

**A Proposed Framework for Analyzing the Impact of
Augmented Reality Technology on the Tourists' Behavioral
Intentions
(An Applied Study on the Tourism Sector in Egypt)**

**A Research Extracted from a PHD Thesis titled:
A Proposed Framework of the Mediating Role of the Tourism
Experience in the Relationship between the Augmented
Reality Technology and the Tourists' Intentions (An Applied
Study on the Tourism Sector in Egypt)**

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Abstract:

The research objectives: Egypt is one of the most prominent tourist countries in the world. The tourism sector is one of the most important sectors in Egypt, because it represents one of the most significant sources of national income, and it has a significant impact on the Egyptian economy. The religious tourism sector is one of the important niche tourism segments in Egypt. The religious tourism has an additional advantage of being resilient to political instability, compared to the other niche tourism segments in Egypt. The "Religions Complex area" in Egypt is one of the most important religious historical sites in Egypt, because the many different Islamic, Christian and Jewish archaeological sites on its land (such as: Amr ibn al-As Mosque, the Hanging Church, and the Jew Temple). Therefore, **objectives** of this research were to:

- 1- Determine the problems facing tourists regarding tourist guiding methods (with or without human tour guide) in the "Religions Complex" area (by conducting exploratory or pilot study in the "Religions Complex" area in Egypt).
- 2- Design and develop an augmented reality (AR) application as a proposed solution (to solve some of the problems revealed in the pilot study), and as a marketing initiative to support the religious tourism and the "Religions Complex" area in particular, and to support the Egyptian tourism in general, especially after the many internal and external challenges that Egypt witnessed during the past years (from 2011) .
- 3- Evaluate the designed augmented reality (AR) to ensure that its ability to solve the problems revealed in the pilot study, and also to measure its benefits in enhancing the tourists' behavioral intentions toward the Religions Complex area, thus supporting the Egyptian tourism in general, and the "Religions Complex" and the religious tourism in particular.

The research Methodology: To achieve the research objectives, the researcher designed and developed the (Religions Complex AR app) with the help of an Egyptian company specialized in designing the AR and VR applications. Then, the researcher evaluated this AR application by developing a proposed framework to study the impact of using this AR app

on the tourists' behavioral intentions toward the Religions Complex area. The methodology used to evaluate the (Religions Complex AR app) was based on an experimental approach and a quantitative approach. The research population included all tourists (whether international or local tourists) who visited the tourism destination which known as the (Religions Complex in Old Cairo area) during the period of data collection. The researcher distributed the questionnaires to a convenient sample of the international and local tourists (who visited the Religions Complex area during the period of data collection) after their experience to the (Religions Complex AR app). The data were collected over a period of two months (from the beginning of November 2023 to the end of December 2023). The sample size was (384), and a total of (293) completed questionnaires were collected representing an overall response rate of 76.3%.

The research results: the researcher concluded that:

- 1- The designed AR application (Religions Complex AR app) can be used as an alternative or complement to the human tour guides, thus solving some of the problems (revealed in the pilot study) facing tourists regarding tourist guiding methods in the "Religions Complex area", such as the shortage of human tour guides, and the problem of insufficient information facing tourists with human tour guides.
- 2- The designed AR application (Religions Complex AR app) enhanced the tourists' behavioral intentions toward the Religions Complex area, thus supporting the Egyptian tourism in general, and the "Religions Complex" and the religious tourism in particular.

Keywords: The augmented reality (AR) technology, The tourists' behavioral intentions (TBI), Tourism Sector in Egypt, Religions Complex area, Religions Complex AR app.

1/1 The introduction.

The AR is a technology designed to enhance or augment the real world through computer-generated virtual information and objects. These digital and virtual objects such as images, text, videos, 3D models, audio, and animation, are superimposed on the real world to enhance the reality and the users' experience. In other words, AR brings digital content into the users' existing or real environment, unlike VR technology, where users step or enter into virtual worlds. So, AR can incorporate visual, auditory, and other sensory information into the user's view to support or enhance the user's experience. Wearable devices (such as smart glasses) or mobile devices (such as smartphones and tablets) can be used to experience the AR technology (**Hammady, Tolba & Elzeney, 2023, p.18**)).

The AR technology is useful and can be used in different areas such as education, tourism, manufacturing, marketing, fashion, and healthcare (**El Filali & Krit, 2018, p.107**). In the context of the tourism industry, AR technology has many benefits such as providing tourists with more knowledge and information about the destinations, supporting the explanation of the heritage sites, helping tourists to learn in different and interactive way, and keeping the heritage sites up to date and supporting the value of heritage sites by adding a competitive advantage (**Marie & Zaki, 2016, pp.30-31**).

In the tourism context, the behavioral intentions of tourist (post-visit intentions) are a subjective judgment, which indicated how tourist will act in the future (**Carvalho, 2022, p. 762**). Chen and Tsai (**2007, p.1115**) defined the behavioral intentions of tourist as the tourist's judgment about the likelihood of re-visiting the same destination or recommending the destination to others. Tourists' revisit and recommendation behavior is one of the signs of their loyalty to the destination, which represent a strategic objective for firms, because retaining current customers has lower costs than gaining new customers, which in turn has a positive effect on profit (**Ramadlani & Hadiwidjaja, 2012, p.2**). So, it is important for destination marketers to understand the tourists' behavioral intentions and what influences their loyalty to destinations to develop and implement effective marketing strategies (**Loureiro & González, 2008, p.118**).

The AR is an important tool to guide tourist's behaviors and intentions (Chung, Han & Joun, 2015, p.598). AR technology can help tourists to acquire more and extensive knowledge and information about the destinations and see the heritage sites from a different view, thus attracting tourists to revisit them many times (Marie & Zaki, 2016, p.31). Chung, Jia, Xiaorui, & Koo (2019, pp.2-4) stated that tourists' behavioral intentions can be enhanced when tourists use AR applications during their travel experience, because it helps tourists to be satisfied, and to better experience the tourism destination, and better understand their current environment. In other words, when tourist is satisfied with the AR, he or she will have an intention to revisit the destination or recommend it to others.

Against this background, the researcher designed and developed an AR application (Religions Complex AR app). Then, the researcher evaluated this AR app by studying the impact of using this AR app on the tourists' future behavioral intentions, by applying on the tourism sector in Egypt (Religious tourism).

1/2 The research problem.

1/2/1 The practical problem:

1/2/1/1 The problems related to the tourism sector in Egypt.

Egypt is one of the most prominent tourist countries in the world. The tourism sector is very important for Egypt, because it represents one of the most significant sources of national income, and it has a significant impact on the Egyptian economy. The tourism sector provides annual dollar revenues, the foreign currency returns, and it helps in reducing the unemployment in Egypt by employing a wide segment of the workforce. So, the tourism sector has a significant impact on the gross domestic product GDP. Also, there are many types of tourism in Egypt such as: cultural tourism, recreational tourism, eco-tourism, medical tourism, sports tourism, festival tourism, conference tourism, and religious tourism (Elnagar and Derbali, 2020, p. 45-46).

