The Role of Metaverse Tourism and Hospitality Online in Egypt

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Abstract:

Information Technology (IT) became a special aspects of human been. The Internet occupy a major part of our time that started since the 1990s. One of the latest development applications is virtual reality (VR). There are new directions of tourism business that are using this VR technology to have a positive impact of revenue. It does not mean the end of traditional tourism.

This paper will focus on advantages and disadvantages of virtual environment in Tourism and Hospitality industry in Egypt.

The research purpose is achieved through several interviews of hotel managers, tourism agency managers, experts and specialists in tourism ministry. The interviews collected data from a questionnaire of 122 managers, experts in a sample of 10 hotels as well as 10 tourism companies in Egypt.

The study point to the significance of Virtual Reality (VR) and its impact on tourism. These points to a new methodology and experience of promoting tourism and hospitality business that allow users to visit the desired places without traditional travel and physical move. This is conspired a new gain of experience.

The study research agenda concretes several topics that explain the significance of VR in hospitality and tourism industry as follows:

- The definition of Virtual Reality and Virtual Tourism
- The Basics of Virtual Tourism
- Types of Virtual Reality
- Characteristics of Metaverse
- The advantages and disadvantages
- Challenges of Metaverse
- The hypotheses
- The Outcomes

The purpose of the research is to explain the development of the Metaverse. Finally, by covered above mentioned study topics, the Metaverse development highlighted the future trends in the in hospitality and tourism especially in Egypt. In order to sustain this type of business as well as archive important revenue and cope with the international trends.

Key words:

Virtual reality, Tourism and Hospitality, Metaverse, Sustainability

1 ـ ايجوث ـ الأقصر

2 ـ جامعه طيبه التكنولوجيةـ كلية تكنولوجية الخدمات الفندقيه والسياحية

3 ـ المعهد العالي للدراسات النوعية بالهرم

Introduction

Online relationships in the tourism industry have become very important throughout the world; many tourism companies now actively use internet sites as a key marketing and sales vehicle for their products and services. (Sabreen G., at el, 2019)

The global tourism market today is characterized by rapid development of digital technologies in order to improve tourism business. Nowadays, modern tourism agency cannot exist without IT technologies. Also, Museums, cultural institutions, and tourist heritage sites are using modern technologies to attract and improve management. A tourism enterprise devoid of website, profile on social media or even online shop is now a rarity. New technologies are also used to heritage presentation, Multimedia contents, large-format film projections and mobile applications (Krzysztof H., 2020).

Virtual tourism is the tourism activity conducted in an immersive virtual environment to shift consumer perception from 2D product to 3D immersive and virtual spaces. It is one of the latest developments of tourism, powered by technological advances, business innovation and adopts immersive technology to create new environments for tourism activities.

Immersive tourism consists of the computer software and hardware that stimulate the human senses (i.e., vision, hearing, touch, and taste). Simulated environment creates the perception of being there, i.e., the sense of presence and immersive technology can impact user experience and performance; Furthermore, immersive technology offers unique marketing opportunities (Bingqing S. at el, 2021).

Finally, the digitized physical and virtual worlds will eventually merge, representing the final stage of the co-existence of physical-virtual reality similar to the surrealist). Such a connected physical-virtual world give rise to the unprecedented demands of perpetual and 3D virtual (Lik-Hang L. at el, 2021; Power, et al, 2009)

Problem of research:

Technology has made our lives much easier, makes it practically possible to remove barriers of the amount and collected and processed of information. Egypt has many different and multiple tourism potentials, which need to keep pace with the technological development in marketing and tourism activation to Egypt. Through the virtual world, which improves the mental image of the Egyptian tourist destination for the tourist and influences his tourist purchase decision

Importance of research:

The use of the virtual world in the tourism field has become inevitable. Egypt with its multiple tourism potentials needs to implement this modern trend in revitalizing the Egyptian tourist destination. But the implementation of this modern trend requires high financial and technological capabilities.

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Purpose Of research:

The aim of the paper is to

- Introducing virtual tourism.
- Introducing the advantages and disadvantages of virtual tourism.
- Introducing the contribution of virtual tourism in marketing and Egyptian tourism activation.
- Introducing the obstacles and challenges of implementing virtual tourism in Egypt.

Background:

Virtual Reality Definition:

Virtual Reality, or VR, could be defined as a computer application is the use creates a simulated environment. It can have a view of 360 degrees. Virtual Real is not similar like traditional interfaces; it makes the user as inside the virtual environment which allows him immersive experience. VR simulates the real environment regardless of its circumstances, as it enables the person to immerse and interact in a 3 dimensional environment similar to the real world.

Technology that integrates the real world with the virtual world by adding digital elements and data such as sound, images, videos and information simultaneously and interacting with the real reality (Huansheng, 2021)

Virtual Tourism Definition:

Virtual tourism could be defined as it is essentially a hybrid concept; it includes both the notions of virtual reality and tourism. In another word, virtual tourism gives the tourist a tourism experience, without actually having to travel to the desired place. It has several forms and comes in vary degrees of technological capability.

It is an electronic method allows the tourist to have a similar to a physical journey free from the usual restrictions on time, distance, cost and human weakness.

It is an activity to visit sites of interest over the Internet without personally traveling to these places. (Falak at el, 2020; Daniel S. at el, 2021)
In the tourism industry VR is considered to be the tourism organizations and companies that rely on VR developer companies to develop a VR tourist experience for them to sell to virtual tourists. (Jason L. at el, 2022)

The Basics of Virtual Tourism:

Virtual Tourism has several basics as follows:
- **Creativity & Innovation:**
  It is one of basics as gives an excellent chance for developing creative applications that constitutes the work in producing new ideas for the tourism products.

