

ARTIFICIAL INTELLIGENCE IN NEWSPAPER NEWSROOMS: A STUDY OF USES AND CONCERNS

Ammar RABAH

University of Oran 1 Ahmed ben Bella Algeria

ORCID iD : [0009-0007-2253-4504](https://orcid.org/0009-0007-2253-4504)

rabah_amar@yahoo.fr

Abstract: Artificial intelligence does not provide solutions to all the problems that journalists may encounter in their work, but like all new technologies and innovations when they are first used, they are attracted by two discourses, one for celebrants and the other for naysayers or fearful. A discourse that derives its legitimacy from daily experiences in newsrooms, as these experiences have confirmed that smart algorithms can help journalists in many tasks such as identifying important topics, highlighting some angles of events that may require press coverage, as well as automating some routine tasks. This enables journalists to devote themselves to other tasks that require a human touch and human creativity. In addition, it can make content available on various digital platforms and increase the number of readers. However, the use of these algorithms may raise some issues related to the breach of individual privacy, the exploitation of personal data, and the generation of biased content and false information. This necessitates that media institutions employ artificial intelligence tools cautiously and adopt strategies that involve everyone in their development, based on qualifying journalists and dispelling these concerns.

Keywords: artificial intelligence; algorithms; big data; newsrooms; journalistic practice;

L'INTELLIGENCE ARTIFICIELLE DANS LES SALLES DE REDACTION DES JOURNAUX : UNE ETUDE DES USAGERS ET SES CRAINTES

Résumé : L'intelligence artificielle ne peut pas résoudre tous les problèmes auxquels les journalistes peuvent être confrontés dans l'exercice de leur profession. Elle fait l'objet, comme tous les nouveaux techniques et innovations, de deux discours. L'un met en exergue ses dangers ; l'autre célèbre ses éventuels avantages en se référant aux expériences quotidiennes dans les salles de rédaction qui ont confirmé que les algorithmes intelligents peuvent aider les journalistes à la réalisation de nombreuses tâches routinières : Identifier les sujets importants, mettre en relief certains angles d'événements médiatiques, ainsi qu'automatiser certaines tâches quotidiennes, cela permet aux journalistes de consacrer leurs efforts à d'autres tâches qui exigent réflexion et créativité humaine. L'intelligence artificielle peut aussi rendre le contenu journalistique disponible sur diverses plateformes numériques, et optimiser ainsi le nombre de lecteurs. Cependant, l'utilisation de ces algorithmes peut poser certains problèmes tels que : l'atteinte à la vie privée, l'usage des données personnelles à des fins commerciaux et autres ainsi que la diffusion de contenus biaisés et de « fake news ». C'est pour cette raison que les institutions journalistiques sont appelées à utiliser les outils d'intelligence artificielle avec soin et clairvoyance et à adopter des stratégies qui permettent à tous les membres de la salle de rédaction de tirer profit de ses avantages selon les compétences de chacun et de surpasser les craintes de son usage.

Mots-clés : intelligence artificielle ; algorithme ; Big data ; salle de rédaction ; pratique journalistique.

