Design Temporary and Virtual Exhibitions

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Abstract:

Companies and institutions are interested in displaying their works with the aim of creating a commercial promotion for their products, and accordingly there are many and varied types of exhibitions, whether permanent or temporary exhibitions and there are factors affecting the design like area of display and the number and quality of exhibits, whether they were products or museum exhibitions and others and technological capabilities and modern materials had a huge effect on the designs and creation of new exhibition types like interactive exhibitions as well as digital presentations for museums and also online shopping ...etc The research will deal with the design of temporary exhibitions, interactive exhibitions and virtual exhibitions and focus on their classification with analysis and identification of the general features of the design and clarify the most important aspects, especially the buildings of the main exhibition halls and international trade fair halls in which temporary seasonal exhibitions and temporary museum exhibitions and their relationship to the economy and tourism.

Research Problem: The problem lies in:-

• How to design temporary exhibitions, interactive exhibitions and virtual exhibitions? and the difficultys of designing ?
• Shortage of knowledg of designing those exhibitions in foundations, standards, principles and the general characteristics of each type and what are the factors affecting them?
• And how to apply booth in an exhibition?

Objectives: The research aims to:-

• Clarify and explain the general characteristics and basic criteria for establishment of temporary exhibitions or virtual exhibitions especially interactive exhibits in order to achieve competitiveness and development.
• Apply the study on ideas for designing Pavilions in temporary exhibitions.
• Conducting an applied study on presenting assuming ideas for a virtual exhibitions.

Methodology: The study uses:-

• The analytical descriptive methodology in Clarifying and explaining the Design criteria of Temporary and Virtual Exhibitions and types by analyzing a selection of temporary exhibitions designs.
• The applied descriptive methodology in Designing pavilion for "EL MARAKBY STEEL" company in the temporary exhibition "Metal & Steel "in "Egypt International Exhibition center ,Cairo –Egypt".
Also the study has concentrated on presenting assuming ideas for (a mobile application and an internet game and webpage) as an application for the virtual exhibitions design and a proposed design for a building named the Fourth Pyramid.

Key words:
Exhibition design and types, temporary exhibitions, interactive exhibits, virtual exhibitions, digital exhibitions and museum exhibitions.

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Technological capabilities and modern materials have a huge effect on design and creation of new exhibition types, like interactive exhibitions as well as digital presentations for museums and also online shopping ...etc.

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1 Exhibition design standards

Exhibition, shows, displays, fairs are all words used to mean the same sort of things, when exhibition professionals communicate with each other, the first exhibitions were probably displays of goods for sale on market stalls even in those simple circumstances, efforts were and still are made to display things in such a way that people are encouraged to move close and admire them. (1) So exhibition design is the distribution of the elements or the consumer goods (which are divided into four categories, which are convenience goods, shopping goods, specialty goods, and unsolicited goods. The two economists, Nelson (1970) and Darby and Cami (1973) (2) , have divided goods into three categories: research goods, expertise goods, and certification goods)and with taking into account the nature of exhibitions that means each one is a unique event. Every exhibition tells stories that can be interpreted in many different ways; the process of exhibition design is predominantly about conversations. When in search of the 'big idea', the designer will tease out the ideas, Technical drawings then finally test the 'build ability' of a design idea. What is it made from? How is it constructed? Is it safe? Is it sustainable? (3)   When developing new shapes, we primarily focus on technology specifications and conditions (4) and so, eventually, comes the installation of the exhibition. So the designer distribute the products in a particular program on an elected site in order to achieve sound functional relations with different functions, such as entrances and exits which must provide a sufficient number of them and distributing them so that they do not lead to a movement breakthrough, also the relations between suites, landscapes and study of the internal transportation. (5) There are some conditions in the exhibition place which should be available like how it is easy to reach? The area should commensurate with the number of booths or pavilions, also the expected number of people to avoid crowding. Creating an exhibition design poses a unique set of challenges as the structure must be quick to be built, portable and often re-usable. What is more is that many exhibitions are built to fit inside an existing building or structure and they are typically operating with small budgets, yet despite these constraints were vanguard and innovative exhibition designs are abounded, and exhibition design showcases displayed the best examples from all over the world. (6) Designers divide the hall into small pavilions and separated all the functions which create an open space focusing on exhibition design and movement circulations.

1-1 Exhibition Definition

It is a place where goods are displayed where samples of scientific, artistic, or industrial products are displayed, etc. (7) and the trade fair (8) is an exhibition that is held regularly periodically, and merchants participating in it to display their goods and make deals, for direct sale to individuals who visit the exhibition.

1-2 Exhibitions classification
1-2-1   Permanent or temporary exhibitions

Which are classified into open and closed, based on implementation (individual or collective), according to the time period (short term - medium term - long term), changing exhibitions (periodical or with private collections), place of residence (fixed or mobile).
   There are two purposes for designing exhibitions which are

Non-profit service exhibitions, such as exhibitions that provide support and a significant reduction in product prices.

Consumer exhibitions such as furniture fairs like Le Marche (9) exhibition and others.

1-2-2   Virtual exhibitions on web pages It is a way to hold an exhibition on the internet

1-3 Foundations of Exhibition Design

Exhibitions are powerful marketing tools, if well planned for them, the return on investment can be very high and it is related to the quality of the building as it cannot be separated from its partial details (10) which depends on the mutual relationship between the whole and the part where the correct details can have a structural meaning.