Over the past years, the tourism sector in Egypt has suffered from many internal (such as 2011 revolution and 2013 revolution) and external challenges (such as the terrorist attack on the Russian plane over Sinai in 2015 and Covid-19 in 2020) that negatively affected its performance and made it suffer from instability in its revenues, and a decrease in the foreign currency reserves. As shown in (Figure 1/1) and (Table 1/1), the number of arrivals to Egypt reached its peak in 2010 with a total 14.7 million tourists and a total income of \$ 12.518 billion in the country's economy. The number of tourists' arrival has not yet recovered to the same peak as 2010 due to the many challenges which the tourism sector in Egypt has suffered during a period from 2011 to 2016, as well as the Covid-19 crisis in 2020. The first challenge is the 2011 revolution, Egypt lost about 5 million tourists (-13.3%) and about 4 billion dollars (-8.6%) compared to 2010, with a total 9.8 million tourists and a total income of \$ 8.726 billion in the country's economy. The second challenge is the 2013 second revolution, Egypt lost more than 2 million tourists (-8.2%) and about 5 billion dollars (-11%) compared to 2012, with a total 9.8 million tourists and a total income of \$ 5.913 billion in the country's economy. The third challenge is in 2016 due to the fall of a Russian plane over Sinai in 2015, and Egypt lost more than 4 million tourists (-34.8%) and about 3 billion dollars (-48%) compared to 2015, with a total 5.2 million tourists and a total income of \$ 3.1 billion in the country's economy. The final challenge is the Covid-19 crisis, Egypt lost more than 10 million tourists (-58.6%) and about 9 billion dollars (-48.9%) compared to 2019, with a total 3.7 million tourists and a total income of \$3.918 billion in the country's economy (**Selim, Aidrous & Semenova, 2020, p. 1149-1150**).

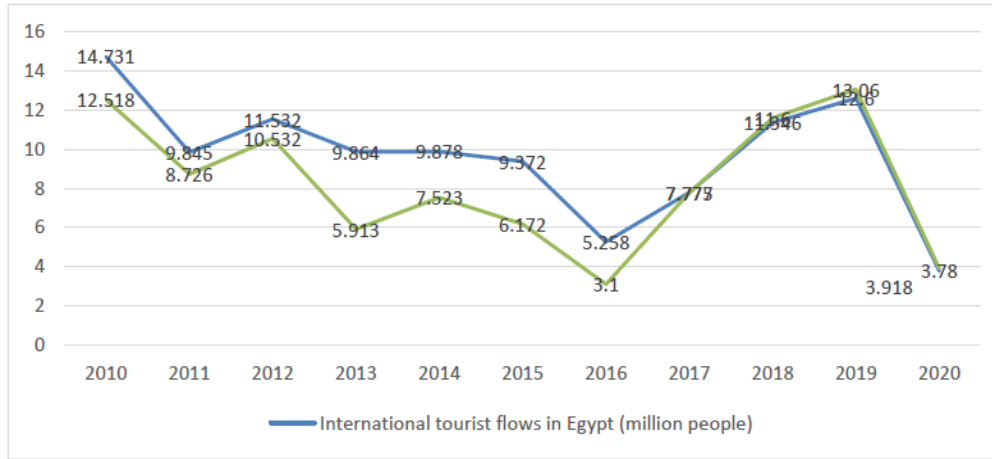


Figure (1/1) Dynamics of arrivals and income from tourist arrivals in Egypt for (2010-2020)

Source: (Selim, Aidrous & Semenova, 2020, p.1149)

Year	Crisis	Effect on number of tourists	Effect on tour income
2010-2011	Revolution(2011)	-13.3%	-8.6%
2013-2014	Revolution (2013)	-8.2%	-11%
2015-2016	Terrorist attack on board a Russian plane (2015)	-34.8%	-48%
2019-2020	Covid-19 2020 year	-58.6%	-48.9%

Table (1/1) Effect of various crises on income from international tourism in Egypt (2010-2020).

Source: (Selim, Aidrous & Semenova, 2020, p.1150).

The Russian-Ukrainian war in 2022 also has a negative impact on the tourism sector in Egypt. Most of the tourists in Egypt were Russians and Ukrainians tourists. They represent the main market for the Egyptian tourism industry, and an essential source of foreign currency returns. But the Russian-Ukrainian war in 2022 led to a decrease in the number of Russian and Ukrainian tourists visiting Egypt which negatively affected the Egyptian tourism industry (Fatouh, Bayoumi & Orloff, 2022, p.89).

Finally, although the tourism sector in Egypt has diverse tourism segments targeting both mass and niche tourism sectors (such as recreational tourism, cultural tourism, eco-based tourism, religious tourism, health tourism, and sports tourism), Egypt relies heavily on mass tourism and specially on two segments of mass tourism: recreational and cultural.

Niche tourism is a form of tourism that are done in small groups, as opposed to mass tourism. The niche tourism is less costly, less harmful, more sustainable, and able to generate higher revenues compared to mass tourism. Mass tourism has many environmental problems to the tourism destinations, such as littering, damage, depletion of resources, and pollution. Also, the large numbers of tourists in a given destination could cause major social and cultural problems to the tourists and the locals and the tourism destinations. Given to the increasing competition in the global mass tourism sector, as well as the pre and post COVID-19 challenges facing the tourism sector in Egypt, there is a need to focus on the niche tourism segments such as the religious tourism, especially with the many various Islamic, Christian and Jewish archaeological sites in Egypt, thereby achieving an increase in competitiveness and revenues **(Elbehary, Elsayed, Abdelghany, & Mandour, 2021, p.14-15)**.

Against this background, the researcher designed an augmented reality application (Religions Complex AR app) as a marketing initiative to support the Egyptian tourism especially after the many internal and external challenges that Egypt witnessed during the past years (from 2011). The researcher focused on the religious tourism as a niche tourism segment in Egypt, with a particular focus on the "Religions Complex" area, which is considered a place of worship for all religions because the many different Islamic, Christian and Jewish archaeological sites on its land, making it a unique religious tourism destination and one of the most important religious historical sites in Egypt.

1/2/1/2 The pilot study.

The researcher conducted a pilot or exploratory study to gain a more complete understanding of the research problem, and to obtain important information that the researcher could not obtain from the literature review. The researcher conducted a survey and relied on a closed-ended questionnaire that can be answered with “Yes” or “No”. The questionnaires were distributed in two languages (Arabic and English) to a convenience sample of (35) tourists (including international and local tourists) at the tourism destination which known as (The Religions Complex in Old Cairo area). A total of (31) valid questionnaires were collected and analyzed. The researcher relied on the closed questionnaire only because international tourists have different languages, and it is difficult to interview them or analyze their answers with an open-ended questionnaire.

The questionnaire composed of three parts or sections. The first one is concerned with the tourist' awareness of augmented reality technology. According to the results of some previous studies, AR technology has many benefits for the tourism. So, the researcher in this section had to investigate the extent of tourists' awareness of augmented reality technology in Egypt, to determine whether Egypt can exploit the benefits of AR technology to support the Egyptian tourism especially after the many internal and external challenges that accrued in Egypt during the past years (from 2011). This section included the following two questions:

Section one: awareness of augmented reality technology.

- 1- Are you aware of the term "Augmented Reality Technology?"
- 2- Have you ever experienced any augmented reality applications before?

The second section is concerned with the religious tourism in Egypt. According to the results of some previous studies, Egypt relies heavily on mass tourism and specially on two segments of mass tourism: recreational and cultural. And there is a need to focus on the niche tourism segments such as the religious tourism. So, the researcher in this section had to investigate the extent of tourists' interest in visiting any religious places in Egypt, to determine whether Egypt needs to focus on effective marketing initiatives and strategies (such as the use of AR technology) to support the

religious tourism as a niche tourism segment. This section included the following two questions:

Section two: religious tourism in Egypt.

- 1- Have you visited any religious places in Egypt before?
- 2- Are you interested in visiting any religious places in Egypt?

The third section is concerned with the tourism destination which known as (The Religions Complex in Old Cairo area). The researcher in this section had to investigate the extent of tourists' interest in visiting the "Religions Complex area", and whether tourists face any problems regarding tourist guiding methods (with or without human tour guide) in visiting the religious places in the "Religions Complex area". The researcher believed that studying these problems is important because they may have a negative impact on the tourists' experiences and their future behavioral intentions, and to determine whether AR technology can be used to solve some of these problems. This section included the following questions:

Section three: "Religions Complex".

