

# Media and Entertainment



**Abstract** The media and entertainment industry is one of the most significant global sectors and one of the first adopters of innovative technological advancements. The industry is divided into segments, such as film, TV shows, radio shows, music, newspaper, magazines, and books. Its strategies are continually evolving as technology advances. The media industry plays a crucial role in influencing and constructing the public's opinion while the entertainment sector brings people together and helps create a sense of relaxation and happiness (How is technology Transforming the Media and Entertainment business | Jellyfish Technologies).

**Keywords** Digital music · Interactive movies · AR games · Streaming · Immersive Audi · Wearables · Noise cancelling · High-resolution imaging · Nano coloring · 3D mapping · Automated reports · Real-life experiences · Customer engagement · Data analysis · Consumer analytics · AI director

The media and entertainment industry is one of the most significant global sectors and one of the first adopters of innovative technological advancements. The industry is divided into segments, such as film, TV shows, radio shows, music, newspaper, magazines, and books. Its strategies are continually evolving as technology advances. The media industry plays a crucial role in influencing and constructing the public's opinion while the entertainment sector brings people together and helps create a sense of relaxation and happiness (How is technology Transforming the Media and Entertainment business | Jellyfish Technologies).

As the internet and mobile technology increase in popularity, the advertising business revenues are susceptible to consumer behavior to follow, subscribe, and like the content. Today, digitalization dominates the growth of the media and entertainment industry. Disney media networks were impacted as consumers shifted to watching online content on platforms like YouTube, Netflix, and other streaming services. Another major issue the industry faces is piracy and cyber risks. It has become imperative for this industry to protect its consumers and their content (10 Challenges and Opportunities Media and Entertainment Industry in 2018 | LinkedIn 2018).

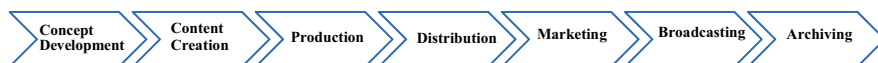
Business costs are escalating as media research to stay up to date with evolving market trends and technology is constantly needed. Another challenge the industry faces is the craving for innovation and creativity. The industry needs to prioritize creating content that is appealing with a digital experience that connects with consumers in a meaningful way.

During the COVID-19 pandemic, the media and entertainment industry was severely affected with the lockdown, live performances, outdoor recreational activities, and cultural site visits being postponed or canceled. The pandemic leads to the global shutdown of TV and film production as well as cinemas, live entertainment venues, and theme parks. Since the media and entertainment industry largely depends on social activity, the current world's circumstance was the most significant challenge this industry had to overcome (Media and Advertising are Changing. Here are your Biggest Challenges. | Inc 2019).

There remain however many opportunities in the media and entertainment industry. With digitalization becoming inevitable, data on consumer viewing and shopping behavior interests, attitude, and demographics are easily attained by modern analytical applications. The use of targeted data can allow companies to deliver precisely targeted content or advertisements. Additionally, the industry's shift to online data has become a game changer. There are opportunities for new talents from professionals to produce creative content and creative client servings. Companies now have more opportunities to create virtual entertainment and real-life modeling activities, virtual events, and virtual museums. The industry is growing and implementing innovative technologies to create appealing and personalized content and build a high-quality online experience (5 Benefits: Competitive Advantages of big data in Business | new-gen apps 2017).

Cloud Collaboration enables multiple collaboration remotely and simultaneously on content creation projects through dedicated software. A band can record virtually, in real-time with the same recording quality regardless of each member's location. Through high-speed internet, the latest software can mirror recording sessions, at several locations, without identifiable delays ensuring recording continuous around seamlessly around the globe. This technology introduced in AVID Pro Tools, a digital audio workstation in 2018, is stored in the Cloud, and it can be accessed from different locations. Users can manage different versions of a project and give reviews independently, similar to Google's docs and sheets (Cloud Collaboration | SearchCloudComputing 2015).

