduction

Tourism is one of the most vital sectors driving the national economy. Given the rapid technological and digital changes reshaping today's environment, it has become imperative for the tourism industry to adapt and align with these transformations. This necessity became even more pronounced during the global health crisis brought about by COVID-19, which imposed strict lockdowns and mobility restrictions. Under these conditions, virtual tourism has emerged as a promising alternative to traditional tourism, offering unique advantages to travelers and stakeholders alike.

1.1 Research Problem

The world is currently witnessing a digital revolution that extends across all sectors, with tourism being among the most significantly affected. This transformation has led to the emergence of new forms of tourism, such as e-tourism and virtual tourism. Against this backdrop, the core research question of this study is:

What are the impacts of digital transformation on the tourism sector?

1.2 Research Questions

From the main question, the following sub-questions emerge:

1. What is meant by digital transformation?
2. What is virtual tourism?
3. What is the current state of virtual tourism in Algeria?

1.3 Research Methodology

The study adopts a descriptive approach, relying primarily on a literature review to examine the conceptual foundations of digital transformation and virtual tourism.

2. Conceptual Foundations of Digital Transformation

2.1 Definition of Digital Transformation

Digital transformation refers to the process by which organizations make a generational shift towards a business model reliant on digital capabilities to create new products, services, revenue generation opportunities, and improved value creation. This shift by formalizing a digital strategy, enhancing present state, knowing what investment plans to make, and thinking back to the barriers that need to be overcome to integrate technologies. Organizations that will successfully undertake digital transformation will depend heavily on change management to ensure they meet their strategic goals (Jubeir, 2021, p. 382).

Digital transformation can be simply defined as the transition from traditional operations through your digital capabilities and business model, connected together to innovate new creative products and services as an alternative to traditional service delivery. While promoting operational efficiencies, optimizing costs associated with both customer and audience customer time, in an effort to increase reach, reduce costs, and dramatic increases in market share, ultimately contributing to meet strategic from competitors (Hamani & Toubal, 2020, p. 1187).

To go further, digital transformation is taking two totally separate models of working, and replacing with digitized model of working— consistently from paper, dealing with transactions and interactions interacting successfully. To success will broadly use different technologies than before, connecting all aspects of your operations to perform goals to be better and more effectively (Youb & Boudbeza, 2019, p. 49).

2.2 Benefits of Digital Transformation

The advantages of digital transformation extend to both consumers and organizations, including (Abdul Rahman , 2019, pp. 213-214):

- ✓ Significant cost and effort reduction.
- ✓ Improved operational efficiency and process organization.
- ✓ Enhanced quality and simplified procedures for service delivery.
- ✓ Creation of innovative service opportunities beyond traditional methods.
- ✓ Greater market reach and customer acquisition potential.

2.3 Drivers of Digital Transformation

According to a Deloitte survey of over 1,200 public-sector entities worldwide, three primary drivers of digital transformation in the public sector were identified:

2.3.1 Cost Pressures and Budget Constraints:

Declining oil prices since late 2014 have led oil-dependent countries to reduce spending on assets and government operations, prompting the adoption of cost-saving measures and more efficient processes.

2.3.2- Customer and Citizen Demands:

The widespread use of social media has created new channels for engagement, enabling governments to better understand citizens' expectations, such as online payment solutions, and to respond with higher-quality services (Slaimi & Bouchey, 2019, p. 954).

2.3.2 - Government Directives:

"Governments rely on a top-down planning approach in their decision-making, which helps accelerate the implementation of digital transformation programs. To be able to allocate the necessary budget for executing such programs, two key conditions must be met: first, incorporating digital transformation into national plans, meaning that digital transformation programs should be among the state's strategic priorities and national visions; and second, making prompt decisions that enable government agencies to activate national digital transformation plans quickly and with high efficiency." (Jubeir, 2021, p. 384)

4. Dimensions of Digital Transformation

Digital transformation encompasses two primary dimensions (Yahiaoui & Gherabsi, 2019, p. 136):

4-1- Technological Capabilities:

This dimension reflects advancements in key emerging technologies, such as internet-based analytics, cloud computing, and complementary digital tools that have seen significant development in recent years.

