CHALLENGES AND LIMITATIONS OF IMPLEMENTING IMMERSIVE MEDIA TECHNOLOGIES IN INDIAN MEDIA INDUSTRY

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ABSTRACT

Immersive media technologies such as Virtual Reality, 360 degree and Ultra HD videos are rapidly growing in the media & communication sector. If we talk about the perspective of the Indian media industry, many changes occurred in the last 10-15 years.

Immersive Journalism, which provides the first person experience to the viewers, is getting incredible day by day. New media technologies of content creation & distribution have also created a dynamic place in the industry. But somewhere in Indian media some limitations occurred in front of the media organisation related to the technological barriers.

This research paper explores the barriers and limitations faced by media organisations in implementation of immersive technologies.

Through our analytical & qualitative review. This study shows that there are few issues like high production cost, costly equipment , lack of skilled operators and ethical considerations.

The study revealed that immersive journalism has a lot of potential to develop innovative content in the field of journalism but affordability & professional training sectors require improvements especially in Indian media organizations. The study explains that immersive journalism is doing good in India but it is still in the experimental phase.

Keywords: Immersive Media, Virtual Reality, Indian Media Industry, Immersive Media Technology.

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INTRODUCTION

The rapid growth of digital communication technologies transformed the Indian media field. In recent years immersive journalism such as 360 degree videos, Infographics, 4k videos, live streaming, VR & AR extended the growth of Media. Their technologies create an impact on the mind of the viewers. It also enhances the engagement of viewers and provides them a better viewing experience.

Athique (2019), The concept of immersive journalism was introduced in the early 2010s. It allows users to get a better virtual experience. It provides multiple visual elements in a single video frame which enhance the experience of the viewer. Major media organisations such as BBC, National Geographic etc. have experimented with immersive journalism. In the Indian Media sector immersive media technologies are relatively limited. Despite the executive growth of digital media & smartphone penetration in India, immersive technologies have not become mainstream journalism practice. This research paper aims to examine the challenges and limitations faced by media organizations in implementing immersive technologies in India. By analyzing existing literature and industry developments, the study explores how technological, economic, and institutional factors influence the adoption of immersive media in the Indian context.

LITERATURE REVIEW

The rapid increase of digital media has tremendously transformed the field of media and journalism in the 21st century. Uskali, T., Gynnild, A., & Jones, S. (2019), The advent of 4k videos, virtual reality, use of multiple visual elements, advanced video production and editing technology, infographics, animation and mobile journalism has introduced new possibilities in the perspective of user engagement and audience retention. These new innovations are changing the scenario of how media content is getting created, produced and distributed.

According to De la Peña (2010), immersive journalism places users into a creative world where users can interact and engage with the story in depth and feel it. This process transforms the viewer into the active viewer.

Pavlik (2019), said that with the help of immersive media technologies we can present the complex stories in ways that are more vivid, interactive and impactful than the traditional text stories. Immersive storytelling enables audiences to explore environments, interact with objects, and understand spatial relationships within news narratives.

Jenkins (2006), said that digital convergence has blurred the boundaries between different media platforms, enabling the integration of interactive and immersive storytelling formats. Immersive journalism can be understood as part of a broader process of media convergence, where storytelling incorporates elements from gaming, film, and interactive digital design as well as the dynamic form of storytelling.

India Today (2023), introduced its first AI Anchor Sana to present the news feature show, marking a major step in the integration of artificial intelligence within Indian broadcast journalism. The AI anchor was designed to deliver news updates, interact with audiences, and present feature programs across digital platforms. Such technological innovations explain how media organizations are exploring new forms of automated and immersive communication to adapt to the rapidly evolving digital media ecosystem. Similarly, Doordarshan (2023), India's public broadcaster Doordarshan has also launched artificial intelligence in specialized broadcasting sectors. The agricultural channel DD Kisan introduced an AI-based virtual anchor named AI Krish, designed to deliver farming-related news, weather updates, and agricultural information to farmers across the country.

According to John V. Pavlik, immersive journalism requires specialized equipment, high-resolution cameras, and advanced editing software, which highly increases production costs compared to traditional news formats (Pavlik, 2019). This technological requirement often creates financial barriers for smaller media organizations that lack sufficient resources to invest in immersive production infrastructure.