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Concerning innovation, others can build up or add new features for the virtual tourism creative products.

- **Fictional Reality:**
Cameras will be used to capture the places that describe virtual tourism. The 3D glasses will be the method to see the virtual tourist environment similar to the reality through a computer

- **Aesthetic Taste:**
The feeling emitted within the tourist as a result of his immersion in the virtual tourist space through the scenes, images, artistic environment and the aesthetic condition that makes the tourist feel fun, relaxation, mystery and curiosity. (Falak at el, 2020)

Types of Virtual Reality:

In fact virtual reality has many types which are highlighted in the following lines:

1. **Non-immersive Virtual Reality**
The VR environment is not directly interacting with the user as it is. As an example: user can control aspects of computer games but the interaction in VR is not direct,

2. **Fully Immersive Virtual Reality**
The other type of VR is fully immersive, ensures a realistic virtual experience. It makes the user feels as if he is physically in the virtual world and events are happening to him.
There is much equipment beaning used in VR environment like VR glasses, body detectors equipped.

3. **Semi-Immersive Virtual Reality**
This type is lying between above mentioned types. The user uses the computer screen or VR glasses which allow him to move around in a virtual environment but will have no physical sensations to enhance the experience.
As a good example of this technology is a virtual tour. (Salama and Abdel Wahab, 2019).

4. **Augmented Reality Technologies**
Phone screen lets the user see the real world and make virtual changes.

5. **VR Collaborative**
Users in different locations can come together in a virtual environment in the form of 3D projected characters. Good example of Collaborative
A virtual environment of a mobile game like Player Unknowns is a good example of Collaborative Virtual Reality. (Huansheng, 2021)

Characteristics of Metaverse:

The characteristics Metaverse can be highlighted in three groups as follows:

1- Multiple Techniques
It generates a mirror image of the real world through dual digital technology to provide an immersive experience based on virtual reality.

2- Sociality

This Characteristics **of** Metaverse is considered a new kind of social form, as includes legal systems, economic systems and cultural systems.

3- Hyper Spatiotemporality

This considered the third characteristics of Metaverse as it breaks the boundaries of time and space as it offers users an open, free and immersive experience.

The significance of Virtual World Technology in the field of tourism and hospitality

Metaverse, which breaks the boundaries between real-world space and virtual space, has the potential to escape from physical time and space constraints. (Jeong, 2021)

- Maintaining the sustainability of tourist sites that are subject to deterioration by relying on virtual tourist paths as an alternative to visiting these sites.
- Increasing the global market share through marketing virtual tourist routes and contributing to placing tourist sites on the global tourism map.
- Reduce costs compared to traditional marketing methods.
- The contribution of interactive technologies to virtual reality in the promotion of tourist sites.
- Protection of historical sites and architectural and artistic works of human and cultural heritage. .(Elnagar, 2020)
- Effective planning and appropriate management.
- Effective tool for entertainment.
- Education Tool
- Virtual attraction in cost effective.
- An interactive dining experience.
- Convenient translation capabilities.
- Real time and saline.
- Reservation of the room.
- Explore the property.
- Experience rich luxury restaurants.
- Local attractions.
- Marketing and Hotel Management (Nagat, 2021)

The Negatives of Virtual Reality:

- It is limited to certain people, The limited use of the system for its high cost
- Not all human senses are affected, as only hearing, sight and touch are dealt with, but they are considered sufficient so far to achieve a degree of total immersion in the tested environment
- Excessive use of virtual reality programs have a negative impact on health (Salama and Abdel Wahab, 2019)
- Virtual tourism has a limited impact on national income. (Falak at el, 2020)

Features and Advantage:

- Metaverse, which can overcome limitations of experience and understanding with documents or phrases, can be applied interchangeably to cultural content through four representative elements: Virtual reality (VR) Augmented reality (AR) Mirror world
- has the potential to escape from physical time and space constraints (Jeong, 2021)
- To encourage innovation and research in tourism technology
- The ability to interact, diversity and excitement (Paul, 2009)
- Tourist transportation to destination places in thought, not body
- Virtual tourism has very limited costs compared to traditional tourism
- It can be practiced at any time
- It relies on technology and modern technologies to provide its services
- Don't depend on seasonality
- Provides job opportunities for disciplines related to technology and modern technologies. (Falak at el, 2020)
- Enhance the accessibility of destinations for users of different categories. Elderly users, users with panic disorders, users with mobility impairments also will be able to enjoy traveling experience just same as other. (Arunasalam S.& Alice G.,2013)
- VR does not entail any physical interaction between the local VR developers and virtual tourists.(Jason L. at el, 2022)

Challenges of Metaverse:

Metaverse are facing has many challenges which are described in the following lines:

1-   Interaction problem

Interaction issue is the first challenge for Metaverse, as it needs to meet the following conditions as a medium between the virtual world and the real world:

- Interactive medium of the transparency enables users to better and ignore the traces of technology.
- The interactive device is portable, lightweight, wearable and convenient to use.

Now days, these technologies have the problem that the interactive devices are not transparent and lightweight enough, and the cost is high, which makes them difficult to popularize... (Abu Elsoaod at el, 2015 ؛ Huansheng, 2021)

2- Computing Issues & Resources

It is considered as the second issue where the power of computing is an important support because there are a so many users. Metaverse needs high speed network connection like 5G to improve processing power.

Now days, Metaverse is using cloud computing technology to increase the demand for computing power resources. This will provide a room for development of computing power.

