

# TV News Production In Smart Newsrooms Using Modern Technologies

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## Abstract

This study looked at how current technology are utilized to create news broadcasts, as well as artificial intelligence systems and visual effects in news reports. The researcher wants to test the hypothesis of "technological determinism" in order to better understand and explain the changes in the newsroom due to technology and communication advancements. (What are the latest technologies utilized in creating news in smart newsrooms?) is the central topic of the study. The goal of the study is to identify the contents and issues related to news in the satellite channels that sampled in the study, and to monitor and analyze the various types of techniques used in the production of that news. As well as the most important software tools on which the news is built, and the format in which the news is presented. In addition to determining the amount of interest in satellite channels in producing new forms of news presentation in the research sample, This study is classified as descriptive research. It seeks to describe and analyze the phenomenon of technological transformation to the use of smart newsrooms in Arab satellite channels, with the goal of identifying and comparing the nature of the templates and forms used by these channels in providing news. The researcher employed the content analysis tool to examine the parts of the content and the format, in which the news is given, as well as to investigate and evaluate the links between the various categories of form. as well as two analytical programs The study findings were summarized in the variety of emphasizing features and current presenting techniques improved by graphics technology and virtual reality in displaying news, with an emphasis on the value of live event broadcast. The employment of these aspects in security, political, and social news is becoming more diverse.

**Keywords:** News production, News production technology, Modern technologies, News programs, News technologies, Smart newsrooms.

## Research problem

This research seeks to show whether the use of modern technologies and the transition to what is technically called smart newsrooms and their reflection on production work had a role in developing media work and changing news values. I dealt with it to shed light on this shift and its reflection on viewers' preference for the channels that have adopted

it and the capabilities required of the communicator to provide content that matches the audience's requirements.

## The importance of the research

The research derives its importance from the importance of its subject to society and to scientific research from two perspectives:

First: The importance of modern technologies in newsrooms has increased in recent years, as they provide an understanding of events and a greater understanding of news by the recipient, as they have been able to simplify the huge amount of dry information and numbers using visual forms that are easier to understand and memorize.

Second: These studies are considered necessary for scientific research due to the recent and scarcity of these studies, especially the Arabic ones. The majority of studies concerned with digital transformation in newsrooms focus on the communicator. As for the news and program content produced by newsrooms, little has been studied.

The research presents a vision for introducing smart newsrooms and their tools through the media content analysis tool in Arab satellite channels that have transformed their newsrooms into smart newsrooms.

### **Research objectives**

The research seeks to monitor the extent to which modern technologies are employed in building news by analyzing a sample of news as follows:

1. Identifying the contents and issues concerned with the news in the satellite channels of the study sample.
2. Monitoring and analyzing the different types of technologies that are used in the production of such news.
3. Monitoring the most important software tools on which the news is built.

### **Analytical research hypotheses**

The first hypothesis: There is a statistically significant relationship between the highlighting elements used for each type of news in the news programs of Al-Jazeera and Al-Arabiya channels.

The second hypothesis: There is a statistically significant relationship between the visual processing used for each type of news in the news programs of Al-Jazeera and Al-Arabiya channels.

The third hypothesis: There is a statistically significant relationship between the elements of visibility according to the presentation

methods used in the news programs of Al-Jazeera and Al-Arabiya channels.

### **Research Tools**

First, the content analysis tool

The content analysis tool is used to analyze the media content in the study sample satellite channels, in relation to the news. The content analysis tool consists of the following categories:

The link between form and content (the news context of the elements of form)

It is the axis through which the use of the elements of the form is linked with their contexts to serve the news story.

1. Highlighting elements used for each issue at hand
2. Visual treatment for each type of case
3. Highlighting elements according to presentation methods

### **Research community and sample**

First, the research community: Arab satellite channels that use modern technologies for smart newsrooms in producing news.

Second: The research sample: Al-Jazeera and Al-Arabiya channels.

### **Research period**

The analytical study extends for the period from 1/9/2021 to 1/1/2022

### **Define terms**

1. Program production: It is procedurally meant the production stages, starting from the process of collecting and verifying information to the stage of editing and processing, and then broadcasting and publishing, including the details that these stages contain and require human efforts and technological capabilities.
2. News programmes: It is procedurally intended for programs specialized in presenting news stories from news bulletins and programs that provide reports and analyzes of current events in a news manner.
3. Smart newsrooms: Smart newsrooms are based on the principle of intelligence, which means procedurally: it is all that is

used by Arab satellite channels in terms of equipment, software and systems that aim to deliver bulletins and news programs with quality and clarity through what they achieve from the sound effects they achieve. And the image in the content of the news presented to the public.

