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The Environmental and Economical Impacts of Using Media Façades in Commercial Buildings in Egypt

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Abstract

Media façades is a subdivision of urban computing integrating digital displays into buildings, including structures and road furniture. It is frequently connected with over-dimensional screens and vivified, lit up publicizing, and places like Times Square. The façade is dematerialized and transformed into one immense promoting medium for sending messages. Media façades can bring out the most assorted feelings, from a major city feeling to disturbance at light contamination. They are likewise seen as Pop Art or as blemishes. Design tends to utilize media façades increasingly as a stylistic component. What used to be added to exteriors after the building development more in the method for a flaw is currently a part of the design procedure and offers new extension for visionary outline that is authored to the term 'Mediatecture'.

This research identifies the impact of using media façades on commercial buildings environmentally and economically. In addition to that experimental design cases of interactive building façades will be discussed and a SWOT analysis would be made to exemplify the challenges and discuss how they may be addressed. In addition, the examples are presented to demonstrate how to work with the difficulties inalienable in media façade design forms, taking into account the formation of different proposals for a media façade on current public buildings and new ones in Egypt.

Keywords

Economical impacts; Environmental impacts; Media façade; Mediatecture; Media Intervention; Commercial buildings; SWOT analysis; design processes

1. Introduction

During the most recent years we have been confronting a developing need of including designers into procedures of current city medialization. Media architecture changes the present idea of design and façade development, highlighting the part of correspondence between building structures and condition. Media façade is a façade that is both aesthetically and functionally specific and in this manner states the connection between technology, architectural design, innovation and substance to new media introductions of present day art as well as communication (Cikic-Tovarovic, Sekularac & Ivanovic-Sekularac, 2011).

The term media façade depicts transforming the building façade into an extensive open screen by supplying its external shell with smart, light-transmitting & interactive elements. Media façades allow correspondence by means of technology onto a façade as advanced media, and media architecture represents the social, cultural and financial ramifications of these façades for the instant environment. When managing media façades as huge scale advanced screens from a human-PC cooperation point of view, we can define the term media façade as: media façades are computerized open screens with subjective frame components and of self-assertive determination, which are made by either preparing the external surface of a building with controllable, consistently molded, light discharging components or by digital content projecting onto it of which are installed during the construction of a building. Media façades are an obvious case of the computerized expansion of urban spaces. They signify the idea of transforming the building surface into an extensive scale urban screen. Due to their tremendous size, they require an interaction from a distance and they have an abnormal state of visibility. Moreover, they are installed in a very dynamic urban environment with quickly changing conditions which result settings that are neither equivalent, nor reproducible. All of this makes the installment of media façades a challenging mission (Gehring & Wiethof, 2014).

Design tends to utilize media façades more as an aesthetic element. What used to be added to façades after being constructed as an aesthetic element is currently some portion of the design and construction procedure and offers new extension for visionary outline which under the term 'Mediatecture' (Frtiz, 2009).