## Value Chain



The value chain for media and entertainment value chain comprises seven phases: concept development, content creation, production, distribution, marketing, broadcasting, and archiving.

Concept development involves the identification of appropriate content to be created and delivered through understanding the needs and trends of the market. Content creation involves the production of relevant materials, through activities, such as creating new shows, written content, or visuals. In the production phase, created content is fully developed, ready for consumption. Products are then ready for distribution by selling to outlets such as TV networks, cinemas, bookstores, etc. Once there the content gets promoted through various marketing activities, before being broadcast. Once the broadcasting phase has been concluded, content is archived for future use, if necessary. This archiving phase concludes the value chain for this industry.

## Case Studies

### Case Study 1

#### Online Co-creation and File Sharing Using Cloud Collaboration Technology



- Countries of implementation: Global
- Company: AVID Technology

AVID Technology is an American technology and multimedia company that has a good reputation in the media and entertainment industry. It specializes in audio and video, specifically, digital nonlinear editing (NLE) systems, video editing software, audio editing software, music notation software, management, and distribution services. Avid products are used in the television and video industry to create television shows, feature films, and commercials. Avid products are used in the television and video industry to create television shows, feature films, and commercials (Avid Acquires the Assets of Rocket Networks| businesswise 2003).



Technology	Platforms/cloud collaboration	
Description	Pro Tools is one of the very few technologies that dominate this industry. It was developed to create one of the best quality digital music recordings in the industry. Pro Tools was created by Avid technology, and its purpose is to provide a digital audio workstation to develop one of the world’s most diverse sets of recording, editing, and mixing system. Pro Tools’ software enables musicians to record using analog hardware, edit and mix songs with the built-in editing and mixing tools, add effects, and save them on a CD. The technology’s hardware is responsible for converting analog audio to digital signals the computer can comprehend. Avid Cloud Collaboration for Pro Tools is a feature developed in 2018 to enable multiple collaborators to contribute remotely and simultaneously on the same project (Pro Tools Systems   HowStuffWorks).	
Stage	In market	
Beneficiaries	Recording artists, musicians, sound engineers, postproduction artists	<ul style="list-style-type: none"> <li>• Remote access</li> <li>• Convenience</li> <li>• Improved health and safety</li> <li>• Cost-effective</li> <li>• Collaboration</li> <li>• Cloud storage</li> <li>• (Advantages and Disadvantages of Pro tools   HowStuffWorks)</li> </ul>

## Case Study 2

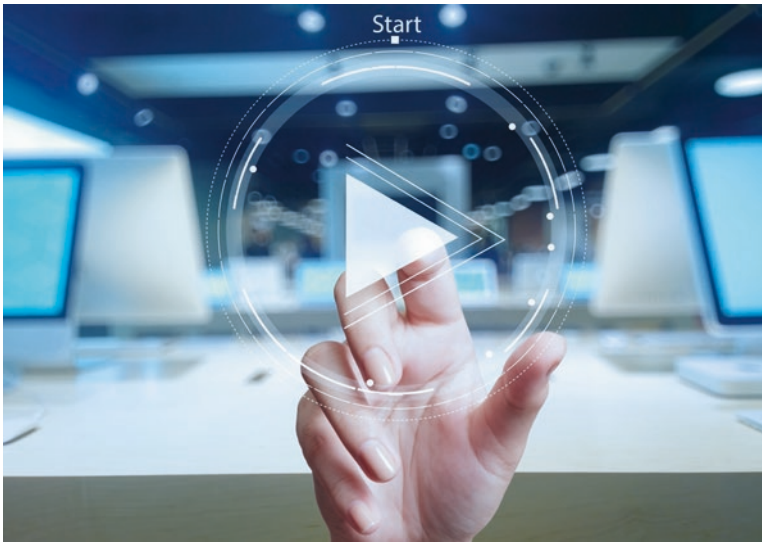


### Online Streaming and Smart Media



- Countries of implementation: Global
- Company: Netflix

Netflix is the world’s leading streaming entertainment company that allows users to watch a diverse range of TV shows, movies, documentaries on any internet-connected device.



