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The Optical Tricks Experience in virtual studios on the Algerian Television An Applied Approach.

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Abstract:

The study focuses on the transition from traditional set design to the use of virtual studios and computer-generated decor. The research problem stems from the ongoing challenge of balancing rising production costs with the creative opportunities offered by virtual technologies. Despite remarkable technological progress, real shooting locations and physical sets continue to impose significant financial burdens on television institutions. This research aims to analyze how virtual studio and decor technologies enhance economic efficiency within television institutions. It also seeks to examine how Algerian television applies key economic and managerial principles, such as planning, organization, and budgeting, in adopting these technologies. Finally, the study proposes a strategic management framework designed to improve audiovisual production processes through the effective integration of virtual technologies.

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Introduction :

The increasing integration of digital technology into television production has revolutionized the visual experience, shifting from traditional set design to the innovative use of virtual studios and computer-generated decor. the problematic arises from the tension between the high costs of traditional production and the creative potential offered by virtual technologies. Despite significant advances in production tools, real shooting locations and physical decor remain expensive. However, virtual studio technology offers a transformative alternative reducing costs while expanding creative possibilities limited only by the imagination of media professionals.

Our study aims to analyze how virtual studio and decor technology contribute to cost efficiency and innovation within television institutions. It also aims to examine the extent to which Algerian television applies economic and managerial principles such as planning, organization, and budgeting in adopting these technologies. likewise aims to propose a strategic management framework for enhancing television production efficiency through virtual technology adoption.

The method of analysis adopted is a case study focusing on Algerian television. This qualitative approach allows for an in-depth understanding of institutional practices and the challenges faced in implementing virtual studio technology. Through field observations, expert interviews, and document analysis, the study seeks to connect theoretical frameworks of media management with practical experiences in production. Ultimately, this research aims to provide an applied model of how emerging digital technologies can redefine television management and production in Algeriaachieving both economic efficiency and creative innovation.

2- Methodological framework of the topic

2-1-Problematic of the Study:

Since the dawn of television media institutions, visual marvel has been the primary concern of those in this field, as it is one of the most important means to captivate the audience's minds and emotions. Visual marvel was not solely confined to the performance of the show's host; rather, the shooting location and its decor, along with the art of illusions and visual effects, were among the most crucial elements contributing to the enchantment of the visual material. The appropriate use of the location and its decor significantly serves the media construction of the television program.

Despite the emergence of many technologies that aimed to save time and effort for those working in this industry, this has not significantly reduced the cost of the shooting location or the decor used therein. In other words, these technologies have enhanced the professionalism of those in this industry and streamlined the various work stages. However, on the other hand, they have not been able to reduce the overall production cost. Nonetheless, by utilizing computer technology, it has often been possible to dispense with real locations and decor, replacing them with imaginary ones produced by computers, resulting in direct savings in the budget of the visual material production. This new technology is called virtual studio or virtual decor.

In this way, virtual studio technology has been able to provide a radical solution that unprecedentedly reduces production costs while elevating the level of marvel for the work as a whole. Despite the reduction in the cost of shooting locations and their decor, their visual appeal has been elevated to a degree limited only by the imagination of those involved in the production of the visual material.

From the above, the problem can be posed through this question: Can the Algerian National Television be effectively managed by relying on modern technologies such as virtual studios and virtual decor?

This question raisesseveralsub-questions :

- What is the reality of real decor in television?
- What is the reality of virtual studio or virtual decor?
- How does virtual studio or virtual decor ensure cost reduction in production and increase revenue?

2-2-Significance of the Study:

- There is a clear scarcity of studies in Arab libraries on the subject of media institution management in general and television in particular.
- Exploring a recent study of the origin and application within the framework of technological, managerial, and technical data, attempting to achieve somewhat applicable results in the Algerian television institution.
- International interest in media institution management as it represents massive investments, requiring substantial funds, and searching for ways to reduce the costs of this industry while simultaneously advancing and innovating in television imagery quickly and with minimal wasted time, increasing viewer attraction. This is achieved through virtual studio and

decor technology, with this interest coming from both public and private media institutions.