1-3-1   Design theory

1-3-1-1Gestalt theory

Taking into account in designing and drawings (elevations and sections), the Gestalt theory which consider that the whole as an integrated entity whose characteristics and features differ from the properties and attributes of the elements and components of this whole.

Understanding this theory depends on understanding the set of principles of its own, which is represented in the set of plastic laws that affect the perception of shapes and so the importance of it is due to the information you provide about how we perceive the spatial content with its various elements and the theory focuses on the law of pragnanz, continuity, closure, common fate, similarity, symmetry, proximity, past experience and (simplest and largest) figure and ground.

1-3-1-2Visual perception

Where directing the visitor's vision of the place by following the theory of perception visual (11) (which is the ability to interpret the surrounding environment using light in the visible spectrum where objects reflect into the environment (12).. Because eyes move symmetrically under normal conditions, however horizontal wedge allows objects to merge visually at different distances. Controlling eye movements begins in the cerebral hemispheres, specifically within the frontal eye areas, and then the tract descends to the brainstem and receives information from the visual cortex, the superior colliculus, and the cerebellum. (13))

So the maximum height of the units is 4 meters must be taken into account, depending on the rate of Visual perception, also avoide placing a large cabinet or table or other display across the front of the booth which can prevent trade show attendees from entering booth space, so keeping the front of booth open creates an inviting appearance.
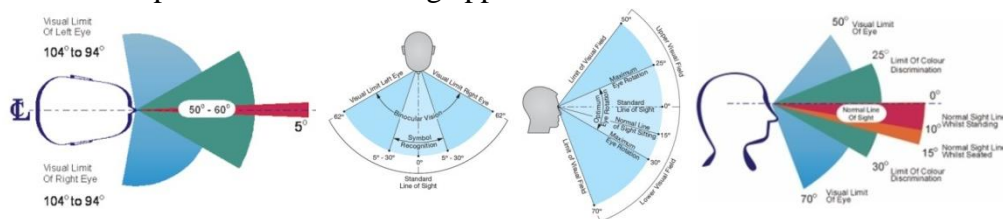
Picture (1)   visual perception eye areas

1-3-2   Function
It is represented in the human sensory demands, and study of the nature of the visitor and his behavior in the space, and the effect of different spaces according to terms of scale, and direction of movement. method of lighting, finishing materials,

1-3-2-1Scale
Scale is defined as the relationship between the dimensions of the part to the whole and in the case of the exhibition, the appropriate scale for the function results from the interaction of a group of exhibition dimensions with the type and size of the exhibits and the movement of the audience and its size and taking into account the arrangement principles that follow the theories of organizations, additives and the form of offering.

1-3-2-2Direction of Movement and circulation
Laying out the layout of the display area and taking into account the movement leading to it, it is important to unite the movement circulation for walk lines of people in a way to enable them to see the exhibition easily without misleading the road or feel bored or tired and we should take into account changes that may occur in the expected movement, to prevent gathering. (14)
o The limited walk line: (15) it is used to provide a sequential topic and its space should not exceed 100 Meter with having a sufficient place in front of walk lines, so that the visitor can stand and contemplate what is displayed without blocking the passage.
o The unlimited walk line: (16) it is used in exhibitions which do not need sequence such as commercial markets in the form of a sequence of showrooms bound with lanes.

1-3-2-3Lighting
The lighting design helps to clarify the function and characteristics of the exhibits and enable the visitor's eye to perform its function freely without getting tired and give a feeling of familiarity that helps to notice the fine detail.
   There are two types of lighting
o Industrial lighting: The type and design of lighting affect the features of the interior space and exhibits.
o Natural lighting: In the case of large exhibition surfaces, they are used to link the exhibition halls and interfere with the surrounding atmosphere, and the colors of the exhibits are the important element in the display.

Determining booth lighting (17):
Exhibitors should adhere to the following suggested minimum guidelines.
o No lighting, fixtures, lighting trusses or overhead lighting is allowed outside the boundaries of the exhibit space.
o Lighting which is potentially harmful, such as lasers or ultraviolet lighting, should comply with facility rules.
o Lighting that spins, rotates, pulsates, and other specialized lighting effects should not be interfering with neighboring exhibitors or otherwise detract from the general atmosphere of the event.

o Placement of ceiling lights in close proximity to displays; light may spill onto the screen surfaces.

1-3-2-4 Finishing Material

Floor: Raised floor systems are used in the design of the main halls for display, and underneath electrical cables are connected to all the display booths of different companies.

Usually carpets are used because they reduce noise, absorbs sound, easy to clean, and do not require the use of a specific medium in installation.

Ceiling: Usually in the main exhibition halls the ceiling is designed as an exposed ceiling in order to install or fix all the supplies like HVAC and plumbing and lighting in an easy way.

