TRANSFORMATION OF MASS MEDIA TO DIGITAL MEDIA- A HISTORICAL STUDY OF IMPACT OF DIGITIZATION ON MEDIA INDUSTRY

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Abstract

Ones and zeros are eating the world. The creating, keeping, communicating, and consuming of information are all being digitized, turned into the universal language of computers. All types of enterprises, from small businesses to large corporations to non-profits to government agencies, are going through a "digital transformation," turning digitization into new processes, activities, and transactions. Impact of digitization had revolutionized the mode of information sharing and its dissemination. The evolution of Mass Media which succeeded Print Media in the beginning of 20th century completely changed the face of Mass Media which transformed into Digital Media in the period of less than hundred years. It is interesting to explore various stages of digitization which contributed to Information Revolution particularly in Media industry. The present paper also tries to study transformation of Mass Media to Digital Media.

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INTRODUCTION

Media refers to any kind of communication channel that serves as a medium to enable information to reach a large group of people. There are several types of Media. There is Print Media consisting of magazines, newspapers, publishing industry and the like, Mass Media industry such as news channels on TV, Radio and so on. There is also Online Media / Digital Media that is the information we consume on websites. Cinema, photography and published books are also forms of media that are subtle but important.

History of Media has evolved from the Manuscripts to Print and then Analogue Electronics to Digital Electronics modes, used in Mass Media. In the very beginning of civilization, people or groups communicated their views and ideas through handwritten manuscripts which had its limitations in terms of reach and circulation. The invention of mechanized Printing Press in Europe in 15th century sped up publishing and circulation of writings. Books and Periodicals were now regularly published and circulated across the distances. La Gaceta de Madrid, Year: 1661, Weeckelycke Courante van Europa, Year: 1656, Einkommende Zeitungen, Year: 1650, Post- och Inrikes Tidningar, Year: 1645, Gazeta, Year: 1641, La Gazette, Year: 1631, Nieuwe Tijdinghen, Year: 1618 are few earlier examples of Print Media.

The era of Analogue Electronics Media began with the beginning of 20th century when Radio and Television developed as more effective forms of Media whose broadcast covered larger physical areas and influenced multiplicity of audiences. With coming of Modern Computers, the Media also got benefitted with storages; operations and control tasks got digitized now. Early computers were meant to be used only for calculations. Simple manual instruments like the Abacus have aided people in doing calculations since ancient times. Early in the Industrial Revolution, some mechanical devices were built to automate long tedious tasks, such as guiding patterns for looms. More sophisticated electrical machines did specialized analog calculations in the early 20th century. The first digital electronic calculating machines were developed during World War II. The first semiconductor transistors in the late 1940s were followed by the silicon-based MOSFET (MOS transistor) and monolithic integrated circuit (IC) chip technologies in the late 1950s, leading to the microprocessor and the microcomputer revolution in the 1970s. The speed, power and versatility of computers have been increasing dramatically ever since then, with transistor counts increasing at a rapid pace, leading to the Digital Revolution during the late 20th to early 21st centuries.

DIGITIZATION IN MASS MEDIA

From ENIAC (*Electronic Numerical Integrator and Computer*), the first Electronic Digital Computer, which used the Decimal System, which worked with the help of Vacuum Tubes for numerical problems developed in 1946 to EDVAC (*Electronic Discrete Variable Automatic Computer*) which was based on Binary System, is also known as stored programme computer(Program instructions held in memory), which required less number of components in 1955, the rapid digitization set in and modern multipurpose computers came up.

Development of Computer Storage capacity, Database Management System, invention of Digital Camera, invention of Cellular Networking and finally use of Internet as the ultimate Networking solution were few of stages which helped in digitization, expansion and transmission of information through Mass Media. Large scale use of Internet changed the face of Media in 1990s. It made Media more accessible and handy. It not only made Electronic Media more popular but also took the world of Media into the era of Digital News platforms. Thereafter **on** *September 4, 1956* IBM announced the 350 Disk Storage Unit, the first computer storage system based on magnetic disks and the first to provide random access to stored data. It came with fifty 24-inch disks and a total capacity of 5 megabytes, weighed 1 ton, and could be leased for $3,200 per month; its first customer was United Airlines' reservations system.

On September 14, 1956 IBM announces the 305 RAMAC and the 650 RAMAC (Random Access Memory Accounting) which incorporated the 350 Disk Storage Unit. It promised, as the IBM press release said, "that business transactions will be completely processed right after they occur. There will be no delays while data is grouped for batch processing… Random access memory equipment will not only revolutionize punched card accounting but also magnetic tape accounting."

In the year 1962, the term *database* is mentioned in print for the first time, according to the *Oxford English Dictionary*, quoting a Systems Development Corporation technical memo: "A 'data base' is a collection of entries containing item information that can vary in its storage media and in the characteristics of its entries and items."

