

The Effectiveness of Applying Virtual Technologies in Tourism during COVID-19 in order to Rebuild Travel for a Post-Pandemic World

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Abstract

According to the UNWTO latest reports, COVID-19 pandemic has executed great and unparalleled impacts on the tourism industry in worldwide. Consequently, the pandemic has remarkably accelerated the testing and spreading the technologies that have helped travel and tourism industry increase their reach through many digital tools. Though, remote or virtual tourism has been an advanced theme within industry opportunities for some time, recently it is expected to have great potentials to help the recovery of tourism industry. This study investigate the success of using virtual technologies during COVID-19 pandemic in order to rebuilding travel for the post-pandemic world in the Egyptian context. To achieve this aim, In-depth online interviews with tourist from different nationalities were conducted. The findings of the research showed that the virtual technologies can help innovating travel for a post-pandemic world, and they can be used to promote destinations as an efficient marketing tool as well. The study also provided recommendations to overcome some deficiencies in the Egyptian experience and also suggested the ability of promoting sustainable tourism and increasing ‘virtual accessibility’ for the elderly and disabled via virtual tourism.

Keywords: Crisis Perception, Virtual ravel, Virtual Technologies, Innovating Travel, Virtual Accessibility.

1- Introduction

Over the last decade, the tourism industry has faced numerous crises and calamities, ranging from terrorist attacks to contagious diseases (Rosselló& Santana-Gallego & Awan, 2017). In December 2019, an unknown virus, most likely originated in the Chinese city of Wuhan and commonly called COVID-19, was detected (Lippi & Plebani, 2020). This had massive and unprecedented effects on various industries, putting millions of jobs and businesses at risk. The World Health Organization (WHO) and national governments implemented border closures as a result of the nature of travel that facilitate the spread of the COVID-19, resulting in a widespread disruption of tourism operations. (Sarkady& Neuburger & Egger, 2021).

As a result, virtual tourism is estimated to have significant potential in empowering the tourism industry's recovery, especially that residents are strongly advised or obliged to stay at home and avoid unnecessary journeys during the COVID-19 epidemic, and the limited access to tourism is 'virtual.'(Lu & Xu, 2021). New technological advancements such as "virtual reality" (VR) and "augmented reality" (AR) have the potential to empower the tourism industry and open up new opportunities. To respond and adapt to the problems provided by COVID-19, the tourism industry can use new technologies and virtual tourism (Lu, J. et al, 2021).

The aim of this study is to investigate the success of using virtual technologies during COVID-19 pandemic in order to rebuilding travel for the post-pandemic world in the Egyptian context.

2- Literature Review

2.1 Virtual Technology

All forms of technology have many improvements that frequently have direct and lasting influences on tourism. Lately, advances in information and communication technologies (ICTs) have been transforming tourism in countless ways, with impacts on areas ranging from consumer demand to site management (Pillai, 2021). One important area of ICTs is virtual technology, which already is used in varied areas including entertainment, design, simulation training, education, events and ...etc (Marzouk, *et al*,2019).

In general, Sarkady(2021) and Guttentag(2020) cleared that, virtualization uses software that simulates hardware functionality to set up a virtual system. This practice enables organizations to operate multiple operating systems, more than one virtual system and various applications on a single server. The benefits of virtualization include greater efficiencies and economies of scale (Pillai, 2021).

Accordingly, Virtual Reality (VR) can be defined as the use of computer technology to create a simulated environment that is a replacement of viewing a screen in front of users, who are immersed and able to interact with 3D worlds(Lu, *et al*,2021). El-Said&Aziz(2021), Rastati(2020) and Manis&Choi(2019) added that Through using of computer's sensors, special graphics, video images and stereo sound of description of places that make actions seem real, in addition to simulate many senses, like vision, hearing, touch, even smell, the positions of the user's eyes are located within the Virtual Environment (VE) instead of locating a real camera inside a physical

environment, whereas the VR technology creates a substantial and interactive world for the user.

