Artificial Intelligence Implementation Challenges in Newsrooms: A Concept Paper

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Abstract

Technological changes in journalistic practices occur continuously. Newsrooms in media organizations are keen to stay in line with the technological developments taking place around the world. Journalism suffers from successive technological revolutions, after websites, social media platforms, data journalism, and finally artificial intelligence. Artificial intelligence will be an integral part of the journalistic process soon. Many international media organizations have begun to introduce these technologies into newsrooms in order to benefit and develop journalistic practices. This article discusses the challenges to the use of artificial intelligence tools in newsrooms. The results showed four main challenges faced by journalists a decrease in creativity, job loss for journalists, limited technological skills, and ethical challenges with AI adoption. On the other hand, there are also challenges facing

media institutions with AI adoption. They include financial struggles due to high costs, difficulty in dealing with big data, lack of technological infrastructure, and human resources. This study adds to ongoing literature and contributes to helping journalists and media organizations identify the most prominent challenges to adapting AI in newsrooms.

Keywords: Artificial Intelligence, Journalistic Practices, Newsrooms.

Introduction

The field of journalism is constantly evolving with the introduction of new technologies and tools (Saad & Talat, 2020). The emergence of artificial intelligence (AI) has initiated a technological revolution in journalism (Tejedor & Rodríguez, 2020; Tejedo & Vila, 2021), making journalistic processes more efficient than ever (Kaplan, 2016). Many news organizations, including the Associated Press, Forbes, the New York Times, the Los Angeles Times, and ProPublica, have begun automating their news content using AI (Graefe, 2016). Monti (2019) suggested that AI, augmented reality, and robotics are expected to undergo significant changes in journalism due to the fourth industrial revolution.

The integration of AI into newsrooms will present challenges for journalists in sustaining their work (Salazar, 2018; Jamil, 2021). For instance, the introduction of robots may lead to job displacement for journalists, resulting in widespread unemployment (Kim & Seongcheol, 2018). Therefore, journalists need to be equipped with the necessary knowledge and tools to adapt to an AI-dominated future. They face various challenges related to technology, such as limited technological knowledge (Malmelin & Nivari-Lindström, 2016; LaBarre, 2020; Sedegah, 2021), as well as institutional challenges, such as the lack of a suitable technological environment in their workplaces (Sun & Medaglia, 2019; Linde, 2020). This article aims to identify the key challenges that hinder the implementation of AI in newsrooms.

Literature Review

AI research suggests that AI will significantly impact the future of journalism (Hansen et al., 2017; Jordan, 2019). Numerous studies have examined the influence of artificial intelligence on journalistic work in newsrooms. For instance, Santos and Salaverra (2021) utilised a mixed-method approach involving observation and interviews to highlight the challenges of implementing AI-generated news in Argentina, such as a lack of technological infrastructure and qualified personnel, as well as the high costs associated with implementation.

Linden (2017) investigated the use of automated news in the United States and five European countries to understand its impact on news production and industry experts' predictions. The study revealed various barriers to the growth of automated news, although it is anticipated that the development of learning algorithms will lead to more advanced machine-generated news.

Okiyi and Nsude (2020) identified obstacles to integrating AI into Nigerian journalism, including automating routine reporting, accessing data, and understanding unstructured data. Meanwhile, Munoriyarwa and Motsaathebe's (2021) study in South Africa found that the slow adoption of AI in mainstream newsrooms was influenced by concerns about job losses, implementation costs, lack of training, and ethical issues.

In Kenya, a qualitative study on AI in newsrooms highlighted the primary obstacles as the lack of high-quality data, ethical concerns, and the unpredictability of technological effects (Kioko, 2022). Asmaa (2021) discovered that AI technology could potentially impact journalism in Egypt by controlling press institutions. Additionally, Yu et al. (2021) found that Chinese media workers believe AI is reshaping the media landscape by optimising workforce structure and liberating human journalists.

Nofal and Al-Jayyar's (2022) study tracked research trends on AI's effects on journalism and television at the Arab and international levels. The study revealed ongoing developments in research on AI's impact on journalism and television from 2017 to 2021.

Overall, these studies highlight the diverse challenges faced by journalists and news organisations globally when implementing AI. The next section will identify the current key challenges in AI adoption by journalists and news organisations.

