

YENİ MEDYADA TELEVİZYON TEKNİĞİ

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ÖZ

Derleme Makalesi

Review Article

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Günümüzde dünya çapında yayın yapan yerel, bölgesel, ulusal ve uluslararası televizyon medyası, küresel markaları pazarlamak ve tüketicisiyle bağlantı kurmak için yayıncılığın duygusal etkisinden yararlanmakta ve yeni medyanın sunduğu yeni ortamları kullanmaktadır. 1990'lara kadar yayın içeriklerini iletmek amacıyla kullanılan karasal, kablo veya uydu sistemleri günümüzde dijitalleşmeyle beraber yerini büyük ölçüde İnternet tabanlı çevrimiçi, çevrimdışı, yüklenmiş, indirilmiş, dar yayın veya podcast gibi multimedya platformlara bırakmış durumdadır. Bu platformlar yayıncılara hedef kitle seçimi ve dijital ölçüm yeteneği sunarken tüketicie de hangi medya içeriğine, ne zaman, hangi cihazda, ne kadar süreyle erişebileceğine dair esneklik sağlamaktadır.

Diğer taraftan dijital teknolojiler dijital içeriklerin üretim, dağıtım, paylaşım ve depolanma yeteneklerini de kolaylaştırmaktadır. Bu süreçte yeni paydaşların entegrasyonu hızlanmakta ve yayıncılık endüstrisinde yeni dijital ekosistemler ortaya çıkmaktadır.

Çalışmada, geleneksel televizyon yayıncılık teknolojileri ile yeni medyayla dönüşen yayıncılık sistemleri karşılaştırılmış, her iki sistemde kullanılan teknolojiler literatür taranarak tanıtılmaya çalışılmıştır. Çalışma yeni medya ile değişen televizyon yayıncılık teknolojilerinin daha hızlı, ekonomik ve kolay erişilir olduğunu, yüksek görüntü ve ses kalitesi sunduğunu, etkileşimli ve eş zamansız yapısıyla izleyicisine önemli kazanımlar sağladığını ortaya koymaktadır.

Anahtar Kelimeler: Yeni Medya, İletişim Teknolojileri, Televizyon, Sayısal Yayıncılık, Televizyon Yayıncılığı.

TELEVISION TECHNIQUE IN NEW MEDIA

ABSTRACT

Today, local, regional, national and international television media broadcasting around the world take advantage of the emotional impact of broadcasting and use the new environment offered by the new media to market global brands and connect with their consumers. Today terrestrial, cable or satellite systems, which were used to transmit broadcast content until the 1990s, have left their place to multimedia platforms such as Internet-based online, offline, uploaded, downloaded, narrow broadcasting or podcasts, with the digitalization. While these platforms offer publishers the ability to select audiences and digital measurement, they also provide the consumer with flexibility in terms of which media content they can access, when, how long and on which device.

On the other hand, digital technologies facilitate the production, distribution, sharing and storage capabilities of digital content. In this process, the integration of new stakeholders is accelerating and new digital ecosystems are emerging in the publishing industry.

In the study, traditional television broadcasting technologies and broadcasting systems transformed by new media were compared, and the technologies used in both systems were tried to be introduced by scanning the literature. The study reveals that television broadcasting technologies that have changed with the new media are faster, more economical and easily accessible, offer high image and sound quality, and provide significant gains to the audience with their interactive and asynchronous structure.

Keywords: New Media, Communication Technologies, Television, Digital Broadcasting, Television Broadcasting.

INTRODUCTION

Television broadcasting is undergoing a radical change in parallel with the developments in video, audio and computer technologies. This change is due to the impact of digital technology and publishing techniques on the production and distribution processes.

This change in broadcasting technologies and especially in television broadcasting in recent years has removed the limits created by time and space factors and made it possible to transmit sound, image and data over a single network service.

The increasing image and sound quality with digitalization has led to the spread of new technologies such as high definition (HD, 2K, 4K) and three-dimensional broadcasting (3D). With the desire of today's audience to reach electronic communication technologies such as Internet and television over a single connection, platforms that use broadband technologies in broadcasting such as

Internet Protocol Television (IPTV), Mobile TV and Web TV have also increased rapidly. Tube televisions were replaced by plasma, LCD and LED screens, roof antennas disappeared over time and turned into cable systems and satellite antenna systems. The Internet protocol systems used today have been the last point in the technology reached in terms of accessing television broadcasts.

The same is true for the publishing dimension. The course of television, which started with analog signals, gained a new momentum after being transferred to the digital platform. In addition to the developments for the audience, it is observed that digital audio and video techniques dominate in television production and broadcasting systems.

Today's television broadcasting presents us with a wide variety of content presentations that have high image and sound quality and can respond to increasing audience tastes. Because only digital hardware and software can bring flexibility to the activities of publishers in a way that can meet these demands. Memory camera systems, editing computers, automation systems, data compression techniques, digital broadcasting satellites, high definition digital television, broadcasting over the internet, virtual studio technologies are some of these digital production and broadcasting environments.

Production and distribution tools that will be affected by this transformation need to be developed for both publishers and consumers in terms of speed, quality, ergonomics, modularity and reliability. Considering the new standards emerging beyond the current broadcasting standards, this means that some devices will lose their old functionality and importance. In order to prevent this, existing broadcasting systems should be combined (converged) to create new products and services, or the structure should be completely replaced with appropriate systems.