## **The second topic**

### **Modern technologies in television news production**

At a time when developments in the field of communication and the production of digital content are accelerating, it has become imperative for news production rooms to keep pace with the changes taking place in the production process and the transition to digital production and the use of artificial intelligence techniques. This transformation has produced new forms of news and journalistic content, such as robotic journalism, digital algorithm journalism, and automated computer journalism, which are forms based on artificial intelligence software. Purely human effort accessible.

### **The concept of artificial intelligence**

The science of artificial intelligence stems from computer science and software, as it is defined as "certain behavior and characteristics followed by computer programs so that . They are able to simulate the mental abilities of humans in their different modes of work, and the most important of these capabilities is the ability of the machine to learn, conclude and make decisions. For doing many reactions" (Hassan, 2020, p. 65) as it is defined as "the scientific and technical current that includes methods, theories and techniques that aim to create machines capable of simulating intelligence... It is also classified as a cognitive science and not as a technical science because it started with research work For a group of researchers in computational neuroscience and mathematical logic before copying it as a branch of computer science and algorithms, and aims to reach solving problems of logical complexity using

algorithms" (Qumura, 2018, pg. 6). Feigenbaum defined it as "the part of computer science concerned with designing intelligent computer systems that have the characteristics that characterize humans, including language understanding, learning, and problem solving." (Masudi, 2020, page 100) The Arabic Encyclopedia of Computer and Internet Dictionary defines it as "a term given to one of the latest computer sciences, and it aims for the computer to simulate the intelligence processes that take place within the human mind, so that the computer has the ability to solve problems and make decisions." In a logical and orderly manner, and in the same way as the human mind thinks" (Al-Sayed, 2021, p. 179), artificial intelligence processes include both learning, that is, acquiring information, and analysis, that is, using logical rules to reach a conclusion, and automatic correction. Among the capabilities of artificial intelligence is the acquisition of information, that is, the ability to learn and understand, and the formation of experience gained through careful distinction between different issues, and the exclusion of inappropriate information. He can also choose between groups of data based on controlling variables, that is, the ability to make the right decisions through the skill of sensory and mental awareness of the different aspects of the problem. In addition to responding to variables with flexibility, speed and accuracy, and the ability to choose between the available possibilities by knowing the consequences of each of them and choosing the possibility that achieves results closer to the desired. The machine can also apply the experience gained from dealing with a specific situation or problem to similar situations, while developing the response form based on the information added each time. It also has the ability to discover errors, track them, correct them and know the causes of their occurrence, and accordingly, it is possible to reach copies that are more capable of avoiding similar errors. In addition to the ability to understand and analyze unfamiliar situations through the method of logical deduction, and to follow the method of

linking between multiple and similar situations. (Hassan, 2020, page 70) One of the results of the continuous development in the uses of artificial intelligence is the changes that have been reflected in the media work environment, through the use of algorithms and computerized programming systems in shortening some tasks that require human effort and can be replaced by automated effort. Artificial intelligence applications also help journalists produce innovative types of stories, such as investigative reports, data-driven stories or the so-called data journalism, which benefit from the automated news generation process. Information is collected, classified, written, edited and distributed automatically. These algorithms can also create news stories using classified data, and publish or distribute them automatically, such as weather reports, currency rates, sports news, or alerts that precede natural disasters such as earthquakes. (Al-Dubaisi, 2022, pp. 99-101). Automated journalism depends in its work on automating news gathering, evaluation, composition, presentation and distribution, through tools for accessing information, filtering it from social media platforms. Its authenticity and sources, and among these tools is the Dataminr application that provides alerts for events Breaking news to newsrooms, helps generate and present news by using the Natural Language Generator to create written, audio, and video news texts, and provides reporting on the news most relevant to the audience. (news, 2020) Algorithms have become widely used in media work, starting with discovering news, alerting the editorial staff to events, or important information, sending alerts that lead journalists to the most important issues circulating in social networks. Verifying information and it requires converting data into materials Media valid is a collaboration between algorithms and human creativity, in hybrid systems that take advantage of the speed and accuracy provided by algorithms, and human capabilities to produce news according to news values suitable for public consumption.

### **The use of smart visual forms in news production**

Smart visual forms are all that are added to the image and video of additional visual elements, whether they are basic or in the form of effects to enhance the content presented in the visual presentation or to obtain certain perceptual effects that target the viewer. And visual effects are "everything that surrounds a person and works to attract his attention through visual perception and works to deliver a message to the recipient directly or indirectly. These are techniques that are used to produce an unrealistic visual formation to influence the viewer through the sense of sight until it reaches mental awareness.. Those visual effects are called VFX (Visual effects), that is, the visual effects that take place after the actual filming, whether in the montage rooms or in the special effects rooms, which would add to the video images and scenes that were not present in it. (Awad, 2020, page 120) Satellite channels use studios equipped to film realistic elements and then add visual effects, and they are called virtual studios and they depend on the default decoration that is provided either through ChromaKey, i.e. backgrounds in a uniform color or specialized blue screen screens to unload backgrounds And replace it with added elements, it is also called a virtual wall or a three-dimensional wall. The virtual studio system relies on the use of CGI-designed elements that are three-dimensional or two-dimensional background elements according to the need for them. A realistic décor can be built for each program due to the high material and time cost. It is also possible to add formal elements such as the news tape, graphics and pictures of the program, the station logo, hurricanes, guest definitions and other elements that are pre-designed and added in the direct montage process. The cameras are automatically controlled to track the locations of people and virtual items. A chroma separator is used to combine both real and virtual elements. It uses specialized programs that act as a virtual camera through which the three-dimensional environment is combined with the live images captured

