



THE EFFECT OF METAVERSE TECHNOLOGY ON MEDICAL TOURISM PROCESS

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Abstract

Metaverse is known as a technology that has started to be used in the field of tourism, as it is in many other fields. That is involved in a wide range of aspects of tourism, including booking hotels, accepting payments, travel planning and cultural heritage tourism. On the other hand, medical tourism is one of the branches of tourism that accounts for a significant share of the tourism revenues of certain countries. In this context, it is known that Metaverse technology has developed in the field of health, especially after the coronavirus pandemic. InsightAce Analytic estimates that the global market for metaverse healthcare will be at \$5.06 billion in 2021. It is projected to increase by 34.8 percent CAGR to reach \$71.97 billion by 2030. Countries that want to increase their medical tourism revenues aim to increase their market shares by investing in metaverse technology. In this study, it aims to present a perspective for future studies by giving these examples.

Anahtar Kelimeler: Medical Tourism, Metaverse, Healthcare Market, Technology

Introduction

The main reasons people seek out medical tourism experiences are to save money, get treatments faster, and receive high-quality medical care (Abbaspour, et. al., 2021). For those who generate income from tourists through medical tourism, medical tourism offers a host of other important advantages. Increasing the number of medical institutions that are internationally accredited and raising the standard of healthcare facilities are just a few of the advantages. More investors are building new hospitals and clinics as well as enlarging already-existing ones as more people travel abroad for medical treatment (Stephano, 2022).

The COVID-19 pandemic is a major factor in medical tourism's current global health crisis (Ghasemi, et. al., 2021). The COVID-19 health crisis, the global economic downturn, and the restrictions on foreign travel imposed to the risk of infection have all had a substantial influence on the medical tourism industry (Sharma, et. al., 2020). Telemedicine is the term used to describe the delivery of medical services remotely. With COVID-19, telemedicine services will expand by 95% today compared to 43% by 2020. The practice of providing medical care remotely is known as telemedicine in the healthcare industry. Virtual reality as a component of the metadata repository opens new avenues for services offered over the phone or via video chat. A headset-based VR experience provides a considerably stronger sense of "being there" than other virtual environments like websites, messaging applications or social media, as anyone who has used one will attest (Marr, 2022). The practices of medical tourism are starting to be impacted by the metaverse's technological advancements in the medical field. In case studies, this article seeks to show how the metaverse affects medical tourism.

Conceptual Framework

What is Metaverse

The word 'Meta' was coined by the science fiction writer Neal Stephenson in the novel 'snow accident' in 1992. Interest in the concept of meta started to attract attention in 2021-2022 with Facebook's decision to rebrand it as "Meta" (Anderson & Rainie, 2022). The term "metaverse" is a mashup of "meta" and "universe". It alludes to a three-dimensional virtual environment where avatars participate in a variety of

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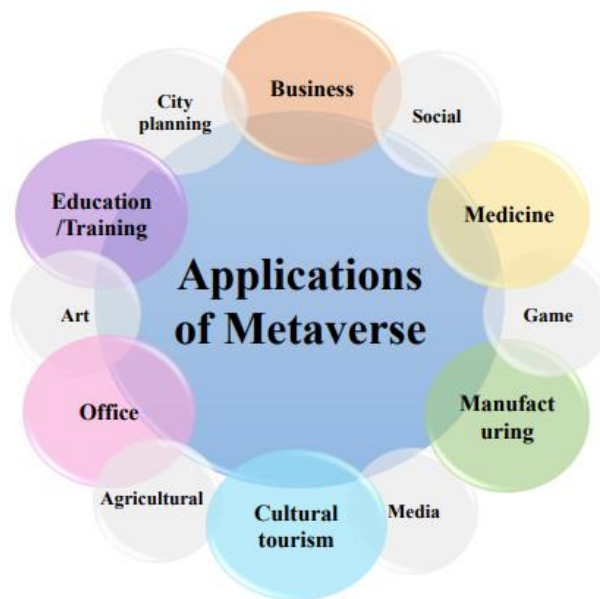
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social, political, economic and cultural activities (Park & Kim, 2022).

Metaverse, today refers to the area of computer-generated, networked extended reality or XR, an acronym for augmented reality (AR), mixed reality (MR) and virtual reality (VR) (Anderson & Rainie, 2022). Three factors; immersion, interaction and information can distinguish AR, VR and MR concepts. With Augmented Reality (AR), the user's environment is annotated virtually in real-time while viewing the real world (Venkatesan, et. al., 2021). Virtual reality (VR) is a type of head-mounted computer that generates digital or simulated experiences using auditory, visual, and haptic feedback (Egliston & Carter, 2021). According to Rauchbanel, MR (mixed reality) gives an undeniable encounter between real and digitally generated settings and is so lifelike that users are unable to differentiate between virtual information and actual objects (Buhalis & Karatay, 2022).

