



ARTIFICIAL INTELLIGENCE (AI) & INDIAN JOURNALISM: CURRENT TRENDS AND CHALLENGES.

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ABSTRACT

In recent years, technological advancement has reshaped various sectors of many developed and developing countries in various sectors. The field of journalism is no exception to it. The advancement of Information and Communication Technology (ICTs), and news media have undergone massive changes. The field of journalism has been quick enough to adapt to these technological innovations, especially in recent years. The implementation of Artificial Intelligence (AI) in this discipline has been rapid in a very short time. The upsurge of robot journalism, automated journalism, and the production process to consumption of news stories has seen a sea change in news and journalism. India is a technologically advanced nation. This research is investigating the following questions. 1. The implication of AI in the media industry of other developed and developing countries, 2. How do Indian media giants and journalists in India perceive this AI? 3. What are the factors/challenges that affect technological advancements? The study has adopted qualitative and quantitative methods like surveys, interviews, and discussions to find the answers.

Keywords: AI Journalism, AI-generated news, Big Data, Robot Journalism, Traditional Journalism, Media Technology, World Perception, Indian Perception.

Introduction

As digital media develops and with the use of algorithms, in the past 10 years, journalism is also changing significantly (S.Y.Kim, B.Y.Kim 2020; Napoli 2014; van Dalen, 2012; Pavlik, 2013; Broussard, 2014). The last decade of the 20th century is the beginning of a new trend the automation of news (Winkler,2014). Automated Journalism refers to algorithm journalism which is synonymous with Artificial Intelligence (AI) or robot journalism as well (Dorr, Oremus, 2015). Professor Nicholas Dimakopoulos from Northwest University defines AI as a computer system that can perform a task that would typically require some level of human intelligence. The revolution of automated journalism or AI is still in a budding stage (Sena Aljazairi, May 2016).

Uses of AI for Journalists

Many surfaces of journalism are touched by AI now through these technologies few journalists are using data mining to find new stories from large datasets, journalists can also create written articles or videos using these technologies. (Professor Nicholas Dimakopoulos). The use of algorithms generates news from structured data without human intervention. AI also provides tools for codifying routines and tasks, and the outputs are similar to those produced by humans(Túñez López, Toural-Bran & Cacheiro-Requeijo, 2018).

Application of AI by News Agencies

The complete journalism industry is surprised because of the ability of AI to create thousands of news stories for a specific topic with fewer errors than human journalists. As of now, these algorithms are producing financial news, sports news, and weather including sensitive content like earthquake alerts(Sena Aljazairi, May 2016). The New York Times and The Washington Post have been using machine learning technologies to help with content moderation, the media 5 industry has started to use algorithms to generate news from structured data and without human intervention, Associated Press started to use an algorithm with Wordsmith, a software tool developed by Automated Insights, to produce earnings reports.

Objectives Of the Study

1. To understand the implication of AI in the media industry of other developed and developing countries.
2. To identify how Indian media giants and journalists in India perceive this Artificial Intelligence.
3. To study factors/challenges that affect technological advancements.