- Increasing interest in modern technology, especially in the media field, where owning this technology has become a fundamental criterion for measuring the advancement or backwardness of media outlets. The introduction of digitization, the adoption of virtual studio and decor technology in some programs on Algerian television indicate an alignment with developments in other satellite channels.
- The importance of research lies in the significance of its variables within the institution itself, society, and the economy, by seeking a strategy for managing the television media institution through strategic management of its production, which relies on decor as a fundamental pillar for the success of its works, by reducing its expenses through the adoption of virtual decor technology, which works to reduce labour costs.
- This study serves as an enclosure to emerging media studies, seeking to crystallize a media thought and heritage that aids in drawing up a strategy for managing media institutions in light of modern technologies such as virtual studio and decor technology.

2-3-Objectives of the Study:

- Providing an overview of media institution management in general and television institution management in particular, as it is an economic entity with a service-oriented nature.
- Shedding light on the concept of the television institution, which is considered today one of the main sources of wealth, and how it is managed and its importance. Highlighting its economics, how its expenses and revenues are managed as an economic institution.
- Understanding the extent to which Algerian television applies the principles of economic management, including planning, organizing, directing, controlling, budgeting, training, and qualification.
- Understanding the technological components that can be relied upon in developing the media institution through its main product, which is the services represented in program production and shows.

2-4- Method of the Study:

Regarding the methodology used in the study, a case study approach was employed focusing on Algerian television. This methodological approach determines the researcher's interest in a single case that can be studied in-depth

and with precision, addressing all its aspects, whether the case studied is an individual, a family, an institution, a social entity, a group, or a small community. In order to achieve our study's objectives, this methodology was applied to understand the practical reality of managing the Algerian television institution and its field adoption of virtual decor technology as a means to facilitate its management performance.

2-5-The Temporal and Spatial Scope of the Study:

- The study commenced in early October 2009 and lasted continuously for a month. During this period, we were able to make numerous observations and conduct interviews with experts. Immediately thereafter, we began preparing to construct the questionnaire and gather its requirements, resorting to Algerian television or one of its directorates to finalize the missing elements.
- Upon completing the questionnaire from November 2009 to January 2010, and defining the study sample, which consisted of television viewers specializing in audio-visual content, given their diversity across schools, institutes, universities, private institutions for audio-visual and Algerian television.

3- Optical Tricks and Special Effects:

An Egyptian cinematographer defines them as innovative creations made or placed in front of the camera, inside it, or in other visual and practical printing mediums to be recorded on film and suggest a new reality that cannot exist in the current present time, except through these innovations, whether in the past, present, or future. These effects are used for several reasons:

- To deceive viewers into believing that what they see is reality, the actual or real thing, especially when it is impossible to film something as it is in reality or due to the impossibility of that for one reason or another.
- Due to the lack or deficiency of human, technical, or mechanical capabilities.
- Due to limited financial resources.
- Due to the impossibility of executing it within the studio, and perhaps filming it in reality would require a very long time, or the thing doesn't exist in reality at all, such as ghosts, etc(Shalabi, 2008, p. 369). These effects and visual illusions can be executed using a number of methods, but their implementation often requires an expert.

Many of these effects add an additional impact to the message, including:(Zeital, 2004, p. 435)

a. **Use of decor:** This refers to the effects of the scene, which create the illusion of something that does not actually exist, such as the presence of stairs suggesting they lead to a higher floor that does not exist in reality, indicating the nature and characteristics of the place.
b. **Use of lighting**: Known as lighting effects, these can create the illusion of environmental or natural phenomena such as sunlight, moving wheels, dancing flames, or the shimmering surface of water.
c. **Use of mirrors**: Mirror effects are used to obtain multiple and duplicated images of a single object.
d. **Camera effects**: These are produced by using the camera in a specific manner, known as visual effects.
e. **Temporal effects:** These are related to time and can create the illusion of time movement (speed, slow motion, freeze-frame).
f. **Background and foreground projection**: This is achieved by projecting front or back scenes to simulate that an event is taking place in a specific location or to simulate the event itself, such as a person appearing in front of a skyscraper or walking in the streets of New York City. (Bernard, 1980, p. 320)
g. **Non-electronic effects (chemical and mechanical):** These include optical effects and mechanical effects.

