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## **Modern and innovative technologies associated with museum tourism**

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### **Abstract:**

#### **Research problem :**

- Can modern technology be used in advertising ,through the effect of augmented reality, especially museum tourism advertising in Egypt?
- Does the augmented reality present a difference from the real reality, where stimuli are added to it that attract the recipient?
- What are the differences in the advertising process, especially in tourism advertising, which resulted in a desire to facilitate the process of finding distinctive characteristics for what will be advertised in a smoother way than its counterparts in the real reality?
- What are the rules followed in the implementation of graphic designs associated with museums that are compatible with augmented reality technology?

#### **Key words:**

Modern technologies -innovative technologies - museum tourism

**Research importance:**

The importance of the research lies in the fact that augmented reality has become of great importance in the field of advertising, as it contributes to promoting and revitalizing tourism, especially museum tourism, which helps to attract the public towards the advertised product. The use of modern technological means and keeping up with the times, entails showing the Egyptian museums in a more modern way through the use of modern methods and keeping pace with the times to promote their historical monuments.

**Research objectives:**

- Highlighting the variables that have been introduced in the advertising media.
- Studying modern graphic rules that are implemented using augmented reality technology.
- A comparative study on models of global graphic designs used in the field of museums with augmented reality technology
- Implementation of graphic applications through augmented reality technology on the Egyptian Museums (Alexandria National Museum)

**Research limits:**

- **Time limits:** from 2000 to 2020
- **Spatial limits:** available from countries of the world.

### **Basic information on virtual reality, augmented reality and social media technologies for museums:**

- Museums face one of the most important challenges of their recent history. In order to adopt new technologies and follow the overall technological pace of the industry, museums must reinvent themselves by developing new ways of providing content to their audience or even using technological aspects to create new content. The technologies in use today can be divided according to their “location “ in the virtual continuity string,

- On the one hand there is the physical world and real environments. In real environments (such as the physical setting of museums or galleries), a series of techniques can be applied.

- First of all, there are technologies that can only re-introduce the physical world for the digital age. These technologies are Video 360 and VR Videos. Moreover, in the real environment social media technologies can be categorized. Their difference from the above technologies lies in the fact that social media technologies aim to develop a more artistic view of reality, creating new forms of public art. Previous techniques target "representation of accuracy", while later techniques target audience approval (via "likes", re-tweets, re-share, ...etc.) focusing less on accuracy and more on artistic representation.

The user can participate in more complex levels of virtualization by leaving a real environment. Augmented reality aims to provide the user with rich content, which must be directly related to the physical world.

By using mobile devices (such as tablets and smartphones), users can enrich their experience while visiting the museum by augmenting reality (for example, putting original colors on an old statue or visualizing what it would look like (a partially destroyed statue if restored)).

A more complicated situation comes when implementing augmented virtualization. Under its environment, augmented virtualization mainly aims to enrich virtual worlds with content coming from the real world (eg with appropriate digitization). The boundaries between virtual reality are usually clear and well defined, while the reasons for bringing digital real items into a virtual world lie in the desire to bring historical elements into a fantastic world or situation. Finally, virtual reality can be defined as a purely artificial environment aimed at embodying users and deepening their experiences, leading them to the limits of forgetting the real world. All of the above reshapes the environment of museums, moving them from just a real environment to a mixed reality world.

Museums have already demonstrated a willingness to adopt these technologies, although modifying them could be faster and more decisive. Museums can realize the potential of digital technologies by reaching a wide audience and increasing their attractiveness, but it is clear that they are facing a shortage of vital resources (such as specialized financial and human resources) leading to “follow-up” technological changes to the proposed capabilities that can be summarized in: (Loumos et al.( 2018)

- Reuse of exclusive digital content for traditional (eg artistic or historical) and alternative uses (eg online gaming or cinema)
- Exploiting content to reach mass markets at the global level
- Enriching the experiences of users and visitors.

The technologies most prevalent among museums come mainly from social media technologies, as these technologies have become popular in recent years capable of providing answers to the promotion of museums. More specifically, social media technologies are used as part of communication and public relations techniques in museums.

The role of "photography" was in the museums' everyday work and their communication strategy. So that photos are used in social media as quick moments of communication and also for the exchange of experiences.

p.121 Budge & Burness ( 2018).