Introduction

The history of journalism constitutes a series of successive stages of changes and developments due to the dynamism that society may experience as a result of the social, economic and technological changes. The integration of artificial intelligence into newsrooms is part of the developments taking place in the field of journalism, and more particularly to the intrusion of technology into every aspect of journalistic practices. These technologies continue to surprise us with new applications and tools, leaving people sometimes unable to keep up with or control. Soon the journalist learns about an application and does his best to control it and employ it in his daily professional practices until he realizes that he has missed many other applications, which puts him in a constant race against time to pursue these digital applications. Those who follow the history of journalism acknowledge that each of these successive and often overlapping eras is characterized by a forced drift behind the tide of innovations. Since the last decade of the last century, journalism has witnessed fundamental changes associated with the Web era, and the launch of copies and websites on the Internet, along with the accompanying technical requirements to enhance the work of journalists and improve the professional efficiency of newsrooms in light of the crisis experienced by the press at the time which was related to the decline in advertising revenues. Then came the Web 2.0 stage where press institutions were obliged to share their information power with their audiences by employing the dimensions of interactivity to improve media content and provide an updated journalistic service that responds to the desires and tastes of the audience in light of the intensification of competition and the emergence of newcomers, electronic journalism sites and alternative media; and today, we are witnessing the beginnings of the artificial intelligence revolution that has shaken some of the habits entrenched in the editorial halls of the most prestigious journalistic institutions. From this perspective, the study of integrating technical innovations into journalistic professional life, most notably artificial intelligence today, gains great importance within the framework of what is described as the paradigm of journalistic change, a change that has become the permanent feature of the field of journalism. Editorial halls have become crowded with applications and technical tools, especially artificial intelligence software and algorithms, which have enabled journalists to collect information, process it, and verify its reliability and credibility with great speed and low cost; then produce it according to various journalistic templates and media; and finally distribute it across numerous digital platforms.

This prompts us to ask the following question: **What do we mean by artificial intelligence and how is it employed in the newsrooms.**

Study Questions

1. What is meant by artificial intelligence?
2. How has journalistic practice been supported by AI tools and algorithms?
What are the areas of employing AI in newsrooms?

Objectives of the Study:

This research paper aims to achieve a number of objectives, perhaps the most important of which are: defining the concept of artificial intelligence and its network of related concepts; monitoring the most important artificial intelligence tools and their areas of use in journalistic practice inside the newsrooms and their impact on the journalistic work environment.

1. Study Methodology

This study is part of the descriptive studies that use the descriptive and analytical approach to understand the phenomenon of using artificial intelligence algorithms by journalists to perform their media tasks. Drawing from Western and Arab academic research heritage about the phenomenon, as well as some pioneering experiences of some media institutions, especially Western ones, the researcher outlined the areas of employing artificial intelligence in journalistic work and the tools used in newsrooms by journalists.

2. Conceptual Introduction

The topic of artificial intelligence imposed itself in the academic field and gained the attention of many researchers worldwide as a phenomenon that has infiltrated all aspects of life and dominated applications and tools for digitizing and computerizing economic, educational, industrial, social, and even media activities. This necessitates the researcher who wants to delve into this phenomenon to familiarize themselves with some basic concepts. Therefore, it was necessary for us to allocate a conceptual introduction to it through which we summarize a set of concepts and terms related to the field of artificial intelligence.

2.1 Algorithms

The word “algorithms” is derived from the name of the Arab mathematician Abu Ja’far Muhammad ibn Musa al-Khwarizmi, known as Al-Khwarizmi (780-850 AD). It means a series of steps to be followed to perform a specific task. It is a systematic procedural way of working, consisting of a series of ordered instructions to solve a problem in mathematics or any problem you face in daily life within a limited time and through a limited number of steps. It reflects a methodical way of resolving a particular issue in an executable manner without ambiguity. In computer science, an algorithm is a sequence of operations defined for the computer to execute in a certain order. It can also be described as a software structure with an imperative nature. The set of operations in it determines the steps for processing the input data to obtain results of any output. An algorithm can be translated into a language that the computer understands using programming code, which is a code written using one of the programming languages that the computer understands, such as C, C++, Java, Python.

2.2 Big Data

The concept of big data has evolved in parallel with the exponential growth of digital data, which has become possible thanks to the widespread use of the internet and the democratization of its use. Alongside the emergence of social web applications or what is referred to in internet literature as Web 2.0 at the beginning of the current millennium, and the accompanying rise of social networks and media that have seen significant usage by internet users, including Facebook, Platform X - formerly Twitter - Instagram, and YouTube.