The transition to digital technology can be finished with the development of the metaverse. In the future, this will allow the Metaverse to advance and become fully integrated into daily life. Five major applications of metaverse are; 'Education/Training', 'Business', 'Medicine', 'Manufacturing', 'Cultural Tourism'.

Figure 1. Applications of Metaverse



Source: Sun, et. al. (2022:6)

- ✓ **Education/Training;** Metaverse can cross physical boundaries and enable students and teachers to receive education in the same virtual space. For example, it may offer operational activities for medical students or flight training simulation opportunities for prospective pilots.
- ✓ **Business;** In the virtual world, Metaverse offers an impressive shopping experience in retail and e-commerce.
- ✓ **Medicine;** Telemedicine has a lot of potential with metaverse. Robotic arms can facilitate surgical procedures, the virtual environment can assist surgeons to gain a more complete understanding of the patient's condition, and medical students can practice on virtual patients to hone their skills.
- ✓ **Manufacturing;** customers may be able to comprehend the specifics of the project without having to leave their homes thanks to the use of the metaverse in industrial engineering and design.
- ✓ **Cultural Tourism;** metaverse is more akin to virtual tourism for the cultural tourism sector. Traditional travel is constantly busy and individuals are unable to visit notable landmarks and locations around the world due to time and space constraints. The region is digitally photographed in three dimensions and uploaded to the cloud for viewing. All visitors need to make the "go-to" excursion is a pair of VR glasses (Sun, et. al., 2022).

As mentioned, the metaverse has begun to facilitate people's professional and social lives, as well as their pursuits in the areas of education, culture, and health. Thanks to technological advancements, this condition will likely spread quickly. The evolution of medical tourism will be covered in this section.

Medical Tourism

Medical tourism is the practice of receiving medical care outside of one's country for a variety of reasons, including exorbitant costs, protracted wait times and the inaccessibility of certain procedures. Patients in affluent nations have turned to foreign nations for medical care as the cost of healthcare services rises. The most important cause of the desire for medical tourism can be summed up as this circumstance (Sevim & Sevim, 2019). Contrary to the current situation, the idea of medical tourism in the 19th century was based on the technological and technical inferiority of people living in less developed nations. It was described as traveling to wealthy nations like the United States, Germany, and the United Kingdom seeking healthcare services that they were unable to access there owing to informational restrictions (Horowitz, et. al., 2007; Ari, 2017). In order to access superior facilities and highly skilled physicians, wealthy people from low and middle income countries traveled to high income countries during the 20th century. Elites from the Global South were now obtaining medical care in the capital cities of their former colonial masters and flows of wealthy patients were heavily influenced by migration patterns and historical experience at the end of the 20th century. There was an increase in patient travel from the Gulf states to the British, German, French, and American health systems as a result of the oil boom (Lunt, 2022).

In recent years, international patients and healthcare capital funds have increased dramatically as a result of the high quality of medical staff and the enhancement of medical services. The national policies of the countries have been revised in response to shifts in the supply and demand of health services and new legislation that facilitates the mobility of health services has also been implemented. Since health services are mostly a "service business," the free movement of commodities and services has made it simpler to buy and sell them. "Medical Tourism" has thus grown to be a significant occasion among global commercial activities (Ataman, et. al., 2017). According to Scott, et. al (2012) and Pan and Chen (2014) depending on these conditions, medical tourism significantly boosts the economies of several nations across the world. The country that serves medical tourism, creating job opportunities, accommodation, food and beverage etc. with the phenomenon of tourism. While providing economic contributions such as; in terms of patients, it is stated that it has effect such as low cost, time saving and obtaining tourism opportunities together with treatment (Buzcu & Birdir, 2019).

According to the statista research department, Canada topped the list of 46 destinations used to determine the world's medical tourism destinations for 2020–2021, with an index score of 76.47. The index is based on evaluations of the environment of the travel destination, the medical tourism sector, and the standard of amenities and services. The top 20 nations in the world according to the 2020 medical tourism index score are listed in the table below (statista.com, 2022).