Social media has been based on images and digital photography has developed on the central elements of social networks.

On most well-known social platforms, such as Facebook and Instagram, photos and videos are used as a point of reference, while images appear more positive rather than text. The above facts regarding the use of social media are common both within and outside the museum sector.

When talking about the cultural sector and especially museums, social media aims to bring the user and the museum together with the aim of creating interaction. Until the digital age, attachment was cultivated in the physical setting of the museum.

Through social media, participation may increase or develop after the visit, when a visitor returns home and wants to see something again or learn about something new.

O'Brien and Toms defined it as “the quality of a user experience that is characterized by the attributes of challenge, positive influence, endurance, aesthetic and sensory appeal, attention, feedback, versatility/renewal, interaction and perceived user control.” ( O'Brien & Toms, (2008) p.11 )

Moreover, the widespread use of the Internet has modified the traditional ways in which organizations communicate with their audience and introduced modern ways in order to reach their audience and disseminate their art and information, so that the cultural department, and more specifically museums, cannot constitute an exception in this direction.

Padilla-Melendez & del Aguila-Obra,( 2013

As a result, developments in information technology are leading to rapid developments in cultural communication, and communication strategies for museums have been designed based on online tools, such as the web and social media. However, the case of museums is not uncommon.

Both the audience the museums address and the information the museums share are made up of privacy. (Padilla-Melendez & del Aguila-Obra, (2013))

For this reason, it is important to consider these characteristics before deciding the most effective way to address the public and present museum information through social media.

It is important to consider that as the subject of museum promotion, the visitor has visual contact when on a live visit. Thus, this will be the basis for building a digital communication strategy. In particular, through social media, the visitor should be able to live the experience and feel in any way the interaction with the museum. Among the most popular social media, Instagram is the most popular in museums. Instagram looks like an online gallery, presenting information through images or short videos, accompanied by short text, smart logos and hashtags. Museums with an online presence seem to prefer this online media, as the most artistic and appropriate in the cultural sector among the massive social media.

This part of the current chapter aims to contribute to an understanding of the relationship between Instagram and museums, while specific examples of museums using Instagram will be provided, in order to illustrate this topic.

### **Digital museum projects using virtual and augmented reality technologies**

Virtual reality and augmented reality technologies have done nothing for museums. Beginning in the early 2000s, a series of researchers developed their frameworks and studied how interactive technologies can be implemented in museums, or how interactive museums can become a reality.

Bowers et al., (2007); Brown et al., (2003)

Each of these projects had its own purpose, while the end product came to serve a unique purpose. From serving educational goals to creating 3D multimedia tools, each project had a unique character, while at this point there was no common and widely accepted vision of how virtual reality technologies could be applied in cultural industries. Soon, more and more applications were introduced that include aspects such as:

- Recreating Ancient Rome  
( Dylla, Muller, Ulmer, Haegler, & Frischer, (2009
- Presenting Minoan civilization and culture through the Archeomatica project.  
(Sangregorio, Stanco, & Tanasi, (2008))
- Develop copies of artifacts from Syracuse, Italy and test them on mobile devices via augmented reality technology  
Stanco, Tanasi, Gallo, Buffa, & Basile (2012
- Create 3D models of cities such as Hamburg and Saint-Omer  
Kersten, Keller, Saenger, & Schiewe (2012)

It's all part of a great bibliography about virtual reality and augmented reality technologies aimed squarely at the cultural industries. Their results indicate that both technologies aim to provide a different experience and outcomes for their users. Moreover, museums can exploit the unique properties of a technology to achieve different goals. Loumos et al., (2018)p.22



For example, augmented reality technology has been shown to provide high added value in cases that include: user experience, provision of information and content through alternative methods and reconstruction of damaged items/artifacts/buildings. On the other hand, VR technology is ideal for creating virtual environments and museums, to support experiential learning or other educational purposes and of course to entertain users.

The authors emphasized that from their own project implemented in 2015 which aims to create a 3D representation of Nafplio (Greece) as it was in the nineteenth century. . Where the principles of non-reconstruction were used in order to configure how the historical monuments of the city.