Big Data generally refers to a quantity of data that can take various forms and is generated in multiple fields (Stone, 2014). The American institute Gartner summarized big data in the three Vs “**Volume, Variety, and Velocity**” (Laney, 2001), meaning the speed of generating this data, its diversity, and the massive quantity generated. Some add a fourth V, **Veracity**, to indicate reliability, thereby emphasizing software solutions for processing incorrect information and ensuring its trustworthiness. These data are key to today’s transformation in managing various institutions. However, benefiting from them requires developing technical and programmatic solutions that capture, aggregate, sift, verify, analyze, categorize, index, and protect the data. In this regard, artificial intelligence algorithms constitute one of the most prominent solutions to this challenge. The data vary from routine data produced by various institutions as part of their daily work to data generated by humans through the use of computers and smartphones when digitizing documents, or using email, or sharing various content such as images, videos, and texts on social media platforms, in addition to the data produced by various machines such as surveillance cameras, sensors, and satellites.

2.3 Machine Learning

Machine learning is a branch of computer science that aims to develop algorithms designed to simulate human intelligence by learning from the surrounding environment. These are computer systems that can learn from available data and improve based on previous performance experiences without direct and explicit programming. The goal is to teach the machine to learn to gain some autonomy in making certain decisions and behaviors. The challenge is to make computers work independently without pre-programming to make this particular decision or that. The feeding of these algorithms is not done through the code, i.e., the program's cipher, but through the massive data packets that the algorithm uses to learn by linking them together and extracting relationships and models.

2.4 Artificial Intelligence

Artificial intelligence linguistically consists of two words: intelligence, which is an attribute of the mind that refers to a set of capabilities such as knowledge and understanding, and the second word of the term is artificial, which means the opposite of natural, i.e., everything made by humans. Artificial intelligence refers to one of the cognitive specialties under the field of computer science and is recent in origin, dating back to the use of the term artificial intelligence for the first time by mathematician John McCarthy from the Massachusetts Institute of Technology in 1955 (Latar,2018). He simply defined it as the science of engineering smart machines. It is the same definition that Louppe goes to by saying, "Artificial intelligence is often defined as the science and engineering that aims to make machines smart or even make them think and act like humans." (Louppe, 2017).

According to the European Commission, artificial intelligence is a technology that allows the machine to deal with the environment, analyze its data, and benefit from it. Using this information, it is possible to anticipate the future and make the right decision to achieve the specified goal. Moreover, these systems improve their performance based on the information they collect and the data they analyze.

Researchers Osama El Sayed Abdel Aziz and Marwa Redwan Ibrahim (2022, 1908), based on a series of studies, both Arab and foreign, on the subject of artificial intelligence and its applications and employment in various life fields and the field of media in particular, between 2015 and February 2022, cited the following definition of artificial intelligence: "Artificial intelligence is defined as the process of simulating human mental, cognitive, and sensory abilities through computer systems. It is an attempt to imitate and simulate several human abilities, most importantly the ability to learn, absorb knowledge, represent it, recall it, analyze language, fully perceive sounds, images, and videos, solve problems, create, and interact socially, among other human abilities, and then attempt to simulate them through complex computer systems based on the exceptional development in the manufacture of processors and computers."

This definition indicates the necessity of three main qualities: the ability to learn, i.e., acquiring information and setting rules for using this information; the ability to collect and analyze this data and information and create relationships between them, which assisted by the increasing spread of big data (Data Big); making decisions based on the process of analyzing information, not just an algorithm that achieves a specific goal. What distinguishes artificial intelligence algorithms from their predecessors, i.e., regular algorithms, is that the latter are restricted to executing a series of instructions and procedures embedded in the program. Starting from the same inputs of the computer program, it gives the same results when executed. Unlike smart algorithms that can learn from big data and continuously improve results based on data analysis and relationship extraction, making the results change or rather improve over time. Therefore, we can say

that artificial intelligence refers to a set of theories and applied techniques to develop computer applications and programs that allow machines to simulate human intelligence, including creating cognitive processes similar to those in humans, especially learning, problem solving, and decision-making. Through machine learning technology, algorithms learn a large number of scenarios not pre-programmed from a quantity of data. Over time, the computer's performance in performing specific tasks improves by extracting data and information, which has become possible through the aggregation of big data.