during filming. The virtual environment is presented at the time of the live broadcast. Among these programs are VIZRT, Brainstorm multimedia and other programs that provide so much precision in the integration that it is difficult to distinguish between real and virtual scenes. (Moheb and Azmi, 2011, pages 150-153) Visual techniques are processes that are mainly used in cinematography, including those that were raised primarily to serve the video game industry and simulate reality for the purposes of education or entertainment. After filming, which is a method followed until recently, and these techniques were used after updating and applying them to serve news and program production processes, as they are added at the montage stage after unpacking the original filmed photography inside the studio equipped with chroma technology. However, the recent update of this process made the process take place in conjunction with filming with a tribal production of the added elements. The studio and cameras were developed to deal with these added techniques during the filming process. Combined with the realistic elements inside the studio as if they were already present without the need for chroma, and replacing them with physical screens with a technology called "Immersive Reality." One of the advantages of this technology is to give a more accurate, efficient and realistic result, in addition to shortening the time. These visual effects are considered smart because they are produced using artificial intelligence software in combination between machine intelligence and the element of human creativity, which distinguishes the current media work.

### **First: Graphics**

There are many definitions that dealt with graphics. Maged Kamal El-Din, a professor at Helwan University, defined them as "a brief picture and an alternative to a set of cultural and intellectual values, which turn into a visual meaning for many focused expressive connotations. The design with its elements and artistic symbols is A relationship that contains in its technical

translation a guiding inventory of practical functions of interest to the recipient as a permanent user of them (Kamal El-Din, 2015, p. 217). Ambrose and Harris define it as "a broad discipline of knowledge sciences concerned with visual creativity, and it includes several aspects such as artistic direction, and type design , page layout and design, information technology, and other creative aspects." (Ambrose and Harris, 2015, p. 12) Design is defined as "a way of expressing ideas using visual means that may contain abstract shapes inspired by nature, simulating vision, and dealing with Al-Ain directly, and aims to find appropriate solutions to the problems that people may face in their normal and daily lives." (Al-Arabi, 2009, pg. 5) Design is an art that simulates the human sense of sight and aims to deliver a message to the recipients, Accordingly, the recipient must have a sense of the aesthetic values contained in the design, because it addresses the beauty spots within the target audience of their different age, social and cultural levels. In terms of media work, journalists have benefited from the development in the graphic design process in their work, and graphic design work was carried out by design specialists who helped journalists enrich their stories with graphic elements, while today's journalists are required to be familiar with the rules of graphic design at a minimum. . Graphic design tools and techniques have witnessed great developments and are widely used in news production, especially with the move to virtual studios, and this development is due to the need for journalists to use new templates. Work to highlight the news and present it in a more attractive and understandable way for the public, and the technological development has produced many Templates and modern editorial systems that have become one of the basics of news production. These tools helped journalists to clarify, enrich, and detail the news, which contributes to pushing the public to follow the news to its end. Hamdi and Taher's study, which was conducted on employees of Al-Jazeera news channel, found that the graphics templates contribute

to simplifying and explaining the news, and help the broadcaster interact with the content presented on the screen. As it draws the viewer's attention to the news story. (Hamdi and Taher, 2020, p. 56)

Second: Holograms: Holographic Memories Technology, which is a three-dimensional imaging that works to anthropomorphize objects using overlapping light waves in a specific direction, to show them in a three-dimensional hologram using laser beams. His idea is to record patterns of interference between laser beams on an imaging plate, and in order to view the image, a laser beam similar to the beam used is shed on the same plate, and it is shown as a three-dimensional stereotype in the space, allowing freedom of movement around the image and seeing all its dimensions. (Awad, 2020, p. 121) The use of this technique dates back to 1947 AD when the scientist Dennis Gabor was able to create models using the magnification power in the electron microscope, but the sources of light at that time were not monochrome. As required to apply the hologram technology, which caused a delay The emergence of holographic imaging dates back to the time of the advent of the laser in 1960, when both Upatnieks and Emmitt Leith from the University of Michigan were able to use the hologram as a three-dimensional display medium. The use of this technology. It has developed in various fields such as education, or as promotional methods within museums, such as the Egyptian Museum, which used hologram technology to embodied some important statues in 2019, or live performances such as dance performances at the Wax Museum in Tokyo, and it was also used in corporate promotions at marketing festivals as a company experience. NOKIA used holograms to promote its products in malls, or used it in advertisements, as Nike experimented with when it used this technology to promote its shoes in 2013. (Abdel-Wanis and Abul-Naga, 2021, pp. 123-125) "It is rarely used in the news because it is incompatible With the camera, it is difficult to deal with it except from specific angles, but when you need to use it, it is combined with other technologies that are

more familiar with the camera, such as XR technology.