Technology	Artificial intelligence (AI)/cloud-based tools	
Description	Netflix came up with a movie as part of the Black Mirror series called Bandersnatch. It is an interactive movie where the watchers’ decisions influence the continuation of the movie. The interactive film has five different endings mapping out every possible ending, making watching the film like a game. Netflix used artificial intelligence (AI) to create an innovative new way to experience online streaming where views can shape their own story as they go (“Black Mirror: Bandersnatch” Could Signal the future for A. I Directors   Inverse)	
Stage	In market	
Beneficiaries	Subscribers and viewers	<ul style="list-style-type: none"> <li>• Engaging experience</li> <li>• Personalized experience</li> </ul>



Case Study 3

3D Mapping



- Countries of implementation: Global
- Company: Green Hippo

Green Hippo develops high-performance video processing software for over 15 years, building quality applications for the entertainment industries. Their core technology is to integrate multimedia products such as projectors and screens through its media servers to create 3D mapping effects and visualizations (About Green Hippo | Green Hippo).



Technology	Augmented reality (AR)/virtual reality (VR)/3D image projection	
Description	Hippotizer offers components enabling intricate mapping projects. Using shape for 3D mapping features, the projection can be aligned, allowing for elaborate LED designs providing a new perspective to real-time video creation with easy-to-set-up interphase	
Stage	In market	
Beneficiaries	Show light designers, facade lighting designers, corporate events organizers	<ul style="list-style-type: none"> <li>• State of the art 3D effects and visualizations</li> <li>• Design manipulation</li> </ul>

# Case Study 4 N I A N T I C

## Augmented Reality (AR) in Games



- Countries of implementation: Global
- Company: Niantic

Niantic is a software development company in the USA and is known for its innovative development and creation of AR mobile games (A Brief History of Niantic Labs, the Makers of Pokémon Go | TechCrunch).



Technology	Augmented reality (AR)/GPS: it is a location-based game
Description	Pokémon Go is an augmented reality mobile game. It uses the GPS in the mobile devices to help locate battles, capture, and train the virtual creators, making the game seem like part of the players' real world. It excited the use of AR and location-based technology to encourage physical activity. The application targeted Pokémon fans to search for Pokémon in the real world (Is Pokémon Go Augmented Reality?   Scientific American)
Stage	In market

Beneficiaries	Gamers	<ul style="list-style-type: none"> <li>• Supports physical activity</li> <li>• Enhanced real-life social exchanges</li> </ul>
	Employees	<ul style="list-style-type: none"> <li>• Interactive immersive experience</li> <li>• Improved training and educational</li> <li>• Increased potential for remote work and collaboration</li> </ul>

## Case Study 5

### Streaming



- Countries of implementation: Global
- Company: Netflix, Inc.

Netflix, Inc. is an American media services provider and production company, founded in 1997. The company’s primary business is its subscription-based streaming service which offers online streaming of a library of films and television programs, including those produced in-house (About Netflix | Netflix Media Center).



Technology	Platforms/streaming media
Description	Online streaming of a library of films and television programs for adults and children



Stage	In market	
Beneficiaries	Subscribers	<ul style="list-style-type: none"> <li>• Content variety</li> <li>• Cost-effective</li> <li>• Multiplatform compatibility</li> </ul>

## Case Study 6 DOLBY.

### 3D Surround Sound



- Countries of implementation: Global
- Company: Dolby Laboratories

Dolby Laboratories, Inc. is an American company specializing in audio noise reduction and audio encoding/compression. Dolby licenses its technologies to consumer electronics manufacturers (Discover Dolby | Dolby).