In order to realize this convergence, the electronics industry carries out a significant part of its R&D activities on digital equipment used in broadcasting systems. However, it is very difficult to keep up with the constantly renewed technology and to try to achieve this in a short time.

In the conceptual framework of the study; The concept of television, the concept of new media and the development of television technique have been examined with the literature review method, and the new media and traditional media broadcasting systems have been discussed with the comparative analysis method.

Studies on the subject are mostly audience-oriented publications that question the impact of new media platforms on the audience. James Webster's (1986, s. 78) article: Audience behavior in the new media environment, in which he examines the social effects of new media on the audience, the book named: Transmedia Television (Evans, 2011, s. 16) which tells about the audience, new media and transmedia storytelling in daily life and the book: On Media Memory (Neiger , Meyers, & Zandberg, 2011, s. 117) examining popular culture and collective memory in the new media era can be given as examples. This study focuses on television broadcasters and differs from other studies in this respect. On the other hand, the study also aims to introduce alternative broadcasting systems for independent broadcasters such as Youtuber and vlogger by showing the conveniences of the uncomplicated publishing systems of the new media.

1. Television Technique

The definition of television was made by the British Standards Institute as follows: The technique of creating temporary images of real or recorded scenes from afar via electrical communication system (Morgül, 1997: 1).

Aziz (1989: 7) defines the television as "transferring the sound and image to the society through electromagnetic waves propagating in space in terms of the transmission system from the source to the receiver, and converting the signals back to sound and image with the receiver devices developed for this purpose".

Since the 1980s, developments in communication technologies have enabled the transmission of radio and television broadcasts with the new methods of that period (Cable TV, Satellite TV, PAY TV). The developments in the 1990s changed this situation and digital technologies came into play. Thanks to the developments in this period, wired communication devices or telecommunication infrastructures used

for data transfer started to be used in the field of broadcasting. Thus, new transmission techniques have left their place to new broadcast applications with different structural features (Çaplı, 1995: 51).

Electronic systems are divided into two as analog and digital systems. With the important developments in digital technologies, analog (tube) television systems have been replaced by digital broadcasting technology. In order to understand today's television technologies and make evaluations on this subject, it is necessary to look at the structure of digital and analog television first.

For years, human beings dreamed of the possibility of transmitting pictures over long distances, but they could not turn this dream into practice until they learned to master the electron. This effort, which started in the 1800s and lasted for about 60 years, is the product of a tradition that started with electricity, telegraph, radio and photography rather than the efforts of one or a few people.

Attempts to transmit from one place to another via electromagnetic spectra (radio signals) have attracted the attention of many amateur enthusiasts who have built their own disc receivers. The transmission of sound from one place to another gave rise to the idea that the image can be transmitted in the same way. Studies in the field of image transmission began at the beginning of the 19th century.

In 1873, Joseph May, a young telegraph operator in Ireland, discovered the photoelectric effect. Selenium rods exposed to sunlight show a change in resistivity. This means that changes in light intensity can be converted into electrical signals.

In 1875, in United States, George Carey developed a system based on simultaneous investigation of every point (pixel) in the image (Garg, 1993: 77). In this system, a large number of photoelectric cells are lined up on a panel facing the image and connected by cables to another panel carrying the same number of light bulbs. However, this system of Carey is not applicable if a reasonable quality criterion is met. Even to match the quality of motion pictures of that period, thousands of parallel wire connections must be made from one end of the circuit to the other.

In 1881, in France, Constantin Senlecq explained a similar idea with a diagram that elaborated further. He designed two rotary switches between the panels of the cells and the lamps, and when these rotate at the same speed, they are interconnected with the corresponding lamp in each cell. With this system, all points of the picture can be connected with a single cable and sent one after the other. In this logic, which forms the basis of modern television, the picture is transformed into a series of picture elements. However, as with the system proposed by Carey, Senlecq's system requires a large number of cells and lamps.

In 1884, German Paul Nipkow made a name for himself with a patent application defending a different scanning system. Nipkow used a rotating disc with spirally arranged holes in his system; In this disc, which is designed with a space between each hole according to the width of the image, it is aimed to scan every line of the image of the light beam reflected from the holes. The light beam, whose intensity varies according to the picture element, is converted into an electrical signal by the cell. On the receiving side, another disk rotating at the same speed is used in front of a lamp whose brightness changes according to the incoming signal. After one full rotation of the discs, the entire image is now scanned. When the discs are rotated quickly enough, that is, when the successive stimuli of light are continued in rapid succession, the eye no longer perceives them as individual elements of the picture, but as a single picture. Nipkow's idea was actually simple, but could not be put into practice with the available materials of that time.

In the other scientific developments in the 19th century, the effort to find an alternative system to Nipkow came to the fore. In this period, the source that will shed light on the studies in the field is the electron. The electron, that is, the small negative electric plane, which revolutionized physics, has caused many researchers to focus their studies on it by using their imaginations, thanks to both the extreme narrowness of its beams and its stability.