3-1- Visual Effects:

It includes pre-digital scientific devices placed in front of the lens.

- **Television brow:** It is a body that creates a frame for the foreground of the shot to cover an optical event in the background of the frame. It consists of picture frames, pull rods, and keyholes illuminated by bright light sources to form a star-like light bundle.
- **Reflections:** These are achieved by reflecting a scene onto a mirror, silver plates, or water.
- **Star filter:** This effect is used to increase the density of lights on a rainy night, or to highlight a singer or musical band. All studio lights captured by the camera, whether from a wide angle or even the glare on the actor's clothes conveyed through the camera lens, transform into clearly visible star-shaped rays on the television screen.

- **Diffusion filter**: Its role is to give a distant and somewhat blurry digital image of the scene, achieved by placing a filter over the lens such as a piece of plastic, a piece of light fabric, or a nylon stocking.
- **Defocusing**: This effect occurs when the camera operator moves closer to the shot, then moves away from focus, and then returns to focus again. It is used as a transitional technique or to indicate acute psychological disturbances or physical imbalance. (Zeital, 2004, p. 455)

3-2- Mechanical Effects:

Primarily used in television series and perhaps also in television productions aired "off-screen," requiring these effects. There is no consensus on the techniques used in producing mechanical effects in general, as it remains experimental to this day. What matters is the simplicity of assembly and operation and a high degree of reliance on safety during operation. These effects include rain, ice, flames and fire, smoke, wind, thunder, lightning, snow, and explosions. (Britz, 2001, p. 350)

A. Electronic Effects: Some of the most important and best effects ever, due to their versatility and ease of execution, as well as their effectiveness in both aesthetic and expressive fields. The most important of these effects are:

1. **Computer-generated** Digital Effects: These are visual effects that are comprehensively generated by the physical components of the computer and its ready-made programs.
2. **Computer-processed Digital Effects**: These are digital visual effects created by the computer using existing images. They include visual sequences generated by the camera, visual frame, image, and drawing, or by enhancing or altering those images in one way or another.
3. **Digital Visual Effects**: Visual effects generated by the computer or digital effects equipment installed in the television mixer, which also refers to the equipment that produces the effects. (Zeital, 2004, p. 458)

4- Chroma Key (Color Keying)

- Have you ever seen an actor on screen:
- Without limbs?
- Playing two roles, such as twin siblings, or father and son, and engaging in a conversation with themselves in a single scene?
- About to fall from a great height with cars passing by on the street where they will fall?
- Sitting with a cartoon character (non-real) and conversing with them?

- Shaking hands with a deceased president or leader?
- Having a rocket pass through their chest, creating a gap through which we see what is behind the actor?
- If you have ever seen any of these tricks or another trick involving an unrealistic image mixing, then you know it is Chroma key.

Figure number 01

4-1- What is Chroma Key?

Chroma key is a technique used to blend two images to create an unreal final image. It is a mix between the two blended images, where the first image is called the foreground video and the second image is called the background video.

A. How it Works:

The trick begins by shooting the foreground video, where the actor stands in front of a uniformly coloured background, usually blue or green. Then, this foreground video is overlaid on the background video, replacing the chosen color (blue or green) with the background video. This makes the actor appear as if they are walking on a beach (the background video) while they are actually walking in the studio in front of the coloured background that has been replaced. This trick is commonly seen in weather forecasts where the presenter points to a non-existent map and has recently started appearing in the sets of many TV programs, especially news-oriented talk shows.(Khalil, 2004, p. 169)

B. How it is Executed:

In recorded works, the role of computers is clear and effective, where video processing software like Adobe Premiere is used to replace the uniform color in the foreground video with the image in the background video.

- Another famous method for executing the Chroma key trick is using television cameras that rely on three independent sensors for the three primary light colors: red, green, and blue. These cameras have the ability to output the image in the form of three separate color signals: one for red,

another for blue, and a third for green. Thus, the blue color signal is replaced with the video intended to be broadcasted in the background, effectively replacing the blue background.(Khalil, 2004, p. 170)

Figure number 02

C. Why Blue or Red?

Any color from the three primary colors (red, blue, and green) can be used, but the most commonly used color in the video field is blue, for two reasons:

1. Blue is the complementary color to human skin tone, and it predominates in most scenes. Therefore, it is logical to choose a background color that is the exact opposite to avoid color mixing issues. Blue is the complementary color to yellow, furthest away from it, so it complements it to produce white.
2. Conversely, in telecine works, green is preferred because blue is more sensitive and susceptible to unwanted signals.