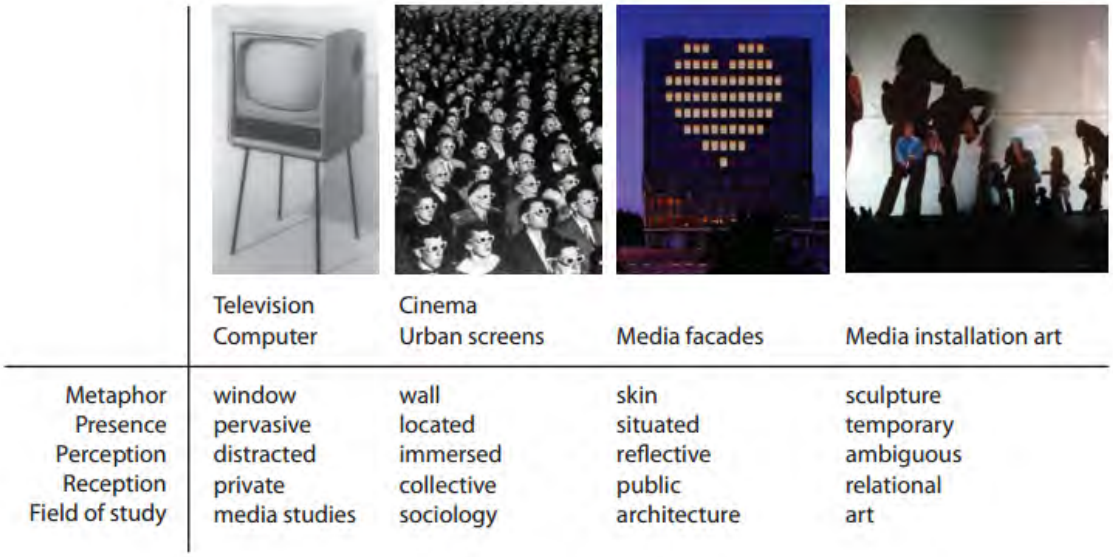

Figure 1. Physical evolution of the screen

2. Who Will Make Use of its Conclusions?

Deliberately, media façade is another idea that permits helping the urban communities and make roads more appealing. A well-built media façade wins drivers and people on foot alike, improves the picture of big organizations, and helps medium and little organizations to emerge among contenders. Therefore, there is a developing interest in media façades covering the city space and attracting huge groups of viewers. Media façades might be interesting to designers and architects, owners of buildings, advertising offices and television channels, advertising & marketing specialists, social networks and internet resources, and sponsors and investors (Petrov, 2011).

3. Building Envelope (Façade)

There are few reviews researching building skin, building envelope and building façades where they all are diverse terms used to mark the outside components of a building. Powler and Kelbaugh characterized a "building

envelope" to be any surface that isolates the thermally conditioned inside of a building from its surrounding environment. As indicated by this definition, building envelope incorporates rooftops, outside walls, floors, ceilings and foundations and each assume an enormous part in the sustainability of the building and how the buildings react to various prerequisites. With a specific end goal to decide building necessities, (ASHRAE) characterized the building envelope into two sections: the outside and the semi-outside parts of a building where the definition of the building exterior envelope is: the components of a building that isolate the interior parts of the building from the outside. While the building semi exterior envelope is: the components of a building that isolated conditioned interior spaces from unconditioned spaces (Dewidar, Mahmoud, Magdy & Ahmed, 2010).

4. Media Façades

Urban architecture futuristically states that each and every piece of a future building will be associated digitally. Buildings themselves will get to be a distinct media for correspondence especially for visual substance transforming them into large displays. Media façades are the integration between digital displays and screens with buildings, landmarks, and road structures. Generally "Media Façade" is a term for merging digital displays with the building façade. Designers ought to have the capacity to manage this new material as an appearance of their design essentially changes in a way that couldn't have been envisioned before (Haeusler, 2009). One of the examples of the enclosure of media façade in buildings is Times Square in New York.

With the appearance of the technology of SMD (Surface Mounted Gadget), high proficiency LEDs and intense processors, digital screens are introducing new transparent media façades that can cover the buildings futuristically. The challenges and possibilities of building urban structures that is utilized as multidimensional screens are gigantic. While there is a little uncertainty that the integration of media surfaces into design is unavoidable, these new potential outcomes being a blend between an augmented PC screen, the building architecture may endure thus of the rectangularity and flatness of the picture. In any case, that concern may not be completely viable as today's media surfaces can be shaped to any frame on the need.

Media façades has to take the proportions of the building when being designed and extra new parameters were added to incorporate eyeball densities, viewing distances, daytime/evening lighting, the façade's transparency, ventilation needs, heat indulgence, ecological effects, human security, and so on. The media façade field is interdisciplinary, not exclusively does it include architecture studying and urbanism, additionally some fringe regions of innovation, urban outline, technology, culture, art, marketing and advertising. Designing Media façade includes investigations of some particular aspects of design that affect operational and utilitarian façade objectives.

Disappointingly, media façades are typically an idea in retrospect, and never adhere the architectural design because they are still considered as "digital screens" or "signage" for advertising, that are not integrated in the architectural design (Raheman, 2014).

4.1. Media Façades Types

Media façades' classification can be due to various qualities and properties, and they might incorporate how they display their content or how they are composed technically.

In spite of the fact that a media façade is a fairly enormous screen, the physical properties of media façades contrast from custom desktop or mobiles. In particular, they accompany substantially bigger screens, and along these lines distinctive viewing aspects and distances. Numerous media façades even cover more than one side of a building's façade, which gives them a 3D non-planar shape figure. Their resolution additionally may shift incredibly according to the used technology. There are six different types of media façades:

– **Front projection façades:** extend media content specifically onto the façade by means of at least one video projector.