Research by Nonny de la Peña suggests that immersive storytelling often requires devices such as VR headsets or high-performance smartphones, which are not widely available among all audiences (De la Peña et al., 2010). As a result, immersive journalism projects may reach a limited audience compared to traditional digital news platforms.

Ethical considerations represent another important challenge in immersive journalism. Scholars argue that immersive experiences can create strong emotional responses among viewers, potentially influencing their perception of events. As a result, journalists must carefully balance immersive storytelling with ethical reporting practices to avoid emotional manipulation or misrepresentation of facts (Uskali et al., 2019).

Industry publications such as The Economist and India Today have discussed how technological innovation in media often outpaces the capacity of news organizations to adopt new tools effectively. Smaller media organizations may lack the financial resources and technical infrastructure required to implement immersive storytelling technologies.

Reports published in Indian media publications such as Frontline have highlighted the growing interest in immersive media among digital news platforms and documentary filmmakers. These reports emphasize that immersive storytelling has the potential to transform journalism by offering new ways of presenting complex social and political issues.

RESEARCH OBJECTIVES

The Aim of this study is to identify challenges and limitations associated with implementing immersive media technologies in the Indian media industry.

1. To understand the concept and role of immersive media technologies in modern journalism.
2. To examine the adoption of immersive technologies such as VR, AR, 360-degree video, and AI in the Indian media industry.
3. To identify the problems faced by media organizations in implementing immersive technologies in India.
4. To analyze the technological and economy related limitations affecting immersive journalism.

RESEARCH METHODOLOGY

This study uses a qualitative research method based on data analysis to understand the challenges and limitations faced by media organizations in implementing immersive technologies in India.The research examines information that exists in academic and industry sources. The data collected from different reliable and prominent sources such as academic books on digital journalism, reputed journal articles, research papers, media industry reports, and articles published in reputed magazines and news portals. These sources provide useful insights into the development of immersive media technologies such as virtual reality, augmented reality, mobile journalism, and 360-degree video in the media industry. A thematic analysis method was used to analyze the data. In this method, the researcher identifies common themes, patterns, and issues that appear in different studies and reports. Through this process, key challenges such as technological limitations, high production costs, lack of skilled professionals, and accessibility issues were identified. This qualitative analysis helps to explain the current situation of immersive media adoption in the Indian media industry and highlights the major barriers affecting its implementation.

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(Hermida, 2010), The use of immersive technologies in media production and journalism has created new possibilities for audience engagement and storytelling. However, a number of obstacles and constraints make it challenging for media organizations to fully adopt these technologies, particularly in developing nations like India. The higher production cost and technological investment is one of the biggest obstacles. It takes specialized cameras, editing software, VR devices, and strong computer systems to produce immersive content like 360-degree videos, 4K cinematic videos, and interactive multimedia stories. In order to maintain compatibility and quality, these costly technologies need to be updated frequently. Compared to traditional forms of journalism, immersive journalism frequently requires sophisticated technical infrastructure and professional expertise, which raises production costs (Pavlik, 2019). Many Indian media

organizations, particularly regional and small-scale news outlets, run with limited budgets and that's why they find it difficult to invest in expensive immersive technologies.

The absence of a strong technological infrastructure is a further major challenge. For seamless delivery and interaction, immersive media content needs reliable digital networks and fast internet access. Even though the number of internet users in India has grown significantly over the last ten years, digital infrastructure is still not evenly distributed throughout the country. While rural areas frequently experience slower connections and unreliable networks, urban areas typically have better access to broadband and high-speed mobile internet. Media companies' capacity to successfully distribute immersive content to audiences across the nation is hampered by this technological divide. Castells (2010) argues that the development of digital media depends heavily on the strength of network infrastructure, and without reliable connectivity, advanced media technologies cannot reach their full potential.

A further barrier to the adoption of immersive technologies in the Indian media sector is the lack of skilled workers. A variety of skills that go beyond traditional journalism techniques are needed to create immersive media experiences. Knowledge of 3D design, animation, virtual environment creation, spatial audio production, and interactive storytelling techniques is necessary for journalists and media producers. Nonetheless, the majority of Indian journalism education programs keep focusing on conventional reporting, writing, and video production. Because of this, there aren't enough qualified experts to create immersive media content. Immersion journalism requires interdisciplinary collaboration between journalists, designers, and software developers, which can be challenging for media organizations with limited technical resources and expertise (Uskali, Gynnild, & Jones, 2019).