Technology	Augmented reality (AR)/virtual reality (VR)/3D surround sound
Description	Dolby Atmos is a suite for immersive audio, having both horizontal and vertical sound placement. This technology has been used in recent years in the cinema industry, games, and Netflix. It has provided an opportunity for moviemakers to create a revolutionary sound experience (Dolby Atmos: What is it? How Can You Get it?   WhathiFi )
Stage	In market

Beneficiaries	Consumers	<ul style="list-style-type: none"> <li>• Immersive sound experience</li> <li>• 3D sound projection</li> <li>• High-quality auditory performance</li> </ul>
---------------	-----------	--

## Case Study 7 **BOSE**

### Bose Frames



- Countries of implementation: Global
- Company: Bose Corporation

Bose Corporation is an American manufacturing company that sells audio equipment and produces audio gadgets. The company is known for its wide-range audio systems. Bose is best known for its home audio systems and speakers, noise-canceling headphones, professional audio products, and automobile sound systems (About Us | Bose).



Technology	Augmented reality (AR)/virtual reality (VR)/audio sunglasses	
Description	Bose Frames are wearable glasses that include noise-canceling, miniaturized speakers, and a microphone for personal listening and speech. The wearer can hear the sound coming out of the sunglasses, with minimized sound leak while others hear practically nothing the sound technology directs sound at the wearer and away from others. The device is paired with the smartphone via Bluetooth to play music, receive calls, and add information to what the wearer sees. The device accepts gesture controls for volume control and phone answering. It can interact with virtual assistants such as Siri and Google Assistant. The device also connects to augmented reality mobile applications and includes a rechargeable battery (Boss Frames Review   TechRadar)	
Stage	In market	
Beneficiaries	Consumers	<ul style="list-style-type: none"> <li>• Multipurpose device</li> <li>• Guided access</li> <li>• Augmented reality application</li> </ul>



**Case Study 8**

**Virtual Museums**



- Countries of implementation: Global
- Company: Google LLC

Google LLC is an American multinational technology company that specializes in internet-related services and products, which include online advertising technologies, a search engine, cloud computing, software, and hardware.



Technology	Augmented reality (AR)/virtual reality (VR)/virtual museums	
Description	<p>Google Arts &amp; Culture is an online platform through which the public can view high-resolution images and videos of artworks and cultural artifacts from partner cultural organizations throughout the world.</p> <p>The digital platform utilizes high-resolution image technology that enables the public to virtually tour partner organization collections and galleries and explores the artworks' physical and contextual information. The platform includes advanced search capabilities and educational tools (When Museums Become Virtual   In exhibit)</p>	
Stage	In market	
Beneficiaries	Consumers	<ul style="list-style-type: none"> <li>• Increased access to art</li> <li>• Improved visitor experience</li> <li>• Engaging atmosphere</li> </ul>

## Case Study 9

### Nano Cell TV



- Countries of implementation: Global
- Country: LG Corporation

LG Corporation is a South Korean multinational conglomerate corporation. It is the fourth largest chaebol in South Korea. LG makes electronics, chemicals, and tele-com products and operates in over 80 countries (The History of LG | UKEssays).



Technology	Nanomaterials/8K display resolution	
Description	8K Nano Cell TV offers a real 8K LED experience. It is four times the resolution of 4K, complete with the natural, lifelike color of Nano Color, precise color at wide angles with Nano Accuracy, and deeper black and contrast of precisely balanced lighting. With deep learning, any content resolution can be upscaled to 8K. LG’s 8K processor uses artificial intelligence (AI) and deep learning to make it possible, translating the source to over 33 million pixels (What Is 8k and What Are Its Benefits?   The Telegraph)	
Stage	In market	
Beneficiaries	Consumers	<ul style="list-style-type: none"> <li>• Enhanced viewing</li> <li>• Better imagery</li> </ul>

## Case Study 10

### Mixed Reality Oculus Quest



- Countries of implementation: Global
- Company: Facebook Inc.