- **Back projection façades:** extend media content from behind the façade and onto translucent regions coordinated into the building.
- **Display façades:** convey content through the coordination of Huge Screen Video Displays into the surface of a building.
- **Window animations:** make utilization of the current windows in a building by lighting them up with the goal that they are seen as pixels.
- **Illuminant or light-transmitting façades:** coordinate light-emitting components into their surfaces.
- **Mechanical façades:** utilize mechanically mobile components to change façade appearances.

The initial three façade types ordinarily include high resolution, while the later ones may bring down the resolution as they depend on the building's architecture (e.g., one window is equal to one pixel) (Haeusler, 2009).

4.2. Opportunities of Using Media Façades

Media façades are different from normal advertising architecture since they offer great environmental and economical opportunities, especially for commercial buildings such as digital media tools that are integrated into the built form both at the same time. Afterwards, the design process, image, graphic, video, and light installations are designed by architects or graphic artists. Communication may be one way (spectator) or two-way (interactor), it could be as an ornamentation integral element, façade has a digital flexibility, ephemerality shown as changeable content and display through time, and sustainability by using PV cells or natural sources. Differences between media façades and advertising architecture can be summed up in the following table.

Table 1. From "Advertising Architecture" to "Media Façade": Communication through Digital Display Skin (Moza, 2012)

Advertising Architecture	Media Façade
1. Attachment: digital media screens are attached onto the built form afterward.	1. Integration: digital media tools are integrated into the built form both at the same time & afterwards design process.
2. Façade: as a background for media content.	2. Façade: as a means of media content.
3. Display: Image , Graphic , & Letter installations are defined by brand developers or specialist designers.	3. Display: Image , Graphic , Video, & Light installations are designed by architects or graphic artists.
4. Communication: one-way (spectator).	4. Communication: one way (spectator) & two-way (interactor).
5. Decoration: Independent element.	5. Ornamentation: Integral element.
6. Stability: Façade has a stone stability.	6. Flexibility: Façade has a digital flexibility.
7. Durability: periodical advertising content & stable billboards.	7. Ephemerality: changeable content & display through time.
8. It is not sustainable not in all situations.	8. Sustainability : by using PV cells or natural sources.
9. Can not be used in temporary events.	9. Can be used for sound and light shows and international competitions, promoting tourism.

4.3. The Challenges Facing the Usage of Media Façades

There were issues included by Gehring and Wiethof in 2014, for example: Locating within the façade since the general appearance of the building having media façade is fundamentally shaped by position, shape and size of the content of the media on façade itself or façades of buildings. In connection to the whole building, media content may be: located on one façade or located in parts of all façades or located on the whole building. The relation to the road must be studied where details must be viewed from a calculated distance (Fig. A), details level and the

distance they are viewed from (Fig. B), the light coming from behind the façade (Fig. C) position of tall trees and other potential hindrances and additionally water surfaces must be taken into consideration (Fig. D), Position of other media façade adjacent media content intensity must be calculated and known (Fig. E).

Figure 2. Factors affecting the location of media content on certain structures

Moreover, dimensions, space, media façade shape, durability of the media façade, media façade visual comfort, lighting, and maintaining a strategic distance from light contamination, the impact of temperature changes, fires and wind speed, usage of sound and the connection to the encompassing land use, passersby, and the content, needs trained designers and highly complicated programs. Light pollution with several negative impacts to humans, animals and plants, & rising energy consumption are considered to be great issues on designing media façades (Cikic-Tovarovic, Sekularac & Ivanovic-Sekularac, 2011).

In addition to these issues, there were several challenges stated by Dalsgaard and Halskov in 2010 that face the design of media façades such as:

- New interfaces: urban setting prompts new types of interfaces.
- Integrating into buildings and environment: new establishments and frameworks must be incorporated into existing physical environment.
- Expanded requests for power and strength: shifting light and climate conditions over which designers frequently have nothing to do about must be considered.
- Creating specific content to suit the medium: the content needs to fit the screen.
- Adjusting partners and adjusting interests: exploring, arranging, changing, and adjusting partner interests can be basic to achieve the system success.
- Differences of circumstances: a wide assortment of circumstances happen in the city - how does the media façade fit into the circumstances in a given area?
- Changing social relations: the presentation of new innovations can bring about interruptions and change social relations.
- Developing and unanticipated utilization of spaces: media façades will probably be utilized, seen and appropriated in diverse routes than designers plan.