Color: It is an important visual influencing factor in the design of space, and homogeneous colors may be used to connect a group of things of one nature. (18)

1-4 Methods of presentation

1-4-1 The one-design exhibitions:

This exhibition takes a standard format or a total of specific forms, there are similarities in colors, materials, details which help on the visual coherence and unity. (19) Modular stand Booths, Standard Exhibition Booths, are environment-friendly. (20) They can be reused and easy to install and assembled into different sizes according to customers' requests. (21)

1-4-2 The free design exhibitions:

It is a free shape composition but the basic problem is how to find the homogeneity to achieve a comfort to the viewer visually. (22)

1-5 Booth Regulations and Types

There are four types of booth configurations: Standard/Linear, Perimeter Wall, Peninsula, and Island. (23)

1-5-1 Standard/Linear Booth (10' depth)

It is any booth that shares a common back wall and abuts with other exhibits, on one or on its flanks or back generally, inline exhibits are 10' x 10' or 10' x 20 inch with a max back wall height of to 8 inch, may be maintained on the sidewall of the booth up to a distance of 5' from the front aisle. The remaining length of the sidewall may be no higher than 4' (24). The best way to interest prospects when approach custom inline exhibit are elements such as exhibit design, space usage, brand colors (25), inviting visuals and furniture selection to come into play. (26)
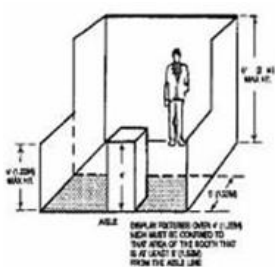
Picture (2) the in line exhibition

1-5-2   Perimeter Wall Booth (10' depth) Custom Modular Trade Show Exhibits

A standard/linear booth found on the perimeter walls of the exhibit floor, the maximum height is 12'. This 12' height may be maintained on the sidewalls of your booth up to a distance of 5' from the front aisle. The remaining length of the sidewall may be no higher than 4' (27).

Picture (3) Perimeter Wall Booth exhibition this 20' x 20' custom modular exhibit utilizes an aluminum extrusion frame

Custom modular exhibits (28) feature some of the same base elements of prefabricate modular systems such as aluminum extrusions, fabric graphics and accessory pieces, however these exhibits are built entirely to exhibitors' specifications. (29)

1-5-3   Peninsula Booth

Any exhibit of 20' x 20' or larger, if backed by a row of standard/linear booths, the back wall may be no higher than 4 inch for a distance of 5 inch from either side aisle and 20' high in the center of the back wall. These height restrictions must be maintained for a distance of 10' from the back wall. Where two (2) peninsula booths share a common back wall ("split Island"), the maximum height may be 20' in all areas of the booth, including the back wall (same as Island Booth rules) (30).   Three out of four sides are exposed to an aisle The typical size for a booth is 10′ x 20′ or larger and there are two types of Peninsula Booths; one that backs up to Linear Booths, and one that backs up to another Peninsula Booth and is referred to as a "Split Island Booth" and Hanging structures are usually permitted. (31)

Picture (4) the Peninsula Booth

1-5-4   Island Booth

It is exposed to and surrounded by aisles on all four sides typically 20 x 20 inch or larger, and hanging structures are usually permitted above it with height restrictions varying by trade show (32), but typically it is between 20 and30 inch and usually the design based on the axis point with independent structural elements positioned near the corners and perimeter of the exhibit to flow in and out of the space reducing clutter and traffic build up. (33)

Picture (5) the Island booth

1-5-5   OTHER CONSIDERATIONS

Canopies and Ceilings Canopies, including ceilings, umbrellas and canopy frames, can be either decorative or functional (such as to shade computer monitors from ambient light or for hanging products).

Hanging Signs and Graphics Hanging signs and graphics are permitted upon approval in all standard Peninsula, Island and Split Island Booths, with a maximum height of sixteen feet (16 ft.) (4.87m) to the top of the sign as measured from the floor. (34)
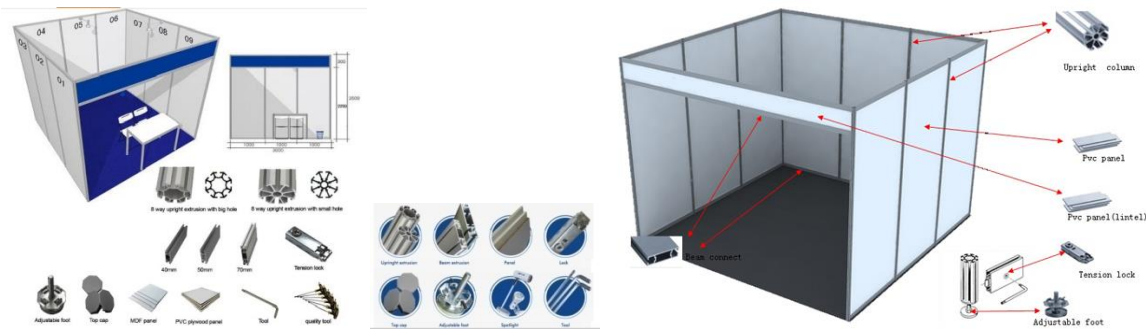
Picture (6) the Modular Stand Booth sit can be packaging and shipping

2 Temporary exhibitions (traditional and interactive)

2-1 Interactive exhibits

Interactive design has become the global trend in design practice in the twenty-first century, and it has emerged as an attempt by designers to integrate their work with IT outputs.

Interactive design is concerned with the behavior and performance of the product and its interaction with people, and how the user makes the decision because it is the main focus of the design process and this requires a greater understanding of the user's behavior.