The fluorescent cathode ray tube was invented in 1897. Karl Ferdinand Braun of the University of Strasbourg placed two electromagnets in the neck of the beam tube to move the electron beam horizontally and vertically. Thus, the movement of the electron beam creates visible lines on the fluorescent screen. Russian scientist

Boris Rosing developed this idea in 1907 and suggested that Braun's fluorescent system could be used as a screen.

In early 1908, Scottish A. A. Campbell Swinton introduced a system that uses cathode ray tubes at both the transmit and receive ends. This is the first system designed entirely electronically. In Swinton's system; The image is projected onto a photoelectric mosaic fixed to one of the tubes. A beam of electrons then scans and generates an electrical signal, this electrical signal on the receiving side controls the intensity of another beam of electrons scanning the fluorescent screen (Herbert, 2004: 52).

The methods proposed by Nipkow and Campbell Swinton are purely theoretical ideas. Existing selenium cells are not sensitive enough and respond very slowly to changes in light intensity. The signal is very weak and booster amplifiers have not yet been invented. But science advances and in 1915 the potassium cell is discovered, which reacts much faster than the selenium cell. Then, the architect of the wireless system is the triode (three-electrode lamp) and neon lamps whose light intensity can change rapidly. Nipkow was the father of ideas and the inspiration for the practical application of these and similar inventions (Howett, 2006: 13).

In 1925, John Logie Baird, a Scottish electrical engineer, introduced an instrument at the Selfridges store in London that projected a simple image from a distance on a black background. This is not actually a real television, because the two discs transmitting the image and reproducing it are mounted on the same spindle. However, Baird has effectively demonstrated that the sequential scanning principle can be applied in practice with this system. Baird performed his second show again in 1926 in his own laboratory by projecting a picture of a human head on the wall. The picture consists of five frames per second and 30 lines (Burns, 2000: 167)

Similar machines were made in Germany at about the same time. A smaller mechanical apparatus was developed by Denes von Mihaly at the Berlin Radio Show in 1928. In this system called "Telehor", the picture is scanned 30 lines, but 10 frames per second are created. In the same period, "Semivisor", who scanned 30 lines in France, was introduced by Rene Bartholemy (Shiers, 2014: 201).

This period is also the period when the first tests of radio-electrical transmission using the medium wave radio band took place. Attempts to transmit from one place to another using radio signals also attracted the attention of many amateur enthusiasts who set up their own disc receivers. The public gradually became aware of these researches, and the producers joined this new adventure and started systematic studies in their laboratories. New companies such as "Fernseh" were born in Germany.

In fact, many researchers interested in broadcasting technology have delayed the systems they have developed for a while. This was due to the lack of some pre-use developments in the design of cathode-ray tubes.

In the 1930s, a number of researchers independently developed the interlace principle, which prevents flicker in the image, scanning first all odd-numbered lines, then even-numbered lines. Then, they discovered new vacuuming techniques, in which more cathode rays can be stored in tubes, although the use of cathode rays in transmitters is prohibited. (Abramson, 2003: 142)

Initially, the light point produced on the fluorescent screen was prepared to replace the light beam in the Nipkow system. The problem is the same as on Nipkow's first attempt at applying it to a black background. The light beam or point needs a dark background or environment. As such, ambient light posed a problem when applied to real scenes (outdoors). To avoid this, what is known as the "intermediate film" system has provided a roundabout solution for several years. In this method, which was used when the cameras were not sensitive enough, the film is processed quickly in the dark after it is shot with a camera, then passed through a scanner and sent to the air as a signal.

An alternative solution to this problem came from the Atlantic in 1923. Vladimir Zworykin developed the first more sensitive and sensitive camera tube with an elliptical cathode ray tube (the first photoelectric mosaic made of metal particles applied to both sides of a mica layer), which he called the "Iconoscope" (Schatzkin, 2002: 112). This first camera tube is more compact, easier to use and more sensitive than a disc. Zworykin presented the first prototype "Iconoscope" at an engineer

meeting in New York in 1929. The system, produced by RCA in 1933, can scan at 120 lines and 24 frames per second, regardless of indoor or outdoor space.

In 1929, Baird persuaded the BBC to broadcast television outside of normal radio program hours by using a system capable of scanning at 12 and a half frames per second and 30 lines per second, and marketed this first disc receiver, which he called "Televisors", to the BBC. Over time, this system has reached the capacity of scanning 180 lines.

René Bartholemy, on the other hand, started the development of a particular disc variant in France and made two presentations on it in 1931. The new system he developed has the ability to scan 30 lines of receiver and transmitter. Tried by some German engineers, Bartholemy's new system uses a chuck drum instead of a perforated disc.

In the light of all these developments, in 1929, the BBC started its first television trial broadcasts in London. This first attempt was made using a radio link over Logie Baird's prototype. Wireless transfer of synchronized image and sound from one place to another was carried out by Charles Francis Jenkins in 1927 (Dervişođlu, 2003: 3).

On the other hand, a television channel started broadcasting in Berlin in March 1935. Pictures are produced on film and then scanned using a spinning disk. In 1936, electronic cameras were developed and used for the first time at the Berlin Olympic Games. It was first published in France in November 1935. As in Germany, a mechanical system is used for image analysis. In the same year, EMI company in England developed an all-electronic television system, driven by the work of Schoenberg. The British government used Baird-designed standards (240 lines, 25 frames per second) for the television broadcast initiated by the BBC in London in November 1936. In 1939, the researches carried out in the USA also bore fruit, and the first state television began broadcasting in New York.