In the year 1963, Charles Bachman, at GE's computer division, develops the Integrated Data Store (IDS), one of the first database management systems using what came to be known as the navigational database model in the Manufacturing Information and Control System (MIACS) product.

On April 19, 1965 Gordon Moore publishes "Cramming more components onto integrated circuits" in *Electronics* magazine, the first formulation of what became to be known as "Moore's Law." The observation of the constant doubling of the number of transistors that can be "crammed" into an integrated circuit became the rallying cry that has guided manufacturing process innovations that have reduced the price and increased the power of electronic components and drove a constant expansion of the scope and reach of digitization.

In 1968, U.S. libraries begin using Machine Readable Cataloging (MARC) records.

In June 1970 Edgar F. ("Ted") Codd publishes "A relational model of data for large shared data banks," in the *Communications of the ACM*, presenting the theoretical basis for relational databases, which became the dominant type of databases from the 1980s to around 2000.

On July 4, 1971, Michael Hart launches Project Gutenberg with the goal of making copyright-free works electronically available by entering the text of the U.S. Declaration of Independence into the mainframe he was using at the University of Illinois.

In December 1975, the first digital camera, invented by Steven Sasson at Eastman Kodak, takes 23 seconds to capture its first image. The camera weighed 8 pounds, recorded black and white images to a compact cassette tape, and had a resolution of 0.01 megapixels.

In 1981, Edgar F. ("Ted") Codd is awarded the Turing Award for his fundamental and continuing contributions to the theory and practice of database management systems—"whenever anyone uses an ATM machine, or purchases an airline ticket, or uses a credit card, he or she is effectively relying on Codd's invention."

In his Turing Award Lecture, Codd notes that "As it stands today, relational database is best suited to data with a rather regular or homogeneous structure. Can we retain the advantages of the relational approach while handling heterogeneous data also? Such data may include images, text, and miscellaneous facts. An affirmative answer is expected, and some research is in progress on this subject, but more is needed." The challenge of heterogeneous data or "big data" will be addressed almost three decades later but not with a relational database approach.

In June 1990, General Instruments, an American manufacturer of cable television converters and satellite communications equipment, upsets the race to build the television of the future by announcing it has succeeded in squeezing a digital HDTV signal into a conventional

broadcast channel. Up until then all the companies preparing proposals for an HDTV standard were working on analog systems.

In 1991, the first 2G cellular network is launched in Finland. 2G networks used digital signals rather than analog transmission between mobile phones and cellular towers, increasing system capacity and introducing data services such as text messaging.

In July 1992, Tim Berners-Lee posts the first photo uploaded to the Web, showing the all-female parody pop group Les Horribles Cernettes (LHC), consisting of four of his colleagues at CERN.

In May 1993, O'Reilly Digital Media Group launches the Global Network Navigator (GNN), the first commercial web publication and the first website to offer clickable advertisements.

In October 1994, HotWired is the first web site to sell banner ads in large quantities to a wide range of major corporate advertisers.

In 1995, after a five-year pilot project, the National Digital Library program begins digitizing selected collections of Library of Congress archival materials.

In June 1995, The Norwegian Broadcasting Corporation (NRK) launches the world's first Digital Audio Broadcasting (DAB) channel.

On November 22, 1995, *Toy Story* opens in U.S. theaters, the first feature-film to be made entirely with Computer-Generated Imagery (CGI).

In 1996, Brewster Kahle establishes the Internet Archives, to preserve and provide access to nearly every site on the Web, later evolving to become a comprehensive digital library. Other Web archiving projects launched in 1996 include the National Library of Australia's PANDORA Project, and the Royal Library of Sweden's Kulturarw Heritage Project.

In 1998, Digital Television transmission commences in the U.K. and the U.S., launching the process of converting and replacing analog television broadcasting with digital television.

In October 23, 1998, *The Last Broadcast* is the first feature-length movie shot, edited and distributed digitally via satellite download to 5 theaters across the United States.

In September 2000, MP3 player manufacturer, i2Go, lunches a digital audio news and entertainment service called MyAudio2Go.com that enabled users to download news, sports,

entertainment, weather and music in audio format. In February 2004, Ben Hammersley writes in the *Guardian*: "Online radio is booming thanks to iPods, cheap audio software and weblogs… But what to call it? Audioblogging? Podcasting? GuerillaMedia?"

Thus, we see in 50 year time the scenario changed and through various experiments the world of Media entered into the fully digital era where storage of data, audio and video presentation of news items by use of digital camera and computer graphics and also transmission got digitized.