Creative thinking depends on providing mechanisms that enable us to achieve it, including flexibility and experimentation. Creative thought also goes through many sequential stages, beginning with the preparation stage, then the training stage, then the conviction stage, and finally, the application stage comes as preparation stages from the creative point of view, and the relationship of intellectual creativity to technological development has a close role for the development of design.The research aims to identify the impact of interactive design and its modern technologies on the creative thinking of the interior designer. (35) When designing kiosks, there is always a focal point of attraction that takes visitors on a journey with something unexpected such as unconventional shapes, creative product display units and graphics, the use of optical illusions design, or the use of large and huge screens in displaying product types and kinds, but if product designs and alternatives are presented using Interactive screens or hologram, it will be more attractive to visitors like Atmosphere, Science Museum London that

was designed by Casson Mannit, it is a highly complex project required a high degree of 3D modelling and construction of complicated shapes and forms manufacture, it was commenced in September 2010, (36) also Houston museum of natural science. (37)

But in "Future Energy Chicago" (38) at the Museum of Science & Industry, they required solutions for how visitors could power an exhibit. So the concept of the design is that when guests enter through the "Energy Garden" their own bodies bring the exhibit to life. Visitors pedaling stationary bikes produce visual light effects. Guests crank a hand generator and activate an array of plasma trees

Picture (7) Atmosphere, Science Museum London and Houston museum of natural science

Picture (8) exhibition of 5 senses and Museum of Science & Industry required solutions

2-2 Museum exhibition design

The making of a plan for the construction of public displays for the purposes of education, study and enjoyment in the service of society and its development. (39) The objective of the proposed museum should be clearly defined, as well as the geographic region, the subject (history, natural history, or art) and extent of display and other services.

A good museum includes these basic functions: (curatorial, display, display preparation, education). In order to realize both objectives and functions, certain facilities and spaces are essential. (40) For example the Greenpeace exhibition in the OZEANEUM exhibition whales and giant sea creatures in original size models. (41)
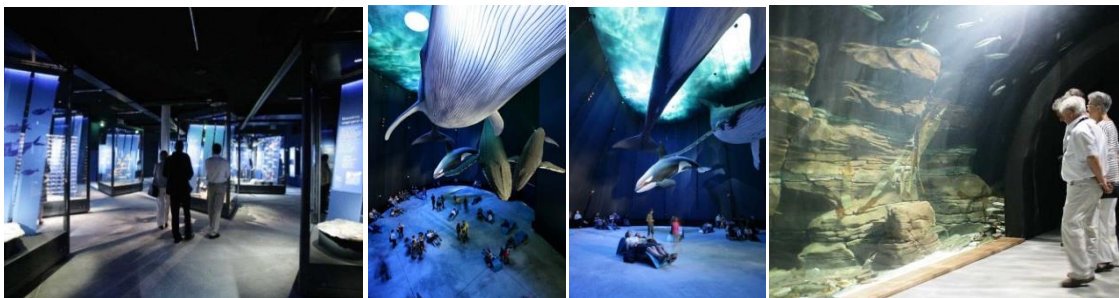
Picture (9) Greenpeace exhibition in the OZEANEUM (Text by Greenpeace)

Also there is another experience for the way of deigning the space in exhibitions which is the theater exhibition, the receptivity to these exhibitions will move beyond those which were promoted by the nineteenth-century models that still typify institutional environments for the exhibitions design. (42)

Picture (10) theater exhibition

2-3 Temporary museum exhibition

The international temporary tourism exhibitions were able to achieve success and attract a large number of visitors. (43) The Egyptian pavilion participating in the Berlin Tourist Exchange "gem2020" featured the logo of the Grand Egyptian Museum, a display of modeling for it, three-dimensional (44) "hologram"[1] images of the statue of Ramses II and golden mask of King Tutankhamun and the special throne chair. (45)

Picture (11) Hologram technology »graces the Egyptian pavilion at the Berlin Stock Exchange

Heritage panorama shows that present the history of Egypt from the Pharaonic era until the modern era, using interactive display techniques, which consist of nine separate flat panoramic screens arranged in a semicircular shape and controlled by a computer.

A large room equipped with 4D technology, it has been equipped so that anyone can live in it and experience a unique experience within the Egyptian beaches to promote each Egyptian tourist destination on large screens.

**Picture (12) heritage panorama and 4D technology room**

2-4 Foundation in Interactive exhibits and Temporary museum exhibition

2-4.1 museum exhibition Lighting

Exhibition spaces are mainly lighted with LED technology which is used to illuminate the showcases and objects on display (46), but usually it is counterproductive to display an item in a darkened environment where its details and colors cannot be appreciated. Yet the more visible the artifact is, the higher the probability of damage from natural or artificial lighting, according to the total time that an artifact is exposed to a light source that damages it, therefore the longer and brighter is the exposure, the more irreversible the damage will be, the two main culprits that can fade and cause an artifact to deteriorate are light (ultraviolet and infrared) and the heat from the light. (47)