Table 1. Medical Tourism Index Score

Characterstic	Medical Tourism Index Score
Canada	76.47
Singapore	76.43
Japan	74.23
Spain	72.93
UK	71.92
Dubai	71.85
Costa Rica	71.73
Israel	70.78
Abu Dhabi	70.26
India	69.8
France	69.61
Germany	69.29
Oman	69.03
South Korea	68.81
Czech Republic	68.32
Taiwan	67.93
Thailand	66.83
Italy	66.75

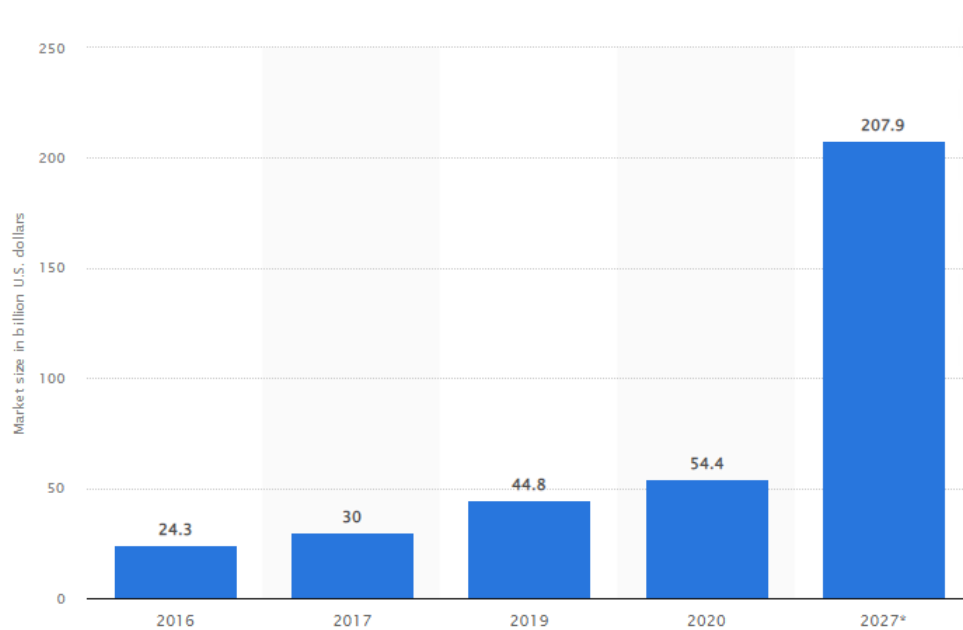
Dominican Republic	66.32
Argentina	66.26

Source: statista.com, 2022

As seen in the table; Canada, Singapore, Japan, Spain, UK, Dubai, Costa Rica, Israel, Abu Dhabi are among the countries with a medical tourism index score above 70. It can be said that these nations have greater standards for their activities, services, and medical tourism than other nations. Their preference in the area of medical tourism grows as a result of this circumstance.

Medical tourism global market has continued to grow, even if the COVID-19 pandemic period.

Table 2. Medical tourism global market size, from 2016 to 2020 with a forecast for 2027 (in billion U.S. dollars)



Source: statista.com, (2022)

According to Michas (2021), the industry for medical tourism was estimated to be worth \$54.4 billion in 2020 and was expected to grow to more than \$200 billion by 2027. Although the coronavirus pandemic has stopped medical tourism, it was predicted that the business will return and grow significantly in the years to come. The covid-19 pandemic has sparked a telehealth revolution. On the contrary, compared to just 43% prior to the pandemic, 95% of US healthcare facilities reported providing remote treatment to patients as of July 2020. This has produced a healthcare environment that is more open to innovations than usual (Millar, 2022).

Metaverse practices in medical tourism

People can completely virtualize their experiences with travel, lodging, dining, cooking, tours, conferences, meetings and conventions by using the metaverse. Customers will be able to utilize a "try before you purchase" feature through these initiatives, allowing them to examine hotel and restaurant interiors, tourist attractions, flights and other services from the comfort of their homes. Metaverse encounters might also provide clients who might be on the fence about booking a reservation added encouragement (Gursoy, et. al., 2022). Metaverse can influence and advance healthcare services in the future. The World Health Organization (WHO) used augmented reality during the pandemic to teach COVID-19 participants and mental health professionals how to use virtual reality to treat patients with mental illnesses and emotional problems. As a result, it appears that Metaverse can help medical practitioners in many areas of their work that involve the usage of these technologies (Ahmadi, et. al., 2022).