Facebook is an American online social media and social networking service. Oculus is a division of Facebook Technologies, LLC, a subsidiary of Facebook Inc. Oculus specializes in virtual reality hardware and software products. It was founded in 2012 and acquired by Facebook in 2014 (Facebook to Acquire Oculus | Facebook).



Technology	Augmented reality (AR)/virtual reality (VR)/sensors and computer vision	
Description	Oculus Quest is a revolutionary, wireless, virtual reality headset that could be used alone or plugged into the computer to enable access for games that are not in the headset. Oculus' innovative software delivers a high-quality gaming experience with realistic precision. It is considered an all-in-one gaming headset because it includes visual display, audio, and in-hand controllers, has built-in storage, and does not require a PC. The technology consists of Insight, which is capable of 3D mapping your virtual space for an accurate representation of your surroundings in the real world. This Guardian system prevents the user from hitting an obstacle and has built-in sensors that translate the user's every move into virtual reality (Oculus Quest: Everything you Need to know   AndroidCenter).	
Stage	In market	
Beneficiaries	Gamers	<ul style="list-style-type: none"> <li>• State of the art</li> <li>• Hands-free</li> <li>• Eliminated need for PC purchase</li> <li>• Cost-effective</li> </ul>

## Case Study 11 **The Washington Post**

### Artificial Intelligence (AI) in Journalism



- Country of implementation: USA
- Company: The Washington Post

The Washington Post is a significant daily newspaper published in Washington, D.C. The company stands out with its works on aspects of the US government.



Technology	Augmented reality (AR)/virtual reality (VR)/robot reporting program	
Description	The Heliograf is used to produce reports by recognizing a trend in finance and big data. The Washington Post has used this technology to help journalists with reporting. For instance, the Post used Heliograf during the elections to alert journalists when the election results started trending in an unexpected direction. This gave their staff an advantage (The Rise of the Robot Reporter   the New York Times)	
Stage	In market	
Beneficiaries	Reporters, staff	<ul style="list-style-type: none"> <li>• Time-effective</li> <li>• Increased efficiency</li> <li>• Increased productivity</li> <li>• Improved quality</li> </ul>

# Case Study 12

## Virtual Theme Parks



- Countries of implementation: Global
- Company: The Walt Disney Company

The Walt Disney Company, more commonly known as Disney, is an American mass media and entertainment business. The company is leading in the American animation industry and lately has diverted to live-action film, production, television, and theme parks (Disney Company | Britannica).



Technology	Augmented reality (AR)/virtual reality (VR)/mobile application
Description	Disney has created an app called Play Disney Parks that enables visitors to play games based on the Disney theme park. It created a unique experience that brings the environment surrounding the player to life. It was developed to entertain guests while waiting to queue to ride Space Mountain at Disneyland etc can design their rocket ships while they wait (Play Disney Parks App Relives Bordon in Line   USA Today)



Stage	In market	
Beneficiaries	Consumers	<ul style="list-style-type: none"><li>• Enhanced visitor experience</li><li>• Entertainment in queue</li></ul>



### Case Study 13

#### Blockchain-Based Live Streaming Platform



- Countries of implementation: Global
- Company: DLive

DLive TV is one of the leading blockchain-based live streaming platforms. It changed the game for content creators by putting platform ownership in the user’s hand using blockchain technology (DLive, a Controversial Blockchain-based Live Streaming Platform | Blockchain News 2020).