4-2- User Experience:

Placing users at the center of institutional strategy, digital transformation focuses on meeting evolving customer expectations for quality, customization, and speed. This is particularly important for digitally native generations, who possess extensive knowledge of new technologies and readily share their experiences via social media. Organizations must therefore adapt their marketing strategies—often starting with digitalizing marketing functions through Customer Relationship Management (CRM) systems that integrate social media analytics. Similarly, Human Resources functions are being transformed through Employee Relationship

Management (ERM) systems, treating employees as internal customers and ensuring high-quality service delivery.

5. Steps of Digital Transformation

Scholars in this field emphasize that successful digital transformation follows interconnected and sequential stages, including (Abdul Rahman , 2019, p. 214):

Developing a digital strategy and improvement procedures, where (Christian Matt et al) point out that the success of digital transformation depends on defining its strategies and distinguishing them from related concepts.

- ✓ Assessing current digital capabilities.
- ✓ Defining the optimal structure for marketing activities.
- ✓ Identifying investment requirements.
- ✓ Recognizing barriers to digital integration.
- ✓ Managing change effectively to ensure successful implementation.

6. Barriers to Digital Transformation

Numerous challenges can hinder the successful execution of digital transformation programs (Hamani & Toubal, 2020, p. 1189), such as (Youb & Boudbeza , 2019, pp. 49–50):

- ✓ Lack of strong political will to support and champion digital governance.
- ✓ Absence of a legally protected digital work environment, including safeguards against cyber attacks and penalties for offenders.
- ✓ Weak strategic planning and coordination at senior management levels, including inadequate organizational restructuring and limited training for staff.
- ✓ Resistance from employees who fear job loss or role changes.
- ✓ Insufficient financial resources and high maintenance costs for digital systems.
- ✓ High infrastructure setup costs.
- ✓ Low digital literacy and income levels among citizens, limiting technology adoption.
- ✓ Concerns over cybersecurity, privacy breaches, and the safety of digital environments.

7. Virtual Tourism – Current Realities and Prospects

Tourism is among the most vital economic sectors, playing a pivotal role in fostering national economic growth. Given the rapid technological transformations globally, many countries are now integrating digital transformation into tourism, particularly in response to the COVID-19 crisis. In this context, virtual tourism has emerged as an urgent and innovative solution.

7.1 Definition of Tourism

According to Morrison & Mill (1998), tourism is defined as “an activity that occurs internationally when individuals cross borders for leisure or business purposes, staying for at least 24 hours but less than one year” (Rabehi & Kouache, 2015, p. 3)

The World Tourism Organization (UNWTO) defines tourism as an activity undertaken by individuals traveling from their usual place of residence for more than 24 hours but less than 12 months, for purposes of leisure, exploration, or cultural engagement—excluding work-related travel in the host country, & Tourism involves:

- ✓ Mobility: Traveling to a location different from the usual environment.

- ✓ Destination: Availability of services and recreational opportunities.
- ✓ Satisfaction: Fulfillment of the tourist's needs in an organized and sufficient manner.
- ✓ Resource Contribution: Generating additional economic resources for the national economy (Abdelrahman & Hassani , 2018, p. 146).

8. Types of Tourism

Tourism can be classified based on various criteria (Khentar & Qelesh, 2019, p. 189):

By Purpose: Religious, cultural, sports, environmental, leisure, wellness, and commercial tourism.

By Group Size: Individual or group tourism.

By Gender: Male-oriented or female-oriented tourism.

By Duration: Seasonal or transient tourism.

By Age Group: Youth, middle-aged, or senior tourism.

By Transportation Mode: Land, sea, or air tourism.

By Geographic Scope: Domestic, regional, or international tourism.

9. Virtual Tourism

9.1 - Definition of Virtual Tourism

The emergence of virtual tourism dates back to the advent of virtual reality technology. Half a century ago, the American thinker Arthur Clarke authored the book *The View from Serendip* , in which he imagined a group of individuals communicating with each other and attending meetings and conferences through high-quality electronic devices, It was in this context that the term Virtual Reality emerged in 1989, encompassing several types, including non-immersive virtual reality.

Subsequently, several related terms appeared, such as *Cyberspace* , virtual environment , and virtual world.

In 1994, virtual tours were used for the first time through a visit to Dudley Castle in England, offering a 3D walking tour. The castle was recreated as it existed in 1955, based on computer control through a system designed by British engineer Colin Johnson.