3. Types of Artificial Intelligence (AI)

Researchers and enthusiasts classify artificial intelligence into three main types: *Super intelligent artificial intelligence (AI)*: This is a hypothetical state in the future where technology surpasses human intelligence. While it exists predominantly in science fiction, scientists discuss steps to avoid scenarios where AI exceeds the “technological singularity” threshold and turns against human interests. *General artificial intelligence (AI) (AGI)*: Refers to information technology systems with intelligence similar to humans. AGI involves creating machines capable of performing all cognitive tasks that a human mind can handle, including thinking, learning, and problem solving in complex and dynamic environments. *Narrow artificial intelligence (AI)*: Associated with specific applications and smart systems that handle routine, repetitive tasks. (أحمد الشوري ;150)

4. Applications of Artificial Intelligence (AI) in Newsrooms:

The use of artificial intelligence aims to enhance user experiences, diversify media platforms, and tailor content based on individual interests and needs. Key features of AI in newsrooms include: **efficient Data Collection and Analysis**: AI enables rapid data gathering and analysis, leading to information that is more accurate. **Improved Content Creation**: AI can generate articles with fewer errors in the outputs, alongside cost reduction. (Westlund & Lewis, 2015).

The essence of journalistic work, regardless of the media through which the media content manifests (written, audio, visual, or electronic), lies in the trilogy of collecting and analyzing information, producing it in a format that can be broadcast and published, a process that is referred to as news production, followed by its distribution across various broadcasting platforms. AI tools now play a significant role in all the three stages of the process. This was stated in the Journalism AI report (Beckett, 2019), which observed through a field investigation that touched seventy-one (71) newspaper institutions from thirty-two (32) countries, the various uses of artificial intelligence in newsrooms, and classified them in the three aforementioned fields, namely: information collection and analysis, news production, and distribution. In light of this, we will adopt this logical classification to provide some examples of journalistic institutions that use artificial intelligence tools in their editorial rooms.

5. Information Gathering and Analysis:

Artificial intelligence tools at this stage allow journalists and editors to monitor developments in real-time by staying vigilant and following events, which help them identify news sources, track evolution of events, generate the idea for the journalistic story, extract necessary information, and establish relationships between them and process them to form the raw material for crafting and editing news stories. These AI-powered tools can help journalists by making it easier for them to gather news and uncover stories hidden in huge amounts of data. For instance, tools like, “Network of Searchable Leaks,” abbreviated, as new/s/leak is a free tool that combines language recognition technology and visual representation to help journalists scrutinize large amounts of textual data and identify relevant elements and unexpected links more

effectively. Similarly, tools like NewsWhip can predict which stories and topics will gain increased attention in the coming hours by tracking the interests of the audience and the media.

The media organization Atlanta Journal-Constitution developed an algorithm that uses the principle of machine learning. This algorithm filtered and classified over 100,000 medical files containing private information about doctors allowing them to select 6,000 files for manual analysis by some of the institution's journalists who were able to identify 450 cases, where doctors had previously faced ethical inquiries by professional medical boards or had been persecuted due to inappropriate behavior, including sexual misconduct towards patients. As a result, half of these doctors were dismissed. (Lever, 2019).

Another example that highlights the use of artificial intelligence in newsgathering comes from Mexico. Given the rising phenomenon of violence, killings and threats in the country, journalists face significant risks when covering such events. To protect their lives, many journalists often avoid reporting on these incidents, especially considering the high number of victims among media professionals. This phenomenon has been termed the "Law of Silence," where journalists refrain from addressing certain events out of fear of assassination.