Simulations, diagnostic imaging, patient care management, rehabilitation and health management will all be possible with metaverse. These technologies can expedite the course of treatment for patients. AR and VR can be useful in a healthcare context. AR scans can project medical images such as CT (Computerized

Tomography) images to clinicians, directly onto the patient and onto the patient's body, giving them a clearer view of the internal anatomy even when the patient is moving. This technology is used by care teams in conjunction with point-of-care radiology (Thomason, 2021).

The Thumbay Group, a healthcare provider in the United Arab Emirates is responsible for the October launch of the Metaverse hospital. The distinction of being the first hospital in the metaverse belongs to this facility. Metaverse Hospital will provide better doctor-patient interaction via augmented reality (AR) and virtual reality (VR) (Hasan, 2022). Using their avatars, patients will be able to visit and chat with doctors. "This will be a fully functioning virtual hospital where patients can visit the doctor using an avatar. According to Dr. Thumbay Moideen, the founder and president of Thumbay Group, "to accommodate medical tourism, we will allow patients to see what the hospital looks like in the Metaverse if they travel and come to Thumbay healthcare center (Goncharenko, 2022).

The real-world Medcare Women's and Children's Hospital is housed in the Medcare Hospitals and Medical Centers metaverse area by a different hospital network, which is also situated in Dubai. Additionally, it will be utilized in medical tourism operations to give prospective patients a fully immersive view of the hospital prior to an in-person visit. "Our ultimate goal is to deliver real healthcare by integrating the delivery of real-time consultations through our team of over 400 medical professionals," Dr. Shanila Lajju's CEO stated (pymnts.com,2022).

Figure 2. First Metaverse Hospital



Source: Bhagat, 2022

Following Facebook's integration of VR and AR models to enable users to navigate virtual worlds using their eye movements and voice instructions, the metaverse hospital is the next big thing in social media. Even before this notification, stakeholders in the healthcare industry were exploring cutting-edge VR and AI platforms in patient care. For example, Asan Medical Center, which is also creating a Metaverse Hospital model, recently took part in a medical tourism event run by the Korea International Medical Association and held fully in metaverse (magazin.medicaltourism, 2022). According to Hanafi (2022), The General Authority of Health Services in Egypt recently said that it will use metaverse technologies to encourage medical tourism. With the help of this technology, companies claim to want to give tourists and the national economy a unique experience when they visit healthcare institutions.

- In late June, Yashoda Hospitals in India became the first hospital network in the metaverse.
- Chosun University Hospital, a private university hospital in the southwest South Korean city of Gwangju, is opening a virtual clinic there. Through the provision of virtual healthcare services on the Metaverse, it seeks to draw patients from outside and encourage medical visits to Gwangju.
- Aimesis, a Dutch firm that creates medical solutions, has announced that Singaporean healthcare provider Meta Health will join the metaverse clinic (healthcareafrica. info, 2022).

Method

This article, which is regarded as a review article, is condensed by combining recent research with illustration applications. It aims to offer a viewpoint on the subject. This article did not require ethics committee approval.

Conclusion

When it comes to medical tourism, it could require knowledge and experience regarding both medical services and the destination country because the field of health services is one where quality and uniformity are challenging. A possible health tourist would be able to visit the hospital where they planned to receive care virtually, witness the service procedures, and learn about the opportunities. It is estimated that metaverse technology can remove the uncertainties in this field. In addition, patients can virtually experience the necessary modes of transportation, lodging options, and general tourism opportunities associated to the process of travelling from their home country to the destination country as part of a medical tourism experience. Individuals can therefore have a notion of the services they will receive even though they do not actually acquire and utilize them, and this will be a key factor in the purchasing choice (Söyler & Averbek, 2022).

Additionally, it is anticipated that as the metaverse develops, so will the range of medical tourism activities. With the development of diagnosis, diagnosis, and treatment processes that are ideal for remote health care, in a virtual environment, it is anticipated that there would be a paradigm change in medical tourism. Language problem, which is one of the main problems of medical tourism, can be easily overcome with Metaverse technologies (Yılmaz, et.al., 2022).

As a result, one of the key subjects of tourism is medical tourism. It gives individuals the opportunity to go for both medical care and tourist activities. It has ceased, like other activities, as a result of COVID-19's effects on the prohibitions on international travel. It makes efforts to raise its income by advancing the services it provides by utilizing the metaverse technology, as it is one of the nations favored in the medical tourism sector. One of these nations is the United Arab Emirates, which hosted the first metaverse hospital. Medical tourism will remain active as a result of the growth of metaverse technology in the medical industry in Egypt and other South Asian nations.

This article aims to shed light on the importance of making investments in metaverse technology in order to boost the market share of other nations for medical tourism.

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