- 1- Have you visited "Religions Complex" before?

If yes, how many times have you visited "Religions Complex" before

- 2- Are you following a tour guide ?

If (No), answer the following:

- A) do you feel you need a tour guide?

If (Yes), answer the following:

- A) Do you get all information you need from the tour guide?
- B) Do you hear most of the explanation demonstrated by the tour guide?
- C) The atmosphere of "Religions Complex" is too noisy that you can not hear what the tour guide is saying?
- D) Do you feel independent within your group by following the tour guide?

E) Do you feel you need more supplementary information aside the guide narration?

F) Have you read most of the texts and information found in the religious and historical places of "Religions Complex"?

Finally, the researcher concluded the following results:

- 1- There is a lack of tourists' awareness of augmented reality technology in Egypt. (45.2%) of the pilot study sample were not aware of the term "AR Technology. Also, (80.6%) of the pilot study sample had not experienced any augmented reality applications before (*Against this background, this research seeks to increase the tourists' awareness of AR technology. So, the researcher designed and developed an AR application (Religions Complex AR app).*
- 2- The religious tourism in Egypt is very important and there is an interest from tourists to visit the religious places in Egypt. (100%) of the pilot study sample had visited religious places in Egypt before, and (100%) of the pilot study sample had an interest in visiting any religious places in Egypt (*Against this background, this research seeks to support the tourism in Egypt and especially the religious tourism as an important niche tourism segment to exploit the interest of tourists in visiting any religious places in Egypt. So, the researcher designed and developed an AR application (Religions Complex AR app) as a marketing initiative to support the religious tourism in Egypt.*
- 3- The "Religions Complex" is one of the most important religious historical sites in Egypt, which is considered a place of worship for all religions because the many different Islamic, Christian and Jewish archaeological sites on its land. However, tourists face some problems regarding tourist guiding methods (with or without human tour guide) in visiting the religious places in the "Religions Complex area". These problems can be summarized as follows:
 - There is a shortage of human tour guides. The percentage of tourists who visited the "Religions Complex area" without a human tour guide was (45.2%), and (57.1%) of them needed a tour guide. The researcher believed that this problem is important because they may have a negative impact on the tourists' experiences and their future behavioral

intentions such as re-visit intentions, and AR technology is important as it can be used to solve this problem. So, the AR application of this study was designed to be used as an alternative to the human tour guide.

- There are some problems regarding the human tour guides. The percentage of tourists who visited the "Religions Complex area" with a human tour guide was (54.8%), and (35.3%) of them did not obtain all the information they need from the human tour guide. Also, (23.5%) of tourists did not hear most of the explanation demonstrated by the human tour guide, (23.5%) of tourists approved that the atmosphere of "Religions Complex" was too noisy that they could not hear what the human tour guide was saying, (11.8%) of tourists approved that they did not feel independent within their group by following the human tour guide, (47.1%) of tourists approved that they need more supplementary information beside the human tour guide, and (41.2%) of tourists approved that they did not read most of the texts and information found in the religious and historical places of "Religions Complex". The researcher believed that these problems are important because they may have a negative impact on the tourists' experiences and their future behavioral intentions such as re-visit intentions, and AR technology is important as it can be used to solve this problem. So, the AR application of this study was designed to be used as a complement to the human tour guide (*Against this background, this research seeks to solve some of the problems facing tourists regarding tourist guiding methods (with or without human tour guide) in the "Religions Complex area", to support tourists' future behavioral intentions toward the Religions Complex area. So, the researcher designed and developed an AR application (Religions Complex AR app) that can be used as an alternative or complement to the human tour guides. Then, the researcher evaluated this AR app by studying the impact of using this AR app on the tourists' behavioral intentions toward the Religions Complex area.*)

1/2/2 The theoretical problem:

The religious tourism sector is one of the potential niche segments in Egypt and it is the focus of the Egyptian government over the past years. The religious tourism has an additional advantage of being resilient to political instability. So, it is more secure and stable than the leisure tourism. The Egyptian government has made many efforts to make Egypt a center for the religious tourism **(Elbehary, Elsayed, Abdelghany, & Mandour, 2021, p.19)**.

Although the AR technology has many benefits for the tourism and the heritage sites, none of the Islamic cultural heritage sites in Egypt have been using AR technology. The challenges of using and implementing the AR in the Islamic cultural heritage sites in Egypt included: the lack of awareness and knowledge of AR and its importance for heritage sites, insufficient financial resources that required to adopt and implement AR in the Egyptian cultural heritage sites, the lack of coordination between the responsible authorities, the technical challenges such as: the effectiveness of GPS which affects the tracking system, the problems of AR displays which based on the screens of mobile phones and tablets, and the lack of free internet connection in the cultural heritage sites in Egypt **(Marie & Zaki, 2016, p.33)**.

The AR is an important tool to guide tourist's behaviors and intentions **(Chung, Han & Joun, 2015, p.598)**. However, in the tourism studies, there is not sufficient research on why people use AR or how its use will affect their intention to travel. Aziz & Friedman **(2019, p.1065)** confirmed that there is a scarcity of research on the impact of AR on tourists' intentions toward the tourism destinations.

Against this background, the researcher believes that there is a real problem. Therefore, the researcher evaluated the designed AR app (Religions Complex AR app) by studying the impact of using this AR app on the tourists' future behavioral intentions toward the "Religions Complex" area, which is a unique religious tourism destination and one of the most important religious historical sites in Egypt. In light of this, the research problem can be summarized in the following question:

1- What is the impact of AR technology on the tourists' behavioral intentions TBI toward the Religions Complex area?

1/3 The research objectives.

The objectives of this research can be summarized as following:

- 1- Determining the problems facing tourists regarding tourist guiding methods (with or without human tour guide) in the "Religions Complex" area (by conducting exploratory or pilot study in the "Religions Complex" area in Egypt).
- 2- Designing and developing an AR application (Religions Complex AR app) as a proposed solution to solve some of the problems (revealed in the pilot study), and as a marketing initiative to support tourists' behavioral intentions toward the Religions Complex area, thus supporting the Egyptian tourism in general, and the "Religions Complex" and the religious tourism in particular.
- 3- Evaluating the designed AR application (Religions Complex AR app) by conducting explanatory study to ensure that the designed AR application (Religions Complex AR app) could solve the problems revealed in the exploratory or pilot study, and also to measure the benefits of this AR app by developing a proposed framework to study the impact of using this AR app on the tourists' behavioral intentions toward the Religions Complex area.
- 4- Providing recommendations based on the results of the research that help managers and decision makers in the Egyptian tourism sector in general and in the Religions Complex area in particular, to adopt the use of AR technology to enhance the tourists' behavioral intentions.

1/4 The research methodology.

The researcher conducted an exploratory or pilot study in the "Religions Complex" area in Egypt, to gain a more complete understanding of the research problem, and to determine whether tourists face any problems regarding tourist guiding methods (with or without human tour guide) in visiting the religious places in the "Religions Complex" area. Then, the researcher designed and developed the (Religions Complex AR app) as a proposed solution to solve some of the problems (revealed in the

pilot study), and as a marketing initiative to support tourists' behavioral intentions toward the Religions Complex area, thus supporting the Egyptian tourism in general, and the "Religions Complex" and the religious tourism in particular. Finally, the researcher evaluated the (Religions Complex AR app) to ensure that this AR application could solve the problems revealed in the exploratory or pilot study, and also to measure the benefits of this AR app in enhancing the tourists' intentions by developing a proposed framework to study the impact of using this AR app on the tourists' behavioral intentions toward the Religions Complex area. So, the research variables and measurement tools, the research hypotheses, the research model, and the research population and sample, will be explained as follows:

1/4/1 The research variables and measurement tools.