2-4.2 Viewing Locations for screens

It is essential that all the intended users can easily view the video wall, and we have to make sure that there are no physical barriers that could obstruct the video wall for some users. A similar field of vision, eye rotation, and head tilt analysis should be applied when a video wall is designed into a public or entertainment venue, and the design must offer comfortable viewing from seated or standing positions, with proper use of color that can enhance a viewer's ability to interpret data, as improper use of color can result in eye strain. Text, data, or visual symbols should be presented applying a background using some complementary color advancements in lamps and LED illumination sources, LCD panels, projection cubes, and high brightness projectors suitable for use in bright ambient light environments (48). Walls surrounding a videowall should be visually neutral to avoid distraction from the information presented on the display wall, also surfaces should have matte finishes and be pattern-free(49).
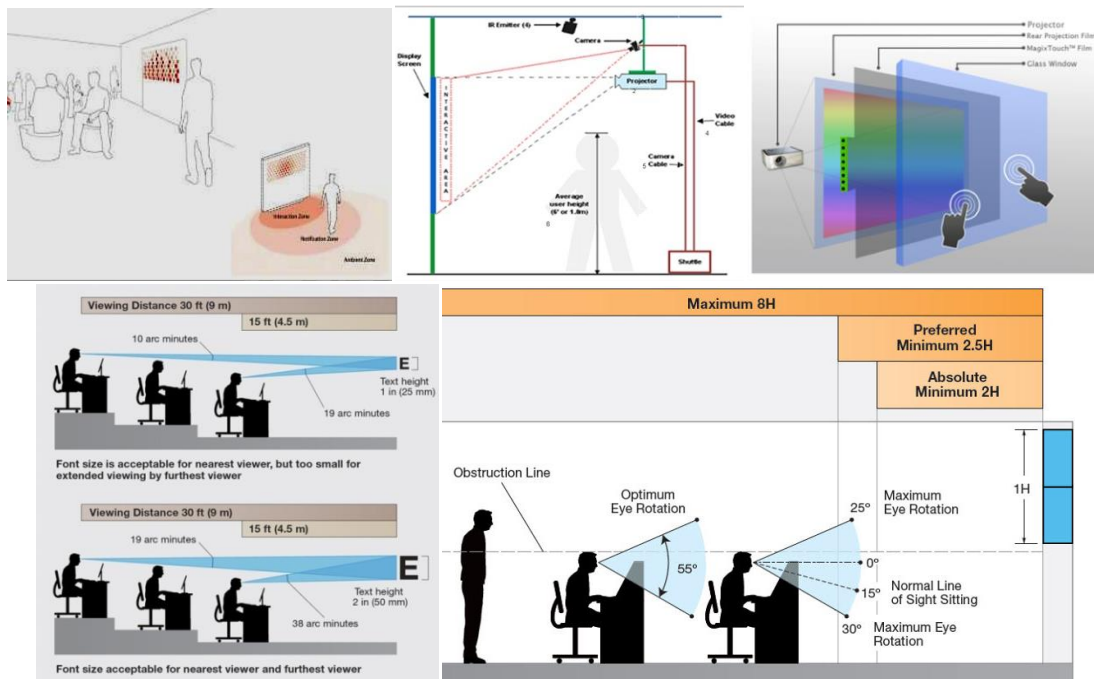
Picture (13) Eye and head tilt from workstation to display, and Font size vs. viewing distance

3 Digital Exhibitions

3-1 Digital museum exhibition

Going into a self-quarantine can have many complex issues and in terms of entertainment, it also probably means you're in for a lot of boredom, and a lot of browsing on the internet.

But there is a way to get a little culture and education while being in confined to home.

According to Fast Company, Google Arts & Culture teamed up with over 2500 museums and galleries around the world to bring anyone and everyone virtual tours and online exhibits of some of the most famous museums around the world. Those collections include the British Museum in London, the Van Gogh Museum in Amsterdam, the Guggenheim in New York City, and literally hundreds of more places where knowledge can be gained about art, history, and science. (51)

And On April 3, 2020, the Ministry of Tourism and Antiquities in Egypt, in cooperation with the American Research Institute in Cairo, launched the first virtual visits to the cemetery of Menna, one of the most beautiful tombs of the nobles on the western mainland in Luxor, which dates back to the Eighteenth Dynasty. After that, many virtual displays of a variety of Egyptian antiquities followed. (52)

These methods are especially good for students who are looking for ways to stay on top of their studies while schools are closed. (53)
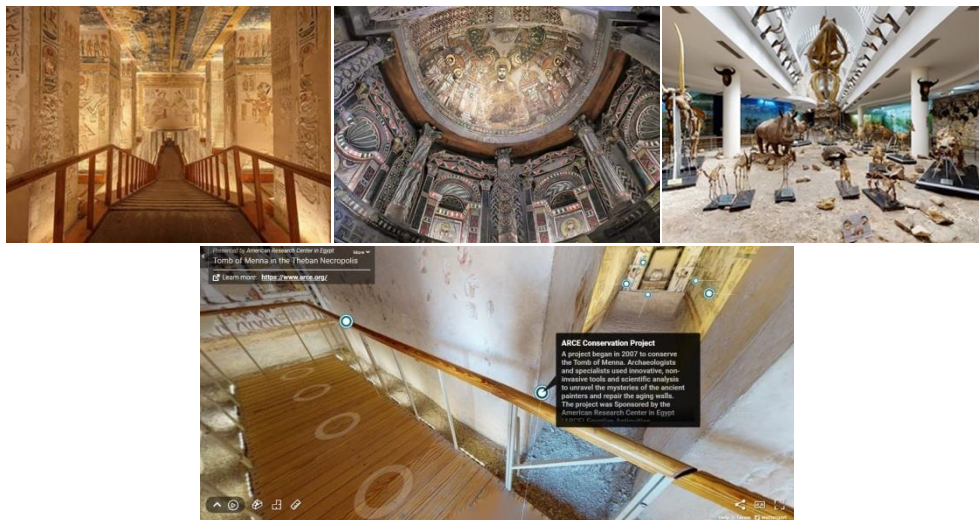
Picture (12) the Ministry of Tourism and Antiquities set up a variety of Egyptian antiquities digital Exhibitions show