### **Third: Virtual Reality and Augmented Reality**

"From virtual reality, I can live the dead corners of our world." This is how virtual reality journalist Yulia Lieb described her work in investigative journalism that uses virtual reality technology. It provides its readers with virtual tours in hard-to-reach places such as jungles or refugee camps. It goes to conflict areas to shed light on the dead corners as it describes them, and allows the reader to live within these corners. Virtual reality is a completely imaginary world or a real site, illustrated and embedded in 3D virtual reality applications that are viewed through electronic screens, and allows the viewer to move and search in different directions, and can be viewed using glasses designated for this purpose such as Oculus Rift, or using the screen of tablets equipped with reality applications. Virtual applications such as Google Cardboard and Daydream View, and these applications allow the user to explore places that he cannot visit, such as the depths of the seas or craters of volcanoes, etc., and give him a sense similar to reality by simulating the largest number of senses such as vision, hearing, and sometimes smell and touch. (Khattab, 2020, page 1450) As for Augmented Reality technology, it is one of the technologies that depends on the actual reality that the user lives with enhanced with additional elements, and it can be displayed using wearable devices as well as can be displayed on mobile devices supported by augmented reality applications with video presentation Spatial Video Spatial Display. Augmented reality technology has attracted press organizations around the world to use it in their printed copies by linking those copies to users' phones, by using an application dedicated for this purpose and the camera of smart devices, as the printed copy provides a QR code that is read through the QR reader application on the phone device. The link is made, and the press topic turns from a fixed two-dimensional topic to a three-dimensional interactive topic, attached to a video on the

topic that is displayed on the screen. One of the press organizations that used this technology is the Australian Sunday Telegraph when it launched the News Alive application for IOS users. And the Canadian newspaper Toronto Star in 2013, and the American newspaper Metro, which used the technology on all its pages. In addition to the Japanese newspaper Tokyo Shimbun, which used this technology in content directed to children. In addition to the British newspaper Independent. Among the Arab press institutions that used this technology are the Bahraini Al-Ayyam newspaper in 2013, the Emirati newspaper Al Bayan, which launched a free special application for augmented reality technology, and the Egyptian Akhbar Al-Youm Foundation launched the AR Akhbar program as an interactive service available for use, in addition to the Lebanese newspaper Al-Nahar and the two Egyptian newspapers Al-Akhbar and Akhbar Al-Youm . (Khattab, 2020, p. 1452) Virtual reality and augmented reality technologies are widely used in the manufacture of news stories and documentaries, as they provide details and information that enrich the illustrated content and sometimes serve as an alternative to displaying the illustrated content. An example of the use of virtual and augmented reality technology in the press is The story of "Kia", which revolves around the embodiment of a murder incident through recorded conversations so that the events of the crime are transmitted visually. It is a story produced by Emblematic Group. Majed Mohamed, the team leader who works in the creative department of Al-Jazeera news channel, mentions that these technologies are widely used in producing news reports, and two types of programs are used to apply them. The first type is post production programs such as Photoshop and 3D design programs such as 3D Max and Lumin. 3D, which was developed by the technical support team in the channel to suit the work in the newsroom. The second type is direct on screen production programs, such as the vizrt program, which imports elements from the rest of the design programs and categorizes

them within the gallery and applies them directly to the screen quickly. These programs are used to design unreal reports with advanced techniques from video game design techniques. These types of reports began with the channel's coverage of the Khashoggi murder case, as the channel reported on the details and mysteries of the case for which no realistic depiction was available.

### **Third: Surround photography**

When covering events, regardless of their level of importance to the audience, the person behind the camera lens is in control of the scene. The photo shooter or the videotape recorder is the one who determines the angles that the audience can view, which is an authority that enables the journalist to frame the event with what it fits with his vision of the event first, and with the institution's policy second. And because the technological development that accompanied media work began to empower the viewer and integrate it into the events and make him a participant in the news story industry, it became necessary for him to be able to watch the event with the least possible authority of the communicator, including his authority to choose the angle and limits of images and video. Accordingly, the 360-degree surround technology came to give the viewer the ability to see the details of the story in full and from all angles. Surround imaging technology differs from virtual reality techniques, although they can be used together. Surround imaging technology enables the viewer to expand the viewing angle as he wants and in all directions, while virtual reality technology enables him to interact with and control the surrounding environment. Single-lens cameras and smartphones do not support peripheral photography, but must be multi-lens cameras such as the GoPro Omni Rig camera, the Samsung Gear 360 camera, and the Samsung Round camera, in addition to multi-lens smartphones. However, a surround imaging experience can be obtained by attaching more than one camera in specific directions and then combining the results using multimedia editing software.