Consequently, VR is identified as the use of a computer-generated 3D environment, which is known a 'Virtual Environment'. It aids navigation and interaction by simulating one or more of the user's five senses in real time (El-Said&Aziz,2021; Giberson, *et al*,2017). The ability to move around and explore the VE is referred to 'navigate,' while the ability to select and move items within the VE is referred to 'interact'. At the present, there are virtual items like (universities, offices, studios, museums, shopping, cemeteries, and wind tunnels), virtual characters like (actors, doctors, and pets) and virtual events like exhibitions. These could include a blank room, a headset, or other gadgets that allow users to access the VE. Furthermore, VR applications now include capabilities such as sound or touch feedback to allow users to interact with things and locations (Lee, *et al*, 2020;Gibson & O'Rawe ,2018).

2.2 VR applications in tourism sector

Rastati(2020) stated that, many people are familiar with the term 'virtual reality' but are unsure about the uses of this technology. It is no longer limited to games or the entertainment industry in general, as VR applications are now being used in a wide range of fields and businesses, ranging from academic research to engineering, design, business, the arts, and entertainment, such as: commercial (retail – e-commerce), education, tourism, manufacturing, training, healthcare, construction, architecture & interior design, marketing & advertising, and sports (VRS Website,2021).

Besides - irrespective of the use - VR produces a set of data, which is then used to develop new models, training methods, communication

and interaction(Lu, *et al*,2021). While there are numerous benefits to using virtual reality apps, such as cost savings, improved operational performance, and a higher return on investment (ROI) for all business projects, there are numerous competitive advantages to using virtual reality applications(VRS Website,2021).

When mention the tourism sector, VR already has numerous and significant applications for many tourism businesses that included the following examples: (Caciora, *et al* 2021; Sarkady(2021); Wang(2021)

1-One of the most exciting advantages of virtual reality applications is the ability to create virtual tours for existing real-world destinations, as they can motivate potential visitors to book their tickets after experiencing how enjoyable it would be to visit these locations through a virtual experience of vacation locations, museums, landscapes, and festivals.

2- Virtual museums are another fantastic way to promote tourism in any country, since they provide an immersive experience with a physical visit to the museum to enjoy the virtual tour or through the museum's website.

3- Hotels and resorts can also generate revenue from virtual reality's advantages by developing a virtual experience of how guests will be treated to inspire potential consumers to choose a hotel over competitors, as well as training employees with motivating situations to maximize client experience.

4- By using VR transportation sector can also motivate passengers to choose their travel options and create an immersive sense of how comfortable and professional their services are.

Furthermore, Kim, et al(2020) added that the industry began to focus on consequences of VR in tourism marketing, heritage preservation, accessibility, management, planning and education. Though adoption of VR is still moderately innovative in some of these fields, industry is trying to integrate VR elements into their businesses especially after appearing the COVID-19 pandemic (El-Said&Aziz,2021).

Since starts of 2020, the COVID-19 pandemic began to affect harmfully the global travel and tourism industry; in addition to restrict tourists to go for an on-site visit during the pandemic due to the closure of tourism destinations and travel constraints(Guha,2020).

Accordingly, COVID-19 became an uprising for virtual tourism with the world restrictions and the doubt about when holidays would be allowed again, VTs could play an essential role in avoiding the total postponement of many tourism activities during predicament periods by creating new business models and providing various opportunities for different entities in the tourism(Sigala,2020). While some companies already had virtual reality experiences in place, they expanded or differentiated their services(Guha,2020). Others took their initial steps into the field of digital tourism. Their goal is to maintain their destination in the forefront of people's minds while also ensuring the long-term viability of their product during the industry's recovery(Caciora, *et al* 2021).

Rodriguez(2021) mentioned, during the pandemic, over 35 countries around the world have provided virtual tours of their most famous landmarks, which included archaeological sites, museums, national parks, and job opportunities have been provided also for employees such as tour guides through the VT-based tour guiding. The United Kingdom, United States of America, China, France, Australia, India,

Italy, Spain, Brazil, and Egypt are the most prominent of these countries.