3-2 Digital Online shopping

Wireless technology had absolutely altered the way you live. Tasks which were physically challenging (50), hence online shopping is more popular mostly due to its speed and ease of use. Online shopping is when a customer purchases services or products through the Web, and discovering the best Online Shopping deal possible and comparing rates. This can easily be done by checking out a large number of online shopping stores quickly and easily, without having to leave the convenience of your house. It is currently the 4th most-popular Web activity, it was exceeded just by e-mail, search, and news. (51) Also Mobile apps are a difficult business to succeed in and the competition in mobile gaming is even tougher. (52)

3-3 Comparison between traditional temporary and Online and digital exhibitions

	Online and digital exhibitions	Traditional exhibitions
Time and place	It doesn't require presence either in the place or time specified for the exhibition.	• It requires presence in a certain time and place. • The location of the exhibition and its proximity or distance to visitors affect both the economy and tourism, especially in international exhibitions that visitors from all over the world come to, such as temporary tourism museum exhibitions and its relation to internal and external tourism and economic income.
Design general aspects	• It is easy to change the designs and areas, also the products after announcing of the start of the event. • The only influencing factor is the default storage space and the speed of loading the web page.	• This is a big obstacle in real exhibitions especially when distributing the large-sized products after placing them such as bedrooms ... etc. • It is linked to specific items in designing like the (lighting –hvac – number of visitors ….etc.
Cost	It requires costs for establishment on the different servers and it is related to the size and time it will take.	It requires costs for establishment and it costs more to change the design of the main exhibition halls or the spaces or booths of the exhibiting companies, after the event begins because they are linked to the size of the main exhibition halls and available services.
Interior design	• The default design of the exhibitions and the stalls inside them is not related to any specific requirements and can be changed at any time and also facilitates the control of the lights and the selection of finishing materials for floors and ceilings.... etc. • It is also possible to modify the spaces of the exhibiting companies and also the products within them and link them to other companies for related or complementary industries.	• Design the electricity and general lighting for the halls and air conditioning to suit the placement of the exhibition booths. Floors are usually installed with a raised floor system for easy installation of cables... etc. As for the ceiling, it is preferred to use the exposed ceiling design consisting of metals to allow suspension anywhere and easily modification and fire system pipes as well as the air conditioning system and its exits. • It is not preferable for the walls of the public hall to be equipped with large openings for the windows due to their effect on the internal lighting. As for the internal walls of the different types of booths they depend on the exhibiting companies,

Table of comparison between traditional and virtual exhibitions

4 Applied study on

4-1 Designing pavilion for "EL MARAKBY STEEL" company in the temporary exhibition Metal & Steel "F a b e x""in Egypt International Exhibition center, Cairo

Design requirements (there was basic information to do the design

o Company logo and collection of photos for the company and the map for the exhibition which dedicate where is the company booth place and area 12x10 m

o Specific requirements to be offered in the design which include

o reception desk, shelves for the product, a storage area that is about 1.5x1.5m, waiting areas which include a lounge and 4 arm chairs, buffet area, small meeting which include minimum of a table and 2 chairs.

o Materials are used for installing the wall cladding, floor and ceiling material should be determined, as white laminated wood for the floor and acrylic for walls and ceiling.

4-1-1 Plan design المراكبى للصلب(in the circle in the exhibition massplan below)

Picture (14) Egypt international Exhibition Center Cairo, Egypt "Metal & Steel "F a b e x" plan and company logo and the reception desk design (in the circle in the exhibition massplan below) (designed by Dalia Sami 2019)

4-1-2 Reception Counter design

Reception desk design usually hold the company brand and it is the best way for helping in generating leads, also it contains shelves to put some giveaways, Competition cards, Cleverly - branded bags and Messages, there is also a storage room to keep the rest of them.

4-1-3 Exhibition Design

The design idea was based on the central organization that gives flow of movement and visibility from more than one place.

Picture (15) front view for the pavilion

Picture (16) side view for the pavilion

Picture (17) different views for the pavilion

4-2 Assuming ideas for (a mobile application and an internet game and webpage(as an application for the virtual exhibitions design)

4-2-1 VE webpage

It is a linked and joint work of the interior designer and the web designer, the designer will show the description of the product and the design alternatives. Also the page will offer the possibility to build 3D model for the interior design required from any user with extra fees.

Or to use the other part in the page which will give to the visitor the opportunity to build with using simple icons to encourage them to buy the products.