(Aljazeera, Ghariba, and Al-Atrash, 2020, pg. 9) This technique does not present the events only, but rather presents them in a chronological sequence and details of the place and illustrates the complex overlap between the events. A mentality stored in the footage. A practical example of producing news stories using peripheral imaging technology is what was published by the investigative journalism Frontline magazine in 2015 about Ebola, where it published a report. It develops the viewer from getting to know the story of the disease from the beginning through virtual reality and the viewer can move the video to all angles, and the Facebook platform restored 360 dissemination of the video so that it reached a wide audience.

Another example is the Beyond the Map project that Google launched to introduce the city of Rio de Janeiro in Brazil, and it uses tools to watch videos through it, namely VR Headset devices, and the user can get a tour inside the city.

### The third topic

**Table (1)** shows the differences between Al-Jazeera and Al-Arabiya in the security news

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
graphic	52	48.1	80	39.8	1.41	not significant
Virtual Reality	3	2.8	21	10.4	2.40	significant
hologram	0	0.0	9	4.5	2.23	significant
3D wall	38	35.2	75	37.3	0.37	not significant
3d video	15	13.9	16	8.0	1.65	not significant
the total	108	100.0	201	100.0		

- The second sub-hypothesis emanating from the first main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya for the elements of highlighting used for political news). Through Table (2), we notice that there are significant differences between Al-Jazeera and Al-Arabiya channels for each of the

### Research procedures

Highlighting elements used for each issue at hand

First: To test the first main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya for the elements of highlighting used for each issue raised)

The following sub-hypotheses emerged from this hypothesis:

1- The first sub-hypothesis emanating from the first main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the highlighting elements used for the security news). Through Table (1), we notice that there are significant differences between Al-Jazeera and Al-Arabiya channels for both the virtual reality and the hologram in the security news, where the calculated Z value for each of them was greater. Its tabular value at the level of significance (5%), while there were no differences between the two channels for the rest of the highlights in this news.

virtual reality and the hologram in the political news, where the calculated Z value for each of them was greater than its tabular value at the level of significance (5%), while there were no differences between The two channels for the rest of the highlights in this news.

**Table (2)** shows the differences between Al-Jazeera and Al-Arabiya in political news

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
graphic	193	48.8	257	44.6	1.27	not significant



Virtual Reality	6	1.5	45	7.8	4.33	significant
hologram	0	0.0	9	1.6	2.50	significant
3D wall	183	46.2	247	42.9	1.03	not significant
3d video	14	3.5	18	3.1	0.35	not significant
the total	396	100.0	576	100.0		

3- The third sub-hypothesis emanating from the first main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the elements of highlighting used for human news). Through Table (3), we notice that there are significant differences between Al-Jazeera and Al-Arabiya channels for virtual

reality in the human news, where the calculated Z value for each of them was greater than its tabular value at the level of significance (5%), while no differences appeared between the two channels for the rest of the highlighting elements. in this news.

**Table (3)** shows the differences between Al-Jazeera and Al-Arabiya channels in human news

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
graphic	52	54.7	24	57.2	0.26	not significant
Virtual Reality	0	0.0	3	7.1	2.63	significant
hologram	0	0.0	0	0.0		
3D wall	43	45.3	15	35.7	1.04	not significant
3d video	0	0.0	0	0.0		
the total	95	100.0	42	100.0		

4- The fourth sub-hypothesis emanating from the first main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the elements of highlighting used for social news). Through Table (4), we notice that there are significant differences between Al-Jazeera and Al-Arabiya channels for virtual

reality in the social news, where the calculated Z value for each of them was greater than its tabular value at the level of significance (5%), while no differences appeared between the two channels for the rest of the highlighting elements. in this news.

**Table (4)** shows the differences between Al-Jazeera and Al-Arabiya in social news

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
graphic	29	42.0	9	37.5	0.39	not significant
Virtual Reality	0	0.0	3	12.5	2.99	significant
hologram	0	0.0	0	0.0		
3D wall	40	58.0	12	50.0	0.68	not significant
3d video	0	0.0	0	0.0		
the total	69	100.0	24	100.0		

5- The fifth sub-hypothesis emanating from the first main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya for the elements of highlighting used for the economic news). Through Table (5), we notice that there are

no significant differences between Al-Jazeera and Al-Arabiya channels for all elements of highlighting in the economic news, where the calculated Z value for each of them was less than its tabular value at the significance level (5%).