Background of the Study

The emerging technologies and their impact on journalism are big and new; leading to discussions and scholarly research publications stressing a technological perspective on the relevance of professional, economic, social, and organizational factors (Pavlik2013, Anderson 2013; Ekdale et al. 2015). A number of studies have already investigated how users perceive computer-generated texts (Clerwall, 2014; Mirbabaie, Stieglitz, et al., 2020). A study done on Swedish students found that students were not able to differentiate between AI-generated content in comparison with human-written, however, it was also identified that content produced by both AI-generated and human written was not very pleasant to read (Clerwall, 2014). Hence it is irrelevant for the evaluation of the articles whether it is AI-generated or human-written (van der Kaa and Krahmer, 2014). On the other hand, a study done by (Waleed Ali, Mohamed Hassoun, 2019) on the impact of AI on changing the practice of journalism found that AI techniques in journalism may raise professional and ethical issues, particularly declining creativity, bias, transparency, equity, data use, and quality. An experimental study done by (Seth C. Lewis, et al, 2019) indicates that an increase in the number of AI- such as chatbots, social robots, and algorithms; are used in building and writing news reports and are a humanitarian component of journalism emphasizing a new upcoming era of employing AI in journalistic. Only a few media companies have specialized in using AI (Graefe et al., 2018). (Tatalovic, 2018) His study analyzed that mostly only weather, financial, and sports reports apply AI as these articles are more fact-based and have a more objective language style. News Organizations like BBC, CNN, and Thomson Reuters are the pioneers in working with automated writing, the journalists of these organizations revealed that though there are restrictions imposed on automation, including the sensitivity of news and the nature of its sources, automated journalism will become more popular, which will increase the depth, privacy and timeliness of the information provided (Neil Thurman, et al, 2017). An analysis was done by (Daewon Kima, Seongcheo Kim,2018) to find out the editor-in-chief's idea of introducing AI in newsrooms, according to the results the position of the journalists in automated journalism relies on the profitability and changes in an external market environment. A quick look at the commercial operation of automated news in the US and five European countries found that there are a couple of frictions that are barriers to automated news, and the learning of more algorithms leads to more machine news, therefore journalists are positive towards adopting and mitigating this new technology (Carl-Gustav Linden, 2017).

Approach of this study

This study is a systematic literature review. The objectives were to analyze and interpret findings that were predefined in previous research. The predefined research focuses on the use of AI in newsrooms and journalists' perception internationally this paper also focuses on Indian journalist perception of the use of AI in newsrooms.

To understand how AI is used in the news industry internationally. The researcher used the list of case studies from Journalism AI an initiative led by the LSE journalism's think-tank, Polis, which has extensive research about AI tools in newsrooms globally. The researcher has selected a few of the best cases from 102 cases studied by LSE. Although it is spotted that this database does not represent widespread cases, it still provides some idea of how AI is developed in the news industry.

To analyze the list of previous literature the cases were first classified based on the application of AI by newsrooms. 1. AI for Content, 2. AI for images and videos, 3. AI as fact-checkers, 4. AI for collecting, producing, and distributing data. Furthermore, how these projects were developed and where were they applied were also studied for a better understanding of the tool. The review of these cases gives a better understanding of how newsrooms use machine learning applications beyond the traditional form.

Interview methods were carried out among journalists and technicians contacting them either through phone, e-mail, or manually in news organizations in India. Interviews use a qualitative technique that is particularly common in the social sciences. (Oxman,1998) describes this tool as a verbal interaction with questions and answers oriented towards a fixed topic with specific objectives. An in-depth interview has a particular application when it comes to interviews with a predetermined interest and the interviewer and interviewee must know each other beforehand (Sierra,1998).

Non-probability sampling has been applied to the sample to correspond to the needs of the research. It is a type of selection widely used in small sample research; it helps to boost the information interviewees provide due to their strategic situation in the research field of knowledge.

Diffusion of Innovation Theory- A framework to understand Automated Journalism

Diffusion is the spread of an innovation or new idea through a social system via various channels over time. It is a form of communication that focuses on the dissemination of new concepts and information. (Roger, 1965.) The process of making a decision about innovation begins with gaining knowledge and understanding of the innovation and continues through stages such as developing an attitude or forming an opinion about it. It may include evaluating the potential impact of the innovation, weighing the pros and cons, and ultimately deciding whether or not to adopt or implement the innovation. (Çakmak and Ocak, 2008). The main advantage of the theory of diffusion of innovation is its ability to explain the spread of new ideas and innovations within a population, regardless of the socio-cultural context or system in which they are found. This means that the theory can be applied to a wide range of situations and populations to understand how and why new ideas are adopted. Hence, the use of the theory of diffusion of innovation in this study is to report the use of AI in the news industry globally and the various challenges faced by Indian news media in the different stages of adopting automation and AI technology. The theory helps to understand how and why these new technologies are being adopted and how this adoption is impacted by the socio-cultural context of India.