How to create a virtual exhibition? (52)

o Click on the art. Spaces tab in the main menu.
o Click the "add exhibition" button.
o Set a title for your exhibition. ...
o Choose to proceed with the default or a different exhibition room.
o In your "exhibition manager", click the "acurate exhibition" button.
o Use the arrow buttons to navigate. [2]
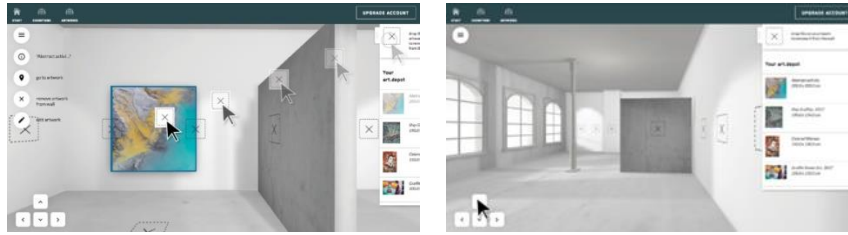
Picture (18) the Use of the arrow buttons to navigate and Drag (you can know more from - KUNSTMATRIX tools)

4-2-2 VE Game and mobile application

It is a proposal to build an online game called VE which will focus on the displaying products and supplies for architecture, interior design and furniture. It is a platform for companies like a real exhibition. It will be created to sell the products in a different interface of online shopping which give users the ability to invite their friends to go on an online shopping and each one can put his photo on the player to identify himself.

The game will be classified into groups according to the type of product for example furniture and accessories and wall finishing and so on. The game levels for each type will be divided into groups and the players can select the category that he wants, for example in furniture there will be classic part or modern part or any offered type form the products.

In all parts of the game, the designer can easily change the interior design for the booths of the exhibition or the exhibition itself, the designer will show the description of the product and the design alternatives.

Also the page will offer the possibility to build 3D for interior design required from any user with extra fees, or to use the other part in the page which will give the visitor the opportunity to build with using simple icons to encourage him to buy the products. Also give the possibility for visitors to leave their comments on the product or any topic related to it in a private message.

Picture (19) proposal to the interface for the mobile application or web page or a game (designed by the researcher Dalia Sami)

4-2-3   4th Pyramid

The idea is based on the construction of a fourth, huge, dynamic pyramid in the vicinity of the pyramids in Giza. This project is called "the fourth pyramid" and it is built of weather-resistant glass, and the building is larger or equal to the area and height of the Great Pyramid.

Taking into account that the sunlight reflects internally in all its parts and that a strong lighting is designed from the top of its summit in the form of a column that directs the sky.

Also the roads to it should be designed, such as the path of rams and the design of Pharaonic temples.

and the buliding design will be dynamic in which the last floors in it, can move on a mechanical rotation axis to display the four facades (such as 360 revolving Restaurant at the Cairo Tower) and some parts of the building are mechanically moved, such as the heart of the vertical pyramid from the base to the top

The internal spaces of the pyramid are divided into various activities between hotels, administrations, commercial and shopping spaces, and it is surrounded by a series of restaurants, cafes, dancing fountains, and various entertainment places.

The activities of the building include the museum display through the design of rooms 4D and a large platform with hologram technology to display the Pharaonic life.

And also create sound and light shows with hologram technology.

Picture (20) proposal to the 4th pyramid design (designed by the researcher Dalia Sami)

Results:

1. The traditional temporary exhibitions give big profits if they are well organized and encourage tourism and the economy because they are based on direct interaction between the customer and the products offered. Offers are made to buy that encourage visitors to attend, especially with the presence of a large number of companies that offer the same quality of products, and competition increases between companies in those exhibitions.

2. Virtual exhibitions do not require presence either in the place or time specified for the exhibition and it is easy to change the designs and areas, also the products after announcing the start of the event and this is considered a big obstacle in real exhibitions, especially when distributing the large-sized products after placing them such as bedrooms ... etc. also Virtual exhibitions are not linked to specific items in the design like the real ones, but the only influencing factor is the default storage space and the speed of loading the web page.

3. Taking into account the movement of visitors in the design of the large exhibition halls, where a continuous walk corridor is made in the form of a broken line from the beginning of the hall to its end to give all exhibiting companies equal opportunities of movement in front of them, then it is the turn of each company to use all the attractive design methods and It is necessary to take into account allocating spaces and areas for waiting and rest areas, also areas for food court or coffe, also the basic service areas such as public toilets or mobile bathrooms

at the exits of the halls, and take into consideration designing corridors and ramps suitable for the disabled, and placing signs and guidance instructions with clear lines and places, especially for emergency exits, and it is preferable to find means for internal movement so that the exhibitions are attractive to visitors and not repellent.

4. Traditional exhibitions require the presence in the place and time specified for the exhibition and require costs for establishment and it is difficult to change the design of the main exhibition halls or the spaces or booths of the exhibiting companies after the event begins, because they are linked to the size of the main exhibition halls and available services.

5. The location of the exhibition and its proximity or distance to visitors affect both the economy and tourism, especially in international exhibitions that visitors from all over the world attend, such as temporary tourism museum exhibitions and its relation to internal and external tourism and economy.

6. Many companies prefer to develop a design for exhibition spaces or booths in a way that allows for re-disassembly, installation, and the possibility of modification and re-use, so this must be taken into account in the design of the booths and methods of disassembly, installation and storage of metal units and gypsum boards.

7. The use of interactive effects and elements inside the exhibition increases the process of attracting visitors to see the products, like using VR glasses and interactive screens and making a hologram for products in temporary exhibitions and interact with them, leaving a great impact on them as a result of the interaction.

8. The lighting style and methods of preserving the exhibits are among the important and influencing factors, especially in museum exhibitions, due to the radiation and heat resulting from lighting, which may cause damage to the museum pieces.

9. Design the electricity and general lighting for the halls and air conditioning to suit the placement of the exhibition booths, floors are usually installed with a raised floor system for easy installation of cables... etc. As for the ceiling, it is preferred to use the exposed ceiling design consisting of metals to allow suspension anywhere, and easy modification and fire system pipes as well as the air conditioning system and its exits.