5. Advantages and Disadvantages of Using LEDs in Media Façades

Without getting too technical, we should still mention the important advantages of media façade over other digital outdoor carriers such as LED's. They are presently fit for yielding 135 lumens/watt so they are energy productive, they have long lifetime - 50,000 hours or increasingly if legitimately designed, don't neend a warm-up period. LED's light is in nanoseconds, not influenced by chilly temperatures, due to that LED's "like" low temperatures and will startup even in below zero climate, directional. With LED's you can coordinate the light where you need it, in this way; no light is squandered and excellent color rendering. Moreover, LED's don't wash out hues like other light sources, for example, fluorescents, making them ideal for presentations and retail applications, environmentally inviting. LED's also contain no mercury or different unsafe substances. LED's are also controllable where can be controlled for brilliance and shading. For case, a media façade may show graphic and shading impacts; text or pictures, commercials or slide-appears, on-line video, sport occasions, channels of satellite or digital TV, real-time data about car influxes, climate, money rates and crisis circumstances.

Although it has many advantages, we can't overlook the disadvantages. LEDs are as of now more costly for starting expense, LED execution relies on effectively designing the installation to deal with the warmth produced by it, and they must be provided with the right voltage and current at a steady stream. This requires some hardware skill to design the electronic drivers (Petrov, 2011).

6. The Interaction With Human Beings: Immersive Environment Experimentation

The development of the media façade has allowed the interaction with surrounding humans and passersby, where they become a part of the building and interacting with it. As Simone Arcagni expressed, "The film re-situates around the local area" and "because of the participation of the media, this present reality is changed into a lasting show in which all the limits amongst performing artist and observer, amongst reproduction and reality, history and appeal tumble down" (Arcagni 2010, p. 40).

In contemporary architecture, brilliant and enlightened surfaces, electronic screens, video projections, and intelligent media are progressively normal, combining and covering the physical surface of the conventional city. It is very similar to a communication amongst genuine and virtual world. The advancement of the computerized applications to architecture makes a vital change on man's association with the architecture. There are many investigations of advanced application to architecture (Gasparini, 2014).

7. Environmental Factors: The Impact of LED Displays

A building façade shields the building from wind, rain, dust and heat. As any electrical machine, LED screens additionally affect nature and the other way around. The customary LED screens, especially in huge sizes, have gigantic ecological results that keep them from being deployed as building façades. They produce a huge amount of warmth that can't be dispersed without the utilization of air-conditioners, and don't permit free flow of air and light amongst outside and inside; thus affecting the indoor condition and aesthetically. However, transparent LEDs utilize less energy, they are lighter, and they permit some level of transparency for associating the outside with inside (Raheman, 2014).

8. Energy and Economic Sustainability

Thinking about the media façade and environmental setting issues and also the sustainability of energy, two primary classes implied for examining the conceivable outcomes of energy sustainability ought to be recognized:

- Consumption of energy amid generation of material and components and ecological effect.
- Consumption of energy amid office operation.

The primary elements of green economical media architecture are: firstly, biologically and ecological development by decreasing the utilization of materials, using renewable assets, ”clean” innovations amid creation, establishment, recycling and reusing materials, wellbeing and speed, safety in producation, transport and establishment. Secondly, reduction in consumption of energy amid production, transport and establishment, amid the misuse of structures, actively, through photovoltaic cells in media design, passively, through maintaining a strategic distance from sunlight, which requires extra fake lightning (Cikic-Tovarovic et al., 2011).

9. Light Pollution

Light pollution requires general concern when designing media façades especially when we are concentrating on the environmental impact of the façade on the surroundings. One of the best accomplishments of life is the ability to help our living space to lighten up in the evening. The enlightenment of both open and private spaces has expanded fundamentally over late years. The inspiration for this is various: industry factories are running 24 hours, city thruways are lit up to guarantee movement security, numerous authentic destinations are highlighted to attract travelers and an ever-increasing number of privates are utilizing outside light to forestall thefts. However, this advancement brings likewise certain downsides, which must be broken down. In spite of all eagerness for new advances and their advantages for humanity, it ought not to be neglected to tip the fingers on basic improvements. The negative effects cannot be denied, such as light scatterings that can annoy people on shining into houses. Night sky exploration can be difficult with the presence of too much light. There is also a waste of electrical power since only a little amount of light is useful. There is a negative effect on the nature and untamed life; influencing the behavior of natural life creatures, causing a negative effect on plants, influencing their development cycles, causing dangerous effect on immigrant birds, which are diverted and getting perplexed. Moreover, billions of insects die on the surfaces of open lights, thus, decreasing regular nourishment for birds. In addition, offensive advertising could occupy drives, particularly amid evening time, causing accidents (Wachlowski, 2011).