THE AGE OF ONLINE/ DIGITAL MEDIA

Digital Media means any communication media that operate with the use of any of various encoded machine-readable data formats. Digital Media can be created, viewed, distributed, modified, listened to, and preserved on a digital electronics device. *Digital* can be defined as any data represented by a series of digits, while *Media* refers to methods of broadcasting or communicating these information. Together, *Digital Media* refers to mediums of digitized information broadcast to us through a screen and/or a speaker. This also includes text, audio, video, and graphics that are transmitted over the internet for viewing or listening to on the internet.

The growth of Cellulor Technology and wide use of World Wide Web brought Internet into the hands of the users in 1990s.

Following examples give a greater understanding of the formats in which Digital Media is used today:

Digital Audio: Audio refers to sound that we listen to through a digital device. This can include a song, a podcast, or other auditory message. You can access Digital Audio both online and offline.

Digital Video: Digital video refers to a moving image that encompasses both visual and auditory elements. It is recorded, stored, and sent to consumers via a digital format. Like digital audio, digital video is accessed both online and offline. Some examples of Digital Video include live videos and movies.

Online advertising: Online Advertising refers to a form of Digital Media that is used to promote a product or service. Examples of advertising include website banner ads or social

media ads. You can place advertisements on various digital platforms and formats including websites and billboards.

Virtual Reality: Virtual Reality provides users with an immersive experience where they can sense colors, images, sounds, and other visual and auditory elements. It allows users to explore various environments that have been virtually generated.

Augmented Reality: Augmented Reality comprises both virtual and real environments. For example, let's say there's a mobile makeup application that allows you to try on makeup. The application uses both your real self along with virtual elements to apply digital makeup, creating both a virtual and real-life environment.

Social Media: Social Media refers to websites and applications that allow individuals or companies to disseminate information to the greater public. While individuals use these online communities to share personal information with friends and family, Media companies use it to promote their brand and share content and commercial brands use Social Media to advertise, market, and sell their products and services. It also provides companies with a way to communicate with its customers. Along with sharing information, consumers and companies can comment and reply to other users.

Video Games: Video Games refer to electronic games with images that you can manipulate. They are used on both computer systems and are displayed on various formats including television and computer screens.

Websites: A Website refers to a collection of Web Pages that uses the same domain name and is published on at least one web server. Websites typically house content and information for readers to digest.

Digital Photos: Digital Photos refer to standalone photographs comprised of pixels. Created through the use of light, Digital Photos are captured, stored, and shared through a digital format. Though they often accompany written content, they can also stand alone.

Electronic Books: Electronic Books are books, magazines, or newspapers created for educational or entertainment purposes that can be read through a screen.

The internet came into being quite discretely in 1965, in a Massachusetts laboratory. With a whole lot of improvisations, this evolved into The Advanced Research Projects Agency

Network, namely ARPAET. Post World War, the US adopted this as their military communication channel and became commercial in 1974. The first person in the world to send an email was Queen Elizabeth. Tim Berners-Lee then came up with a computer coding technology, now called the HTML. This enabled people to access information at the click of a button, sitting in their home. In the very next year, the World Wide Web began its long and arduous journey in the life of man, and within the next couple of years, it had about two million users and 600 hundred websites.

The next development in Online Media was the arrival of Google Search Engine in 1994. Now, all people could access websites of the world via computers by asking a simple query on the search engine. In 2004, the onset of Social Media created the second digital revolution, with information being thrust upon people at every second. Truly, ads and companies bombard information on Instagram, an average person sees about 6000 – 10000 ads a day, many of which are on Instagram and Facebook. These apps are also evolving to incorporate more and more features to enhance engagement, and the Social Media business, including influencers, companies and media agencies is slowly and steadily growing.

CONCLUSION

We have seen in the above discourse, how various developments in the process of Digitization impacted Media Industry by improving methods of storage of data, audio and visual presentation and transmission of information. These advances resulted in digital revolution in Media Industry too. Meanwhile the Internet Revolution brought Media platforms on the very screen of our personal computer and mobile phones. These developments facilitated updating and sharing of information which was now just a click away.

The increased use of Digital Media is changing people's everyday lives and the way they connect and collaborate in the broader societal context, at work and in civil society. Much of the impact of this heightened use is beneficial to both individuals and society. It is enabling unprecedented levels of communication, social interaction and community building across boundaries of time, place and social context. It is enabling individuals and speeding up the democratization of knowledge. New learning methods are possible (as has been evidenced by the World Economic Forum's *New Vision for Education* project), as are ways of working, which are providing better opportunities to people in under-served communities and regions.

But not all the impacts of increased use of Digital Media are positive. Research indicates that when humans excessively use Digital Media, it can negatively influence their cognitive and behavioural development and even their mental and physical health. Hyper- connectivity, the increasing digital interconnection of people and things, has the potential to change patterns of social interaction, as face-to-face time may be substituted by online interaction. In addition, greater technology enablement of work (and the resulting fragmentation of jobs) threatens the security of jobs traditionally considered as skilled in the developed world.

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