10. When designing booths, there is always a focal point of attraction that takes visitors on a journey with something unexpected such as unconventional shapes, creative product display units and graphics, the use of optical illusions design, or the use of large and huge screens in displaying product types.

11. To develop modern and innovative designs, different sciences should be integrated. Sciences such as linking mechanics, energy and other sciences with interactive designs, as well as knowing all the developments in the field of technology and modern materials.

12. It is possible to design a virtual exhibition events. It can be called (VE) which will be designed for helping the real product's selling but in a digital way.

13. It is possible to design a virtual exhibition games, it can be called (R P S G) or also (VE) which will be made to market real products and lead to good product recognition. Through this type of games, games can be created for furniture products, interior design supplies, and architecture and so on.

14. Designing games or programs in the virtual world on the Internet (Virtual Exhibition) VE or applications on mobile phones that enable the user to create a space and use finishing materials from the options in the game, which are real products for the company so that the user

builds the model he desires, and he can buy the product from the company accordingly, as the game or program gives at its end a description of the selected products and calculates the quantities to be used, their cost and the potential cost of hiring technicians to install the products. The games or program also provide technical support service that the user can resort to at any stage, and also provide a variety of designs for specific areas, provided that these games or programs are free or for a small amount of money to encourage Internet surfers to log into them.

15 Designing games or programs in the virtual world on the Internet (Virtual Exhibition) VE or applications on mobile phones that give the user the opportunity to choose the pieces of furniture he desires, while providing designs for alternatives that are already available from the product and describing the materials used in it. It can also give the user the ability to build the model he desires, whether from blocks or raw materials, and through it he makes alternatives in designing a piece of furniture or materials to be used in the basic design (for example, by choosing different colors or textures for painting or wood .....ect), also adding accessories or special motifs from a ready-made group of accessories, or placing a different coating for fabrics), so that these alternatives are from the real products or supplies of the company so that the user can finally buy the product. The games or program also provide a technical support service that the user can use at any stage, provided that those games or programs are free or with a small amount of money to encourage Internet surfers to log into them.

16 In the virtual world of exhibitions, it is possible to link the Internet pages of all companies and complementary industries and accessories through a hyperlink, which is a link from a hypertext file or document to another site or file that is usually activated by clicking on a distinct word or image on the screen, also it is possible to create a market and joint cooperation between the companies and their complementary industries and companies that produce accessories and create a platform for them as the field of manufacturing furniture, necessary paints, fabrics and accessories.

17 Which reflect positively on the economic activation, whether buying or selling locally and internationally.

18 "Friend shopping game F S G "this type of games or programs on the Internet can allow you to add friends, go to the exhibition and talk about products together, and so on, it is also can be called (Friends virtual exhibition) FVE this is like what is done in many popular web games that allow friends to meet, talk, and virtually move together inside the game .... etc. and here the interior designer creates designs that attract users and push them to enter the virtual exhibitions.

19 Designing applications on mobile phones to visit exhibitions periodically and send notifications of new designs for interior design and furniture. Of course, these applications can be developed to include all building, finishing and furnishing supplies.

20 You can make presentations with three-dimensional hologram images of the famous forms of monuments and put them in hotels as a kind of advertising, tourist attractions, education and entertainment.

21 E-shopping in virtual exhibitions results in many possibilities for design modification, change and development, and provide an unlimited control of lighting and sound effects, the most important factors affecting the exhibition are the size of storage space and the work of a wall to protect against viruses ... etc.

22 Online shopping is very prosperous, especially with the application of the Corona ban that has swept the world due to the virus, as it takes into account the principle of achieving precautionary measures, which increased its activity promoting it using social media, which increased the process of competition between producers and designers of products.

Recommendations:

1. A recommendation for researchers and academics in scientific colleges to study the principles and foundations of designing web pages, websites and electronic games and how to use them in the field of specialization to open a new field for digital interaction and open a new market for virtual design and marketing it online, which reflects positively on both the economy and also on shopping tourism by attracting new categories of customers.

2. Activating the role of the state like the Ministry of Tourism and the Ministry of Planning and institutions in sponsoring the design of Museum exhhibitions to strengthen the competitive advantage because the whole world is interested in everything related to the ancient Egyptian civilization in general.

3. Converting the results to applications by supporting research and development in this field and to ensure the development of skills, tools and methodologies which are needed to cooperate between Integrated Sciences with interior design and furniture such as mechanical and electrical Sciences ....ect.

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[1] The hologram technique, which is the technique of stereoscopic museum displays, by displaying 3D models in a vacuum or through transparent media to fully simulate the original artifacts and merge into the surrounding space, and thus it is considered the closest way to simulate the display of original pieces.
It was not the first precedent for using hologram technology, as it was used in the Egyptian Museum in Tahrir after the mask was transferred to the restoration laboratory as a result of the fall of the chin from the mask to simulate the original mask during the period of its restoration as it enabled museum visitors to see the mask and its details accurately, clearly and as close as possible to the real mask.

[2] There are many websites and open source tools for Creating Digital Exhibitions like Omeka – Collective Access- Collection Space- Open Exhibits- KUNSTMATRIX tools- Co Spaces browser app…..)that can help you create the exhibition.