AI Challenges in Newsrooms:

This section will address two main areas of challenges in implementing AI in journalism. Firstly, it will focus on the challenges encountered by journalists. Secondly, it will discuss the challenges faced by media organizations.

AI Challenges Face Journalists:

There are many challenges currently faced by journalists in their AI adoption. Based on previous literature, the current section discusses the most important challenges that impede the use of AI in newsrooms.

Stifle Creativity:

Some believe that AI will replace creative positions in journalism, while others argue that AI will enhance creativity by offering fresh perspectives and ideas (Ahmad, 2022). The use of AI is claimed to stifle journalistic creativity (Malmelin & Nivari-Lindström, 2016). The Associated Press acquired the Wordsmith service not because the algorithm writes more accurately than humans, but because it writes faster and in greater quantity (Graefe, 2016). According to some experts, there is a 50% chance that computers will have intelligence comparable to humans within the next 50 years (LaBarre, 2020). Despite differing opinions on the current role of robo-journalists, the ultimate goal of news-writing algorithms is to write news in a manner similar to humans (Miroshnichenko, 2018).

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AI poses a threat to journalistic creativity. Ken Schwencke, a journalist and programmer for the Los Angeles Times, was awakened by an earthquake on March 17, 2014, at 6:25 a.m. He quickly discovered an email notification from quakebot, an algorithm, which had outpaced its human coworkers (Eveleth, 2014). Additionally, traditional crime reporting has undergone a significant transformation due to robot involvement. While human journalists used to cover only crimes with newsworthiness, robots now cover all fatality-related incidents and provide crucial secondary information that human reporters may overlook (Miroshnichenko, 2018).

AI has also made significant inroads in sports journalism, where it has become indispensable for match analysis, photography, and technological coverage that human sports journalists cannot achieve on their own (Yang, 2023). Traditional journalists rely on intensive investigative journalism to uncover new facts and social trends, using their storytelling ability, experience, values, imagination, and intuition to craft journalistic narratives. The emergence of robot journalists poses a formidable challenge to traditional journalists, as they do not forget facts, do not tire, and if programmed objectively, are free from bias (Rashedi, 2020). For example, the Japanese have developed a three-dimensional humanoid mechanical journalist capable of conducting interviews, taking photographs, and writing stories at events (Latar, 2015).

In conclusion, AI is competing with journalistic creativity, making it challenging for journalists to resist these powerful technological tools. The quantity of news coverage generated by algorithms already surpasses that of humans, and the perceived superiority of humans in terms of quality may be greatly overestimated.

Job Loss:

The concept of artificial intelligence (AI) replacing humans aligns with Marshall McLuhan's idea of media as "extensions of man." The increasing presence and advancement of AI assistants will significantly reshape the media sector, potentially

leading to a reduction in human journalists (Ahmad, 2022). Various occupations, including manufacturing, are already being impacted by AI and automation, with robots displacing tens of thousands of jobs (Leinonen, 2018). According to the World Economic Forum, AI, robots, and automation are projected to displace 75 million jobs globally (IANS, 2019).

AI is expected to have a substantial impact on the global workforce, with intelligent software streamlining operations for economic efficiency. This will enable the media to produce a greater number of stories at a lower cost while maintaining speed and accuracy (Chan-Olmsted, 2019). Automation's rise is evident in journalism, as seen in Microsoft's decision to replace hundreds of journalists responsible for article selection, curation, and editing on the MSN website with automated news story selection algorithms. This trend is particularly concerning given the current layoffs in Indian news media due to the economic impact of COVID-19 (Sharma, 2020).

It is anticipated that AI will assume 8% to 12% of existing reporting work, prompting journalists to focus on long-form news, feature interviews, analysis, investigative reporting, and data-driven journalism, areas where machines have yet to excel (Ross, 2020). Journalists now require not only traditional journalistic skills but also technical abilities to leverage technological tools. As AI becomes more prevalent in journalism, journalists face the challenge of adapting to this new landscape. Basic technology skills are insufficient, and additional technical expertise is necessary to thrive in an AI-driven environment (Metz, 2017).

While AI may lead to job displacement, it also presents new opportunities for working with artificial intelligence. Furthermore, AI still relies on human supervision, guidance, control, and various other tasks, highlighting the continued need for human involvement alongside AI.