Automated Journalism Globally

Today newsrooms have shifted from digital journalism to newer technologies like AI. Past predictions have speculated that 90% of news will be AI written by 2025 (Amarah Ennis, 2022). Research done by (Mathias-Felipe de-Lima-Santos, and Wilson Ceron December 2021) on Artificial Intelligence in News Media: Current Perceptions and Future Outlook, has analyzed the evolution taking place in

journalism by analyzing the LSE list of journalism AI, the study by (Mathias-Felipe, et, al.) argues that AI is used in different forms in the news industry. The study looks into three major subfields: Machine learning, computer vision, & scheduling, optimization, and planning.

Machine Learning: According to Mathias study of the cases listed by LSE. Machine learning is applied for two major reasons by newsrooms: One AI for boosting public interest by using AI, and the second is for business strategies to individual readers. That is AI is used for predicting reader subscriptions or cancellations.

Computer Vision: Media practitioners use computer vision to deal with visual content in different ways for fact-checking on the social network, and report investigation. It was analyzed those small new outlets use computer vision algorithms to produce investigative stories but the bigger outlets rely more on computer vision algorithms. This could be because computer vision requires a qualified individual to develop codes, technological investment, and investments only large newsrooms can afford (de-Lima-Santos and Salaverría 2021). This could lead to a serious challenge as large newsrooms have financial dominance. (Mathias, et, al 2021).

Planning, Scheduling, and Optimization: While journalism is related to textual content, Mathias's finding suggests that automated journalism sometimes constitutes a basic computational model application. Possibly just to fill in the blanks of template stories. These simple algorithms are more likely to be found in news industries as they do not require much effort or time to deploy (Biswal and Gouda 2020).

Different uses of AI worldwide

AI for covering COVID-19

Columbia Journal examined how news outlets from eight countries used AI to report on the pandemic. Bayerischer Rundfunk (Germany); Bloomberg News (United States); Canadian Press (Canada); Helsingin Sanomat (Finland); NTB (Norway); Omni (Sweden); RADAR (United Kingdom); Tamedia (Switzerland); The Times (United Kingdom). Seven out of nine media organizations were already using it for other types of coverage such as election results, and sports recaps (BR, Bloomberg, CP, HS, NTB, RADAR, and Tamedia). Omni and The Times experimented the AI for the first time. Most of the time these organizations developed their own automated news using open-source tools and proprietary solutions. Tamedia and Radar used third-party platforms in two cases so that journalists could design their own stories. Omni once outsourced the production of automated news to some external content provider. The regular reports on the number of people getting infected, deaths and vaccinated changed daily AI has been the solution to collect external data for regular reporting. In this study, the newsroom has used AI to create newsletters, dashboards, visualizations, and more.

AI for Local News

News outlets across UK and Ireland use RADAR to provide AI-generated articles to digital, broadcast, and print media. Around 250,000 articles were filed in 18 months using Radar's "Live Tech", which blends automation tech with human editorial skills and creates quality content. US news outlets are also utilizing AI to provide news to local communities. AP is working with tools to replace people so journalists could invest time in richer research on stories. KPCC-LAist Public radio for the community from California worked with Quartz to use machine learning that could answer thousands of reader questions and also organize by theme, trend, or topic. This allowed the journalists to build a stronger relationship with the community by quickly responding to readers.

AI for Fake News Check

Disinformation is a global problem and countries such as Argentina have adopted fact-checking bots like "Chequebot" to combat this issue. 25 media outlets in Argentina use this tool to automatically identify claims in the media and match them with existing fact checks. (LSE,2021) Other countries have also developed tools like "Source" to detect manipulated images and AI tools such as GANS to address deepfake videos. The ICFJ Knight Fellowships' Truth-Buzz program is also assisting journalists by providing training in fact-checking and verification through a partnership with First Draft News (Alessandra Monnerat). The goal is to improve the scope and impact of verified information by effectively communicating and disseminating it. Decoders is a French newspaper Le Monde's fact-checking section that has been subject to criticism but also recognized for its importance in combating disinformation (Jesús Miguel Flores Vivar, 2019)

AI for Calculating Corruption

Calculating Corruption: Peru's Ojo Público Creates "Funes" Tool to Gauge Contracting Risks. This tool was indeed created for investigating government contracts. "Funes" is a search engine, a website, and a source for more than 2,45,000 public contracts. The algorithms of this tool check hundreds of documents in the blink of an eye and calculate the corruption risk as a percentage. When the tool completes the calculation, the alerts allow Ojo Publico to expose cases of corruption. In 2020 "Funes" won first place in the innovation category of the Sigma Awards.