❖ The independent variable.

The independent variable of this research is the use of the augmented reality technology AR. The augmented reality technology is defined as a system that integrates digital contents (such as, texts, images, videos, and 3D objects) with the user's perception of the real world, and through the use of smart glasses, tablet, and smartphone (**Recupero, Talamo, Triberti & Modesti, 2019, p.2**).

To measure the AR in this research, the researcher integrated two models:

1) The first model is (technology acceptance model TAM):

The researcher depended on TAM to measure the impact of (AR perceptions) on the memorable tourism experience and tourists' intentions. The researcher depended on three dimensions of TAM to measure the AR perceptions (AR perceived usefulness, AR perceived ease of use, and AR perceived enjoyment). These dimensions of (AR perceptions) can be defined as follows:

- 1) AR perceived usefulness: it refers to the degree to which an individual believes that using an AR application is useful and has great value.

- 2) AR perceived ease of use: it refers to the degree to which an individual believes that using an AR application is easy and free of effort.
 - 3) AR perceived enjoyment: it refers to the degree to which an individual believes that using an AR is fun and not boring.
- 2) The second model is (model of smart tourism technology STT attributes):

The researcher depended on attributes or dimensions of STTs to measure the impact of (AR attributes) on the memorable tourism experience and tourists' intentions. The researcher depended on three dimensions or attributes of STTs attributes to measure the AR attributes (interactivity, informativeness, and personalization). These dimensions of (AR attributes) can be defined as follows:

- 1) Interactivity: it measures the ability of an AR application to enable user to easily control and interact with the content of AR application, or interact with the designed user interface (UI).
- 2) Informativeness: it measures the ability of an AR application to provide sufficient, relevant, and accurate information, to the user.
- 3) Personalization: it measures the ability of an AR application to offer tailored responses, information and services, to the user.

❖ **The dependent variable.**

The dependent variable of this research is the behavioral intentions of tourists. It represents the final stage of tourist's decision-making process in which the customer takes further actions after they finished their visit or their tourism experience. This process includes how tourists will act in the future or their future behavioral intentions. The behavioral intention of tourists is one of the signs of their loyalty to the destination, and stated by some researchers as the destination loyalty intentions.

To measure the behavioral intentions of tourists in this research, the researcher depended on two dimensions of tourist's future behavioral intentions. These two dimensions are:

- 1- The intentions to revisit the destination.
- 2- The intentions to spread a positive word-of-mouth and recommend the destination to others.

1/4/2 The research hypotheses.

Based on the literature review, the researcher identified the following research hypotheses.

H1. The AR technology has a statistically significant positive impact on the tourists' behavioral intentions TBI.

H1a. The AR perceptions (AR perceived usefulness, AR perceived ease of use, and AR perceived enjoyment) have a statistically significant positive impact on the tourists' behavioral intentions TBI.

H1b. The AR attributes (interactivity, informativeness, and personalization) have a statistically significant positive impact on the tourists' behavioral intentions TBI.

1/4/3 The research model.

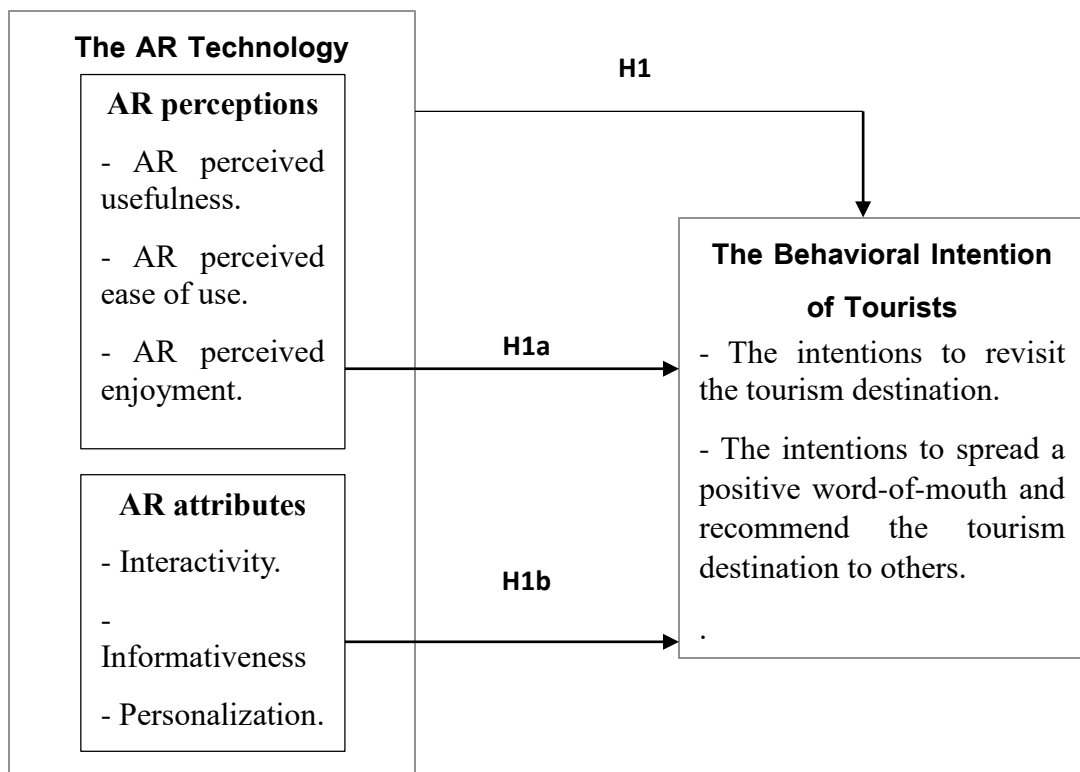


Figure (1/2) The research model
(Source: The researcher's preparation)

1/4/4 The research population and sample.

❖ The research population.

The research population included all tourists (whether international or local tourists) who visited the tourism destination which known as the (Religions Complex in Old Cairo area) during the period of data collection.

❖ The research sample.

The non-probability sampling technique was used. This type of sample was used because there is no sampling frame for the research population and the heterogeneity between the research population.

The researcher distributed the questionnaires to a convenient sample of international and local tourists who visited the Religions Complex area during the period of data collection, after their experience to the AR application (Religions Complex AR app).

❖ The sample size.

The researcher determined the sample size on the basis that the availability of characteristics that required to be studied in the research community is not less than (50%), and the degree of confidence required (95%), and the limits of the standard error ($\pm 5\%$). Accordingly, the sample size is (384)⁽¹⁾.

❖ The procedures of data collection.

The researcher distributed the questionnaires to a convenient sample of international and local tourists who visited the tourism destination which known as the (Religions Complex in Old Cairo area) during the period of data collection. The data were collected over a period of two months (from the beginning of November 2023 to the end of December 2023). Three well-trained research assistants (Egyptian tour guides) helped the researcher in collecting data because the international tourists have different languages and the researcher could not collect data from the international tourists without the help of the three Egyptian tour guides who can speak different languages and can deal with the international tourists and collect data from them. The AR app (Religions Complex AR app) was installed on smartphones used by the researcher and the three assistants. Then, the researcher and the assistants briefly introduced the Religions Complex AR app to the participants and asked them to use it

independently. Finally, the researcher and the assistants distributed the questionnaires to tourists after their experience to the AR application (Religions Complex AR app). A total of (293) completed questionnaires were collected representing an overall response rate of 76.3%.