4-2- Use of Chroma Keying in Studios:

Despite the ease of use of highly sophisticated digital visual effects, Chroma keying remains widely used in many production studio setups. We have previously mentioned the most common uses of Chroma keying in weather reports through weather maps or satellite imagery. Typically, the map or image generated by the computer replaces all areas except for where the presenter stands, making it appear as if the presenter is standing in front of the weather map or satellite image. However, there are situations where Chroma keying can be applied more effectively, such as:

- **Studio Decorations for Various TV Programs:** Studios offer excellent control over lighting, allowing you to make the Chroma keying process appear more realistic if you were hosting a show with one of these decorations.(Zeital, 2004, p. 460)

This method can also be used to create a variety of backgrounds and environments related to the scenes as decorations for programs that cannot be achieved in reality. In this process, the image mixer is usually tasked with

preparing it after the graphic designer prepares the backgrounds and scenes for the program's decor. The presenter or host is then filmed against a blue background with bright lighting. An electronic process is set up on the image mixer device to replace all the blue color in the image with another image, such as the program's title or decor, for example. The television studio camera is directed in one direction (fixed) and towards the person, where everything in the image appears blue in the "blue screen" composition or green in the "green screen" composition. It is then outputted and replaced with another image, and the background image, which can be the program's title or any other image, is inserted into the mixer when the two images are merged to form the presenter's shot, along with the program title appearing behind them.(Lewis, 2009, p. 580)

5- Virtual Studios in the Field of Cinema and Television:

5-1- In the Field of Cinema:

In the field of cinema, thanks to this technology, the director can first have a preview of scenes from the film that combine real actors, backgrounds, and virtual effects created in 3D drawing programs in a momentary scene during the filming process. This gives them full control over the placement of actors within the shooting location and the immediate decision-making, whether to settle for the shots taken or to reshoot. Then, the production team uses the camera tracks recorded by the computer during the actual shooting process to produce high-quality virtual backgrounds and shooting locations in 3D drawing programs. These backgrounds and locations are then integrated with the footage captured by real cameras to produce the final image of the film using scene composition software. Given that many Arab directors are currently leaning towards shooting films with digital cameras and because virtual studio programs can produce HD quality images, these programs can be used to create shooting locations and studios directly in the film.(Salim, 2007, p. 77)

5-2- In the Field of Television:

First: Uses of the Virtual Studio within a Special Effects Environment:

All components of the scene, such as snow or underwater shooting effects, and connections with studio devices, can be recognized through the add-ons available in the design system associated with the control unit.

This design system is powerful in all aspects and can involve a third element in the design, "real image, 3D design, and special visual effects." It meets all production needs, no matter how specific they are.

The user interface of the 3D design and control system is flexible enough to work with automatically and can respond to any form of design development, thus providing a great opportunity to reduce production time.

The quick and strong response feature to the effects of real components in relation to virtual components is one of the most important features offered by the 3D design system. In 3D design, an imaginative decor can be based on realistic photographic imaging, making it difficult for viewers to decide whether this decor presented in the program is imagined or entirely real and built in the studio.

Second: On Air Virtual Studios:

Perhaps the use of virtual studios in live broadcasting is the magical solution to creating television channels at the lowest cost. The 3D design system can easily provide designs that include dynamic informational content such as product prices, stock market data, various statistics, election results, voting outcomes, and match results. One of the most famous television channels that utilize this technology is Al Jazeera News Channel.

Since the most costly aspect of production for television stations is the set design, and given the difficulty of a station building sets for all the programs it offers, which is very expensive, with virtual studio technology, only one television studio is required where all programs are filmed, and the computer immediately replaces this monochrome studio with the distinctive virtual studio for the program being filmed. All sets for the programs offered by the channel are stored on the computer, allowing for wide-ranging possibilities and changing sets without cost other than designing the graphic decor on the computer and airing it live.