Generally, tourists can do it simply starting with filling in the registering form by their name, email address, and the VT program that they want to join. Then, the tour platform will send a confirmation letter to inform them the Zoom ID and password. On the tour-day, tourists join the program in Zoom along with guide and other tourists. The guide not only shows photos of tourist sites but also invites the tourists "to take a walk" using Google Earth. The guide regularly presents YouTube videos, detailed images on Power Point or website supplemented with details. Moreover, VT with 360- degree are mutual among overseas tourist attractions such as museums, Kyoto Garden, Niagara Falls, and the Grand Canyon(Omid, 2021; El-Said&Aziz,2021;FATF,2021)

2.3 Virtual tours in the Egyptian context

2.3.1 Tourism in Egypt before COVID-19

According to a report released on January 20, the UN World Tourism Organization (UNWTO) indicated that Egypt's tourism sector grew by 21% in 2019, attracting 13.6 million people, and that the number of visitors in 2020 is likely to approach 15 million. The report also stated that the Middle East was the world's fastest growing tourist destination, while Asia and the Pacific saw a slowdown in growth. It went on to say that Europe's growth was equally modest in comparison to prior years, at only 4%. The UNWTO awarded Egypt's promotional video campaign "People To People" the Middle East's Best Promotional Film Award in September 2019.

The following figure displays the growth of the number of tourists arriving to Egypt from 1995 to 2019, before the pandemic.

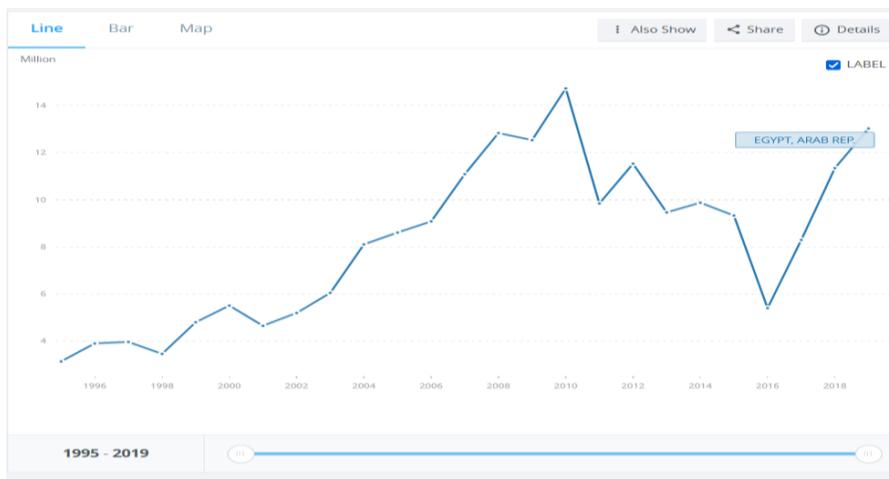


Figure 1. Number of International tourists' arrivals - Egypt (1995-2019)
Source: The World Bank

The tourism sector recorded its highest revenues in 2018 and at the beginning of 2019, which was supposed to be a profitable year ahead for Egypt's tourism business. This progress certainly was interrupted by the COVID-19 pandemic. (International Food Policy Research Institute, 2020)

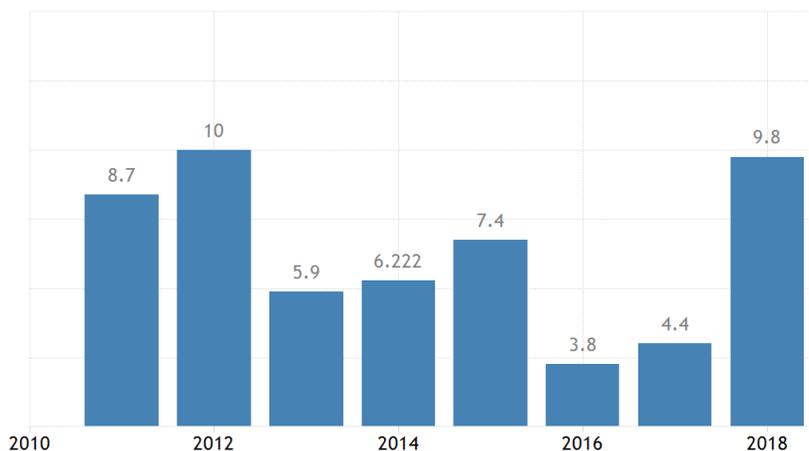


Figure 2. Egypt tourism revenues (2010-2018) Source: Egypt Central Bank

2.3.2 Tourism in Egypt during COVID-19

First reports indicate that the tourism sector in Egypt suffered from COVID-19 very acutely. Except for the first two months of 2020, when

business was normal, the tourism sector could only partially offer its services. Due to travel restrictions enforced in other countries, coming to Egypt from abroad was significantly difficult.