1/5 The design of the (Religions Complex AR app).

The (Religions Complex AR app) is a smartphone-based AR application. It is an Android application which can be downloaded from "Google play" and installed on Android smartphones to provide users with

- (1) The sample size was determined from the following website: www.surveysystem.com.

an AR experience of the "Religions Complex" area. The researcher designed this application with the help of an Egyptian company specialized in designing the AR and VR application. The name of this application on "Google play" is {مجمع الاديان (الواقع المعزز)}. Figure (1/2) shows a screenshot of the application icon on "Google play".



Figure (1/2) Screenshot of the (Religions Complex AR app) icon on "Google play"

The content of this App includes the following;

- 1- A map of the "Religions Complex" area shown in figure (1/3).
- 2- 3D models of three religious and archaeological places (Amr ibn al-As Mosque, the Hanging Church, and the Jew Temple).
- 3- (Sound icons): which include a virtual audio tour guide that provides explanation and information about the three religious and archaeological

places (Amr ibn al-As Mosque, the Hanging Church, and the Jew Temple), in Arabic and English language. This virtual audio tour guide was a recording of an Egyptian tour guide (female tour guide) working in one of the Egyptian tourism companies which work in the field of the international tourism. This Egyptian tourism company agreed to cooperate with the researcher, and allowed the Egyptian tour guide (female tour guide) to cooperate with the researcher and record her explanation of the three religious and archaeological places (Amr ibn al-As Mosque, the Hanging Church, and the Jew Temple), in Arabic and English language.

- 4- (Images icons): which include images of the three religious and archaeological places (8 images of Amr ibn al-As Mosque, 8 images of the Hanging Church, and 8 images of the Jew Temple).
- 5- (Videos icons): which include videos for the three religious and archaeological places (one video of Amr ibn al-As Mosque, one video the Hanging Church, and one video the Jew Temple).

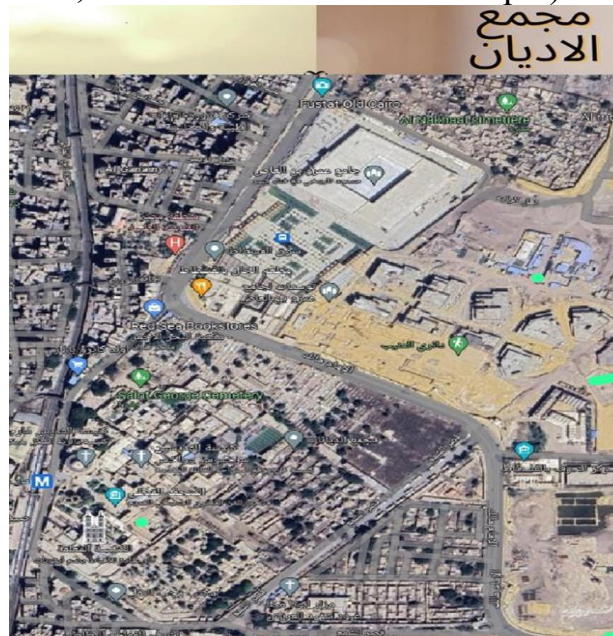


Figure (1/3) Map of the "Religions Complex" area in the (Religions Complex AR app)

1/6 How to use the (Religions Complex AR app):

Once the user installs and starts the application, the start page appears which includes an introduction and a (start the experience) button. Figure (1/4) shows a screenshot of the start page.

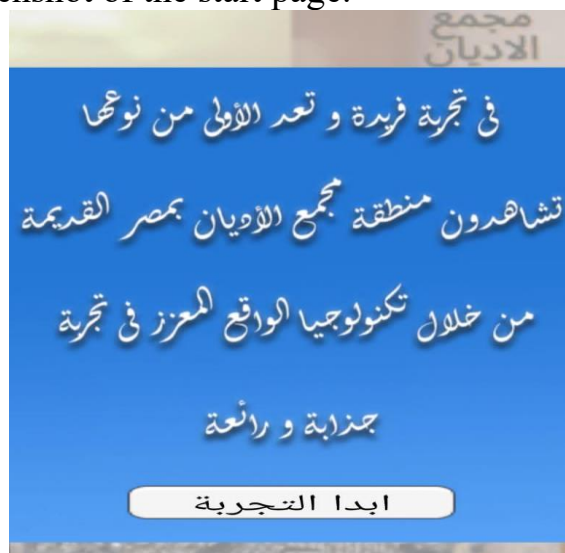


Figure (1/4) Screenshot of the start page in the (Religions Complex AR app)

Once the user clicks on the (start the experience) button, the user is directed to the main menu which includes three buttons (Arabic, English, and Map button). Figures (1/5) shows a screenshot of the main menu.



Figure (1/5) Screenshot of the main menu in the (Religions Complex AR app)

When the user wants to hear the explanation of the virtual audio tour guide about the three religious and archaeological places (Amr ibn al-As Mosque, the Hanging Church, and the Jew Temple) in Arabic language, the user clicks on the (Arabic) button. But when the user wants to hear the explanation of the virtual audio tour guide about the three religious and archaeological places (Amr ibn al-As Mosque, the Hanging Church, and the Jew Temple) in English language, the user clicks on the (English) button. Finally, when the (Map) button is clicked, a map of the "Religions Complex" area appears. The user should download and print the map of the "Religions Complex" area to start the AR experience. This map can be printed from any printers, and it is a base to put AR content on, where users can hold the "Religions Complex" area map and point their smartphone towards it with the AR app to see the content of the (Religions Complex AR app).

When the (Arabic) or (English) button is clicked, the user's smartphone camera opens. Then, users should point their smartphone camera towards the "Religions Complex" area map. When users point their smartphone camera towards the "Religions Complex" area map in the real world, the virtual audio tour guide provides the user with an introduction about the "Religions Complex" area, and the 3D models of (Amr ibn al-As Mosque, the Hanging Church, and the Jew Temple) appears on the Religions Complex" area map, in addition to sound, images, and videos icons. Finally, the user hears music while using the application. The music effects can create a special AR experience. Figure (1/6) shows a screenshot of the "Religions Complex" area map when the smartphone camera is directed towards it, where the 3D models, in addition to sound, images, and videos icons appear on the "Religions Complex" area map.

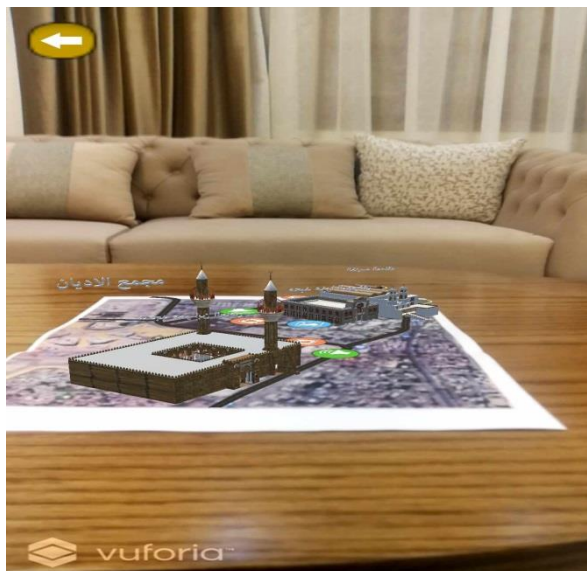


Figure (1/6) Screenshot of the "Religions Complex" area map when the smartphone camera is directed towards it

The user can see each 3D model of (Amr ibn al-As Mosque, the Hanging Church, and the Jew Temple) from different angles and interact with each 3D model by enlarging or reducing it. Each 3D model has its own sound, image, and video icons, which appear next to the 3D model. For example, the 3D model of Amr ibn al-As Mosque has its own sound, image, and video icons, which appear next to the 3D model of Amr ibn al-As Mosque. When the sound icon next to the 3D model is clicked, the virtual audio tour guide starts explaining the history of the religious place and providing the user with many information about it. For example, when the sound icon next to the 3D model of Amr ibn al-As Mosque is clicked, the virtual audio tour guide starts explaining the history of Amr ibn al-As Mosque and providing the user with many information about Amr ibn al-As Mosque. Also, when the image icon next to the 3D model is clicked, different images of the religious place appear. For example, when the image icon next to the 3D model of Amr ibn al-As Mosque is clicked, different images of Amr ibn al-As Mosque appear. Figure (1/7) shows screenshots when the image icons next to each 3D model are clicked. Finally, when the video icon next to the 3D model is clicked, a video of the religious place appears. For example, when the video icon next to the 3D

model of Amr ibn al-As Mosque is clicked, a video of Amr ibn al-As Mosque appears. Figure (1/8) shows screenshots when the video icons next to each 3D model are clicked.