AI for Image Search

The New York Times uses AI-powered image recognition software to verify the authenticity of images used in news articles. The software analyzes images for signs of manipulation, such as changes in color, texture, or composition.

The BBC has developed an AI-powered image search tool that allows journalists to quickly find related images for a story. The tool uses image recognition algorithms to analyze the content of images and match them with other images in the BBC's library.

The Washington Post uses AI-powered image search to detect deepfake images. The paper has developed a tool that uses machine learning algorithms to analyze images for signs of manipulation.

The Indian Express uses software called "Veracity.ai" which is a deep learning-based solution that checks the authenticity of the text, images, videos, and audio. It uses natural language processing and computer vision to analyze the content for authenticity.

The Associated Press (AP) uses AI-powered image search to generate captions for images automatically. The AI system analyzes images and generates captions that describe the content of the image.

AI for Video

Reuters used artificial intelligence (AI) technology to enhance its entire video archive - nearly one million clips supported by the Google Digital News Innovation (DNI) Fund. By unlocking these data, Reuters believe it to deliver unparalleled value to customers for years to come. In collaboration with a London-based AI start-up, Reuters has come up with its first-ever fully automated, yet presenter-led sports news summary system. The new system binds AI in order to create pre-recorded footage of a news presenter into entirely new reports. It works in a similar way to deep fake videos. In other words, Synthesia and Reuter's new tool could proclaim the natal of videos on-demand catering to the interest of each individual.

AI for Newsroom

Ashish Verma head of SPH had thrown light on the journey of newsrooms using AI. Mr. Verma has developed 3 AI-based projects the first one is a customer data platform for collecting and unifying reader customer data which allows the organization to improve customer service, subscription, retention rates, and security. The second AI tool helps journalists in gathering, producing, and distribute news this tool also consolidates the trending topics helping the journalists to work on their next stories. The third AI component named "SPH Robbie" is a tool that ingests news articles and can summarise the key points and angle of a piece it also provides video presenters with ready-to-go story summaries. Another case of AI in the newsroom is when The Guardian joined forces with AFP to work on a machine-learning solution to extract quotes accurately from news articles and match them with the right source. Mexican-based EI Universal news organization teamed up with AI to measure missing stories of Mexico, as it is the deadliest place in the world for reporters outside of active war zones.

Interpretation of Cases

The concern about employment is legitimate there is no current evidence that automated news could be a reason for loss of employment. Because journalists globally provide more than their part and human characters cannot be replaced by machines. In the case studies mentioned, experiments with automation are on the rise but employment risk due to automation is not as witnessed. According to an Australian journalist (Alexander Fanta, 2017), Automated news can provide a quick summary of news or the first version of a story but they lack in-depth and critical examination of the facts presented. (Fernando Zamith) professor of Porto University argues that "Accuracy requires proper verification. Robots cannot get it right every time.

Indian Perspective

To understand the Indian perspective on the use of AI in the news industry, an in-depth interview was conducted with ten journalists around the country through e-mail, recording phone calls, and manually.

The perspective of Indian journalists on the use of artificial intelligence (AI) in the news industry is one of cautious optimism. While many Indian journalists recognize the potential benefits of AI in terms of efficiency, accuracy, and reach, there are also concerns about the potential negative impacts of automation on the profession.

One of the main benefits of AI that Indian journalists see is the ability to automate data analysis and fact-checking. With the help of machine learning algorithms, journalists can quickly sift through large amounts of data and identify relevant information, making it easier to uncover important stories and facts. This can save journalists time and effort, allowing them to focus on more in-depth reporting and analysis.