In an attempt to measure the impact of this law on journalism, "El Universal" foundation, in partnership with the Google News Initiative, one of Google's services to help publishers and journalists combat misinformation and fake news, had to resort to using artificial intelligence and machine learning to quantify media coverage and visually represent it according to geographical regions, and then analyze it in comparison with data from the official records of government security services investigations. If there is any recorded incident in the records that did not receive media coverage, this indicates that the "law of silence" prevailed. To overcome the problem of the absence of journalistic articles in case of lack of press coverage for some incidents, they used the wide range of local news (2400 municipalities in Mexico) and national news data from Google Actualities. The results revealed fluctuations in the number of news articles, and sometimes their complete absence coinciding with events like the arrival of new political leaders to power or the election of new governments, as well as cases involving the killing or arrest of one of the drug lords. These results later became the subject of an investigative journalism (Roman, 2019). Although marketed as a tool for researchers, "Audemic" can also assist journalists and content creators in saving valuable time in the process of gathering information and report preparation. Application users can upload any newspaper article, of which the software then generates an audio version. Additionally, "Audemic" provides users with an overview of the article's topic, and allows them to explore specific topics, listen to the content, highlight key information, and take notes easily. All of this enhances research efficiency.

6. Artificial Intelligence Mechanisms for News Production

Artificial intelligence algorithms for news production are called generative artificial intelligence tools, and their tasks vary from producing various journalistic content in different media (texts, audio clips, videos, maps, graphics, and visual representation icons, as in data journalism) to reproducing and translating these articles into other language. In the context of smart automation of translation tasks, the Canadian Press agency utilizes the "Ultrad" application (St-Germain & White, 2021) to translate updates coming from its English-speaking counterpart, the Canadian Press, or the Associated Press. Developed in 2018, "Ultrad" has evolved from basic machine translation to smart translation enhanced with machine learning technologies, which

enabled the application to improve accuracy and avoid errors over time with repeated use.

As for the tools for generating journalistic articles, the Swedish company “United Robots” developed an application for the Swedish institution «Ost Media», which created a website in 2016 with the aim of covering all football championship matches from the first to the sixth division in the province of Ostergotland (Diakopoulos, 2019). Using this technology, “Ost Media” was able to generate two-thirds of the articles published on the site out of approximately 850 articles per month. To enrich the articles with live testimonials from the coaches, the institution developed another application called “Q&A,” which allows for virtual interviews with the coaches by sending some questions and incorporating their answers into the article as testimonials.

Regarding the generation of audio-visual content, we mention the tool developed by Reuters in partnership with a French startup called “Synthesia,” which allows for the production of videos showing a presenter summarizing the events of the English Premier League matches (Chandler, 2020). This application initially produces textual summaries of the matches and combines them with video clips featuring one of the human presenters pronouncing the names of all the players and commenting on various game or play situations, forming a database from which the artificial intelligence application draws the necessary inputs to generate video summaries of the matches. The leading algorithms in word synthesis and deep learning have allowed for the emergence of the robotic news broadcaster who presents news bulletins, manages dialogues, and animates meetings. Among the examples of this is what was presented by the official Chinese news agency “Xinhua” in 2018 and the Russian news channel “Russia 24,” where the robotic broadcaster Alexei was introduced to mimic and simulate the face of one of the company’s founders, whose real name is Alexei Yuzakov (محمد الغباري، باسل يسري، عبد الفتاح عثمان, 2023: 638).

Some media institutions have also developed the robot correspondent to cover events in some dangerous areas such as hotspots of tension and conflicts, war zones, and when volcanoes, earthquakes, and natural disasters occur. For example, CNN provided news coverage of areas affected by the COVID-19 pandemic. These robots take the form of a camera equipped with facial recognition algorithms and scanning places.