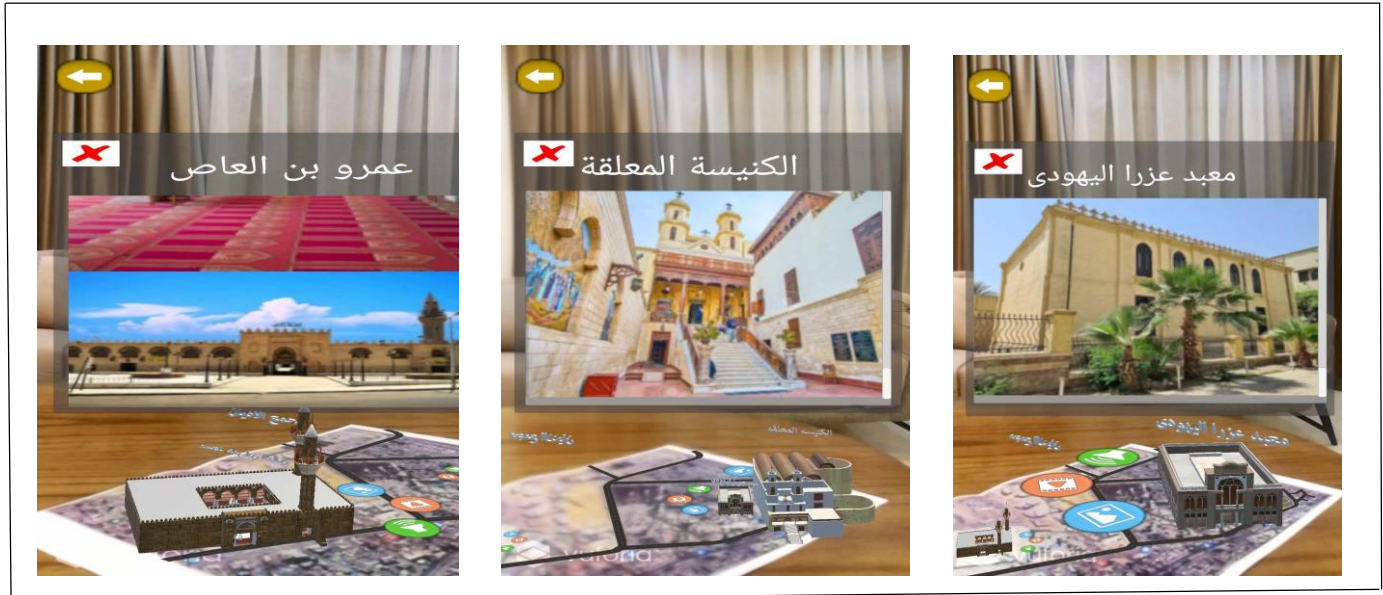


Figure (1/7) Screenshots when the image icons next to each 3D model are clicked



Figure (1/8) Screenshots when the video icons next to each 3D model are clicked.

1/7 Hypothesis testing and research results.

1/7/1 Regression analysis.

Regression analysis was used to examine the effect relationship (direct relationship) between the research variables.

❖ Simple Liner Regression:

Simple liner regression was used to examine the impact of AR technology (independent variable) on the tourists’ behavioral intentions (dependent variable), as shown in (Table 1/2).

Table (1/2): Simple liner regression to the impact of AR technology on the TBI

Independent variables	β	t. test		F. test		r	R ²
		Value	Sig.	Value	Sig.		
constant	.766	3.727	0.01**	225.021	0.01**	.660	43.6%
Augmented Reality Technology x	.800	15.001	0.01**				

** significant level 0.01

According to the above table (1/2), it can be concluded that:

- The correlation coefficient (r= 0.660) at a level significantly less than (0.01), which indicates that there is a significant positive relationship between AR technology and tourists’ behavioral intentions TBI.
- The coefficient of determination (R² = 43.6%), which indicates that the AR technology (independent variable) on the regression model explains (43.6%) of the total change in the tourists’ behavioral intentions (dependent variable).
- The equation of regression model (TBI = 0.766 + 0.660 AR Technology).
- The value of (T-test = 15.001) at a level significantly less than (0.01), which indicates that all dimensions of AR technology have a significant impact on the tourists’ behavioral intentions TBI.
- The value of (F-test = 225.021) at a level significantly less than (0.01), which indicates the quality of the significant impact of the regression model on the (tourists’ behavioral intentions TBI), or the significance of the regression model as a whole in explaining the amount of the variation in the tourists’ behavioral intentions TBI (by

comparing the model's fit with a baseline model known as the null model).

- According to the above results, **H2** is accepted, as follows:
H1. The AR technology has a statistically significant positive impact on the tourists' behavioral intentions TBI.

1/7/1/1 Testing the first sub-hypotheses:

❖ Simple Liner Regression:

Simple liner regression was used to examine the impact of AR perceptions (independent variable 1) on the on the tourists' behavioral intentions TBI, as shown in (Table 1/3).

Table (1/3): Simple liner regression to the impact of AR perceptions (independent variable 1) on the TBI

Independent variables	β	t. test		F. test		r	R ²
		Value	Sig.	Value	Sig.		
constant	.900	4.651	0.01**	232.808	0.01**	.667	44.4%
Augmented reality perceptions x1	.759	15.258	0.01**				

** significant level 0.01

According to the above table (1/3), it can be concluded that:

- The correlation coefficient ($r = 0.667$) at a level significantly less than (0.01), which indicates that there is a significant positive relationship between AR perceptions (independent variable 1) and tourists' behavioral intentions TBI.
- The coefficient of determination ($R^2 = 44.4\%$), which indicates that the AR perceptions (independent variable 1) on the regression model explains (44.4%) of the total change in the tourists' behavioral intentions (dependent variable).
- The equation of regression model ($TBI = 0.900 + 0.667 \text{ AR perceptions}$).
- The value of (T-test = 15.258) at a level significantly less than (0.01), which indicates that all dimensions of AR perceptions have a significant impact on the tourists' behavioral intentions TBI.
- The value of (F-test = 232.808) at a level significantly less than (0.01), which indicates the quality of the significant impact of the regression model on the (tourists' behavioral intentions TBI), or the

significance of the regression model as a whole in explaining the amount of the variation in the tourists' behavioral intentions TBI (by comparing the model's fit with a baseline model known as the null model).

Simple liner regression was used also to examine the impact of AR attributes (independent variable 2) on the tourists' behavioral intentions TBI, as shown in (Table 1/4).