Khaled Al-Anani, Egypt's Minister of Tourism and Antiquities, stated that tourism income in Egypt will drop to around 4 billion dollars in 2020, down from 13 billion dollars in 2019, which means that the Corona pandemic deprived Egypt of roughly 70% of its tourism income in 2020. (Ahram online, 2021)

As been shown in the following table, at the start of 2020, a positive rate of change in the number of tourists was achieved. That is, in January and February of that year, as contrast to 2019, which was a prediction of a financially stable year for Egypt's tourism industry. (World Trade Organization, 2021) However, following the introduction of Covid-19 and its spread in Egypt, preventive precautions and, most crucially, decisions to prohibit travel in Egypt and other countries, as in other countries around the world, the number of tourists arriving in Egypt until last August recorded very low values compared to 2019 as a result of preventive measures and, most crucially, decisions to avoid travel to Egypt and other countries. (ECES, 2020)

Months	Prior to the Crisis	During the Crisis	Rate of change (%)	Direction of change
	2019	2020		
January	861	945	10	↑
February	885	942	6	↑
March	1097	398	-64	↓
April	1220	1	-100	↓
May	932	2	-100	↓
June	1083	4	-100	↓
July	1225	89	-93	↓
August	1221	223	-82	↓

Table 1. The change in tourist arrivals to Egypt numbers (2019-2020) (000 tourists) Source: UNWTO database for the COVID-19 period.

The table shows that April, May, and June 2020 are the lowest months when compared to comparable months, according to the data, when the crisis was at its peak, and then things began to recover in July and August 2020.

The decrease in Egypt's inbound tourism during the pandemic definitely affected tourism revenues. According to Figure 3 we can conclude the following:

1. A 55 percent decrease in tourism income in the first half of 2020 (January-June) compared to the same period in 2019.
2. Due to the virus's non-spread instructions in Egypt until mid-March 2020, near the end of the quarter, the first quarter (January-March) 2020 witnessed modest fall, at an estimated rate of 11%, compared to the same quarter the previous year.
3. In the second quarter of 2020 (April-June), tourism revenues declined by 87% compared to the previous quarter of the same year and by 90% compared to the same quarter in 2019. (WTO, 2020)

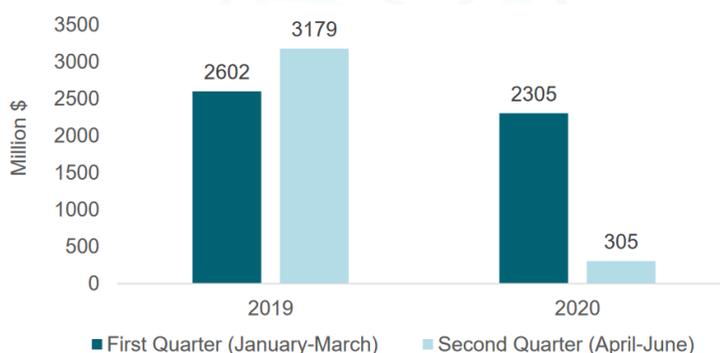


Figure 3. Tourism revenues statistics in 2020 compared to 2019. Source: UNWTO database for the COVID-19 period

2.3.3 The Egyptian e-initiative responding to COVID-19 pandemic in tourism sector

Virtual tours have been on the rise around the world as a way of trying to save the tourism industry in the wake of travel restrictions aimed at limiting the spread of the Covid-19 pandemic on the one hand, and allowing people all over the world to explore and enjoy several civilizations while confined at home on the other hand. For the same reason, Egypt has embraced virtual tours as well as inspire visitors to visit the country in person once the outbreak has passed. (Soha Bahgat, 2020)