A virtual tour represents a simulation of an existing site or area, consisting of a series of video images, multimedia elements such as sound effects and music, written texts, and storytelling (Al-Najjar, 2020, p. 53).

Virtual tourism refers to experiencing tourism activities within a digital environment, serving as an alternative to physical travel. Through advanced technologies, participants can “visit” destinations free from traditional constraints of time, cost, distance, or physical limitations.. (Berkennou , 2019, p. 59)

Key Differences between Traditional and Virtual Tourism

Traditional Tourism	Virtual Tourism
Physical travel from actual residence to destination	Virtual “travel” experienced mentally rather than physically
Requires substantial financial resources	Minimal costs
Requires available leisure time	Accessible at any time
Relies on natural and human resources for service delivery	Relies on technology and modern innovations
Often seasonal	Not season-dependent
Direct impact on national income	Limited direct impact on national income
Creates jobs in various artisan and technical fields	Creates jobs in technology-related fields

Source : (Fellaq, Charfi, & Fouqa, 2020, p. 339) .

9.2- Significance of Virtual Tourism

Virtual tourism offers substantial benefits to both tourists and service providers, including (Chenbi & Atto, 2020, p. 225):

- ◆ Facilitating access to accurate and up-to-date tourism information.
- ◆ Reducing service delivery costs, leading to more competitive pricing.
- ◆ Enabling the development of innovative tourism products tailored to different market segments.
- ◆ Enhancing the competitiveness of tourism enterprises.
- ◆ Reflecting a nation’s technological advancement, attracting foreign investment.

Additionally, investing in virtual tourism allows for (Kouache & Qamrawi , 2013, p. 38):

- ◆ Expanding the reach of tourism offerings.
- ◆ Responding more effectively to niche market demands.
- ◆ Providing practical and interactive information about destinations (e.g., museums, natural sites).
- ◆ Building networks of tourism partners.
- ◆ Increasing foreign visitor engagement.

9.3- Core Components of Virtual Tourism

There are three fundamental components that enable a virtual tourism experience to feel authentic to the visitor (Berkennou , 2019, pp. 60-61):

9.3-1- Creativity

Tourism has always been subject to change, reflecting shifts in markets, consumer preferences, technologies, politics, and economic conditions. Competition in the sector drives innovation in service delivery. Creativity in tourism can manifest in four key areas:

- ◆ **Product Innovation:** Adding new features or experiences to the tourism offering.
- ◆ **Technological Innovation:** Utilizing advanced technologies to enhance the tourism experience.
- ◆ **Managerial Innovation:** Improving organizational structures and processes to boost performance.

- ◆ Logistical Innovation: Strengthening external linkages with customers and partners in the tourism value chain.

9-3-2- Virtual Realism

This involves creating a simulated environment that closely mirrors the real-world destination. It can take the form of:

- ◆ Rooms equipped with cameras that allow tourists to observe surroundings and interact with others remotely, as if face-to-face.
- ◆ The use of 3D glasses to immerse visitors in highly detailed virtual worlds.
- ◆ Computer-generated environments replicating actual locations.

9-3-3- Aesthetic Appeal

The aesthetic component refers to the emotional and sensory engagement experienced during immersion in a virtual environment. It includes the enjoyment, curiosity, and sense of discovery prompted by visual, artistic, and narrative elements.

9-4- Key Applications of Virtual Tourism

There are several technologies and applications used in virtual tourism, such as virtual reality and augmented reality, which can be summarized as follows (Madoui & Benjeroua, 2020, p. 55):

9-4-1- Virtual Reality

Virtual reality is still under development, due to the relative novelty of this medium as well as the ongoing scientific explorations in this field, many of which are still being discovered. Consequently, this technology has multiple definitions that vary among researchers and users of this system.

According to Webster's New Universal Unabridged Dictionary (1989), virtual reality is defined as 'being present in effect or essence, but not in actual fact.' The most widely accepted definition of virtual reality is that it is an imaginary space manifested through a specific medium (such as theater, image, film, etc.) or a description of a set of objects or entities existing in a certain space, along with the rules and relationships governing these objects.