3- Ethical issues:

Ethical issues are one of the challenges for Metaverse as it must be controlled and restrict the behavior of users, in addition to establish clear ethical and moral norms to

maintain a good and orderly ecological environment. The main reason for that It contains more complicated social relationships. This issue of Metaverse refers to the phenomena that arise due to the absence of the corresponding moral norms, which conflict with the ethical norms of the real society.

4- Privacy Issues

Privacy is next issue of Metaverse as it must be corresponds to the real identity and linked closely to the real world.

5- Cyber-Syndrome

There is a lot of disorder causes used in the internet like physical, social, and mental disorder caused by excessive use of the Internet. The time the people are spending in the internet is increasing dramatically. The development of technology makes equipment more simplification; electronic devices are become smaller and more portable. Those are reflected of cyber syndrome and considered more serious problem.

6- Standards & Compatibility

The last challenge is standards and compatibility as it created by several vendors and no standards has been made yet. It can be fragmented into two groups:

- Metaverse are created by different companies.
- Compatibility between Metaverse and the real world (including issues handling of legal disputes and currency compatibility circulation (Huansheng, 2021)

The study hypotheses

- **H 1:** There is an effect of different degrees with statistical significance, the average of the study axes, according to the sentiments of tourists about "the possibility, challenges and significance of Metaverse" in achieving sustainable tourism and hotel development in Egypt.
- **H 2:** There are significant differences according to the generational differences of the estimations of the surrounding tourists in terms of "the possibility of application, challenges and the significance of Metaverse" in achieving sustainable tourism and hotel development in Egypt.
- **H 3:** There are significant relationships between the variables of the study" the possibility, the challenges, and the significance of using the virtual reality in achieving sustainable tourism and hotel development in Egypt.

Materials and Methodology of Research:

Questionnaires provide an efficient way of collecting a large amount of data from a sizable population of tourists in Egypt in a highly economical way.

The questionnaire consists of four sections section:

- Section (1): Discusses the significance of using the virtual tourism world in Egypt.
- Section (2): The possibility of virtual tourism applications in Egypt...
- Section (3): The challenges facing the virtual world of tourism in Egypt.

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- Section (4): The role of virtual reality in achieving sustainable tourism and hotel development in Egypt

In November 2021, Pilot study was conducted aiming to find out the possibility, the significance and the challenges of Metaverse on the role of virtual reality in achieving sustainable tourism and hotel development in Egypt.

Moreover, Questionnaire was reviewed by some academic scholars to establish their appropriateness, clarity and to ease the understanding the role of virtual reality in achieving sustainable tourism and hotel development in Egypt.

Some alterations were suggested and then were implemented. Questionnaire was then pre-tested in order to investigate the respondent's understanding of scale items and to identify also any issues that was confusing in order to develop appropriate scale items to confirm the validity and reliability of the research. a questionnaire was distributed to a sample of hotel managers and tourism agencies. A number of 40 forms were distributed to volunteer who were asked to complete them.

The study field accomplished through survey by personal meeting, phone calls, social media networks, and emails. The target population for this study was belief the hotel managers and tourism agency managers, experts and specialists in tourism ministry' regarding the role of virtual reality in achieving sustainable tourism and hotel development in Egypt.

The study was conducted from December 2021 to February 2022. The questionnaire was applied for the purpose of collecting data over 150 questionnaire forms, received only 122 completed were valid (81% response rate) presenting a sample of the target population for this study was 10 hotels as well as 10 tourism companies, experts and specialists in tourism ministry. The collected data were analyzed using SPSS version 20.

Study instrument reliability

For all scales, Cronbach's Alpha, the correlation coefficient was calculated to regulate the internal consistency of the scale; the Reliability coefficient is over 0.7 it is considered acceptable in most social science situations. The Cronbach's Alpha tests showed that the reliability coefficients for all the instruments were above 0.90; it is considered "strongly acceptable" which indicates that the instrument was reliable for being used. Cronbach alpha for all survey instruments was shown in the following table:1.

Table 1: Reliability Statistics (No. 122)

Part	Cronbach's Alpha	No. of Items
Total factors	.986	37
Factors of the significance of using the virtual tourism world in Egypt	.986	12
Factors affecting the possibility of virtual tourism applications in Egypt	.973	8
The challenges facing the virtual world of tourism in Egypt	.911	8
The role of virtual reality in achieving sustainable tourism and hotel development in Egypt	.922	9

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Outcomes and Discussion

Demographic data

The distribution of the volunteers according to demographic data (n = 122) indicated that regarding the gender most of the volunteers were men; the ratio of volunteers was 81.1%; it was found that most of the volunteers age 56.6 % From 20 years to less than 35 years old. This showed that most of the volunteers' segments are mature. In accordance with **Employer**, most of the volunteers were from hotel by the ratio of 68.9 %. About the **Position**, most of the volunteers 64.8% were junior management level. Regarding the **Academic** Education, most of the volunteers 69.7 % were University or college, this indicated that most of the volunteers' segments are well educated. The outcomes are presented in table 2.