Since the first television transmitters were installed in the country's capitals, only a small part of the country's population could watch the broadcasts. For this reason, plans are made to cover other regions as well.

II. World War II stopped the development (dissemination) of television in Europe. However, intensive research on electronic systems continued in this period. So much so that the cathode ray tube design is used in studies on radar screens, and circuits that can operate at higher frequencies are being developed. When the war ended, television broadcasts resumed to previously established national standards. In parallel with the developments in television broadcasting systems, broadcasts have begun to be transmitted to wider audiences.

These publications consist of 405 lines in England, 441 lines in Germany and Italy, and 455 lines in France. By 1952, a single standard (50 frames per second and 625 lines scanning) was proposed in Europe and was gradually adopted by the countries. Modern television was born.

It is difficult to summarize the developments in television from the 1950s to the present. New equipment has appeared, picture sources have become more sensitive. There have been radical transformations not only in broadcasting technology but also in terms of audience perception. Color and digital technologies have come into play in publishing.

The physical concept that allows color reproduction is metamerism. The effect of any color in the human eye can be reproduced by combining the effects of the other three colors (red, green, blue) known as primary colors. In practice, red, green and blue colors can cover the widest range of natural colors. In other words, any color can be defined by determining the proportions of red, green and blue. Practical experience showing that three colors can be combined to form a fourth color has shown that this principle can be the basis of color reproduction (Kang, 1997: 262). In broadcasting, in order to transmit electrical signals in the best possible way, it was preferred to combine them to give three different signals. One of the signals represents the luminance of the picture and the other two represent the chromatic values of the picture when taken together.

In the camera, color is separated into primary colors by means of prisms. Each primary color illuminates a separate tube and produces its own signal. In the receivers, the color is reproduced using bright dots arranged in triads of red, green,

and blue. The dots are placed close enough, from a reasonable viewing distance, that the triad appears as a single source of information. In other words, the eye sees each triple element as a single picture element. The number of colors that can be seen with the primary (main) colors of the television is around ten thousand. The primary colors red, green and blue are used only in cameras and receivers.

Based on the principle of color reproduction provided by the combination of colors, the first color television display was made by Baird in 1928. In this demonstration, a mechanical scan is made with a perforated disk containing three spirals, one for each primary color, each spiral meeting a separate set of color filters. In 1929, H.E. Ives and his colleagues at Bell Telephone Laboratories have introduced a system that reflects light from a three-color source through holes in a single spiral.

In 1938, in France, Georges Valensi introduced the principle of binary compatibility. Accordingly, broadcasts sent in color should be watched by black and white receivers, and broadcasts transmitted in black and white should be seen in black and white by colored receivers (Ayres, 2021: 383). In 1940, Peter Goldmark developed a sequential system at CBS and the United States for transmitting three primary colors obtained using three color filters placed in the light path before scanning. The system is almost viable. However, a three times wider frequency range is required compared to black-and-white transmission. This situation has led to the search for a non-mechanical solution that does not require such a large bandwidth in subsequent research.

In 1953, simultaneous research at the RCA and Hazeltine laboratories in the USA gave birth to the first harmonized color and screen size system. This system has been standardized by the "National Television System Committee" (NTSC) consisting of television experts working in the industry and has been named NTSC system (Tooms, 2016: 308) In this system, the signal is no longer in the form of three primary colors, but a combination of these primary colors (RGB) is transmitted. The "brightness" signal usable by black and white receivers: "Y" and "C", whose color information is combined into a single "color" signal. The isolation of color and brightness information in the transmitted signal has saved bandwidth. In reality,

color information requires much less bandwidth than the bandwidth required for luminance.

The NTSC system was introduced in early 1954. This first American system is highly susceptible to color errors caused by certain transmission conditions. In contrast, European researchers have sought to develop a more robust signal, less sensitive to phase distortions.

Also in 1954, Henri de France proposed the SECAM system (Sequentiel Couleur à Memoire), in which two color components are transmitted sequentially. In this system, the information transferred to each line is stored in the receiver until it reaches the next line, and then processed together to give full color information for each line (Bali & Bali: 373).

In 1963, in Germany, Dr. Waiter Bruch has developed a variant of the NTSC system; PAL (Phase Alternation by Line). The difference from NTSC is that it automatically corrects the phase errors that may occur. Both systems started to be implemented in the color television services that were launched successively in England, Germany and France in 1967 (Aziz, 2013: 15).

With the invention of video equipment, the start of cable television broadcasting, and then the realization of satellite broadcasts, the use of television has increased rapidly. With the use of satellites in the broadcasting industry, images were instantly transferred from one end of the world to the other in real time.

The assassination of American President Kennedy in 1963 was watched by 750 million people on television. Likewise, Neil Armstrong's first landing on the Moon was watched in real time by 500 million people on television. At this date, there were more than 10 million buyers in France (Cavalier, 2004: 240).