9-4-2- Augmented Reality

Given the novelty of the concept of augmented reality, numerous terms have emerged to refer to it. In reviewing the literature on augmented reality, we find many synonymous terms, such as 'added reality,' 'enhanced reality,' 'improved reality,' 'blended reality,' and 'augmented reality.' All these terms refer to the same concept, with differences in terminology largely due to translation variations.

Beige defined augmented reality as a system that relies on viewing the real world directly through telepresence, in which artificial images are overlaid on real images to provide us with real elements and additional information that might otherwise be imperceptible to the human eye. It is also defined as a form of technology that enhances the real world through computer-generated content. Augmented reality technology allows for the seamless integration of digital content into the user's perception of the real world, enabling the addition of two-dimensional and three-dimensional shapes, as well as the incorporation of audio and video files and textual information. These enhancements can serve to increase individuals' knowledge and understanding of what is happening around them.

10. Drawbacks of Virtual Tourism

- ◆ Lack of a “real experience,” especially considering the social nature of tourism, which can facilitate interaction with local culture and heritage rather than merely passive observation.
- ◆ Potential negative impact on a large number of destinations, particularly in poor countries dependent on tourism revenues, which are often underdeveloped and far from major tourism-consuming regions of the world.
- ◆ Health risks identified by some authors as a result of immersion or the use of virtual reality equipment.
- ◆ Limited memories and reduced opportunities to record and relive the holiday experience or collect physical souvenirs.
- ◆ Social implications of creating a generation of potential virtual reality addicts who are unable or unwilling to interact with their fellow human beings (Berkennou , 2019, p. 61).

11- The State of Virtual Tourism in Algeria

According to the 2019 Travel and Tourism Competitiveness Index compiled by the World Economic Forum, Algeria ranked 89th in the ICT Readiness Index with a score of 4.2, lagging behind many Arab and African countries, such as the United Arab Emirates (ranked 4th with a score of 6.4), Bahrain (24th with 5.8), Qatar (36th with 5.6), Kuwait (39th with 5.5), Morocco (72nd with 4.6), and Tunisia (80th with 4.4). This reflects Algeria’s relatively low position compared to neighboring and regional countries.

A review of key government websites dedicated to promoting Algeria’s tourism destinations reveals shortcomings: the website of the National Tourism Office (www.ont.dz) (<http://www.ont.dz>) has been under maintenance for some time, and even before going offline, virtual reality technologies were absent from it.

The same applies to the Algerian National Tourism Office’s site (www.onat.dz) (<http://www.onat.dz>).

Likewise, the website of the Ministry of Tourism, Handicrafts, and Family Work (www.mtatf.gov.dz) (<http://www.mtatf.gov.dz>) also lacks these technologies.

As for the Visit Algeria portal (www.visitalgeria.dz) (<http://www.visitalgeria.dz>) , which the ministry relies on to promote Algeria’s tourism destination, it too falls short in using modern information and communication technologies.

Regarding the social media presence of these institutions:

- ◆ The National Tourism Office: www.facebook.com/ont.dz (<http://www.facebook.com/ont.dz>).
- ◆ The Algerian National Tourism Office: www.facebook.com/dzvisitalgeria (<http://www.facebook.com/dzvisitalgeria>).

According to the “Alexa” website ranking system, the National Tourism Office (ONT) website is not ranked due to being under maintenance. The Algerian National Tourism Office (ONAT) website is ranked 3,644,149 globally, the Visit Algeria portal is ranked 1,396,982, and the Ministry of Tourism’s website is ranked 791,837 (Madoui & Benjeroua, 2020, pp. 60-61).

12.Conclusion

The current global context—particularly the COVID-19 pandemic—has compelled nations to accelerate the digitalization of their tourism sectors due to the significant revenue

potential it offers. Adopting virtual tourism has become a strategic necessity. However, Algeria lags behind in this area due to several factors:

- ◆ Weak technical infrastructure.
- ◆ Shortage of skilled human resources specialized in virtual tourism.
- ◆ Lack of institutional focus on developing this promising segment.

12.1 Recommendations

To address these challenges, the study proposes:

- ✓ Enhancing the integration of ICT within the tourism sector.
- ✓ Training and upskilling the workforce for competence in virtual tourism.
- ✓ Organizing specialized training programs in VR-based tourism.
- ✓ Encouraging travel agencies to adopt and promote virtual tourism services.

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