Table 2: Volunteers' profile analysis

Demographic data	Freq.	%
Gender :		
Male	99	81.1
Female	23	18.9
Total	122	100.0
Age :		
Less than 20 years	13	10.7
From 20 years to less than 35 years	69	56.6
From 35 years to less than 45 years	34	27.9
From 45 years and over	6	4.9
Total	122	100.0
Employer:		
Hotel	84	68.9
Tourism company	32	26.2
Other	6	4.9
Total	122	100.0
Position:		
Supervisory	20	16.4
Junior management level	79	64.8
Senior management level	23	18.9
Total	122	100.0
Academic:		
University degree	85	69.7
Highschool	20	16.4
Middle Certification	12	9.8
Another	5	4.1
Total	122	100.0

According to Part 1: Factors of Choosing Egypt

The choices that most candidly tells how the volunteers feel about those statements
Volunteers feeling about those statements: List the mean scores of the volunteers' judgment regarding evaluating the role of Metaverse tourism and hospitality online in Egypt, Tables (3-7), the outcomes presented that:

A.   Regarding the volunteers 'estimation toward the first element: The significance of using the virtual tourism world in Egypt. the outcomes showed that:

It achieves spatio-temporal synchronization for actual attendance of festivals in countries of the world is the first efficacy average by a ratio of (79.54%), with a mean (4.87) and SD (0.33). This showed that the significance of using the virtual tourism world in Egypt. Regarding 2nd agree level were the possibility of meeting the expected dangers in the real world, such as tourist visits in the midst of wars, the nuclear reactor, and experiencing the atmosphere of dangers. By a ratio of (91.96 %) with a mean (4.59) and SD (0.75). This indicated that the significance of using the virtual tourism world in meeting the expected dangers in the real world. In the 3rd level was this technology saves time, effort and money in marketing for the Egyptian tourist destination by a ratio of (91.06%) as agree average, with a mean (4.54) and SD (0.68). this indicated the significance of technology saves time. Concerning the 4th level agrees average was (90.16%) regarding agree with that The possibility of time travel to the past or the future and living this world (such as the Pharaonic village in Egypt) and living among the Pharaohs at the same time. With mean (4.50) and SD (0.76). In the 5th level was that saving time, effort and money in the tourist experience for the tourist, by a ratio of (88.52%) as agree average, with a mean (4.42) and SD (0.49). In accordance with the 6th acceptance level was that the tourist's desire to provide the tourist experience at the appropriate time for him without being restricted to the date of tourist trips or the date of travel abroad. With (87.54%) average, mean (4.37) and SD (0.48). In the 7th level was that Virtual reality technology contributes to supporting and increasing the activation and marketing of Egyptian tourism, by a ratio of (85.90%) as agree average, with a mean (4.92) and SD (0.84). The possibility of generating and living in any environment, no matter how realistic or imagined was the 8th priority to the volunteers with agree average level (83.60%), mean was (4.18), and SD (0.38). in the 9th significance with (74.42%) as an agreed average by Virtual reality technology affects tourist satisfaction, with a mean (3.72) and SD (0.92).

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Table 3:The volunteers' feeling about those statements: The significance of using the virtual tourism world in Egypt

No.	Scale Item	Strongly disagree %	Disagree %	Uncertain %	Agree %	SA %	Mean Statistic	Mean Std. Error	SD	Weighted Average (%)	Ranking over all
1.	Virtual reality achieves a good impression on the tourist and improves his mental image	0	12.3	25.4	62.3	0	3.500	0.064	0.707	70.00	10
2.	It achieves spatiotemporal synchronization for actual attendance of festivals in countries of the world	0	0	0	12.3	87.7	4.877	0.030	0.330	97.54	1
3.	Virtual reality technology achieves scientific and technological cooperation between tourist countries	0	9.0	38.5	52.5	0	3.434	0.059	0.655	68.70	11
4.	The application of virtual reality technology increases the country's tourism revenues	0	27.0	48.4	24.6	0	2.975	0.065	0.721	59.52	12
5.	Virtual reality technology affects tourist satisfaction	0	11.5	26.2	41.0	21.3	3.721	0.084	0.929	74.42	9
6.	This technology saves time, effort and money in marketing for the Egyptian tourist destination	0	0	10.7	23.8	65.6	4.549	0.062	0.682	91.06	3
7.	Virtual reality technology contributes to supporting and increasing the activation and marketing of Egyptian tourism	0	0	24.6	21.3	54.1	4.295	0.076	0.840	85.90	7
8.	Saving time, effort and money in the tourist experience for the tourist	0	0	0	57.4	42.6	4.426	0.045	0.497	88.52	5
9.	The tourist's desire to provide the tourist experience at the appropriate time for him without being restricted to the date of tourist trips or the date of travel abroad	0	0	0	62.3	37.7	4.377	0.044	0.487	87.54	6
10	The possibility of generating and living in any environment, no matter how realistic or imagined	0	0	0	82.0	18.0	4.180	0.035	0.386	83.60	8
11	The possibility of time travel to the past or the future and living this world (such as the Pharaonic village in Egypt) and living among the Pharaohs at the same time	0	0	16.4	16.4	67.2	4.508	0.069	0.763	90.16	4
12	The possibility of meeting the expected dangers in the real world, such as tourist visits in the midst of wars, the nuclear reactor, and experiencing the atmosphere of dangers	0	0	16.4	7.4	76.2	4.598	0.069	0.757	91.96	2

In accordance with the 10th acceptance average level was that Virtual reality achieves a good impression on the tourist and improves his mental image. With (70.00%) average, mean (3.50) and SD (0.70). In the 11th level was that Virtual reality technology achieves scientific and technological cooperation between tourist countries, by a ratio of (68.70%) as agree average, with a mean (3.50) and SD (0.65). Finally, the application of virtual reality technology increases the country's tourism revenues was the 12th priority to the volunteers with agree average level (59.52%), mean was (2.97), and SD (0.72).

This indicated that the significance of using the virtual tourism world in Egypt. This agreed with (Krzysztof, 2020; Huansheng, 2021; Daniel et al., 2021). As shown in Table 3.