If the process from the beginning to the present is summarized, we can describe the time period from the beginning to the end of the Second World War as the beginning and trial phase of television, the maturity period between 1945-1960, and the golden age of television between 1960-1980. In this period, significant progress has been made in television broadcasting technique, color television broadcasts have started, various broadcasting types have been developed, and

countries have expanded the coverage of television broadcasts through radio links and relay stations.

A number of technological developments and privatization policies in the 1980s led to the development of private broadcasting in Europe. With the use of satellites in communication technology, the idea of making television broadcasts in this way emerged, and after a while, cross-border broadcasts began.

In this direction, television, which produces a unique language so that people who migrated from the villages and came together in the urban area to benefit from the opportunities of the city, can easily understand, also laid the foundation of the globalized society (Mattelart, 1998: 100).

In this period, the United States is in a superior position both in the film industry and in the television industry. The dramas broadcasted in many other countries, especially in Europe, are made in the USA.

In the 1980s, as a reflection of the neo-liberal policies in the world and in Europe, there was a transformation that affected all European countries with the privatization trends in the publishing field. From this period, with the emergence of commercial channels, public broadcasting entered a period of decline. The process that started in France, Germany and Italy in 1984 was experienced in Belgium, Denmark, Spain and Greece after a while (Ward, 2009: 256).

In the 1980s, television and radio waves were released in Europe. In order to prevent the turmoil arising from the use of these waves, the "High Council" was established with a law enacted on July 29, 1982 and it was suggested that three private channels should broadcast. At the end of the 80s, video cameras began to spread to large audiences. While it was 0.2% in 1980, this rate reached 2% in 1990 (Cavalier, 2004: 242-244).

Needs are the basis of all emerging and developing technologies throughout history. In the 1990s, with the increase in private broadcasting organizations, many countries complained that the television channels allocated to them were not sufficient. Although there are new image compression methods, these formats cannot be used because analog broadcasting is made. In addition, geographical and climatic

conditions affect the quality of broadcasting. These problems are also valid for analog broadcasting satellite systems. During this period, some studies were carried out to eliminate the listed problems and digital broadcasting systems were developed to increase the number of channels. In digital broadcasting technology, the bandwidth has been increased and at least ten channels of standard definition (SD) or four channels of high definition (HD) broadcasting can be made from the band that can be used by a single channel in the analogue system. In addition, the broadcast quality can be increased with appropriate compression ratios (MPEG-2, MPEG-4).

During the 1990s, studies were carried out on digital audio video and high-definition television. In this direction, the European Community has started a research program on high definition television (HDTV: High Definition TeleVision) depending on the media program (Cavalier, 2004: 245)

In the same period, Toshiba company introduced a three-dimensional (3D) video camera system made of liquid crystal.

Towards the end of the 90s, as a result of the convergence of television technology with computer technology, the ability to broadcast media contents using computer infrastructure and internet was discovered, and a new era, even revolution, began in television broadcasting technology. In this new era, the interaction between the televisions using computer and internet infrastructure and the audience has increased, the desire of the viewers to communicate with what they watch on television, to be able to interfere with the content and to customize the content, IP TV, WEB TV, SMART TV etc. using digital infrastructures has led to the emergence of new broadcast technologies and video tools. Now, information flow can be realized not only unidirectionally from the broadcaster to the viewer, but also bidirectionally from the viewer to the broadcaster. This revolutionary innovation led to the disappearance of the classical television broadcasting structure.

2. New Media

In the 19th century, printing and photography had a revolutionary effect on modern society and cultural development, and today there is a media revolution

initiated by new communication technologies. Although this new revolution is arguably deeper than previous revolutions, its effects are felt intensely today.

The printing press has influenced cultural communication with its function of media distribution. In photography, on the other hand, there is a kind of cultural communication consisting only of still images. In contrast, the computer media revolution; It has influenced all phases of communication, including purchasing, processing, storage and distribution, interacting with all kinds of media content such as characters (texts), still images, moving images and sound.

The issue of what is new media and what is not is still being debated today. For example, can digitally recorded videos, television programs prepared in digital studios, and movies using three-dimensional animations and digital compositions be considered new media? In the same way, are pictures, photographs and illustrations created using computers and then printed on paper within the scope of new media? Otherwise, only the Internet, multimedia systems and sites, computer games, CD and DVD roms, electronic books and magazines, virtual studios and so on media assets or new media?

Based on these questions, we can consider new media as a medium that distributes and exhibits, not just produces using a computer. Texts published by a computer (websites and electronic books) can be considered as new media. However, these texts printed on paper are not considered new media. Similarly, photos in a CD that are placed on a CD-ROM and need a computer to view them are considered new media, but the same photos printed as an album are not considered new media.

This definition is rather limited in understanding the effects of computers on culture as a whole. In this case, a computer used as a media production or storage device must be differentiated from other computers in the role of displaying and distributing media. The necessity of this separation for computers, which all have the same potential to change cultural languages, is another issue that needs to be questioned.

What exactly makes new media new? Practitioners and theorists have made many relative definitions about this question.

Robert Logan (2010: 6) in his book *Understanding the New Media*; He expressed it as digital media that includes interactive, two-way communication and also includes some computers. According to him, new media is very easily processed, stored, transformed and taken and foamed. Most importantly, all data is easily accessible.