Limited Technological Skills:

The reliance on technology is increasing more than ever before due to new innovations (Chanpun, 2023). Proficiency in technological skills presents a significant barrier to effectively using artificial intelligence (Huang & Rust, 2018). Reports suggest that a strong foundation in statistics, probability, predictions, calculus, algebra, Bayesian algorithms, and logic will be essential for the majority of occupations involving the technical aspects of artificial intelligence (Lesgold, 2019). Individuals capable of researching and developing AI applications are currently scarce compared to other fields because these operations are not carried out through a specific program per se (Markow et al., 2017).

The advancement of AI-related technologies will have a substantial impact on journalism and will revolutionize the approach to the profession (Salazar, 2018). An examination of the topics comprising the curriculum for a career in news in Spain reveals a significant lack of exposure to new technologies. Without collaboration between media and educational institutions focusing on communication sciences to bridge this gap, technological progress will continue unabated, potentially resulting in an irreparable technological divide brought about by the introduction of AI in content generation (Otero, 2022).

In general, working with AI differs significantly from working on websites and social media platforms. It is not solely about the journalist disseminating news, but also requires technical skills that enable them to adapt and use these tools in their journalistic work (Ayush et al., 2022). The absence of training and preparatory workshops (Stray, 2019), as well as the lack of AI courses for journalism and media students in various universities and institutes, contribute to the weak technological skills of journalists in working with artificial intelligence (Goni & Tabassum, 2020).

AI demands a range of skills that journalists are not accustomed to practising or learning. Technological skills present a challenge for journalists in their use of AI.

Journalists have recognized that the future of their profession necessitates technological skills, without which they will continue to struggle.

Ethical Challenges:

Ethical considerations have always been integral to the field of media studies. Traditional media ethics is a form of applied ethics that focuses on the professional mass media system, its protocols, and practices. However, journalistic ethics often do not keep pace with technological and cultural changes (Hömberg & Klenk, 2014). The introduction of the first automated "journalist" at the Associated Press newsroom in 2014 immediately sparked ethical questions. Should readers be informed that the author of an article is a machine, or should this information be withheld? Legally, who is considered the author of the content? Who bears responsibility for the accuracy of the facts, especially in the presence of potential data flaws? How can journalistic ethics be imparted to a robot? (Weeks, 2014; Montal & Reich, 2017).

The journalism industry has undergone a significant transformation with the introduction of robots writing news articles and reports. Critics and journalists have raised numerous concerns about the credibility and impartiality of articles produced by automated systems (Waddell, 2019). Experimental studies have investigated the impact of computer-generated news on perceptions of credibility. The findings suggest that people perceive computer-generated news as less credible than news written by a human author (Waddell, 2018).

In traditional journalism, the journalist or media organization bears legal responsibility for upholding ethical standards in the profession. Journalists are prohibited from publishing news that could harm individuals, and they are expected to diligently verify the accuracy of news before publication (Dugan, 2008). These ethical standards have been a topic of discussion among experts in the field of AI (Vladeck, 2014). According to Wang and Siau (2018), data security and privacy

present significant risks to developers, governments, and consumers. Therefore, it is ethically imperative to use accurate, impartial, and correct data.

AI Challenges Facing Media Organizations:

In recent years, AI has become a top priority for enterprises due to the availability of large amounts of data and the introduction of advanced tools and infrastructure (Davenport & Ronanki, 2018). According to a recent Gartner survey, the number of businesses using AI has increased by 270% over the past four years and quadrupled over the past year (Rowsell-Jones & Howard, 2019). However, despite the potential economic value that AI can offer, businesses just starting to implement AI solutions face obstacles that prevent them from gaining performance advantages (Fountaine et al., 2019; Ransbotham et al., 2018).

Financial Difficulties:

The cost and financial benefits of digital technology are important considerations for businesses. The use of AI in businesses may lead to a "digital conundrum," where increased costs offset potential income growth, resulting in limited profitability for organizations (Sjodin, 2020).

In a 2019 survey of 71 news organizations across Europe, North America, South America, and Asia, four out of ten businesses had already implemented AI-based strategies. The study identified high development costs as the main barrier to adopting these technologies, posing a significant challenge for companies seeking to embrace artificial intelligence (Beckett, 2022).