Table (1/4): Simple liner regression to the impact of AR attributes (independent variable 2) on the TBI

Independent variables	β	t. test		F. test		r	R ²
		Value	Sig.	Value	Sig.		
constant	1.528	7.447	0.01**	127.766	0.01**	.552	30.5%
Augmented reality attributes x2	.605	11.303	0.01**				

** significant level 0.01

According to the above table (1/4), it can be concluded that:

- The correlation coefficient ($r = 0.552$) at a level significantly less than (0.01), which indicates that there is a significant positive relationship between AR attributes (independent variable 2) and tourists' behavioral intentions TBI.
- The coefficient of determination ($R^2 = 30.5\%$), which indicates that the AR attributes (independent variable 2) on the regression model explains (30.5%) of the total change in the tourists' behavioral intentions TBI (dependent variable).
- The equation of regression model ($TBI = 1.528 + 0.552 \text{ AR attributes}$).
- The value of (T-test = 11.303) at a level significantly less than (0.01), which indicates that all dimensions of AR attributes have a significant impact on the tourists' behavioral intentions TBI.
- The value of (F-test = 127.766) at a level significantly less than (0.01), which indicates the quality of the significant impact of the regression model on the (tourists' behavioral intentions TBI), or the significance of the regression model as a whole in explaining the amount of the variation in the tourists' behavioral intentions TBI (by

comparing the model's fit with a baseline model known as the null model).

❖ **Multiple Regression:**

Multiple regression was used to examine the impact of the dimensions of AR perceptions (AR perceived usefulness, AR perceived ease of use, and AR perceived enjoyment) on the tourists' behavioral intentions TBI, as shown in (Table 1/5).

Table (1/5): Multiple regression to the impact of the dimensions of AR perceptions (AR perceived usefulness, AR perceived ease of use, and AR perceived enjoyment) on the TBI

Independent variables	β	t. test		F. test		r	R ²
		Value	Sig.	Value	Sig.		
Constant	0.898	4.638	0.01**	78.570	0.01**	.670	44.9%
1-AR Perceived Usefulness	0.271	5.457	0.01**				
2- AR Perceived Ease of Use	0.213	3.979	0.01**				
3- AR Perceived Enjoyment	0.359	6.921	0.01**				

** significant level 0.01

According to the above table (1/5), it can be concluded that:

- The correlation coefficient (r= 0.670) at a level significantly less than (0.01), which indicates that there is a significant positive relationship between AR perceptions (independent variable 1) and the tourists' behavioral intentions TBI.
- The coefficient of determination (R² = 44.9%), which indicates that the AR perceptions (independent variable 1) on the regression model explains (44.9%) of the total change in the tourists' behavioral intentions TBI (dependent variable).
- The equation of regression model (TBI = 0.898 + 0.359 AR Perceived Enjoyment + 0.271 AR Perceived Usefulness + 0.213 AR Perceived Ease of Use).
- The value of (T-test = 6.921 AR Perceived Enjoyment, 5.457 AR Perceived Usefulness, and 3.979 AR Perceived Ease of Use) at a level significantly less than (0.01), which indicates that all dimensions of AR perceptions have a significant impact on the tourists' behavioral intentions TBI.

- The value of (F-test = 78.570) at a level significantly less than (0.01), which indicates the quality of the significant impact of the regression model on the (tourists' behavioral intentions TBI), or the significance of the regression model as a whole in explaining the amount of the variation in the tourists' behavioral intentions TBI (by comparing the model's fit with a baseline model known as the null model).
- According to the above results, **H2a** is accepted, as follows:
H1a. The AR perceptions (AR perceived usefulness, AR perceived ease of use, and AR perceived enjoyment) have a statistically significant positive impact on the tourists' behavioral intentions TBI.

Multiple regression was used also to examine the impact of the dimensions of AR attributes (interactivity, informativeness, and personalization) on the tourists' behavioral intentions TBI, as shown in (Table 1/6).

Table (1/6): Multiple regression to the impact of the dimensions of AR attributes (interactivity, informativeness, and personalization) on the TBI

Independent variables	β	t. test		F. test		r	R ²
		Value	Sig.	Value	Sig.		
Constant	1.544	7.508	0.01**	43.170	0.01**	.556	30.9%
1-AR Interactivity	0.276	4.912	0.01**				
2-AR IN formativeness	0.262	4.405	0.01**				
3- AR Personalization	0.158	2.795	0.01**				

** significant level 0.01

According to the above table (1/6), it can be concluded that:

- The correlation coefficient ($r= 0.556$) at a level significantly less than (0.01), which indicates that there is a significant positive relationship between AR attributes (independent variable 2) and the tourists' behavioral intentions TBI.
- The coefficient of determination ($R^2 = 30.9\%$), which indicates that the AR attributes (independent variable 2) on the regression model explains (30.9%) of the total change in the tourists' behavioral intentions TBI (dependent variable).

- The equation of regression model ($TBI = 1.544 + 0.276 \text{ AR Interactivity} + 0.262 \text{ AR Informativeness} + 0.158 \text{ AR Personalization}$).
- The value of (T-test = 4.912 AR Interactivity, 4.405 AR Informativeness, and 2.795 AR Personalization) at a level significantly less than (0.01), which indicates that all dimensions of AR attributes have a significant impact on the tourists' behavioral intentions TBI.
- The value of (F-test = 43.170) at a level significantly less than (0.01), which indicates the quality of the significant impact of the regression model on the (tourists' behavioral intentions TBI), or the significance of the regression model as a whole in explaining the amount of the variation in the tourists' behavioral intentions TBI (by comparing the model's fit with a baseline model known as the null model).
- According to the above results, **H2b** is accepted, as follows:
H1b. The AR attributes (interactivity, informativeness, and personalization) have a statistically significant positive impact on the tourists' behavioral intentions TBI.

1/6 The research recommendations.

- 1- Solving some of the problems (revealed by pilot study) facing tourists regarding tourist guiding methods (with or without human tour guide) in the "Religions Complex" area (such as the shortage of human tour guides, and the problem of insufficient information facing tourists with human tour guides), because these problems may have a negative impact on the tourists' future behavioral intentions toward the Religions Complex area.
- 2- Using the designed AR application (Religions Complex AR app) which can be used as an alternative or complement to the human tour guides, thus solving some of the problems (revealed in the pilot study) facing tourists regarding tourist guiding methods (with or without human tour guide) in the "Religions Complex area".
- 3- Using the designed AR application (Religions Complex AR app) to exploit the benefits of this AR application in enhancing tourists'

behavioral intentions toward the Religions Complex area, thus supporting the religious tourism and the "Religions Complex" area in particular.

- 4- Designing and developing many AR applications in the tourism sector, and encouraging the different tourism destinations to adopt and implement the AR, in order to exploit the benefits of AR technology in the tourism sector and support the Egyptian tourism.
- 5- Encouraging researchers and academics to conduct further studies and research on the use of AR technology in tourism to determine its potential advantages. These studies provide useful information and ideas for academics and practitioners alike.
- 6- Understanding the tourists' behavioral intentions and what influences their loyalty to the tourism destinations to develop and implement effective marketing strategies, achieve a competitive advantage, enhance tourism sustainability, support the Egyptian tourism and generate a financial success.