Lev Manovich (2002: 142) has argued that new media represents a fusion of two separate historical trajectories in computer and communication technologies. Both began with the invention of Babbage's analytical machine and Louis Daguerre's daguerreotype in the 1830s, and lasted until the mid-20th century, when a modern digital computer was developed to perform computations on numerical data more efficiently. In parallel, there has been the rise of modern media technologies that allow images, sequences of images, sounds and texts to be stored using different material forms.

Since the 19th century, modern society automates media production; It has developed technologies such as camera, film camera, cassette recorder and video recorder. Then came a new stage in media development, requiring new technologies to store, organize and access these media materials efficiently. All of these new technologies have been computer-based. Thus, the automation of media access has become the next logical step in the process already implemented when the first photo was taken. The emergence of new media coincided with this second phase.

New media has emerged as a result of transforming all existing media into digital data accessible for computers. In the new media, graphics, motion pictures, sounds and shapes have become computable.

The new media brought radical changes in the field of communication, turning analog media into digital representation. The Internet makes it possible to reach every desired data at equal speed, digitally coded data can be reproduced countless times, and different media types can be displayed on the computer.

The "interaction" and "asynchronous (asynchronous)" offered by the "New Media" channels, which are formed by the convergence of new communication technologies, make it easier to access the data in distance education "in every

thought" and "in every environment", while expanding the content of traditional television broadcasting. Traditional television broadcasting is rapidly transforming, and viewing rates are increasing, especially on VoD (Video on Demand) platforms. In addition, with simple applications on mobile devices, the viewer can easily access data anytime and anywhere.

In line with the new media environments, television broadcasting systems are also undergoing serious changes. This change is achieved by replacing the traditional system with technologies suitable for new media or by integrating it with some new systems through convergence.

With the new media, the equipment used in traditional broadcasting systems is partially losing their functionality or the technological infrastructures are being changed in accordance with the new system, with the software starting to replace the hardware with the new media. However, many publishing functions can be performed through a single system.

In order to perform a broadcast in the traditional system, many compatible devices are needed. These devices are connected to each other and to the main control systems via reference units. Audio and video are sent to these control systems from devices with producer or player features, and the media file is distributed from there. If we open the process a little more; The media file produced is converted into a format suitable for the director system. It is loaded into Video Tape Recorder (VTR) or digital players (Playout) previously connected to picture and sound tables. Graphics, texts, logos, and images which are produced by the Character Generator (CG) are superimposed on the media file that is output simultaneously from the picture and sound switchers. The final version of the media file is converted into a suitable format for the broadcast platform by passing through the logo generator (LG) and transmitted to the broadcast medium via a link. In this process, which is carried out for a simple broadcast, when it comes to live broadcast, a number of different image and sound sources and control systems come into play. Intercom, a two-way closed-circuit communication system that provides communication between the television director and the studios, prompters, which enable the person in front of the camera to read the text that is reflected in the mirror system in front of the

camera lens and flow from the bottom up, while making direct eye contact with the listener and monitors with professional reference screens where images from camera, playout, VTR, DVD, CG and other broadcast systems are watched are some of these systems

3. Method

The definition, technique, history and concept of new media television, which is in the conceptual framework of the study, has been examined by the literature review method, and the systems applied for the adaptation process to the new media and traditional media systems have been examined by the comparative analysis method. There are many studies in the literature on the use of traditional and new media technologies in television broadcasting. However, the number of studies in which both technologies are compared and their advantages and disadvantages are revealed is very few. In this respect, it is expected that the study will contribute significantly to the literature.

4. Findings and Discussion

In the process of adaptation to new media, some systems used in traditional broadcasting are replaced by new technologies, and some are included in this process with hardware add-ons. VTR, KJ, Playout, Camera Control Units, Intercom systems, Prompter, video and sound monitors and hybrid, converters, picture and sound desks used in traditional broadcasting systems have either been out of use or have been converted into systems suitable for new media channels.

Camera Control Units are systems that are produced for the remote control of camera types used in studio environments and that enable them to be controlled remotely by sending command signals to the cameras. There are some features that distinguish studio cameras from other (actual and cinema) cameras. The first of these is that the studio camera does not have integrated systems or accessories such as a viewfinder, overhead light, battery and adapter, overhead microphone and recorder / reader mechanism, on the contrary, it shares energy, intercom, video and prompter signals with the camera control unit over itself.

There is a need to use more than one camera for broadcasting in environments that can be described as studios. This brings with it some problems. First of all, the color, light and contrast values of all cameras should be equal. In cases where the ambient light changes during the broadcast, the light and color values of the camera will also change, so the new values need to be reapplied to more than one camera. Another problem is cable clutter. In studio broadcasts, there is an exchange of energy, video, intercom, prompter and data signal between a camera and control unit. This exchange is provided with multicore cables. As the distance between the camera and the control unit increases in live broadcasts, the length of the cable will naturally increase and this will cause the signal quality to decrease.

In such problems in traditional broadcasting, a cinematographer enters equal values through the camera control units to which more than one camera is connected and can ensure the continuity of color and light unity, albeit temporarily. However, this will change with multi-camera broadcasts. For example, at least 10 cameras are used in a football match held in daylight, that is, under natural light. Since the direction and intensity of the sun's rays will change during the day, it will be necessary to constantly adjust the light and color of all cameras. 10 cameras means 10 camera control units. This will leave the cinematographer face to face with a very tiring situation. At the same time, since the number of multi-cell cables equal to the number of cameras will be used, uninterrupted and quality signal transfer will be difficult.