**Table (5)** shows the differences between Al-Jazeera and Al-Arabiya in the economic news

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
graphic	12	44.4	21	38.9	0.48	not significant
Virtual Reality	3	11.2	12	22.2	1.21	not significant
hologram	0	0.0	0	0.0		
3D wall	12	44.4	21	38.9	0.48	not significant
3d video	0	0.0	0	0.0		
the total	27	100.0	54	100.0		

6- The sixth sub-hypothesis emanating from the first main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the elements of highlighting used for the news science and technology). Through table (6), we notice that there are significant differences between Al-Jazeera and Al-

Arabiya channels for each of the virtual reality and the three-dimensional wall in science and technology news, where the calculated Z value for each of them was greater than its tabular value at the level of significance (5%), while no Differences between the two channels appear for the rest of the highlighting elements in this news.

**Table (6)** shows the differences between Al-Jazeera and Al-Arabiya channels in science and technology

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
graphic	22	44.9	30	47.6	0.29	not significant
Virtual Reality	0	0.0	9	14.3	2.76	significant
hologram	0	0.0	0	0.0		
3D wall	27	55.1	21	33.3	2.31	significant
3d video	0	0.0	3	4.8	1.55	not significant
the total	49	100.0	63	100.0		

7- The seventh sub-hypothesis emanating from the first main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the elements of highlighting used for sports news). Through table (7), we notice that there

are no significant differences between Al-Jazeera and Al-Arabiya channels for all elements of highlighting in the sports news, where the calculated Z value for each of them was less than its tabular value at the level of significance (5%).

**Table (7)** shows the differences between Al-Jazeera and Al-Arabiya in sports news

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
graphic	1	100.0	20	40.0	1.21	not significant
Virtual Reality	0	0.0	0	0.0		
hologram	0	0.0	0	0.0		
3D wall	0	0.0	30	60.0	1.21	not significant
3d video	0	0.0	0	0.0		
the total	1	100.0	50	100.0		

8- The eighth sub-hypothesis emanating from the first main hypothesis, which states (there

are significant differences between Al-Jazeera and Al-Arabiya channels for the

elements of highlighting used for health news). Through Table (8), we notice that there are significant differences between Al-Jazeera and Al-Arabiya 3d video channels in the health news, where the calculated Z value

for each of them was greater than its tabular value at the level of significance (5%), while no differences appeared between the two channels for the rest of the highlighting elements. in this news.

**Table (8)** shows the differences between Al-Jazeera and Al-Arabiya channels in Al-Khobar Health

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
graphic	9	31.0	45	50.0	1.78	not significant
Virtual Reality	0	0.0	9	10.0	1.77	not significant
hologram	0	0.0	0	0.0		
3D wall	15	51.7	36	40.0	1.11	not significant
3d video	5	17.3	0	0.0	4.02	significant
the total	29	100.0	90	100.0		

**2- Visual treatment for each type of case**

Second: To test the second main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the visual treatment of each type of case) The following sub-hypotheses emerged from this hypothesis:

1- The first sub-hypothesis emanating from the second main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the

visual treatment of the security news). Through Table (9), we notice that there are significant differences between Al-Jazeera and Al-Arabiya channels when there is no visual treatment in the security news, where the calculated Z value was greater than its tabular value at the level of significance (5%), while no differences appeared between the two channels for the rest Visual processing in this news.

**Table (9)** shows the differences between Al-Jazeera and Al-Arabiya in the security news

visual processing	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
LIVE	3	2.7	3	1.9	0.45	not significant
Live material from the event site	50	44.6	70	43.5	0.19	not significant
Archives	20	17.9	25	15.5	0.51	not significant
graphics	36	32.1	63	39.1	1.18	not significant
without	3	2.7	0	0.0	2.09	significant
the total	112	100.0	161	100.0		

2- The second sub-hypothesis emanating from the second main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the visual treatment of political news). Through table (10), we notice that there are significant differences between Al-Jazeera

and Al-Arabiya channels when there is no visual treatment in the political news, where the calculated Z value was greater than its tabular value at the level of significance (5%), while no differences appeared between the two channels for the rest Visual processing in this news.

**Table (10)** shows the differences between Al-Jazeera and Al-Arabiya in political news

visual processing	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		

LIVE	5	1.2	12	2.3	1.23	not significant
Live material from the event site	192	46.4	220	41.9	1.37	not significant
Archives	60	14.5	81	15.4	0.40	not significant
graphics	147	35.5	212	40.4	1.53	not significant
without	10	2.4	0	0.0	3.58	significant
the total	414	100.0	525	100.0		

3- The third sub-hypothesis emanating from the second main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the visual treatment of human news). Through Table (11) we note that there are no

significant differences between Al-Jazeera and Al-Arabiya channels for visual treatment in the human news, where the calculated Z value was smaller than its tabular value at the level of significance (5%).