الملخص

أهداف البحث: تعتبر مصر من أبرز الدول السياحية في العالم. ويعد قطاع السياحة من أهم القطاعات في مصر، لأنه يمثل أحد أهم مصادر الدخل القومي، والذي له تأثير كبير على الاقتصاد المصري. ويعتبر قطاع السياحة الدينية أحد أهم قطاعات السياحة المتخصصة في مصر، والذي يتمتع بميزة إضافية تتمثل في القدرة على مواجهة عدم الاستقرار السياسي مقارنة بقطاعات السياحة المتخصصة الأخرى في مصر. وتعد "منطقة مجمع الأديان" في مصر من أهم المواقع التاريخية الدينية في مصر، وذلك لكثرة الأماكن الأثرية الإسلامية والمسيحية واليهودية المختلفة الموجودة على أرضها (مثل: مسجد عمرو بن العاص، الكنيسة المعلقة، والمعبد اليهودي). وبالتالي تمثلت أهداف هذا البحث فيما يلي:

- 1- تحديد المشاكل التي تواجه السياح فيما يتعلق بطرق الإرشاد السياحي (سواء كانوا مع مرشد سياحي بشري، أو بدون مرشد سياحي بشري) في منطقة "مجمع الأديان" (من خلال إجراء دراسة استكشافية أو استطلاعية في منطقة "مجمع الأديان" في مصر).
- 2- تصميم وتطوير تطبيق بالواقع المعزز كحل مقترح (لحل بعض المشاكل التي كشفت عنها الدراسة الإستطلاعية)، وكمبادرة تسويقية لدعم السياحة الدينية ومنطقة "مجمع الأديان" بشكل خاص، ودعم السياحة المصرية بشكل عام، خاصة بعد العديد من التحديات الداخلية والخارجية التي شهدتها مصر خلال السنوات الماضية (منذ عام 2011).
- 3- تقييم تطبيق الواقع المعزز المصمم للتأكد من قدرته على حل المشاكل التي كشفت عنها الدراسة الإستطلاعية، وكذلك لقياس فوائده في تعزيز نوايا السياح المستقبلية تجاه مجمع الأديان، وبالتالي دعم السياحة المصرية بشكل عام، ودعم "مجمع الأديان" والسياحة الدينية بشكل خاص.

منهجية البحث: لتحقيق أهداف البحث، قام الباحث بتصميم وتطوير (تطبيق مجمع الأديان بالواقع المعزز) وذلك بمساعدة إحدى الشركات المصرية المتخصصة في تصميم تطبيقات الواقع المعزز والواقع الافتراضي. ثم قام الباحث بتقييم هذا التطبيق من خلال تطوير إطار مقترح لدراسة تأثير استخدام هذا التطبيق على النوايا السلوكية للسياح تجاه منطقة مجمع الأديان. واعتمدت المنهجية المستخدمة لتقييم (تطبيق مجمع الأديان بالواقع المعزز) على المنهج التجريبي والمنهج الكمي. شمل مجتمع البحث جميع السياح (سواء السياح المحليين أو الدوليين) الذين قاموا بزيارة الوجهة السياحية المعروفة باسم (مجمع الأديان بمنطقة القاهرة القديمة) خلال فترة جمع البيانات. وقام الباحث بتوزيع قوائم الإستقصاء على عينة ميسرة (جسم العينة 384 مفردة) من السياح المحليين والدوليين (الذين زاروا منطقة مجمع الأديان خلال فترة جمع البيانات) بعد تجربتهم لتطبيق (مجمع الأديان بالواقع المعزز). تم جمع البيانات على مدى شهرين (من بداية نوفمبر 2023 إلى نهاية ديسمبر 2023) والحصول على (293) قائمة إستقصاء صالحة للتحليل الإحصائي بمعدل استجابة بلغ 76.3%.

نتائج البحث: استنتج الباحث مايلي:

- 1- يمكن استخدام تطبيق الواقع المعزز المصمم (تطبيق مجمع الأديان بالواقع المعزز) كبديل أو مكمل لعمل المرشدين السياحيين البشريين، بالتالي حل بعض المشاكل (التي كشفت عنها الدراسة الإستطلاعية) التي تواجه السياح فيما يتعلق بطرق الإرشاد السياحي في "مجمع الأديان"، مثل مشكلة نقص المرشدين السياحيين البشريين، ومشكلة عدم كفاية المعلومات التي تواجه السياح مع المرشدين السياحيين البشريين.
 - 2- دعم تطبيق الواقع المعزز المصمم (تطبيق مجمع الأديان بالواقع المعزز) النوايا السلوكية للسياح تجاه منطقة مجمع الأديان، مما يدعم السياحة المصرية بشكل عام، ويدعم "مجمع الأديان" والسياحة الدينية بشكل خاص.
- الكلمات المفتاحية:** تكنولوجيا الواقع المعزز، النوايا السلوكية للسياح ، قطاع السياحة في مصر، منطقة مجمع الأديان، تطبيق مجمع الأديان بالواقع المعزز.

List of References:

1. Aziz, N., & Friedman, B. A. (2019). Augmented reality: The proposed moderating role of hedonic and utilitarian motivations on the intention to visit a destination. **Strategic Innovative Marketing and Tourism**. Springer, Cham, pp. 1065-1073.
2. Carvalho, M. (2022). Factors affecting future travel intentions: awareness, image, past visitation and risk perception. **International Journal of Tourism Cities**, 8(3), pp.761-778.
3. Chen, C. F., & Tsai, D. (2007). How destination image and evaluative factors affect behavioral intentions?. **Tourism management**, 28(4), pp. 1115-1122.
4. Chung, N., Han, H., & Joun, Y. (2015). Tourists' intention to visit a destination: The role of augmented reality (AR) application for a heritage site. **Computers in Human Behavior**, 50, pp. 588-599.
5. Chung, N., Jia, J., Xiaorui, T., & Koo, C. (2019). The influence of technology readiness on satisfaction and destination loyalty toward augmented reality technologies. **Pacific Asia Conference on Information Systems (PACIS 2019 Proceedings)**.
6. Elbehary, H., Elsayed, M., Abdelghany, N., & Mandour, Y. (2021). Post Covid-19 Tourism: Promoting the Holy Family Trail as a Niche Religious Tourism Destination. **Paper Published by The Public Policy Hub- GAPP School, (AUC)**.
7. El Filali, Y., & Krit, S. D. (2018). Augmented reality types and popular use cases. **International Conference of Computer Science and Renewable Energies**, pp.107-110.
8. Elnagar, A. & Derbali, A. (2020). The importance of tourism contributions in Egyptian economy. **International Journal of Hospitality and Tourism Studies**. 1(1): 45-52.
9. Fatouh, T., Bayoumi, E., & Orloff, M. (2022). Investigating the Impact of the Russian-Ukrainian Conflict on the Egyptian Market: Insights

from Multiple Sectors. **International Business Logistics Journal (IBL)**, 2(2), pp.83-94.

10. Hammady, R., Tolba, R., & Elzeney, M. (2023). Compendium of Extended Reality Tech and Business Models for Arab Countries, 1st Edition. ESCWA-United Nations.
11. Loureiro, S. M. C., & González, F. J. M. (2008). The importance of quality, satisfaction, trust, and image in relation to rural tourist loyalty. **Journal of Travel & Tourism Marketing**, 25(2), pp. 117-136.
12. Marie, M. & Zaki, H. (2016). Historic Cairo in The Era of Augmented Reality: Opportunities and Challenges. **Journal of the faculty of tourism and hotels JFTH**, Vol. 13, Issue 2, pp. 21-35.
13. Ramadlani, M. F., & Hadiwidjaja, D. (2012). Determinants of Tourist Revisit Intention to Kota Batu. **Jurnal Ilmiah Mahasiswa**, 1(2), pp. 1-20.
14. Recupero, A., Talamo, A., Triberti, S., & Modesti, C. (2019). Bridging museum mission to visitors' experience: activity, meanings, interactions, technology. **Frontiers in psychology**, 10, Article 2092, pp. 1-10.
15. Selim, M., Aidrous, I., & Semenova, E. (2020). International tourism: Prospects for development in the post coronavirus world (Egyptian example). **International Journal of Management (IJM)**, 11(7). pp. 1145-1155.