In the new media process, some changes have taken place in the working principles of camera control units. First of all, it was ensured that more than one camera could be controlled via a single control unit, and when necessary, access to the control units could be made via mobile devices (tablet, mobile phone). In addition, thanks to new technologies such as the transmission of signals using radio frequencies, wifi, 4G, 4.5G and 5G wireless transmission techniques instead of cables, both the quality and the amount of communication have increased. In addition, the need for manpower has decreased and broadcasting costs have decreased.

Another system used in traditional broadcasting is video cassette readers (VTR) and digital players (Playout). VTRs are video and audio sources and enable the recording and playback of video tapes and media files. VTRs, one of the indispensable systems of traditional television broadcasting, have been replaced by card readers with the development of technology.

Playouts are systems that read and broadcast media files on a computer-based automation system without tape or card. These systems, called the new generation VTR, can read media files in many formats at an adjustable speed and can automatically broadcast a list during the broadcast stream, especially outside the live broadcasts. The most important feature of playouts used in new media broadcasting systems is that the broadcasting institution can connect to the central distributor system over the network and can transfer media files in digital media very quickly over this network. Thus, the problem of generation loss of media files is eliminated, and speed, time and publishing costs are saved. These systems, which can be controlled via mobile devices, are also capable of broadcasting image and audio files transmitted from mobile devices with advanced command applications.

Apart from directing systems, they also provide automatic content playback for playouts, satellite channels, cable TV and corporate users. In addition, they can broadcast for websites, pay TV channels of hotels, corporate presentations, video wall source and other program distribution systems.

Character generators (CG), which traditional television broadcasting has attached special importance to in recent years, are an independent automation device that provides the ability to generate and display fixed and animated titles, logos, markers, clocks, countdown and other dynamic data on the main image on the screen. With the new media, Live CG Broadcast, KJ systems using Social Hub software modules can connect to most social networks such as Facebook, Twitter and Instagram to receive or broadcast messages in real time. These systems, the social Hub module collects all messages from the audience of an event in real time, allowing an operator to read and select messages that can be sent to the Live CG broadcast page for immediate viewing, Facebook, Twitter, Flickr, WhatsApp, Skype, Instagram, Line, RSS Supports links to publications and e-mail accounts. They can

also be used to create an interactive broadcast of content such as election results, sports scores and television games presented in excel files, spreadsheets and customized automatic formulas.

The development of new communication technologies has also affected the communication systems of broadcasters. Wireless intercom systems of today's technology are designed to provide mobility to television broadcasters such as lighting crews, videographers and other support operators who need full duplex and multi-channel access to the main intercom system. The emergence of wireless intercoms is a direct result of the need to overcome frequency crowding and has also increased the level of channel flexibility available to the individual user.

The usage areas of intercom systems are limited with the emergence of cellular communication, digital phone systems and other communication devices.

In parallel with the rise of Internet video and the integration of smart phones into daily life, a new generation of prompters has emerged that has replaced heavy computer screens. The new iPad prompter has a similar function to the traditional studio teleprompter. However, it is lighter and easier to use and transport as it is not connected to a power source.

Content Management System (MAM), one of the new media systems, offers publishers a configurable workflow and media asset management model that covers the entire publishing cycle, from content ingestion to storage and distribution. This system is designed to simplify complex tasks and allows broadcasters to manage tasks more efficiently.

Designed for broadcasters, this system monitors all available media on the network and archives it after making sure it reaches the target. The system enables users to find, catalog, preview, transfer and manage media via a web interface accessible from any desktop or mobile device.

Another publishing system that gains importance with the new media is the Ingest / recorder units. They are multi-format professional recording systems that broadcasters have resorted to in recent years for their needs for broadcast creation, content protection, web content creation, mobile content creation or any other type of

digital asset creation. These systems, which are used to digitize raw or edited images obtained in television, production and broadcasting sectors from analog, DV or different media in high quality and desired formats, have the ability to record from the same source in multiple and different formats and can be remotely controlled via mobile communication tools, internet or They can be streamed over LAN. Parallel to the development of broadcasting technologies, Ingest systems are also used in media monitoring, qualitative research, legal registration requirements, advertising monitoring and security.

Streaming is a term used to describe the real-time viewing of media files, usually video and audio. Basically, there are two types of flows. "Real" transmission requires a special service that broadcasts audio/video information in real time. Powerful dedicated servers are required because a lot of resources are needed to stream (broadcast) media files correctly. For example, if you want to broadcast a live video in real time, you need a powerful stream server. Most real stream server technologies record, encode and stream media files in real time. These servers make real-time media files produced by millions of users suitable for broadcasting on TV stations, live shows, video sharing sites such as youtube or dailymotion. In another stream method, media files are streamed and kept in the recorder unit. Thus, the user can optionally access and watch these media files at any time. In this case, the TCP protocol is used. Although TCP is secure, data loss is not suitable for normal and expected video streaming. However, flash, quicktime and realmedia contents combined with a fast server are able to play such media files without issue and minimize buffering time. The same is true for new media platforms. In WEB TV, Mobile TV or IP TV technologies, media files are streamed in real time and presented to the user. For this, as mentioned before, powerful stream servers are needed that can stream the same media file to hundreds of thousands of users at the same time.