Kargas, Loumos, & Varoutas, (2019)

The developed application is the property of a local museum (Papantoniou" Peloponnesian Folklore)

(Folk Heritage Foundation), which is used to attract visitors and for educational purposes via an online 3D quiz game. A small portion of the materials used and the 3D model of an important Fragkoklissia Church building are on display in Nafplio,



Fig 1  
**(Fragkoklissia church)**

This sector is experiencing increasing tension as it is gaining the interest of researchers Vayanou, Ioannidis, Loumos, & Kargas (2019)

This tension is expected to gain more attention in the coming years as a result of the current and future large-scale digitization of cultural artifacts as well as through technological development and facilitation in implementing new forms of technological applications

### **Museums through Instagram**

Recent surveys have proven that the social platform, Instagram, is best suited for museum publishing as it combines visualization with a sense of the aesthetic. Instagram is now the most popular and widespread social platform for museums. Due to its aesthetic strength, user-friendly design, and popularity, museums are increasingly using Instagram to publish their exhibitions and experiences. The extent of social media use as well as technological developments has indicated an interest in internet strategy.

The power of the image has changed the role of photography and spawned new channels of communication. This new development is taken into consideration while designing the online strategy as a key point of the latest development. The digital age has affected museums as well as the strategy to be pursued.

The first point to check is the goal of your online museums strategy. In particular, it should be clear whether a museum is using social media in order to promote itself, to publicize its exhibits, or to advance visitor learning. The primary concern of this strategy should be clear before you start designing the online strategy.

(Guazzaroni & pillai , ( 2020) p.123 )

The online museums strategy is designed while first defining the messages as well as the target audiences they aim to reach. In particular, specific messages are designed for each target audience in order to effectively promote the museum or its exhibits online. The Internet audience is usually younger and familiar with new technologies. This means that the audiences in the online communication strategy may differ from the overall communication strategy, and thus the messages as well. The most common is the use of social media to facilitate engagement with users and to introduce new types of engagement.

In addition, through social media has begun to offer a variety of capabilities to visitors. The decision to be made within the online strategy formation is what capabilities will be used. For example, in the case of using photography, what should be considered while designing the online strategy, is the scope of photographic communication. Image-based communication may be memories or storytelling. In the first option, people search for photos of events or visits that they have made and remember in their memory the visit as well as their feelings during the visit. On the other hand, in the storytelling option, people tell a story to other people who were not present at the event or visit, trying to move forward.

Another way to engage users while designing the online strategy is to include others in the museum experience through tags, comments, and open online conversations. In addition, the museum should have effective and strong hashtags to increase its followers and attract people interested in the cultural sector. All of the above reflects the call for museums to be more responsive, democratic and reflective and to reach a wider audience outside museum premises.

Guazzaroni & pillai (2020) p.24 )

While talking about museums using Instagram, a new trend emerged, developing this tension, which is Instagram museums.

These museums are designed taking into account the widespread spread of Instagram and depends on the direction of Instagram posts and stories. This type of museum aims to attract visitors in order to create Instagram posts and stories.

## **Museums using Instagram “ The instagram” Museums”**

A series of models will be presented with the aim of revealing how each of the museums using their social media and more specifically their Instagram account.

Recently, there has been a great development in the museum sector, and this development was more than unexpected, especially for the traditional cultural sector. However, no one can argue that this is a new trend in museums that will strongly influence the formation of a new culture.

As mentioned above, Instagram tends to be a popular online tool for networking and posting about museums and their exhibits. In addition, we have seen the widespread use of new technologies, such as virtual reality and augmented reality technologies in museums, which will certainly change both the world of museums and the world of Instagram, we will provide some examples of Instagram museums to explain this new trend.

### **Museum of Ice-Cream**

The Museum of Ice Cream was the first Instagram museum to open in 2016. Since then, it has inspired a variety of concepts to come to life. The idea behind this museum is to provide miniature sweet things, inspired by happy childhood, where visitors can take pictures and live the experience of being a child, licking ice cream or lollipop, making snow angels, etc. This experience costs about \$38, while there are a limited amount of tickets Goldstein , (2018)

The idea of the Ice Cream Museum is based on the user experience, this experience is located in San Francisco and New York. In the physical building, the user enters into a museum where they can taste ice cream, play and interact.