Additionally, AI-based systems can also be used to automatically generate articles, summaries, and other forms of content, which can help to increase the output of news organizations. This can be particularly useful for small and medium-sized news organizations that do not have large teams of writers and editors. (Mr. Jinoy Benny senior editor of The Hindu Frontline) supposed that Journalists use various tools to search for and research stories. These tools, such as Google News and internal tools specific to the news organization, help in finding and gathering relevant information. However, these tools do not replace the skills of human journalists in critical thinking and fact-checking.

However, despite the many benefits that AI can bring to journalism, there are also concerns about the potential negative impacts of automation on the profession. Some Indian journalists worry that relying too heavily on AI could lead to a loss of human perspective and creativity in the news-gathering process. They also express concern that automation could lead to job losses in the industry, as machines can perform certain tasks more quickly and cost-effectively than humans.

Another concern that Indian journalists have is the potential ethical implications of AI. They are worried that AI-generated content can be biased or misleading, and that the use of AI in journalism could contribute to the spread of misinformation. They have also raised concerns over the lack of transparency in the use of AI, particularly in terms of how the technology is being used and the potential consequences of its use.

To mitigate these concerns, Indian journalists and news organizations need to be transparent about the role that AI plays in their work and to ensure that human oversight and judgment are always involved in the decision-making process. Additionally, efforts should be made to invest in training and development programs that help journalists to understand and utilize the latest AI technologies. (Mr. Devdas Rajaram- an AI prof at ASIAN college) also is of the view that "it is unlikely that AI will fully replace human ingenuity in the news industry. While AI tools can automate certain tasks and assist in the production of news content, they are ultimately designed and trained by humans. Even with advanced AI technologies such as generative AI, which can self-train without human intervention, it is

unlikely that they will fully replace the creative and emotional aspects of storytelling that are unique to human journalists. Newsrooms will continue to rely on human journalists' unique perspectives and abilities to craft compelling and engaging news stories". This will help prepare them for the changes ahead and ensure they have the necessary skills and knowledge to work effectively with AI.

Overall, Indian journalists have a nuanced perspective on the use of AI in journalism. They recognize the potential benefits of AI in terms of efficiency, accuracy, and reach, but also express concern about the potential negative impacts of automation on the profession, as well as the potential ethical implications of AI. It is important for Indian journalists and news organizations to approach the integration of AI with care and caution, and to ensure that human oversight and judgment are always involved in the decision-making process.

Challenges faced to use AI in newsrooms:

Technical expertise: Implementing AI in a news organization requires a certain level of technical expertise, both in terms of understanding the underlying algorithms and in terms of being able to integrate AI systems into existing workflow and infrastructure.

Cost: Developing and deploying AI systems can be expensive, which can be a barrier for smaller news organizations.

Ethical and legal considerations: The use of AI in the news industry raises several ethical and legal concerns, such as issues of bias and privacy. (Mis. Nirupa a print journalist) expressed that AI has a lot of ethical issues, for instance, when a human brain that is in existence for centuries still is in the process of development, then the answer is very simple when it comes to AI. As AI tools are still in their beginning stage and AI for now is infested by all the biases of humans.

Scalability: AI systems can require a significant amount of computational power, which can be a challenge for smaller news organizations with limited resources.

Discussion

Artificial intelligence (AI) in the news industry is becoming increasingly prevalent internationally and in India. However, some key differences exist in how AI is used in these two regions.

Internationally, some of the most common uses of AI in the news industry include:

Automating data analysis and fact-checking to uncover important stories and facts: News organizations are using AI-powered tools to sift through large amounts of data, identify relevant information, and uncover important stories and facts. This can include monitoring social media for breaking news and trending topics, as well as analyzing data on topics such as crime and financial performance.

Generating articles and summaries to increase output and reach new audiences: AI-based systems can be used to automatically generate articles, summaries, and other forms of content, which can help to increase the output of news organizations. Additionally, AI can also be used to personalize news content to the individual reader's preferences, which can help to increase engagement and retention.