10. International Case Studies

The media façade responds effectively to outside triggers from its surrounding. If present day sensor advances (climate, temperature, traffic and light) are considered, it is not hard to run a media façade in the receptive mode. Along these lines, the media façade can ”respond” to certain outside factors.

Outer factors could be a few parameters from the city, similar to climate, daytime, traffic density, or even office action. The media façade turns into a dynamic building skin which ponders effectively its condition. It can rethink itself consistently and build up its own dialect.

10.1. Tower of Winds

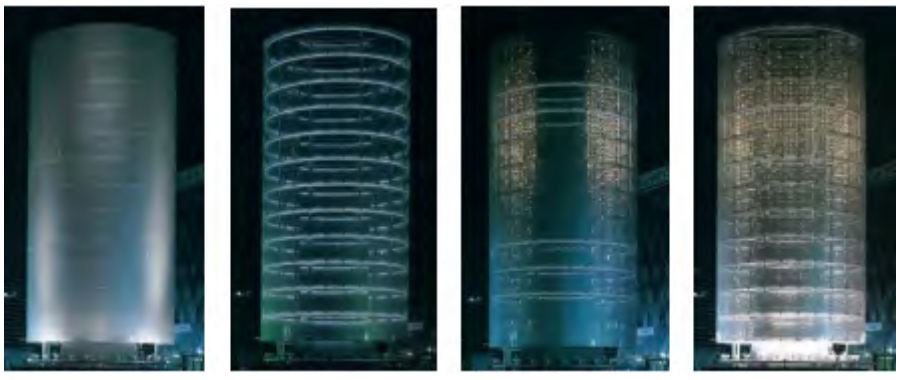

Figure 3. Tokyo Ito, Tower of winds, Yokohama 1986; (Wachlowski, 2011).

The first case has been executed in 1986 in Nippon: the ”Tower of Winds” in Yokohama, which is a 21-meter high ventilating tower from a shopping center, changes measured wind power into different light movements on its surface. Amid daytime, the punctured metal surface appears to be smaller, however, when the daybreak comes, the building uncovers its progression. As different info parameters are being registered progressively as indicated by a specific equation, people are unable to comprehend a basic reliance between a solitary parameter and the movement. In this way, the movement remains a puzzle failing to get unsurprising (Wachlowski, 2011).

10.2. DEXIA Tower in Brussels

Another great case is the DEXIA Tower in Brussels, responding to temperature. Climate Tower is an urban establishment from the Belgian Design Agency Lab. It gauges tomorrow’s temperature, precipitations, cloudiness and wind by utilizing hues and geometrical patterns to envision/translate continuous information given by the Royal Meteorological Institute of Belgium. The building consists of 6000 windows, though behind each is a lighting installation that consists of 12 lights, each with three LEDs—a green, a red and a blue—that can be consolidated into an entire color palette. A color code relates to tomorrow’s temperature contrasted with the month to month normal, connected to a size of color temperatures running from red (6° or hotter), orange (4°), yellow (2°), green (month to month normal), cyan (- 2°), blue (- 4°) to violet (- 6°) or colder (Wachlowski, 2011).

Figure 4. Weather tower, Brussels; (Wiederker, 2011)

10.3. GreenPix

GreenPix is the first usage of economical, digital and sustainable media technology to the glass curtain wall. The building, including with the world's biggest colored LED screen and first photovoltaic cells, executes as an independent system that supplies its own particular energy for the light display. PV cells absorb the sunlight by day and utilize it to enlighten the screen and to make the light show at the evening time. The façade can demonstrate playback recordings, live substance, including live exhibitions, and client created content that are designed by specialists. The solid box shaped building picks up an informative viewpoint with its innovative "smart second skin" (Moza, 2012).

Figure 5. GreenPix; Day and night

10.4. New York City's Port Authority Bus Terminal

New York City's Port Authority Bus Terminal Covers 6,000 square feet of the façade and 25,000 square feet of architectural lighting. Utilizing Mediamesh, which is a stainless steel work texture with entwined LED profiles and with associated media controls, introduced behind it where the LEDs render the pictures onto the façade, uses 80 percent less power than customary LED show items, Mediamesh® is a transparent framework that does not totally shut off the façade. The architecture of the building is hence not obliterated, and when shut down; the Mediamesh® façade is likewise coordinated as an agreeable component of the architectural design (JP, 2015).