5-3- On Air Graphics and Shapes:

One of the important uses of virtual studio technology is employing it to create graphics on the image broadcasted by the television station, such as displaying the news ticker on the screen, placing the station's logo, or adding any graphics or texts to the image being broadcasted by the station, such as football match scores or three-dimensional diagrams to illustrate an important sudden event such as a plane crash or similar incidents that require immediate broadcasting without available footage.

There are many technological solutions to create virtual studios, but most of them include the following components:(Salim, 2007, p. 79)

- The use of camera tracking systems, whether optical or mechanical, to create live broadcasts, simulating the real camera perspective.
- Real-time compositing software that instantly provides real-time rendering, using camera tracking data to generate a composited image of the television studio.
- A video mixer device that can combine the video output from the camera with the video output from the real-time compositing software to produce a final video image as a final output.

The virtual studio can easily integrate with any existing studio, allowing it to produce artistic works similar to those produced by virtual studios. This has led to the emergence of many highly advanced programs and films in the field of special effects with extremely limited costs.

5-4- Challenges Faced by Virtual Studios:

This technology initially encountered numerous problems and challenges. One of them was that the actor could not see the scene they were performing, making it difficult for them to interact with the shots or other characters that had been previously designed or recorded. Similarly, the director could not see the immediate results at the same moment, and the camera had to be stabilized to ensure that the angles matched the scenes that had been previously designed or recorded. However, many of these issues have been addressed in modern virtual studio software, and it has become possible to verify all these aspects through an immersive space provided within the computer programs used for design.(Rotthaler, 1996, p. 41)

5-5- Benefits of Virtual Studio:

- **Saving Time, Money, and Effort:** Producing shows in a virtual studio requires significant technological efforts, but the benefits and real advantages it brings to television production are undeniable. The reduction in preparations and production stages in the virtual studio compared to current television productions is significant.
- Imagine a not-too-distant future where broadcasters can exchange sets and accessories seamlessly through the realm of virtual media by simply opening an extension of the blue screen technology, without delving deep into complexities, thus increasing significance. This opens up new perspectives for image formation on the surface with the assistance of software. In comparison to traditional production techniques, virtual

studios offer more freedom, as evidenced by the following:(Rotthaler, 1996, p. 43)

1. Lighting, including shadows, can be artificially created in the computer and adjusted as desired, eliminating the need for multiple lighting sources within the studio.
2. Changing color schemes and compositions in computer-generated images is quick and easy.
3. Decorations can be easily changed with the push of a button.
4. Small studios can be enlarged virtually.
5. Virtual decorations allow for the utilization of existing studios, making them multi-service and diverse in both classic and virtual technologies.(Sadik, 2008, p. 155)

5-6- Types of Virtual Studios:

1. **Virtual Reality Studio**: This studio is fully integrated with virtual sets and artistic effects. It features a smart movable camera that maintains dimensions and interacts intelligently with virtual backgrounds and sets. It presents a scenario where presenters and guests appear to be in a different location than the actual studio.
2. **Virtual Observer Studio:** This studio is dedicated to sports events and occasions. It electronically monitors matches with smart cameras, capturing dimensions of the field and player positions. It stands out significantly and is the first of its kind in the Middle East. This studio can detect offside situations, penalties, and other errors made by players or referees in real-time and during replays with slow motion. This is achieved within television studios without the need for external effects. Channels such as Saudi TV and CNN own and utilize this system. A similar system is used for online platforms as well. The technology of animated match replays has been employed on various sports websites, such as BBC Sport, during the Euro Cup 2004 and the FIFA World Cup in Germany 2006, allowing viewers to watch match replays and listen to commentary on the game. The system can display goal replays and allows for choosing the preferred camera angle and viewing replays from the perspective of each player. Interactive match replays require a Flash Shockwave player to run the programs. Various entities are involved in developing these systems for multiple computer applications, including Princeton Electronic Billboard, which has developed a system allowing

television producers to insert advertisements that appear as part of the stadium wall. The system can determine camera placement after reading the stadium map and the location for inserting the required advertising shot.(Sadik, 2008, p. 157)

Figure No. (03): Shows a match that uses the virtual studio for analysis.