Concerning **the second part: the possibility of virtual tourism applications in Egypt** the result showed that:

In the 1st level is that Cooperation between the Ministry of Tourism and other entities in the application of virtual reality technology in the tourism field, by a ratio of (75.16%) as agree weighted average, with a mean (3.16) and SD (0.76). Regarding the 2nd agree average was Encouraging creativity, innovation and renewal in advanced tourism programs through virtual reality technology in the tourism field by a ratio of (62.02 %) with a mean (3.09) and SD (0.74). In the 3rd level was The Ministry of Tourism has an effective website that uses virtual reality to introduce and market tourist places and activities in Egypt.by a ratio of (60.32%) as efficiency average, with a mean (3.01) and SD (0.58). Concerning the 4th level agrees average was Availability of sufficient awareness of the significance of using virtual reality in hotels and tourism companies by a ratio of (54.48%), with mean (2.72) and SD (0.77). In accordance with the 5th acceptance average level was that Provides marketing programs for virtual reality technology. With (52.96 %) average, mean (2.64) and SD (0.80). Moreover, regarding the 6th priority to the volunteers was Availability of trained workers to use virtual reality devices with agree average weigh level (49.52 %), mean was (2.47), and SD (0.80). In accordance to the 7th acceptance average level was a Virtual reality application cover all places and tourist patterns (such as hospital tourism, medical health tourism, diving, and fishing with (37.04 %) average, mean (1.85) and SD (0.70). In the 8th level was that Availability of infrastructure for communications and electronic computing, by a ratio of (32.12%) as agree average, with a mean (1.60) and SD (0.77).

These indicate that the possibility of virtual tourism applications in Egypt needs more care   and the factors affecting the possibility of virtual tourism. This agreed with (Huansheng, 2021; Jeong, 2021), Table 4.

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Table 4: The volunteers' feeling about those statements: the possibility of virtual tourism applications in Egypt

No.	Scale Item	Strongly disagree %	Disagree %	Uncertain %	Agree %	SA %	Mean Statistic	Std. Error	SD	Weighted Average (%)	Ranking over all
1.	The Ministry of Tourism has an effective website that uses virtual reality to introduce and market tourist places and activities in Egypt.	0	16.4	65.6	18.0	0	3.016	0.053	0.589	60.32	3
2.	Availability of sufficient awareness of the significance of using virtual reality in hotels and tourism companies	8.2	23.0	57.4	11.5	0	2.721	0.070	0.774	54.48	4
3.	Provides marketing programs for virtual reality technology	8.2	37.7	35.2	18.9	0	2.648	0.080	0.881	52.96	5
4.	Availability of trained workers to use virtual reality devices	8.2	47.5	32.8	11.5	0	2.475	0.073	0.805	49.52	6
5.	Cooperation between the Ministry of Tourism and other entities in the application of virtual reality technology in the tourism field	0	0	44.3	36.1	19.7	3.754	0.069	0.764	75.16	1
6.	Availability of infrastructure for communications and electronic computing	57.4	24.6	18.0	0	0	1.607	0.070	0.777	32.12	8
7.	Encouraging creativity, innovation and renewal in advanced tourism programs through virtual reality technology in the tourism field	0	23.0	44.3	32.8	0	3.098	0.067	0.743	62.02	2
8.	Virtual reality applications cover all places and tourist patterns (such as hospital tourism, medical health tourism, diving, and fishing).	32.8	49.2	18.0	0	0	1.853	0.063	0.700	37.04	7

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Concerning Part 3: The challenges facing the virtual world of tourism in Egypt the outcomes showed that:

Concerning the 1st priority to the volunteers were both of Insufficient experience in designing virtual reality programs; and the difficulty of providing virtual reality devices due to their high cost. With agree average weigh level (79.18%), the mean was (4.95) and SD (0.19), Followed in the 2nd agreed level with (78.68%) as an acceptance average by Unavailability of trained workers to use virtual reality devices. with a mean (4.93) and SD (0.24). Concerning the 3rd arranged level was that fear of virtual reality replacing traditional visits Fear of virtual reality replacing traditional visits by average (68.20 %), with SD (0.75) and mean (3.41). In the 4th level was the lack of tourism spending as a result of the lack of actual trips and actual tourist visits, and thus the lack of tourism revenues for the host country. By a ratio of (65.42%) as decide average, with a mean (3.27) and SD (0.84). In the 5th level is that the virtual tourist experience does not have the fun of the actual experience, feeling the air on the sea, inhaling the smell of the sea, the smell of roses in the natural areas, the experience of mountaineering and the real taste of the food of the host country, by a ratio of (65.24%) as agree average, with a mean (426) and SD (0.72). Moreover, regarding 6th agree that Low occupancy rate of hotel rooms due to the use of virtual reality in the tourism field, by a ratio of (61.96%) with a mean (3.09) and SD (0.86).

This point to that there are many **challenges facing the virtual world of tourism in Egypt**. This agreed with (Daniel et al., 2021; Huansheng, 2021; Jeong, 2021), Table 5

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Table 5: The volunteers' feeling about the challenges facing the virtual world of tourism in Egypt

No	Scale Item	Strongly disagree %	Disagree %	Uncertain %	Agree %	SA %	Mean Statistic	Mean Std. Error	SD	Weighted Average (%)	Ranking over all
1.	Low occupancy rate of hotel rooms due to the use of virtual reality in the tourism field	0	32.8	24.6	42.6	0	3.098	0.078	0.866	61.96	6
2.	The lack of tourism spending as a result of the lack of actual trips and actual tourist visits, and thus the lack of tourism revenues for the host country	0	25.4	22.1	52.5	0	3.271	0.076	0.843	65.42	4
3.	The application of virtual reality technology leads to a reduction in employment	0	32.8	36.1	31.1	0	2.984	0.073	0.803	59.66	7
4.	Fear of virtual reality replacing traditional visits	0	16.4	26.2	57.4	0	3.410	0.069	0.758	68.20	3
5.	Unavailability of trained workers to use virtual reality devices	0	0	6.6	93.4	0	4.934	0.023	0.249	78.68	2
6.	Insufficient experience in designing virtual reality programs	0	0	4.1	95.9	0	4.959	0.018	0.199	79.18	1*
7.	The difficulty of providing virtual reality devices due to their high cost	0	0	4.1	95.9	0	4.959	0.018	0.199	79.18	1*
8.	The virtual tourist experience does not have the fun of the actual experience, feeling the air on the sea, inhaling the smell of the sea, the smell of roses in the natural areas, the experience of mountaineering and the real taste of the food of the host country	0	16.4	41.0	42.6	0	4.262	0.066	0.725	65.24	5