**Table (11)** shows the differences between Al-Jazeera and Al-Arabiya channels in the human news

visual processing	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
LIVE	0	0.0	0	0.0		
Live material from the event site	54	52.9	20	52.6	0.03	not significant
Archives	12	11.8	6	15.8	0.63	not significant
graphics	36	35.3	12	31.6	0.41	not significant
without	0	0.0	0	0.0		
the total	102	100.0	38	100.0		

4- The fourth sub-hypothesis emanating from the second main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the visual treatment of social news). Through table (12), we notice that there are significant differences between Al-Jazeera and Al-

Arabiya channels for live material from the site of the event in the social news, where the calculated Z value was greater than its tabular value at the level of significance (5%), while no differences appeared between the two channels. For the rest of the visual processing in this news.

**Table (12)** shows the differences between Al-Jazeera and Al-Arabiya in social news

visual processing	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
LIVE	0	0.0	0	0.0		
Live material from the event site	33	38.8	18	66.7	2.53	significant
Archives	12	14.1	3	11.1	0.40	not significant
graphics	36	42.4	6	22.2	1.88	not significant
without	4	4.7	0	0.0	1.15	not significant
the total	85	100.0	27	100.0		

5- The fifth sub-hypothesis emanating from the second main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the visual treatment of the economic news).

Through table (13) we notice that there are significant differences between Al-Jazeera and Al-Arabiya channels for each of the live material from the event site, archive and graphics in the economic news, where the

calculated Z value was greater than its tabular value at the level of significance (5%), in While there were no differences between the

two channels for the rest of the visual processing in this news.

**Table (13)** shows the differences between Al-Jazeera and Al-Arabiya in economic news

visual processing	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
LIVE	0	0.0	0	0.0		
Live material from the event site	12	57.1	5	9.8	4.30	significant
Archives	0	0.0	9	17.6	2.06	significant
graphics	9	42.9	37	72.6	2.38	significant
without	0	0.0	0	0.0		
the total	21	100.0	51	100.0		

6- The sixth sub-hypothesis emanating from the second main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the visual treatment of Al-Khobar Science and Technology). Through table (14), we notice

that there are no significant differences between Al-Jazeera and Al-Arabiya channels for visual treatment in Al-Khobar Science and Technology, where the calculated Z value was smaller than its tabular value at the level of significance (5%).

**Table (14)** shows the differences between Al-Jazeera and Al-Arabiya channels in science and technology

visual processing	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
LIVE	0	0.0	0	0.0		
Live material from the event site	15	26.3	15	31.3	0.56	not significant
Archives	12	21.1	6	12.5	1.16	not significant
graphics	30	52.6	27	56.2	0.37	not significant
without	0	0.0	0	0.0		
the total	57	100.0	48	100.0		

7- The seventh sub-hypothesis emanating from the second main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the visual treatment of sports news). Through table (15), we notice that there are significant differences between Al-Jazeera and Al-Arabiya channels for both live

material and live material from the site of the event and archive in the sports news, where the calculated Z value was greater than its tabular value at the level of significance (5%). ), while there were no differences between the two channels for the rest of the visual processing in this news.

**Table (15)** shows the differences between Al-Jazeera and Al-Arabiya in sports news

visual processing	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
LIVE	1	50.0	3	5.1	2.52	significant
Live material from the event site	0	0.0	48	81.4	2.76	significant
Archives	1	50.0	3	5.1	2.52	significant

graphics	0	0.0	5	8.4	0.43	not significant
without	0	0.0	0	0.0		
the total	2	100.0	59	100.0		

8- The eighth sub-hypothesis emanating from the second main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the visual treatment of the health news). Through table (16), we notice that there are significant differences between Al-Jazeera and Al-

Arabiya channels when there is no visual treatment in the health news, where the calculated Z value was greater than its tabular value at the level of significance (5%), while no differences appeared between the two channels for the rest Visual processing in this news.