Monitoring social media for breaking news and trending topics: AI-powered tools can be used to monitor social media platforms for breaking news and trending topics, which can be used to quickly identify and report on important stories.

Advanced AI technologies such as natural language processing (NLP) and computer vision are being used to analyze large amounts of unstructured data, such as images, videos, and audio, and extract insights from them.

In India, the use of AI in the news industry is still in the early stages of adoption, but it is rapidly gaining traction. Some of the most popular uses of AI in Indian journalism include:

Data analysis and fact-checking to uncover important stories and facts: Similar to international news organizations, Indian journalists are using AI-powered tools to sift through large amounts of data, identify relevant information, and uncover important stories and facts.

Generating articles, summaries, and other forms of content to increase output: Indian news organizations are starting to use AI-based systems to automatically generate articles, summaries, and other forms of content to increase output and reach new audiences.

Personalizing news content to individual readers' preferences: Indian news organizations are also starting to use AI to personalize news content to individual readers' preferences to increase engagement and retention.

One of the main differences between the use of AI in international and Indian news industries is that, internationally, more advanced AI technologies are being used in the news industry, such as NLP and computer vision, while in India, the use of AI is still relatively basic, focusing on more fundamental tasks such as data analysis and content generation. Additionally, while international news organizations tend to have more resources and infrastructure to support the implementation of AI, Indian news organizations are still building the necessary infrastructure to support AI implementation.

Another difference is that internationally there is more concern about job loss due to the implementation of AI, while in India, the focus is more on ethical concerns, such as bias and misinformation. International news organizations are worried about the potential of AI to replace human journalists, and the impact this could have on the industry. In contrast, Indian news organizations are more concerned about the impact of AI on the accuracy of the information and how it can be used to spread false information.

In terms of the future, we can expect to see more Indian news organizations adopt AI in the coming years as they recognize the benefits it can bring in terms of efficiency, accuracy, and reach. The Indian government and private sectors are also investing more in AI, which will help to improve the infrastructure and support the implementation of AI in the news industry. Additionally, Indian news organizations will need to invest in training and development programs to help journalists to understand and utilize the latest AI.

Conclusion

In conclusion, the use of artificial intelligence (AI) in journalism is becoming increasingly prevalent both internationally and in India. However, there are some key differences in how AI is used in these two regions.

Internationally, AI is being used primarily to automate tasks such as data analysis and fact-checking, to generate articles and summaries, and to personalize news content to individual readers' preferences. Additionally, advanced AI technologies such as natural language processing (NLP) and computer vision are also being used to analyze large amounts of unstructured data, such as images, videos, and audio, and extract insights from them. There is also concern about job loss due to the implementation of AI in the news industry.

In India, the use of AI in journalism is still in the early stages of adoption, but it is rapidly gaining traction. Indian journalists are using AI-powered tools primarily to automate data analysis and fact-checking, generate articles and summaries, and personalize news content to individual readers' preferences. However, the use of AI in Indian journalism is relatively basic, focusing on more fundamental tasks such as data analysis and content generation. Additionally, Indian news organizations are still building the necessary infrastructure to support the implementation of AI. The main concern in India is about the ethical implications of AI and automation, particularly regarding issues such as bias and misinformation.

In the future, we can expect to see more Indian news organizations adopt AI as they recognize the benefits it can bring in terms of efficiency, accuracy, and reach. The Indian government and private sectors are also investing more in AI, which will help to improve the infrastructure and support the implementation of AI in the news industry. Additionally, Indian news organizations will need to invest in training and development programs to help journalists understand and utilize the latest AI technologies.

Overall, the use of AI in journalism has the potential to revolutionize the field, making it more efficient and effective, but both international and Indian news organizations need to approach its integration with care and caution. It is important for news organizations to be transparent about the role that AI plays in their work, and to ensure that human oversight and judgment are always involved in the decision-making process. Additionally, efforts should be made to invest in training and development programs that help journalists to understand and utilize the latest AI technologies, while at the same time ensuring the ethical implications are taken into consideration.

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