11. Media Façades in Egypt

Media façades are considered a new induction to Egypt, and are starting to be used widely across the country. They are mostly used on commercial and public buildings, mostly as an advertising medium. A couple of examples will be studied in the next section.

11.1. Commercial Buildings

11.1.1. Downtown Mall

Downtown Mall is in the heart of New Cairo, located on the 90th road in New Cairo's fifth settlement. Based on 44,000 m^2 of land, this grand business and corporate office focus is situated on the primary street 90 in New Cairo. It comprises nine little buildings, where the ground and first floor in all buildings are committed to retail shops and eateries. Among the nine buildings, four have five stories of office space. One of Katameya Downtown's extraordinary focal points is its expansive open-air recreational and dining region. A substantial LED façade is situated on the corner over the building, which promotes for the brands in the shopping center. On asking passersby

and drivers about the façade, they remarked that it hurt their eyes during the evening because of the glare and it causes distraction for drivers while the audiences complain about not having a large space in front of the façade to easily see it and check the brands it is promoting.

11.2. Public Buildings

11.2.1. Laser Projection

Laser projection is utilized as a part of sound and light show on Public Buildings where MISR organization for Sound, Light and Cinema works on the sound and Light shows in the different archeological zones such as the speaks by sphinx (pyramids) territory at Giza governorate, Karnak sanctuary at Luxor governorate, Faila sanctuary at Aswan governorate, Abu SIMBLE sanctuary at Abu Simble zone, Edfo sanctuary at Edfo zone. They are universally eminent as their verifiable acculturated esteem is basic beyond depiction. The breakthrough innovation of lighting, laser and projection are used for envisioning the concealed divisions of Pharaonic Egyptian human civilization.

The company does the future activities at the Egyptian archeological destinations and different ones of touristic fascination, creates them and issues the photos, prints matters and multimedia according to the exceptional technology. The company also oversees and does the touristic benefit ventures identified with them, including the touristic transport administrations, association of imaginative shows at the archeological locales and of all what goes for engendering the way of life and expressions. This is done in order to keep pace with the most recent

Figure 6. New York City's PortAuthority Bus Terminal

Figure 7. Downtown Mall Media Façade

world accomplishments satisfied in this association whether by itself or through support with outsider (”Sound and Light”, 2010).

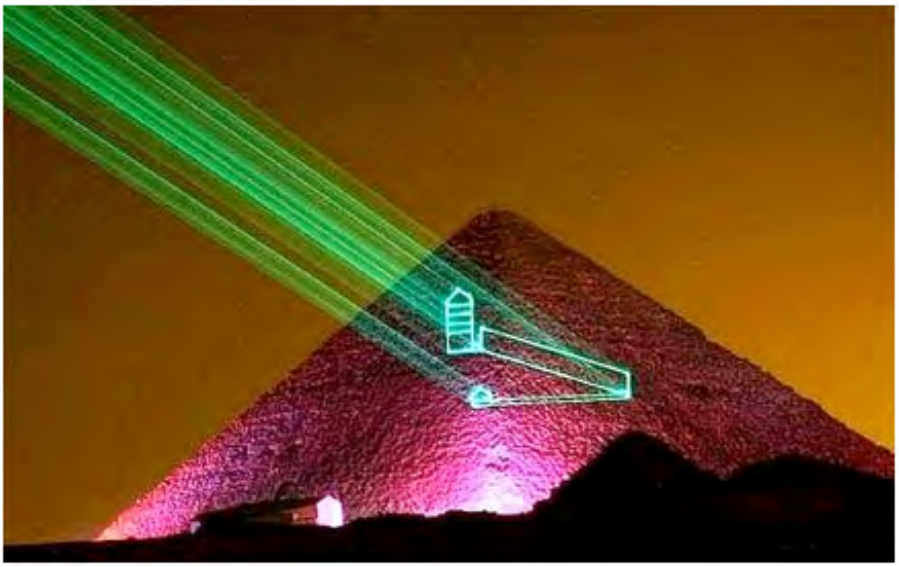

Figure 8. Laser tagging on historical buildings

11.3. Events

11.3.1. 3D Mapping on the Library of Alexandria

A 3D video mapping show was anticipated on 21 and 22 May 2014 on the façade of Egypt’s Bibliotheca Alexandrina, the cultural center and main library in the Mediterranean zone. The execution entitled ”Enlarged Reality: 3D Video Mapping Show on Ancient Alexandria” was composed by the International Augmented Med venture, supported under the Mediterranean Cross-Border Cooperation program to advance tourism and archeological locations improvement.