This museum has an Instagram account, more than 2,000 posts and about 394,000 followers. Her ultimate goal is for users to experiment with her environment in order to take funny pictures, which is why she only maintains an Instagram account instead of other popular social media.



fig2 Museum of Ice-Cream

### **Color Factory**

The Color Factory launched in San Francisco, in 2017. The owner was a blogger who collaborated on this idea with an artist and designer to create a rainbow-themed place. It started as a colorful celebration that will only last for one month. It finally lasted for another eight months. Now it is hosted in New York City while in parallel it organizes experiential exhibitions to engage a wider audience in other venues, such as Houston in Summer 2019. In New York. Artists, designers, etc. participate in narrating their colorful work and engaging visitors.

Color Factory depends on user experience as well. Besides its physical location, it maintains an Instagram account as well as a Facebook account. It has an Instagram following of 237,000 people and his posts are mainly color images taken from user experience



**fig 3 Color Factory museum**

## **Candytopia**

Candytopia is another Instagram Museum, which is based on the idea of user experience. It is not intended to be a museum, retail site, or theme park, but rather places designed to provide entertainment.

In particular, the concept behind Candytopia is to provide a perfect and fairy scene in order to take a picture and share the best pictures with your friends and followers. The scene is organized around a series of rooms, with different motifs, focusing on sweets. Animal figurines made of gummy and jelly bears. At the moment, they are located in three different locations: Dallas, Houston and Philadelphia..



In terms of social media, Candytopia maintains an Instagram account as well as Facebook. Its Instagram account follows CANDYTOPIA's logic full of colors and happy sweets. The account, followed by 223,000 people, primarily provides posts - both videos and photos - showcasing the user experience at Candytopia's headquarters.

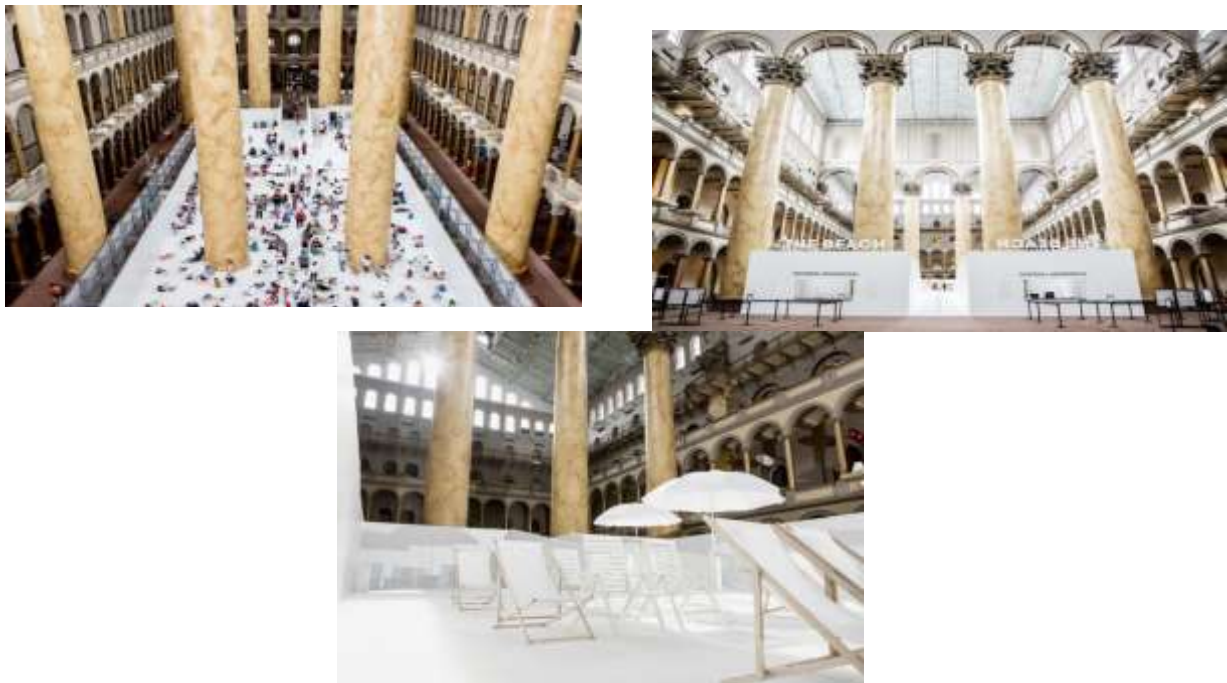


**fig4 Candytopia**

### **The Beach on Snarkitecture :**

The Beach was initially launched in 2015 in Washington. Since then, it's flown to Florida, Sydney, Paris, Thailand and many other places around the world. The idea behind the Beach was, "Make your day at the beach familiar, enjoying the view, the waves, creating bubbles, playing as a kid, and using everyday items. Chairs such as beach chairs, umbrellas, lifeguards and other elements that symbolize the going beach experience are scattered throughout the beach including the landscape and presenting the beach experience to the participants.