One of the smart applications that was developed at the beginning of the last decade and which was widely used under several names in many Western editorial halls is called Tobi and its task is the automatic generation of texts (Laver, 2019). In November 2018, the Tamedia Foundation in Switzerland was able, through this application to generate 40,000 newspaper articles about the elections in Switzerland in just 5 minutes, as it was able to write about the results of the country’s 2,222 municipalities in German and French.

The same algorithm, under the name Heliograph, is used by the Washington Post, which enabled it to cover more than 500 election races between the periods of 2014 and 2019. Regarding this application, one of the newspaper’s officials, (Jerymy Gillbert & Lever, 2019), explains that robots can provide results faster and update articles allowing journalists to focus on other tasks. He adds that the surprising thing is that many journalists came and said, “We produce this article every week, so can it be automated, that is, generated automatically?”. These robots may be specialized in covering specific events, such as the Quakebot for the Los Angeles Time newspaper, which specializes in covering natural disasters and quickly writes articles about earthquakes in the region.

7. News Distributing

By the process of distributing news, we mean the way in which media content is published and broadcast in the era of multiple digital platforms to be at the audience’s

accessibility or fingertips. These platforms or channels vary from the websites of press organizations to their pages on networks and social media, in addition to digital billboards and mobile phones. It is a process with a marketing dimension, given the information overload we live and the problem of visibility that websites face due to the fragmentation of the audience and the diversity of their patterns of consuming information and method of reception, which makes the use of artificial intelligence applications one of the effective solutions that journalistic institutions resort to.

One of the most important examples of using artificial intelligence tools in news distribution is the Canadian daily newspaper “The Globe and Mail” and their robot, “Sophi”, which has won numerous awards. Its role goes beyond merely publishing articles on the website; it aims to enhance some of the published content in an attempt to highlight them and put them at the forefront. Every 10 minutes, the application updates website pages according to the probabilities of profitability and revenue resulting from the popularity interest of different topics. The tool also decides whether this article or another should be included in the subscription version or remain freely accessible and the content available in return. This approach allows journalists, as the editor-in-chief stated, to focus on improving the quality of the content rather than worrying about how to place the articles online (Turvill, 2021). After implementing this robot, “The Globe and Mail” observed a 51% increase in subscribers who chose the newspaper subscription format after visiting the website. By April 2021, they had 170,000 subscribers making subscription revenue account for 70% of their total income, surpassing advertising revenue (Turvill, 2021).

Another example of news distribution involves “Yle” the Finnish public broadcasting company. They designed a virtual assistant named “Voitto” (Koponen, 2018) powered by intelligent algorithms. “Voitto” sends voice notifications to user’s phone, who in turn can respond vocally. The algorithms allow programming content delivery times of broadcasting according to the user’s desire. For instance in one case, someone answered the notification saying that he prefers listening while exercising outdoor. Thus, as soon as the user went out and started running, ‘Voitto’ automatically began to provide news in audio format. This application works within the content push strategy. This Push strategy analyzes user behavior, creating personalized profile based on consumption habits, interests and preferences. “Yle” integrated “Voitto” into an aggregator called “NewsWatch”, offering personalized services to users. This algorithm can further improve its performance through machine learning enhancements.

Additionally, artificial intelligence (AI) tools can play a role in managing virtual groups by supervising the management of discussions and comments, which are considered a vital means for engaging readers and enhancing forms of interaction between followers of the newspaper organization websites and its pages on social networks. These tools encourage content sharing and participation, aligning with marketing strategies. Furthermore, these tools can, through machine learning technology, classify articles that violate legal or ethical standards, preventing them from publication, and notifying those in charge of the press institution about them. News organizations also employ AI techniques to collect browsing data, analyze audience behavior, and create databases. These data serve as the foundation for targeted marketing campaigns and advertising efforts.