Concerning the Part 4: The role of virtual reality in achieving sustainable tourism and hotel development in Egypt the outcomes showed that:

In the 1st level is that Virtual reality has a role in achieving sustainable development in Egypt, by a ratio of (98.36%) as agree weighted average, with a mean (4.91) and SD (0.27). Regarding the 2nd agree average was Virtual reality in hotels and a tourism company has a role in achieving sustainable tourism development, by a ratio of (97.70%) with a mean (4.88) and SD (0.32). The 3rd level was that the use of virtual reality in marketing for the hotel helps in sustainability by improving the mental image of Egypt by a ratio of (97.22%) as efficiency average, with a mean (4.86) and SD (0.34). Concerning the 4th level agrees average was (95.40%) regarding agreeing with that Virtual reality in hotels and tour operators helps maintain sustainability, With mean (4.77) and SD (0.42). In accord with the 5th receipt average Virtual reality in hotels and tourism companies is an important element in sustainability by reducing operating costs. With (88.52%) average, mean (4.42) and SD (0.49).

Moreover, Virtual reality helps in sustainability and improving the work environment within hotels and tourism companies approaching the 6th priority to the volunteers with agree average weigh level (85.24 %), mean was (4.26), and SD (0.72). In accordance to the 7th acceptance average level was the application of virtual reality technology helps to achieve the sustainability of the careers of workers in the tourism field. With (77.86 %) average, mean (3.89) and SD (0.67). In the 8th level was that the use of virtual reality helps in sustainability in improving the performance of hotel and tourism management in general, by a ratio of (77.70 %) as agree average, with a mean (3.88) and SD (0.77).

This indicated that the role of virtual reality in achieving sustainable tourism and hotel development in Egypt. This agreed with (Carpenter, 2020; Najat, 2021; Jeong, 2021; Jason et al., 2022). As shown in Table 6 **Concerning the Part 4: The role of virtual reality in achieving sustainable tourism and hotel development in Egypt the outcomes showed that:**

In the 1st level is that Virtual reality has a role in achieving sustainable development in Egypt, by a ratio of (98.36%) as agree weighted average, with a mean (4.91) and SD (0.27). Regarding the 2nd agree average was Virtual reality in hotels and a tourism company has a role in achieving sustainable tourism development, by a ratio of (97.70%) with a mean (4.88) and SD (0.32). The 3rd level was that the use of virtual reality in marketing for the hotel helps in sustainability by improving the mental image of Egypt by a ratio of (97.22%) as efficiency average, with a mean (4.86) and SD (0.34). Concerning the 4th level agrees average was (95.40%) regarding agreeing with that Virtual reality in hotels and tour operators helps maintain sustainability, With mean (4.77) and SD (0.42). In accord with the 5th receipt average Virtual reality in hotels and tourism companies is an important element in sustainability by reducing operating costs. With (88.52%) average, mean (4.42) and SD (0.49).

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This indicated that the role of virtual reality in achieving sustainable tourism and hotel development in Egypt. This agreed with (Carpenter, 2020; Najat, 2021; Jeong, 2021; Jason et al., 2022). As shown in Table 6

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Table 6: The volunteers' feeling about those statements: Part 4: the role of virtual reality in achieving sustainable tourism and hotel development in Egypt

No.	Scale Item	Strongly disagree	Disagree	Uncertain	Agree	SA	Mean		SD. Deviation	Weighted Average (%)	Ranking over all
		%	%	%	%	%	Statistic	SD. Error			
1.	Virtual reality has a role in achieving sustainable development in Egypt	0	0	0	8.2	91.8	4.918	0.025	0.275	98.36	1
2.	Virtual reality in hotels and tourism companies has a role in achieving sustainable tourism development	0	0	0	11.5	88.5	4.885	0.029	0.320	97.70	2
3.	Virtual reality in hotels and tour operators helps maintain sustainability.	0	0	0	23.0	77.0	4.771	0.038	0.422	95.40	4
4.	Virtual reality in hotels and tourism companies is an important element in sustainability by reducing operating costs	0	0	0	57.4	42.6	4.426	0.045	0.497	88.52	5
5.	Virtual reality in hotels has a role in sustainability by reducing negative environmental impacts and maintaining ecological balance.	0	0	47.5	24.6	27.9	3.803	0.077	0.849	76.08	9
6.	Virtual reality helps in sustainability and improving the work environment within hotels and tourism companies	0	0	16.4	41.0	42.6	4.262	0.066	0.725	85.24	6
7.	The use of virtual reality helps in sustainability in improving the performance of hotel and tourism management in general	0	0	36.1	39.3	24.6	3.885	0.070	0.773	77.70	8
8.	The use of virtual reality in marketing for the hotel helps in sustainability by improving the mental image of Egypt.	0	0	0	13.9	86.1	4.861	0.031	0.348	97.22	3
9.	The application of virtual reality technology helps to achieve the sustainability of the careers of workers in the tourism field	0	0	28.7	53.3	18.0	3.893	0.061	0.678	77.86	7