It has around 237,000 followers and offers around 1,400 posts mostly with professional photos that show the Snarkitecture scene in a more artistic way.



**Fig 5 The Beach on Snarkitecture**

## Louvre Museum

The Louvre was founded in 1793 during the French Revolution. Its collections are displayed on five levels, in 3 connected pavilions named after three prominent figures from French history:

Richelieu (1585-1642), prime minister of King Louis XIII,

Sully (1559-1641), Prime Minister of King Henri IV

Denon (1747-1825) first director of the Louvre

The Louvre Museum has 3.2 million followers. The account contains about 1,850 publications that mainly present exhibits or photographs of museum buildings. The posts are focused on the imaging tool and there is no video from inside the museum. However, there is only a short clip promoting the external structure of the museum. It is worth noting the interaction with Instagram visitors, as each post collects an average of 300 comments



Fig 6 Louvre museum

### **Acropolis Museum**

One of the most famous and most modern Greek museums is the Acropolis Museum, which attracts a large number of visitors. It has been available on since 2015 and has nearly 9,000 followers. This account contains over 123 posts featuring the Museum, its activities, the Acropolis monument, as well as exhibitions held in the Museum. In addition, it appears to be used indirectly as a marketing tool, as it promotes gift ideas that will be sold in the museum.

### **Virtual and augmented reality tours of museums through 360 . technology:**

360 Virtual reality and augmented reality technologies have been integrated into museums, providing new experiences for visitors as well as users online. With new technologies, the user can visit an online museum while at home or at work, take a digital look at the exhibits and visualize this experience by highlighting their points of interest

### **National Museum of Natural History**

The National Museum of Natural History Tour has created an online virtual tour through a sample web VR platform, which is available here. This means that visitors can visit the museum through their laptop or mobile phone. During the tour, the visitor can live the experience of visiting room by room, entering rooms, navigating between exhibits and searching for exhibits still on display in the physical museum.



**fig 7 National Museum of Natural History**

**Renwick Gallery, Smithsonian American Art Museum Renwick**

Tech 360 Presents Renwick Gallery, Smithsonian Museum of American Art.

The application called "Renwick gallery wonder 360" can be downloaded for free from Google Play and the app store. So that the visitor can move in the Renwick exhibition to explore the place and the works.



Fig 8 Tech 360 Presents Renwick Gallery, Smithsonian Museum of American Art

### **The Louvre Museum**

This wonderful experience presents the Louvre Museum As expected of such a famous museum all over the world, the visitor can take a tour of the museum, both outside and inside. The visitor may choose the hall he prefers to visit and enter it. It is also able to scroll and zoom in or out.



**fig 8 Louvre museum**

### **Metropolitan Museum of Art**

The Metropolitan Museum of Art offers a 360 tour of the museum in a simpler and more widely available way. Through the YouTube 360 platform, the Metropolitan Museum offers the visitor the experience of accessing the museum's buildings.



**fig 9 Metropolitan Museum of Art**

An award-winning virtual reality project, The Ancient Egyptian Collections Project, by the Metropolitan Museum of Art includes six short virtual reality videos and has been viewed 11 million times to explore the museum's interior. Awards for this project include the 2017 Webby Award, Best Culture and Lifestyle Video, as well as the 2017 Shorty Award, and Best Cultural Foundation. The Metropolitan Museum of Art and the British Museum are collaborating to create a virtual gallery to allow visitors a virtual experience through Google Cardboard), both The VR Video and 360-degree project allow users to experience the Temple of Dendur, which was built around 15 BC. When the Roman Emperor Augustus ruled Egypt



**fig 10 Google Cardboard**



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