The subject of the projection, which joined sound and lighting impacts with digital & virtual components, is the historical backdrop of Alexandria from its foundation until the classical period ended, with an extraordinary concentrate on the principle fascination destinations of the city and its authentic turning points. The show included adjacent to the established video projection, lasers, smart lighting, controlled blazes, a water curtain and an advanced 3D Audio 8 framework (”Laseronics-me”, 2014).

Figure 9. 3D Mapping on the Library of Alexandria

11.3.2. Artistic Projection on the Bourse Building in Media City in Cairo

The opening of the sixteenth Cairo Arab Media Awards and as anticipated onto a full size beautiful imitation of the old Cairo Stock Exchange building. The Bourse building in media city in Cairo was anticipated in the opening of the sixteenth Cairo Arab Media Awards. They utilized artistic projection façade. The artistic projection functions as follows:

- A motion picture was projected onto a full size picturesque reproduction of the old Cairo Stock Exchange building (otherwise called the 'Bourse') which is a piece of one of the present film sets being used at the studio praising the historical backdrop of Egypt and the improvement of the Arab media—covering print, radio, TV, advanced media and the web.
- The imaginative process included 3D mapping of the building so the projections and work of art could be fitted to the architecture, permitting it to be utilized as a genuine 3D surface instead of simply having level projections connected. Impacts included moving pictures inside the windows, pivoting sections and veil contra-cover impacts.
- The projection framework comprised of 4 x 6K PIGI projectors with twofold pivoting scrolls, two of which were utilized to fill the surface, and the other two to accomplish the cross blurring and contra-concealing. The toss distance was 60 meters, and the pictures secured the total of the 32-meter wide 'building' (Evans, 2011).

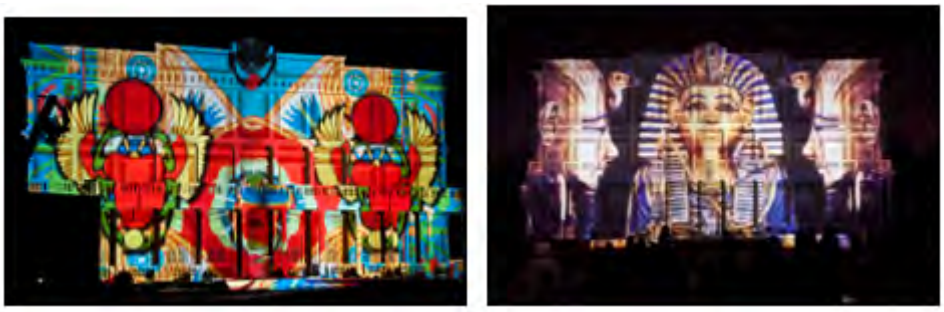

Figure 10. Bourse Building in Media City in Cairo

12. SWOT Analysis for the Previous Case Studies

A SWOT analysis was conducted on the case studies with enviromental/ ecological and economical criterias and by studying the SWOT analysis for the case studies we found that from the ecological aspects: there was one strength point of using the media façades which was the building can react with the surrounding environmental conditions changing its colors according to the wind or temperature. On the other hand, the weakness were so much such as visual discomfort and light pollution, and implementation of sound and the relation to the surrounding land users and the audience. While the opportunities were creating bird-friendly façades so that the birds won't hit it when they are flying, and they could also be used in environmental ads and save materials used in traditional ads that harm the environment. It also had threats such as the effect of temperature changes (thermal discomfort) and that bright lights might affect human/plants/ animals negatively. As for the economical aspects, the strengths were obvious as media façades were used in advertising and decoration, they could also be used in promoting tourism, landmark buildings and changeable content, and display through time as opportunities. Unfortunately there were weaknesses and threats, such as devices that cost a lot and need trained engineers, and it might affect the façade if used on a heritage building. While the opportunities were that they could be a source of income to owner, could promote tourism, landmark buildings & changeable content & display through time.