Regarding the main parts affecting the role of Metaverse tourism and hospitality online in Egypt **(N 122):**

Outcomes showed that the volunteers are aware of the vital factor evaluating the the role of Metaverse tourism and hospitality online in Egypt and ranking them as follows: the 1st position level is the role of virtual reality in achieving sustainable tourism and hotel development in Egypt with a mean (4.41) and SD. Deviation (.45); Followed in the 2nd ranking level the significance of using the virtual tourism world in Egypt, with a Mean (4.12) and SD. Deviation (.56). In the 3rdranking level is the challenges facing the virtual world of tourism in Egypt with a mean (3.98) and SD. Deviation (.50).; followed in the 4th ranking position by the possibility of virtual tourism applications in Egypt with a mean (2.64) and SD (.69). As shown in **Table 7**.

Table 7: evaluating the impact of the employee culture in drawing the mental image of the guest about tourism and hospitality services (N 122).

Descriptive Statistics				
Part	Mean		SD	Rank
	Statistic	SD. Error		
The significance of using the virtual tourism world in Egypt	4.1202	.05089	.56214	2
The possibility of virtual tourism applications in Egypt	2.6465	.06300	.69582	4
The challenges facing the virtual world of tourism in Egypt	3.9846	.04598	.50784	3
The role of virtual reality in achieving sustainable tourism and hotel development in Egypt.	4.4117	.04126	.45571	1

Regarding Paired Samples Friedman Test N: 122 comparing the differences between the variables of the study regarding the role of Metaverse tourism and hospitality online in Egypt outcomes showed that: There is a statistically significant difference between the outcomes in the variables regarding the differences between the variables of the study regarding the impact of the role of Metaverse tourism and hospitality online in Egypt in drawing the guest satisfaction about tourism and hospitality services. As shown in table (8).

Table 8: The differences between the variables of the study regarding the role of Metaverse tourism and hospitality online in Egypt

a. Friedman Test (N 120)				
Ranks		**Test Statistics**[a]		
	Mean Rank	Chi-Square	df	Asymp. Sig.
Part 1: Factors of the significance of using the virtual tourism world in Egypt	2.89	354.206	3	.000
Part 2: Factors affecting the possibility of virtual tourism applications in Egypt	1.00			
Part 3: The challenges facing the virtual world of tourism in Egypt	2.11			
Part 4: the role of virtual reality in achieving sustainable tourism and hotel development in Egypt	4.00			

Pair 1: measure the significance of using the virtual tourism world in Egypt. The Paired Samples Correlations (0.931) and Sig. (0.000); and Paired Samples Test were wit t value (60.697), and Sig. (2-tailed) (0 .000).

Pair 2: The possibility of virtual tourism applications in Egypt, the Paired Samples Correlations (0.980) and Sig. (0.000); the Paired Samples Test were wit t value (12.483), and Sig. (2-tailed) (0 .000).

Pair 3: The challenges facing the virtual world of tourism in Egypt, the Paired Samples Test were wit t value (-22.930-), and Sig. (2-tailed) (0 .000). Moreover, Paired Samples Correlations was with Correlation (0.984), and Sig. (0.000).

Pair 4: The role of virtual reality in achieving sustainable tourism and hotel development in Egypt, the Paired Samples Correlations (0.917) and Sig. (0.000); and Paired Samples Test were wit t value (-48.292-), and Sig. (2-tailed) (0 .000). As shown in table (9).

Pair 5: Factors affecting the possibility of virtual tourism applications in Egypt and The role of virtual reality in achieving sustainable tourism and hotel development in Egypt, the Paired Samples Test were wit t value (-68.252-), and Sig. (2-tailed) (0 .000). Moreover, Paired Samples Correlations was with Correlation (0 .962), and Sig. (0.000).

Pair 6: The challenges facing the virtual world of tourism in Egypt and the role of virtual reality in achieving sustainable tourism and hotel development in Egypt, the Paired Samples Correlations (0.974) and Sig. (0.000); and Paired Samples Test were wit t value (-38.780-), and Sig. (2-tailed) (0 .000). As shown in table (9).

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Table 9: Paired Samples T-Test of the variables compared to each other (N: 122)

	Paired Samples Statistics				Paired Samples Correlations		Paired Samples Test	
		Mean	SD	Std. Error Mean	Correlation	Sig.	t	Sig. (2-tailed)
Pair 1	Factors of the significance of using the virtual tourism world in Egypt	4.1202	.56214	.05089	.931	.000	60.697	.000
	Factors affecting The possibility of virtual tourism applications in Egypt	2.6465	.69582	.06300				
Pair 2	Factors of the significance of using the virtual tourism world in Egypt	4.1202	.56214	.05089	.980	.000	12.483	.000
	The challenges facing the virtual world of tourism in Egypt	3.9846	.50784	.04598				
Pair 3	Factors of the significance of using the virtual tourism world in Egypt	4.1202	.56214	.05089	.984	.000	-22.930-	.000
	The role of virtual reality in achieving sustainable tourism and hotel development in Egypt	4.4117	.45571	.04126				
Pair 4	Factors affecting The possibility of virtual tourism applications in Egypt	2.6465	.69582	.06300	.917	.000	-48.292-	.000
	The challenges facing the virtual world of tourism in Egypt	3.9846	.50784	.04598				
Pair 5	Factors affecting the possibility of virtual tourism applications in Egypt	2.6465	.69582	.06300	.962	.000	-68.252-	.000
	The role of virtual reality in achieving sustainable tourism and hotel development in Egypt	4.4117	.45571	.04126				
Pair 6	The challenges facing the virtual world of tourism in Egypt	3.9846	.50784	.04598	.974	.000	-38.780-	.000
	The role of virtual reality in achieving sustainable tourism and hotel development in Egypt	4.4117	.45571	.04126				

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Research hypotheses were tested using Pearson product-moment correlation coefficient. Preliminary analyses were made to ensure no violation of theories of normality and linearity. Outcomes show that there are strong correlations between all the proposed relations in the conceptual model with (r) values ranging from (.931 to. 984**), (P< .005), and the obtained correlation value are in the expected positive direction. Based on the outcomes all the research hypotheses were fully supported. As shown in table 10.