8. Concerns Regarding the Use of Artificial Intelligence in Newsrooms:

When the French group Ebra announced in October 2023 its intention to experiment with ChatGPT in newsrooms by allowing editors from both ‘l’Est Républicain’ and ‘Vosges Matin’ to use it for reviewing, correcting, and proofreading articles, the National syndicate of Journalists immediately rushed to express its concern and

opposition, emphasizing that “the union will not hand over the keys of information to computers, and there must be consensus on usage precautions and non-negotiable boundaries” (Vulliet, 2023). This incident reflects the ongoing apprehensions that still surround the integration of artificial intelligence in newsrooms. At the forefront of these concerns lies, the fear associated with technology adoption and task automation across various economic and industrial domains. More precisely, it involves delegating certain tasks to machines, resulting in a reduction of human involvement. Roles traditionally performed by journalists, including routine research, information gathering, and even generating routine articles, may eventually be taken over by AI systems. Consequently, some journalists could be dismissed, especially given the financial crises that many media organizations are experiencing due to intense competition and the dominance of the free economic model for media content distribution.

In Ohio State, the local newspaper “Richland Source” uses artificial intelligence to report on sports results in elementary schools across the state. The controversial program they employ is “Lede.AI”, developed in-house by the newspaper itself. The same service was used by ‘Gannett newspaper’ chain to write high school sports reports. However, the newspaper chain was forced to abandon “Lede.AI” after receiving a wave of ridicule on social media due to several major errors in articles of at least one of its newspapers including repetition, lack of basic details, in addition to the use of inappropriate and strange language that generally appeared as if it was written by a computer without any real knowledge of the sport. This is what prompted Jay Allred, the General Manager of “Lede.AI”, to express regret, acknowledging the flaws but also emphasizing, “Content automation is part of the future for local newsrooms... Our service provides readers and communities with information they couldn’t otherwise obtain, freeing up journalists and editors so that they can engage in doing real journalism that impact the communities they serve” (Duffy, 2023).

However, to address this dilemma, some institutions hired individuals to review and correct the AI-generated reports. Yet, one organization stopped working on the service after noticing the many errors in the automatically generated articles and the human cost of re-correcting and proofreading. Recognizing the cost of human intervention required for verification and accuracy led some to believe that machine learning algorithms could become a perfect tool for generating fake news, making it even more challenging to verify the credibility and reliability of news (Beckett, 2019:57). Furthermore, these reports may lack depth and ignore the context, potentially missing the full picture of a news story. This issue becomes more pronounced when dealing with automated translations, which might strip reports off their historical, temporal, and even cultural contexts when applied to different societies. All of this may affect the essential role of journalism in providing accurate information, combating misinformation and disinformation, with the aim of enhancing public debate and consolidating democratic values.

Added to this is the problem of intellectual property ownership of articles and bearing legal responsibility for content that violates laws and ethics, such as violating public morals and even cases of slander or defamation, which require legal proceedings. So, who is pursued in these cases, the journalist, the editor-in-chief, or the algorithm developers? As for the collection of users’ personal data, the recurring issue arises once again, which pertains to the breach of individual privacy spaces and the use of personal data within the huge data packages available to artificial intelligence algorithms. It remains unclear whether the public consents to the collection and sharing of such data for marketing purposes. Additionally, for content personalization algorithms to function, they must formulate assumptions about audiences and stakeholders, which can be biased or inaccurate. Content personalization strategies based on browsing behavior and user data

can trap individual users in a single viewpoint, represented by articles generated or selected based on AI recommendations. This can obscure other opinions and isolate individual users within their own thoughts, creating what is known as “filter bubbles.” This effect can extend beyond the user and influence the editorial line of newspapers if algorithm-generated content dominates, leading to a homogenization of content across media institutions. This contrasts with studies suggesting that online news consumers may access a diverse range of news. (Vaccari, 2018).