CONCLUSION

Many of the technologies that are considered new media are digital and are often manipulated, network-based and compressed content. Internet, websites, computer-based multimedia systems, smart objects, electronic games, augmented

and virtual reality, artificial intelligence technologies, CD and DVD can be counted as examples of these technologies. In this sense, the term "new media" refers to on-demand access to content with interactive user feedback and creative engagement, anytime, anywhere, on any digital device. Another aspect of new media is streaming of new and unedited content.

The media, which used analog broadcast models until the 1980s, faced a rapid transformation based on the use of digital technologies such as the Internet and video games from the 90s on. The use of digital computers, along with the emergence of digital television and online broadcasting, has transformed the "old media". Even traditional media forms such as printing and printing have been reproduced with image manipulation software such as Adobe Photoshop.

Developing technology is fueling an information revolution. The integration of new media technologies with digital broadcasting and the internet has lifted the limits of analogue broadcasting and weakened the traditional structure of public platforms. This situation has also changed the nature of the relationship between the broadcaster and the audience. In the information age, new media has created a discussion environment for its users, providing an informative, entertaining and more importantly an interactive environment.

Television broadcasters also have to adapt to this new environment. In broadcasting, new media applications have come into play mostly during the distribution of media files. In order to reach internet-based new media channels, publishers have mobilized their systems and made some hardware arrangements. In line with the new communication environments (WEB TV, IP TV, Internet TV, Mobile TV, Live Casts, HDTV) especially in the web environment, the directorial infrastructures have been transformed and integrated with new media channels. As a result, the digital age has created suitable environments for new media. With the new media, which makes good use of these environments, the meaning of geographical distance has changed, the volume, amount and speed of communication have increased, and an interactive approach has been provided to the audience that allows them to exchange views and comment in order to establish a network and be a part of a community interested in the same issues.

REFERENCES

- ABRAMSON, Albert (2003). The History of Television, 1942 to 2000. North Carolina: Mcfarland.
- AYRES, Robert U. (2021). The History and Future of Television: Can Technology Save Humanity from Extinction. Cham: Springer Nature.
- AZİZ, Aysel. (1989). Elektronik Yayıncılıkta Temel Bilgiler. Ankara: TRT Basım ve Yayın Müdürlüğü.
- AZİZ, Aysel (2013). Televizyon ve Radyo Yayıncılığı. İstanbul: Hiperlink Yayıncılık.
- BALI, Rajeev and BALI, Simp (2018 Audio Video Systems. New Delhi: Khanna Publishing House.
- BURNS, Robert W. (2000). John Logie Baird: Television Pioneer. Cornwall: Institution of Electrical Engineers.
- CAVALIER, Jean J. (2004). Medya ve İletişim teknolojileri. (M. Çamdereli, Trans.) İstanbul: Salyangoz Yayınları.
- ÇAPLI, Bülent (1995). Televizyon ve Siyasal Sistem. İstanbul: İmge Kitabevi.
- DERVİŞOĞLU, Ahmet (2003). “Cumhuriyetin Sekseninci Yılında Elektrik-Elektronik Mühendisliği”, Elektronik Mühendisliği Dergisi, s: 3.
- EVANS, E. (2011). Transmedia Television. New York: Routledge.
- GARG, Rajeev (1993). Electronics and Computer Quiz Book. Delhi: Pustak Mahal.
- HERBERT, Stephen (2004). A History of Early TV. London: Taylor ve Francis.
- HOWETT, Dicky (2006). Television Innovations: 50 Technological Developments. Wellingborough: Kelly Publications.
- KANG, Henry R. (1997). Color Technology for Electronic Imaging Devices. Wahington: SPIE Press.
- LOGAN, Robert K. (2010). Understanding New Media: Extending Marshall McLuhan. New York: Peter Lang.

MANOVİCH, Lev (2002). The Language of New Media. USA: MIT Press.

MATTELART, Armand M. (1998). İletişim Kuramları Tarihi. (M. Zıllıođlu, Trans.) İstanbul: İletişim Yayınları.

MORGÜL, Avni (1997). Televizyon Tekniđi. İstanbul: Boğaziçi Üniversitesi Yayınları.

NEIGER, M., MEYERS, O., & ZANDBERG, E. (2011). On Media Memory. Hampshire: Palgrave Macmillan.

SCHATZKIN, Paul (2002). The Boy Who Invented Television: A Story of Inspiration and Quiet Passion. New York: TeamCom Books.

SHIERS, George (2014). Early Television: A bibliographic Guide to 1940. New York: Routledge.

TOOMS, Michael S. (2016). Colour Reproduction in Electronic Imaging Systems: Photography, Television, Cinematography. New Delhi: John Wiley and Sons.

WARD, David (2009). Television and Public Policy: Change and Continuity in an Era of Global Liberalization. New York: Routledge.

WEBSTER, James G. (1986). "Audience behavior in the new media environment. Journal of Communication", 3(36), s.77-91.

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