Governments play a crucial role in supporting organizations by modernising legal and regulatory processes, raising awareness of digital transformation, providing technical and financial assistance, and strengthening data transmission infrastructure (Bai et al., 2021; Chen et al., 2021). The AI sector is experiencing financial growth, creating challenges for media in recruiting individuals with AI expertise and

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potential conflicts of interest (Cihon, 2021). Many media organisations and non-government-funded newspapers also face limitations in using AI in the media (Lewis, 2019).

Dealing with Big Data:

Unstructured data poses a challenge for AI systems (Tayefi, 2021). While standard templates can easily convert tabular results for sports or profit data into narratives, AI systems aiming to become more prevalent in the creative economy must effectively utilize and synthesize unstructured data, which makes up the majority of available data today (Alonso, 2015).

Organizations have access to two categories of data: internal data and external data. Internal data includes accounting, sales, human resource management, and production, and has historically been a significant factor in business decision-making. However, relying solely on internal data is unlikely to provide a competitive advantage (Song & Luo, 2022). On the other hand, external data, which is not directly linked to a company's activities, can offer valuable insights into the competitive environment. The influx of both external and internal data presents unprecedented potential as well as significant challenges for businesses (Colson, 2019).

Media organizations seeking to leverage data for AI support must integrate internal and external data sources, while also managing data cleansing, processing, and dissemination across organizational boundaries as necessary. Additionally, journalists need to be trained to handle big data (Wu et al., 2019).

Lack of Technological Infrastructure:

There is a growing need to expand the use of AI in digital content (Karnouskos, 2020). Developing new infrastructures, such as the industrial internet, is crucial for companies' digital transformation (Sjödin et al., 2020). Implementing AI requires a substantial amount of data, which depends on the type of infrastructure offered by

businesses (Kumar & Kalse, 2021) and the data available to them. However, the majority of SMEs currently lack the quality infrastructure needed to facilitate AI adoption. Moreover, organizations may hinder the progress of AI solutions by struggling to gather significant amounts of data or dealing with poor data quality (Dwivedi, 2021).

Additionally, organizations are facing increasing data challenges, particularly in terms of standards and data architecture. Overall, organizations lack the necessary data and standardized formats to validate limited data and fully benefit from AI (Kohtamäki et al., 2019). Journalists in the Jamil study sample noted that the lack of a technological environment and insufficient economic and technological resources pose a major challenge to integrating AI into newsrooms (Jamil, 2022).

Human Resources:

Organizations need to harness AI technology to leverage its potential (Dwivedi et al., 2021). A major obstacle to AI implementation in companies is the lack of AI expertise and professional capabilities (Hansen & Bøgh, 2021; Johnson et al., 2021). Since AI systems do not possess human intelligence, their algorithms often produce speculative responses, such as probability-based predictions, which require human explanation, demonstration, and action to achieve precise and valuable results. Human factors, including organizational leaders and personnel, can influence the level of AI adopted by organisations (Stead, 2018).

Many leaders either lack the necessary AI expertise or are unaware of AI transformation, leading to a limited understanding of the technology's potential value and benefits, or having unrealistic expectations for AI technology (Sun & Medaglia, 2019). Consequently, organizations may overestimate their AI capabilities or struggle to bridge the gap between their current and required AI capabilities, hindering AI adoption (Chatterjee, 2021).

Talent scarcity and skill gaps are key strategic issues for most companies in the AI landscape (Hansen & Bøgh, 2021). Many practitioners lack the knowledge of the capabilities and fundamental processes necessary for businesses to realize AI's potential and are unable to address the human resource challenges associated with promoting AI (Tambe et al., 2019). When employees lack the necessary AI knowledge, there are limited opportunities for them to receive training and develop the skills required for AI applications. Therefore, it is crucial to consider how SMEs, particularly small businesses, can attract and retain skilled workers (Davenport & Ronanki, 2018).

Conclusion

The presence of artificial intelligence is increasingly prominent across various industries. Research primarily focuses on the positive and negative impacts of AI tools on journalistic practices. This study specifically examines the challenges that may impede the integration of AI tools in newsrooms. A review of existing literature reveals two main aspects of these challenges. Firstly, there are challenges that journalists themselves face, including constraints on creativity, limited technological proficiency, potential job displacement, and ethical dilemmas. Secondly, there are challenges that media institutions encounter, such as financial constraints, inadequate technological infrastructure, insufficient human resources, and difficulties in managing big data. This study aims to help journalists and media organizations recognise the most significant challenges and requirements for integrating AI into journalistic processes.

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