Technology	Blockchain/platforms	
Description	DLive firm created a controversial blockchain-based streaming platform monetized by Lino blockchain. It allows users to build their content and promises incentives to users, viewers, and content creators. Users are rewarded for contributing as the platform grows. It revolutionized distribution systems by awarding the platform community for their contribution rather than the corporation (DLive, a Controversial Blockchain-based Live Streaming Platform   Blockchain News 2020)	
Stage	In market	
Beneficiaries	Content creators and contributors	<ul style="list-style-type: none"> <li>• Low fees</li> <li>• Cost-effective</li> <li>• Enhanced quality</li> <li>• Live to stream</li> <li>• No creator fees</li> <li>• Efficient</li> </ul>

## Case Study 14

### Big Data in Media and Entertainment



- Countries of implementation: Global
- Company: Qubole

Qubole platform is a secure, open-source, multi-cloud data lake platform that provides services that aid in diminishing time and efforts toward running data pipelines, machine learning, streaming analytics, and data exploration (About Us | Qubole).



Technology	Big data/machine learning and cloud	
Description	Qubole provides services to companies that are faced with the pressure of creating new business strategies in the digital world. Production, advertising, and distribution plans rely on understanding and analyzing consumers' behaviors and preferences. As the world shifts from analog to digital media, it gave rise to opportunities for business to leverage their significant data assets to better customer engagement. It predicts what consumers want by collecting data on consumers' most viewed content and devices they use to see them (Big Data in Media and Entertainment   Qubole)	
Stage	In market	
Beneficiaries	Consumers	<ul style="list-style-type: none"> <li>• Improved customer experience</li> <li>• Enhanced customer engagement and loyalty</li> <li>• Constant updates</li> </ul>



Case Study 15

Cognitive Movie Trailer



- Countries of implementation: Global
- Company: 20th Century Studios

20th Century Studios is an American film studio that is part of the larger company Walt Disney Studios. It is one of the biggest film studios worldwide.



Technology	Artificial intelligence (AI)/machine learning and platform	
Description	The company created trailers with the help of machine learning algorithms and artificial intelligence (AI) using IBM’s Watson platform. In horror movies, Watson was used recently where the platform survey and understand what creates a sense of horror within the viewers. The platform then selects the topmost workable clips in the films, and the editors use those clips in creating the trailers for them (Machine Learning Already Changing the Entertainment Industry   Future 2016)	
Stage	In market	
Beneficiaries	Consumers	<ul style="list-style-type: none"> <li>• Improved quality</li> <li>• Unique, engaging experience</li> </ul>
	Employees	<ul style="list-style-type: none"> <li>• Enhanced workforce expertise and creativity</li> <li>• Effective work management</li> </ul>



**Case Study 16**

**Personalized Content**



- Countries of implementation: Global
- Company: Netflix

Netflix, Inc. is an American media services provider and production company founded in 1997. The company’s primary business is its subscription-based streaming service which offers online streaming of a library of films and television programs, including those produced in-house (About Netflix | Netflix Media Center).



Technology	Artificial intelligence/machine learning and platform	
Description	Netflix created an AI algorithm called Meson that helps the team predict what consumers want to watch. Once the subscriber opens the Netflix platform, TV series, movies, or documentaries that he might want to watch are offered on screen (Machine Learning Already Changing the Entertainment Industry   Future 2016)	
Stage	In market	
Beneficiaries	Consumers	<ul style="list-style-type: none"> <li>• User friendly</li> <li>• Engaging experience</li> </ul>



**Case Study 17**

**The Automation of Creativity**



- Countries of implementation: Global
- Company: McCann

McCann is a global American advertising and marketing organization. It is one of the largest industries worldwide and has created iconic advertising campaigns (About Us | McCann).



Technology	Artificial intelligence (AI)/machine learning
Description	McCann Erickson in Japan created an artificial intelligence (AI) creative director AI-CD. Its purpose is to study the buyer’s brief then produce creative ideas. It is the first robot designed to provide creative directions for commercials. It should be able to do a creative director’s job more effectively (Machine Learning Already Changing the Entertainment Industry   Future 2016)

Stage	In market	
Beneficiaries	Consumers	• Creative, engaging media campaigns
	Employees	• Creative direction • Time-effective • Cost-effective • Enhanced learning experience