In the sequence to technological and professional challenges, **accessibility issues** also limit the reach of immersive media technologies. Many immersive experiences require VR headsets, advanced smartphones, or powerful computers to function properly. These devices are not widely available to all audiences, particularly in economically diverse countries like India. Even though smartphone penetration has increased very much, not all smartphones support high-resolution immersive content such as Ultra HD or 360-degree video. As a result, a large portion of the population may not be able to fully experience immersive journalism content. This limitation

reduces the potential audience reach and discourages some media organizations from investing heavily in immersive storytelling.

Another major concern highlighted by scholars is related to **ethical and editorial challenges**. Immersive storytelling has the ability to create strong emotional experiences for audiences because viewers often feel as if they are physically present inside the story. While this can enhance empathy and understanding, it also raises ethical questions about the representation of reality. Journalists must ensure that immersive content accurately reflects real events and does not exaggerate or manipulate situations to create dramatic effects. De la Peña et al. (2010) note that immersive journalism has the power to influence audience perception more strongly than traditional media formats, which makes ethical guidelines and responsible storytelling extremely important.

The literature suggests that although immersive technologies such as VR, 360-degree video, mobile journalism, and cinematic storytelling offer innovative opportunities for modern journalism, their implementation in the Indian media industry faces multiple barriers. These include high production costs, limited technological infrastructure, lack of skilled professionals, accessibility challenges, ethical concerns, and uncertain business models. Addressing these challenges will be essential for the successful integration of immersive media technologies into the future of journalism in India.

DISCUSSION

The findings of this study show that immersive media technologies bring both new opportunities and several challenges for the Indian media industry. Technologies such as Virtual Reality (VR), 360-degree video, mobile journalism, cinematic storytelling, and artificial intelligence–based news presentation have the potential to transform the way news is produced and consumed. These technologies allow journalists to present stories in more engaging and interactive ways, helping audiences feel more connected to the news. For example, 360-degree videos and immersive visuals can allow viewers to experience events from multiple perspectives, while mobile journalism enables reporters to produce and share content quickly using smartphones and portable devices.

Similarly, AI-driven tools and digital anchors are gradually being used to deliver news and automate certain newsroom functions.

In the Indian context, the adoption of immersive technologies is still in its early stages. While some leading media organizations and broadcasters have started experimenting with technologies such as VR storytelling, AI news anchors, and 360-degree video content, these practices are not yet widely used across the entire media industry. The uneven availability of high-speed internet and digital infrastructure across different regions of the country also affects the accessibility and distribution of immersive media content.

CONCLUSION

Immersive media technologies are gradually transforming the global media environment by introducing new and innovative ways of storytelling and audience engagement. Technologies such as Virtual Reality (VR), Augmented Reality (AR), 360-degree video, mobile journalism, cinematic video production, and artificial intelligence are changing how news is created, presented, and experienced by audiences. These technologies allow journalists to present stories in a more interactive and engaging manner, helping viewers understand events more clearly and feel more connected to the content. As digital media continues to grow, immersive storytelling is becoming an important part of modern journalism and communication practices.

The implementation of immersive technologies in the Indian media industry is still facing several important challenges. One of the main issues is the high cost involved in producing immersive content. Advanced cameras, editing software, VR equipment, and skilled professionals are required to create high-quality immersive media experiences. Another challenge is the shortage of skilled professionals who have the technical knowledge required to produce immersive media. Journalists today are expected to understand not only traditional reporting techniques but also digital tools, multimedia production, and interactive storytelling methods. Despite these challenges, the future of immersive journalism in India appears promising. With the continuous growth of digital infrastructure, increasing smartphone usage, and the expansion of high-speed internet services, the environment for immersive media development is gradually improving.

Many media organizations have already started experimenting with technologies such as 360-degree videos, mobile journalism, and AI-based news presentation. As technology becomes more accessible and affordable, it is likely that more media houses will adopt immersive storytelling techniques.

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