- Currently, research is being conducted in Japan and elsewhere to develop Virtual Reality television and produce it. It allows viewers to look at the displayed scenes in a three-dimensional manner from any possible angle, with image clarity equivalent to that of high-definition televisions. Therefore, computer-designed shapes and characters have become a feature in the media.(Al-Hashemi, 2001, p. 225)

5-7- The Difference between the Virtual Studio and the Virtual Decor:

- As mentioned earlier, the Virtual Studio is a type of studio equipped with special devices supported by blue and green screens, and the camera is movable in all directions during operation. The nature of these devices is that they are expensive due to their multiple uses at all levels. However, the viewer's perception of their capabilities overshadows the high cost of these devices. Its goal is to keep pace with developments at the lowest possible cost and with more creativity and astonishment by using it as a substitute for real studio decorations, along with some visual tricks and other areas as mentioned.
- On the other hand, the Virtual Set is only a process of color input on those blue or green screens, and it is used in a regular studio by adding those backgrounds. Its use has evolved with the availability of digital cameras, advanced computers, and software compared to before. However, the only difference is the lack of camera movement. Its use does not allow the camera to move in the studio, nor does the position of the lenses change, nor any vertical or horizontal tilts of the camera. Because this pressure,

which weighs heavily on image composition, is the basis of this technology.

- Furthermore, the cost there is only in the value of purchasing the backdrop fabric (blue or green) and using it in program studios, making it appear like a virtual studio. This is the confusion that many people fall into, especially when creating decorations for programs. The difference is a simple technical one, and most people, even some specialists, cannot distinguish between them, especially since this field is new. Therefore, virtual decoration is often referred to as a virtual studio, primarily because of its simplicity. It is more commonly used in television program production, where good and impressive decorations are required. On the other hand, virtual studios are used more in the cinema industry and other fields such as sports matches, to accomplish what cannot be achieved in reality or even exists in reality, but in a dynamic and cost-effective way. Consequently, the results of the virtual studio and virtual decoration are similar despite the differences in techniques.
- As for virtual decoration, it is available on all channels without exception. When distributing the questionnaire for this study to the respondents and asking them about the most important international channels that use this technology, their answers were as follows:

Table No. (01): Shows the international channels that the respondents watch that are used for the virtual studio or virtual decoration, according to the number mentioned:

The number of mentions	1	1	1	1	1	1	1
the channel	22 Alresalah	22 Sharjah	24 Nile	25 Almustakillah	26 Almajd	27 Alresalah 28 MTV	29 Al Hiwar 30 alekhbariya
The number of mentions	1	1	1	1	1	1	1
the channel	15 Manar	16 iqraa	17Nessma TV	18 toyoraljanah	19 abudhabi	20 media sat	21 El Hayat 01-02
The number of mentions	6	6	5	3	3	2	2
the channel	8 france2	9 france3	10 TRT	11 CNN	12 Dubai	13 Rotana	14 BBC
The number of	8	9	18	19	28	30	56

mentions							
the channel	01 AlJazeera	02 AlArabiya	03 Mbc	04 TF1	05 canal+	06 LBC	07 M6

Comment:

From the table, we notice the category of the respondents, who are Algerian. They tend to follow Arab channels more than foreign ones. The respondents mentioned 30 channels, of which 23 are Arab channels and 7 are foreign channels: BBC, CNN, France3, France2, M6, canal+, TF1, as illustrated in the table. This is a natural characteristic of an Arab population as they tend to follow channels in the language they speak for ease of information assimilation. Additionally, not all individuals are proficient in foreign languages. French channels come in second place as they follow 5 French channels and 2 English ones (BBC, CNN). This is because the Algerian people are known to be more proficient in French than any other language after Arabic, due to historical roots of French colonization of Algeria. This colonization has left its mark, especially in the northern regions, particularly in the capital, which was heavily colonized. In fact, most of its inhabitants speak French in their daily lives. Our study community is from the capital's population.

As we can see from the table, the mentioned channels are a mix of public and private channels owned by various specialized channels, especially news channels. This indicates that virtual set technology is more commonly used in news channels. This is because most programs are talk shows that require only 1 to 5 individuals inside the studio, which makes the virtual set decoration process easier, especially regarding camera paths, direction, and control, as they remain stationary.