**Table (16)** shows the differences between Al-Jazeera and Al-Arabiya channels in Al-Khobar Health

visual processing	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
LIVE	0	0.0	0	0.0		not significant
Live material from the event site	15	39.5	30	49.2	0.94	not significant
Archives	6	15.8	6	9.8	0.88	not significant
graphics	13	34.2	25	41.0	0.67	significant
without	4	10.5	0	0.0	2.59	
the total	38	100.0	61	100.0		

### 3- The elements of highlighting according to the methods of presentation

Third: To test the third main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels

for highlighting elements according to presentation methods). Through table (17), we note the absence of the elements of highlighting according to the methods of presentation in relation to the direct news

**Table (17)** shows the differences between Al-Jazeera and Al-Arabiya channels in the news directly

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%		
graphic	3	100.0	0	0.0		
Virtual Reality	0	0.0	0	0.0		
hologram	0	0.0	0	0.0		
3D wall	0	0.0	0	0.0		
3d video	0	0.0	0	0.0		
the total	3	100.0	0	0.0		

The following sub-hypotheses emerged from this hypothesis:

1- The first sub-hypothesis emanating from the third main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya for the elements of highlighting according to the presentation methods of the news, an in-studio report). Through table (18), we notice that there are

significant differences between Al-Jazeera and Al-Arabiya channels for each of the virtual reality, the hologram, and the three-dimensional wall in the news, an in-studio report. The calculated Z value was greater than its tabular value at the level of significance (5%), in While there were no differences between the two channels for the graphics and 3d video in this news.

**Table (18)** shows the differences between Al-Jazeera and Al-Arabiya channels in Al-Khobar, an in-studio report

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%	T	
graphic	267	48.6	363	44.6	1.45	not significant
Virtual Reality	12	2.2	96	11.8	6.45	significant
hologram	0	0.0	18	2.2	3.51	significant
3D wall	246	44.8	312	38.4	2.37	significant
3d video	24	4.4	24	3.0	1.39	not significant
the total	549	100.0	813	100.0		

2- The second sub-hypothesis emanating from the third main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the elements of highlighting according to the presentation methods of the news, a field report). Through table (19), we notice that there are significant differences between Al-

Jazeera and Al-Arabiya channels for virtual reality in the news field report, where the calculated Z value was greater than its tabular value at the level of significance (5%), while no differences appeared between the two channels for each of the two channels. Graphics, holograms, 3D wall and 3D video in this news.

**Table (19)** shows the differences between Al-Jazeera and Al-Arabiya channels in the news, a field report

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%	T	
graphic	114	59.4	129	51.8	1.58	not significant
Virtual Reality	0	0.0	9	3.6	2.66	significant
hologram	0	0.0	3	1.2	1.53	not significant
3D wall	78	40.6	105	42.2	0.33	not significant
3d video	0	0.0	3	1.2	1.53	not significant
the total	192	100.0	249	100.0		

3- The third sub-hypothesis emanating from the third main hypothesis, which states (there are significant differences between Al-Jazeera and Al-Arabiya channels for the elements of highlighting according to the presentation methods of the news, an interview report). Through table (20), we notice that there are significant differences

between Al-Jazeera and Al-Arabiya channels for the 3d video in the news interview, where the calculated Z value was greater than its tabular value at the level of significance (5%), while no differences appeared between the two channels for the rest of the highlighting elements. According to the presentation methods in this news.

**Table (20)** shows the differences between Al-Jazeera and Al-Arabiya in the news interview

highlight elements	Al Jazeera		Al Arabiya		Z. test	indication
	T	%	T	%	T	
graphic	171	51.4	186	47.7	0.98	not significant
Virtual Reality	0	0.0	0	0.0		
hologram	0	0.0	0	0.0		
3D wall	156	46.8	204	52.3	1.46	not significant
3d video	6	1.8	0	0.0	2.66	significant
the total	333	100.0	390	100.0		

### Results summary

1. When linking the results of the categories of highlighting elements with the categories of the types of cases, it was found that the use of highlighting elements (graphic effects). It is the most relevant to all types of issues that have been covered, and it is partnered with (the three-dimensional wall) in economic issues and the category of science, technology and health. It was also found that Al Arabiya channel was the most used of the virtual reality category in the types of security, political and humanitarian issues and the category of science and technology. And Arabic was the most used category for the hologram in the security and political news categories.
2. When linking the results of the visual processing categories used with the categories of case types. It was found that the category (live material from the site of the event) was the most used in the categories of news (security, humanitarian, social, sports, and health), while the category (graphics) was the most used in Categories of news (political, economic, science and technology). Al Jazeera was the most used category for (live material from the event site) in social and economic news, and it was also the most used category for (none) in security and political news. While Arabic was the most used for the categories (archives and graphics) in economic news, and the most used for live broadcasts, live video material and archives in sports news.
3. When linking the results of the categories of highlighting elements with the categories of presentation methods. It was found that the category (graphic effects) was the most used in the four categories, and Al-Arabiya was the most used of the elements of virtual reality in the internal and field reports, while Al-Jazeera was the most used of the three-dimensional wall elements. In internal reports and 3D video in interviews.
4. When linking the results of the visual processing categories with the categories of presentation methods, it was found that the live material from the site of the event is the most used in field reports and interviews, while the graphic category is the most used in internal reports. Al-Arabiya was the most used for live broadcasts in direct news, while Al-Jazeera was the most used for direct broadcasts in field reports. Al Jazeera was the most used graphic in interviews.

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