Table 10: Research hypotheses teste and Correlations

Correlations		significance	possibility	challenges	the role
Factors of the significance of using the virtual tourism world in Egypt	Pearson Correlation	1	.931**	.980**	.984**
	Sig. (2-tailed)		.000	.000	.000
Factors affecting The possibility of virtual tourism applications in Egypt	Pearson Correlation	.931**	1	.917**	.962**
	Sig. (2-tailed)	.000		.000	.000
The challenges facing the virtual world of tourism in Egypt	Pearson Correlation	.980**	.917**	1	.974**
	Sig. (2-tailed)	.000	.000		.000
The role of virtual reality in achieving sustainable tourism and hotel development in Egypt	Pearson Correlation	.984**	.962**	.974**	1
	Sig. (2-tailed)	.000	.000	.000	
**. Correlation is significant at the 0.01 level (2-tailed).					

Outcomes:

1. Egypt lacks a Metaverse platform for cultural content.
2. Tourism and travel are activities containing many types of transportation and reservations, which increase opportunities to exploit technology to enhance the tourist experience.
3. VR plays an important role in revitalizing tourism, as it represents a three-dimensional simulation of reality, through which the tourist can visit the tourist places and move between them while he is in his place
4. The application of VR technology in the tourism field has a role in revitalizing tourism to Egypt
5. VR has many uses in the tourism and hospitality sector, and it will become widespread in society in general and tourism in particular
6. Through the virtual tourism reality, the tourist is able to immerse himself in the degree to which the tourist is isolated from the real world, as it provides a real experience that preserves tourist and heritage sites while allowing visits to places that have an environment that is not suitable for crowding
7. It is possible to preserve the real tourist places from deterioration.
8. VR technology can be used to stimulate tourism by simulating and marketing tourist place
9. Virtual tourism achieves a competitive advantage

10. The method of dealing with the virtual conscious is not specified at an earlier time, but rather takes place at the same time, the person interacts with the computer. Example: when a tourist makes a tour inside a tourist place, he can choose by himself the path that he will walk on and he can also knock A door or crossing a street and other events that can happen in actual reality

11. VR does not provide tourists the full tourist experience as in the case of conventional tourism, where tourists are able to experience a destination through all of the five senses (i.e., sight, sound, smell taste, and touch).

12. For now, VR appears, thus, not to be a substitute for conventional tourism, but rather as a dynamic futuristic niche in its own right.

Recommendations:

1. The necessity of applying virtual reality technology to stimulate tourism in Egypt, especially in times of crisis

2. The necessity of determining the content that the tourism companies will display by the Tourism Promotion Authority and the Ministry of Tourism, in order to entice tourists to visit the tourist places and push them to buy tourism programs to visit these places

3. Concluding many agreements between companies, hotels and the government to apply this technology in the correct manner

4. Training the employees of the tourism companies on this technology so that the expertise in this field is available.

5. The necessity of providing devices to apply virtual reality technology.

6. Researchers and specialists in the tourism field must be aware of the significance of virtual reality technology, and the huge boom it will bring in tourism, and be able to face all challenges and take advantage of the opportunities offered by this technology

7. A project should be prepared based on the use of virtual reality technology to introduce the most important tourist and archaeological sites spread in Egypt, highlighting the most important patterns and different tourist components in various tourist sites and places to display them in the form of three-dimensional models that allow the tourist to take a virtual tour of the Egyptian tourist attractions.

8. Opening museums with virtual reality technology, as well as the virtual reality zoo, as well as the depths of the sea with virtual reality, providing cinemas, restaurants, and a children's square, in which the tourist can discover outer space and see spaceships

9. Launching a campaign on the experience of virtual reality tourism in metro stations in Egypt, with the aim of introducing citizens and tourists to the most important tourist attractions and places in Egypt.

10. The Ministry of Information should launch a visual and audio advertising campaign using virtual reality technology through the production of a three-

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dimensional program that allows tourists to roam the Egyptian tourist sites, visit archaeological museums and learn about the various artifacts in them, and this is clarified in a set of guiding and advertising signs

11.   Photographing archaeological tourist sites such as Luxor and Aswan, as well as natural tourist areas with picturesque nature and clear waters using virtual reality technology, must be photographed and included on the World Heritage List. It is posted on YouTube

12.   Technology could possibly present a complex industrial process or visualize history, which allows better understand the heritage.

13.   Managers must strike a balance between authenticity and modern technology to satisfy all target groups

14.   User behavior literatures need to be effectively transformed into the design artifacts broadly defined as a construct, a model, a method, or an instantiation of application design research and development.

15.   Using second life for teaching hotel and Tourism management students

16.   The need to pay attention to the development of technical and technological applications in order to activate virtual tourism

17.   Interest in the adoption of virtual tourism in the Arab countries, the Gulf countries and the various tourist markets

18.   Promotion of virtual tourism on the Internet

19.   Government should control the online relations between the tourist and travel providers to protect the consumer from illegal practices in websites.

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