Since Al Jazeera Channel was mentioned the most, 56 times, it's worth shedding some light on it. Al Jazeera Channel is the first independent Arabic news channel that started broadcasting from Qatar on 01/11/1996 via the Arab satellites Arabsat and Nilesat. Al Jazeera broadcasts in digital format, thanks to its latest production and broadcasting technologies. It operates according to a five-year plan set by the board of directors since its inception to cover both capital and operational costs. For example, in 1998, Al Jazeera's expenses amounted to 2002.51 Algerian dinar out of a total budget of 10012.55 Algerian dinars, resulting in an expenditure rate of 2002.51 Algerian dinar for the year.

Al Jazeera relies on self-funding to cover its expenses through advertisements and the sale of its diverse programs. It invests these funds in establishing the

largest studios equipped with the latest digital technology. The Al Jazeera building covers an area of 1850 square meters. Its designs and technical specifications were completed by a local company, with the construction costing 2002.51 Algerian dinar. The channel utilized fully digital electronic equipment for managing, processing, filming, and preparation. The cost of the technical equipment purchased by the channel amounted to 1401.757 Algerian dinar (DZD).

Therefore, Al Jazeera did not hesitate to acquire the latest technologies to maintain its position with its audience. Recently, it purchased a virtual studio for around 332 million Algerian dinars from a specialized company in this field. This virtual studio is used in the program "Without Borders", where everything we see is not real except for the presenter, the guest, and the table.

Additionally, the new design of Al Jazeera News Channel was executed by an American company, as seen on http://www.giantocopus.com/v3. Cinema 04D software was used to create its works in a three-dimensional manner. The logo of Al Jazeera incorporates water movement as backgrounds, with a graphic representation of the word "Al Jazeera". The concept behind this design is that water is essential to Al Jazeera. It then transitions to the idea of the earth globe falling into the water, and then emerging with the word "Al Jazeera".[1]

6- Study Recommendations:

1. Decoration is the backbone of production, and it is the aspect that researchers found lacking in the session's format.
2. Virtual studios produce virtual decorations, but they possess specialized devices aimed at reducing production costs. Therefore, we focused on virtual decoration because it is part of the virtual studio and carries many of its features, except that the camera in the virtual decoration, without a dedicated virtual studio, does not move as opposed to others.
3. The economic importance of virtual decoration, despite its long-standing use in weather forecasts and its adoption by most global channels.
4. The use of virtual decoration in program production does not affect the credibility of the news being delivered visually. It focuses on changing the appearance of the session without altering its content.
5. The development of virtual studios in Algerian television requires support from the state or partnerships with international television stations to train and qualify those in charge and bring in the necessary resources.

6. Sessions that are more suited for virtual decoration than real decoration are talk shows, especially news programs, due to the small number of people involved, requiring no more than three stationary cameras. In the case of a virtual studio, it doesn't matter whether the programs are talk shows or variety shows; camera movement is facilitated technically.
7. The media institution can consider adopting virtual decoration more than real decoration for its productions because it is the preferred decoration for program viewing.

- Conclusion:

These are the most significant developments that have emerged in the field of visual effects and illusions from the pre-1960s to the 1990s. However, after 2000, there has been significant advancement with the emergence of digital devices and substantial technological advancements. Digital cameras and High Definition (HD) technology have become more suitable for this discourse.

Amidst current technological advancements, new scientific techniques have emerged, advancing the technology of Chroma keying for building virtual sets. This technology, known as virtual decoration, relies on replacing physical locations and decorations with computer-generated imagery. While it has existed for some time, the availability of computers, digital cameras, and software has facilitated its widespread use and daily application.

Virtual decoration requires only one studio painted blue or green, where individuals are filmed in a three-dimensional environment, uniformly coloured and well-lit, facilitating easy separation of this color afterward. Real and virtual images are then fed into a single-color background separation device, replacing virtual images while retaining the photographed individuals. Since the paths of real and virtual filming are identical, the result is images of real individuals within virtual studios. Furthermore, decoration changes can be made live on air without any additional cost.

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