Table 2. SWOT Analysis for the case studies

Criteria	Strengths	Weaknesses	Opportunities	Threats
Environmental /Ecological	- The building can react with the surrounding environmental conditions changing its colors - Pv Cells can be installed to generate electricity during morning times	- Visual discomfort,& light pollution - Will cause eye strain and distraction to drivers especially at night - Implementation of sound & the relation to the surrounding land users	-Create bird-friendly façades so the birds won't hit it when they are flying - Can be used in environmental ads and save materials used in traditional ads that harm the environment.	- The effect of temperature changes - (Thermal discomfort) - bright lights might affect human/plants/ animals negatively
Economical	- Used in advertising - Used in decoration - Can be used to promote charity events and for sound and light shows/competitions	- High initial cost - High lifecycle costs (operation and maintenance) - Needs special expertise for design and installation, causing extra cost.	- Income to owner - Promoting tourism - Landmark Buildings - Changeable content & display through time	- Might affect the façade if used on a Heritage building

Moreover, studying the previous international and national case studies, we find that, there are different types of media façades and most of them are and could applied in Egypt. Due to the reason that they would have great potentials such as: they would strengthen the Egyptian tourism by advanced Sound and Light Shows, acknowledgement of Egyptian monuments, can be used in public buildings openings, or in advertising and significant events (Matches, Concerts, ...). Most importantly that they might not affect the surrounding ecology and enviroment negatively and it might be a source of income for the buidling they are being projected on.

However, we can't ignore the limitations it has such as: it needs trained designers, highly complicated programs, an open area, it might cause the loss of traditional identities, causes light pollution with several negative impacts to humans, animals and plants and rising energy consumption.

However, these limitations could be solved and managed by time and by training designers, using high-tech equipment that doesn't cause heat, light or noise pollution.

13. Results and Conclusion

According to the analyses and discussions above, this paper's conclusions may be summarized as follows:

Egypt is located in the North African desert; this topographical area gives the Egyptian atmosphere a few attributes, which influences on designing any building. Egyptian atmosphere is arid, hot dry summers, cold winters and rarely any precipitation which will urge designers to design building skins that will have the capacity to give natural ventilation, shading and lessen the consumption of energy.

Media Façades are turning out to be increasingly universal in the urban condition: we can find little ones in cafeterias displaying menus; greater ones in shopping centers providing store registry data, for example; gigantic promoting brand item over a whole building façade. Subsequently of their inescapable universality, there has been an expansion in research around them, particularly how individuals interface, engage, and facilitate around them. So we can presume that a media façade comprises essentially of animated photos and light created by electronic gadgets and is not only a decoration, so its function is not just ornamental, but rather, with its potential

for representation it is used for interaction between the building and its surrounding environment. The utilization of programming and computerized shows connected to the building façades, regardless of whether they are glass, plastic or metal is changing drastically the importance of architecture. Both, video and architecture are not only aesthetic, but they are as well innovative mediums, with its characteristic technological restricts. Nonetheless, media façade configuration is joined by various particular issues that have been mentioned in the previous sections. Making a legitimate system for the procedure of media façade configuration represents a decent stage for subjective association between media and architecture, and different fields too.

In addition to that, we can see how media façades can affect the building economically and environmentally as shown in the SWOT analysis, how it could be a source of income to the building that uses its façade by promoting tourism or different advertisements. In addition to the environmental point of view, it could provide information about the weather as shown in the DEXIA Tower case study, and special LEDs that could be used to be birds friendly.

To put it plain, up until now, researches about media façades have occurred in various groups, for example; design, architecture, and art, which permits us to start collecting current discoveries, to move to better approaches for considering, and to sum up disciplines, working towards building a general comprehension of coordinating media façades in the architectural building design.

14. Recommendations and Further Researches That Can Be Done Based on This Research

Other researches could be done to determine the impact of using media façades on commercial buildings in Egypt can be done by studying social and cultural aspects. Designers ought to consider critical issues for proficient building façades; these issues influence the technologies added to building façades considering its cost and how proper it is for the building necessities. In this way vitality sparing, designers ought to properly select site for working, as the plan highlights changes with site climatic qualities, be mindful of any huge change in climatic conditions in the site. Then properly choose the best façade innovation that serves the objective of the building, choose proper ventilation techniques that are reasonable for the building use and notify to all PC demonstrating that can lead the designer to the correct execution of the ideal façades' techniques.

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