There is a fear in newsrooms about adopting artificial intelligence tools. These fears may be fueled by the cultural brakes that always accompany the process of adopting new innovations, and are mainly related to the fear of losing some privileges, roles, and even the entire profession, changing work habits, and getting out of the comfort zone (work routine). On the other hand, it is fueled by the fact that it is linked to a future that often appears like a dark tunnel due to concerns related to the future of the human-machine relationship in light of the development of artificial intelligence algorithms and tools.

The integration of these algorithms also requires developing clear-cut strategies that everyone participates in. However, the lack of cognitive competencies, skills, specialized human resources, and high-level training hinders this transition towards AI-dependent journalistic institutions; which creates a foggy and sometimes pessimistic picture for some. Many researchers are trying to dispel these fears, believing they are legitimate concerns that always accompany transformation processes, especially those involving new technologies. Meredith Broussard, a data journalism professor at New York University, does not see any immediate danger in AI. Currently, algorithms handle tedious tasks, and she adds that although some jobs will be automated, she is not worried about the apocalypse that robots may cause in newsrooms (Lever, 2019).

Conclusion

Artificial intelligence technologies have transformed journalistic practice and affected all aspects of journalism, from journalistic products and the method of their distribution to the work of journalists, and their relationship with the public. However, this impact on journalism as a profession and on journalistic work is still in its early stages, dominated by contradictory views and inconsistent opinions. The study notes the disparity in using and benefiting from AI tools in the newsrooms of leading media institutions. These tools affect all stages of the journalistic process, from collecting and processing information to ensuring its credibility and extracting relationships between them, to providing it as raw material on which smart algorithms rely to generate content in various media (text, audio, image, video) and in different journalistic formats (news, reports). They are also tasked with distributing this content based on marketing strategies aimed at maximizing engagement and providing personalized content constructed from individual interests and tastes.

The reasons behind adopting these tools can be classified and ranked in three points according to their importance: performing journalistic tasks more effectively, providing more accurate journalistic content responsive to audience aspirations, and economic goals where business intelligence improves profitability and makes economic models more efficient. However, the adoption of artificial intelligence in newsrooms is still faced by many doubts about the future of the profession and is accompanied by a set of fears, perhaps the most prominent of which is the fear of losing job positions or certain tasks already attributed to robots, in addition to ethical and legal considerations related to biased content and errors in journalistic coverage. Adding to that, the violation of individual privacy and the exploitation of personal data, as well as the problem of bearing

legal responsibility in cases of content that requires legal follow-up or conflicts with ethics and public morals.

Dispelling these fears and neutralizing the cultural brakes that may hinder the process of adopting artificial intelligence tools requires rehabilitating and training journalists on these tools, which qualifies them to have sufficient technological competence necessary to contribute to the debate about ethical aspects and editorial policies in the era of artificial intelligence journalism; so that these issues do not remain limited to technicians and software developers. It also qualifies them to contribute effectively to developing strategies that enable the smooth integration of artificial intelligence tools into newsrooms. Furthermore, the development of these smart applications and algorithms goes beyond being a purely technical task limited to software developers. Rather, there must be a partnership between specialized university researchers, journalists, and legal professionals to develop tools that serve the core function of journalism, which is to provide correct information and news, and to enrich public debate to enhance Democracy. Last but not least, the optimal exploitation of artificial intelligence tools by avoiding being swept away by overly optimistic trends in employing artificial intelligence and advancing steadily according to a balance between, on one hand, financial benefits, time savings, and tool effectiveness, and on the other hand, challenges related to inaccurate information, biased content, and personal data protection. In general, our research recommends more collaboration between media outlets, universities, and startups to facilitate the integration of new technologies and assess their impacts, as well as to exchange knowledge, expertise, and experiences. Alongside developing uses of artificial intelligence through an approach, that respects values and human rights while enhancing media work ethics. As artificial intelligence employment is no longer exclusive to any sector, it has become more urgent to prepare governmental policies regarding artificial intelligence, accompanied by a legal, legislative and regulatory arsenal to regulate its various and diverse uses.

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