On 9 April 2020, a series of virtual and guided video tours of many Egyptian museums and archaeological sites have been launched by the Ministry of Tourism and Antiquities in collaboration with its partners, (SIS, 2020) Such as, The Coptic Museum, The Tomb of Niankhkhnun and Khnumhotep in Saqqara (The tomb of the Two Brothers), The Step Pyramid Complex of Djoser, The Funerary Complex of King Unas, A tomb of Mehu in Saqqara, Tomb of Mehu, Chief Justice and Vizier, The Tomb of Ramses VI, Kom al-Shuqafa catacombs in Alexandria, tomb of Kheti in the rock-hewn Necropolis of Beni Hasan in Minya Governorate, Mosque, Ben Ezra Synagogue in Old Cairo, Madrasa and Khanqa of Sultan Barquq, The Red Monastery, Tomb of Queen Meresankh III and Menna Tomb. (The Egyptian Ministry of Tourism and Antiquities, 2020) Under the slogan: “Experience Egypt from Home. Stay Home. Stay Safe”, all tours were available on the Ministry’s official website and Social Media platforms.

On 19 April 2020, The United Nations’ Educational, Scientific and Cultural Organization "UNESCO" praised in a tweet the Egyptian e-

initiative launched by the Egyptian Ministry of Tourism and Antiquities, entitled “Explore Egypt from Home”, calling on the people of the world to discover the wonderful Egyptian civilization. UNESCO described the Egyptian e-initiative as an important tool for defending residents' well-being and breaking down barriers erected by the new coronavirus, underlining the importance of culture in times of crisis. (UNESCO, 2020)

Mosque-Madrassa of Sultan Barquq has been chosen among the 10 virtual tours of spectacular buildings around the world. (Ministry of Tourism and Antiquities, 2021) The Guardian said “The intricate architecture in the iwans displays verses from the Quran along with geometric designs and patterns. The Mamluk-built mosque contains marble mosaics and its doors and minarets are carved to perfection”. (The Guardian, 2021)

3- Methodology

3.1 Research Population and Sample

This research focused on analyzing the e-initiative launched by Egyptian Ministry of Tourism and Antiquities during the pandemic, using virtual tours as a key element in that initiative. Due to the absence of any official data announced about this initiative, tourists' impressions about it, or the percentages of viewing virtual tours on the ministry platforms. As a consequence, twenty tourists from different nationalities whom watched VR Tours through Ministry's official website and Social Media platforms were considered adequate for collecting data

3.2. Data collection Methods and Procedures

Using Facebook Messenger, in depth online interviews were conducted with 20 tourists from different nationalities whom watched VR Tours through Ministry's official website and Social Media platforms in order to make an insight into the e-initiative and its impact on rebuilding travel for a post-pandemic world. Most of the questions revolved around the following points: time and quality of the videos, sound clarity, the sufficiency of data, ambiance of the video and finally the desire to visit the site.

4- Interview Analysis and Discussion

The interviewees illustrated many notes through their answers that will should be considered well for improving the VTs in Egypt as an alternative tourism during and after the pandemic. The results of interviews have shown some deficiencies in the available VTs that were watched by the study's sample.

Whereas all of replies agreed that there are no tour guides which it effects on the interaction and misunderstanding for many parts of tours, in addition to the available data with videos are not enough to identify them all of needed information specially about unknown places or the new ones.

Moreover, they mentioned there is lacking a sense of reality and immersion; the related technology is not mature enough; such as there are no 3D videos and consequently the VE was very poor because there are no simulated senses like smell, hearing and touch; accordingly, they did not use any computer's sensors or any additional tools except their mobile phones. Additionally, the videos are usually available on the social networks and the tourism ministry's website not in separate platform with registration form for tourists and their requests like the similar experiences.

Furthermore, the majority of responds (17 out of 20) stated that the total quality of videos were perfect but for official websites or social platforms not for VT and they added that some videos were very fast and their time duration were short that make them confused towards many important details.

Even though the previous deficiencies, all participants have the desire to visit the places physically after the pandemic and they are waiting for more videos and VTs about Egypt until the travel restrictions are reduced.

In general, the interviewees added some points that cause increasing their desire to use VTs. They stated that VT is an interesting and innovative experience, an entertainment activity to make people relax and relieve stress; can be a good alternative to the actual trip, especially during the pandemic; enables people to experience the destination without being in the destination in-person and that they cannot go due to constraints. It can be used as a promotion and advertisement means to attract more visitors for on-site visits; etc.

Accordingly, these findings agreed with various studies that are talked about the VTs and their impacts on rebuilding tourism during and after the pandemic, in addition to their tools and technics, which make the tourist virtual experience very excited specially when using the VT-based tour guiding and the interaction with 3D worlds and VE (Rastati, 2020 ; Guttentag,2020; Ideas, 2021; Pillai,2021).

Several resources talked about Egypt's virtual experiences to rebuild the tourism during the pandemic (ECES, 2020; WTO, 2021; Ahram online, 2021) but this study is the first try to know the main shortages that are found by tourists when using the Egyptian VTs to modify them for raising the efficiency in proportion to what the competitors offer.

The findings of the interviews concluded the deficiencies in the type of used videos, the VE effects and there are no tours with availability to elect the language or tour guide 'sound or detailed tours. Nevertheless, all interviewees are waiting for more VTs in Egypt, which ensures increased numbers after making the suggested adjustments to the recent and future VTs.

5- Conclusions and Suggestions

Strict health protocols and improved safety standards are needed in order to make tourists feel safe during the tours. Vast transformation needed to make this industry survive after the pandemic. VTs can be a starting point as an alternative tourism during COVID-19 and even after the pandemic ends. They can be an intermediate of promoting the tourist attractions to central and local governments whereas VT can be an entry and make people prompted to visit these tourist attractions directly.

Study results highlighted that virtual tourism could be a useful tool to reduce conceptions of the coronavirus for those countries that are still undergoing serious impacts from the pandemic.

In Egypt, during and after the pandemic the official tourism bodies have used virtual technology to contribute in rebuilding the tourism industry and as an effective marketing tool to promote its tourist products, but there are some deficiencies that can be overcome by considering the following suggestions of this study that can be addressed to tourism officials in Egypt in the ministry of tourism and its authorities:

-Improve the VTs system in their ability to stimulate each of the five senses. Also, the ways in which users interact and the currently used input and output devices. For example, developing the VTs by

providing them with 3D and 4D videos featured with needed details about the places, beside a fully immersive headset capable of stimulating each of the senses with a combination of high-definition graphics, surround sound, heat and humidity controllers, a device that can spray flavors into the mouth and provide texture sensation, and a separate glove that provides tactile feedback.

-Encourage using virtual technologies as an effective marketing and promotion tools not only during the crises but also as a continues strategy whereas, the virtual experiences provide more effective advertising than brochures for the tourist attractions and the VTs with panoramic photos on the official tourism websites and social networks offer psychological relief to individuals feeling travel concern. Moreover, the websites featured with tourism movies increase tourist interests in real visitation.

-Offer unique platforms attached with multi languages registration forms for the VTs and the communication of information among tourists. It facilitates the establishment of online travel communities, in which visitors share information via VEs, chat services, and other tools, and in which customers increasingly trust marketing messaging rather than advertising. Furthermore, tourism providers will gain from establishing brand recognition in such communities, as well as studying and responding to the comments expressed about their products in these virtual communities.

-Expand using of VTs to gain profits mainly during the pandemic. Where tourist destinations can develop innovative ways to integrate the internet selling of souvenirs/products into their virtual tourism product (e.g. virtual tour and live streaming). In addition, use VTs to provide job opportunities (e.g. Tour guides, tour leaders,

marketers and sales persons) as an alternative job to some tourism employees who lost their jobs during the pandemic or even if any crisis will happen in future.

- Virtual tourism can help to ensure sustainable tourism viability and development in a variety of ways, such as using VTs for visiting destinations that are currently undeveloped, in danger, under threat, already beyond its carrying capacity or closed to tourism; substituting the VTs for tourist's actions that are seen to be unmaintainable or risky (such as hunting); helping to avoid unnecessary trips and reduce the greenhouse gas emissions from transportations and decrease the carbon footprint and so forth.

-Increase the use of VTs to improve "virtual accessibility" for the elderly and disabled through virtual tourism.

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