The university training of journalists in the context of Artificial Intelligence: a systematic review

La formación universitaria de periodistas en el contexto de la Inteligencia Artificial: una revisión sistematizada

Rosmir Sivira Camacaro. Journalist with over 10 years of experience and a Master's in Applied Linguistics, specializing in content generation, communications management, and discourse analysis. I have a research focus on discursive interaction. I worked for 9 years at *El Impulso*, the oldest newspaper in Venezuela, as a journalist and editor for Tourism and Gastronomy, later as a journalist for Economy and Business. I also participated in foundations supporting rural tourism and wrote for specialized magazines. In Chile, I have worked as a reporter for media outlets and in institutional journalism for companies in the education sector. Additionally, I have led national digital social campaigns with funding from the Undersecretary of Social Security´s Educational Funds in Chile. Currently, I serve as Secretary of Studies and an academic in the Journalism program at the Universidad Autónoma de Chile, Talca campus.
Autonomous University of Chile, Chile
rosmir.sivira@uautonoma.cl
ORCID: 0000-0002-5266-7371

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Abstract:

Artificial Intelligence (AI) is gaining ground in the communications industry, taking over tasks traditionally performed by journalists. However, the application of information technology tools requires specific competencies. The aim of this study is to analyze the training approaches for journalism in higher education institutions concerning the development of skills related to Artificial Intelligence and automated journalism. A systematic review of 107 scientific articles was conducted. Among the findings, it was noted that universities do not specifically and deeply address content related to AI, and educators reported lacking the competencies to teach courses related to the application of AI in journalism, knowledge that is already demanded in the job market. It is concluded that there are significant deficiencies in university training in AI for journalists,

Resumen:

La Inteligencia Artificial (IA) gana terreno en la industria de las comunicaciones y se hace cargo de labores que habitualmente realizan los periodistas. Sin embargo, la aplicación de herramientas de la tecnología de la información exige competencias específicas. El objetivo del presente estudio es analizar los planteamientos de formación periodística en instituciones de educación superior, para el desarrollo de competencias relacionadas con la Inteligencia Artificial y el periodismo automatizado. Para ello se realizó la revisión sistematizada de 107 artículos científicos. Entre los hallazgos, se destacó que las universidades no abordan de manera específica y profunda contenidos sobre IA, sumado a que los docentes declaran no contar con competencias para impartir asignaturas afines a la aplicación de la IA en periodismo, conocimiento que ya se exige en el mercado del trabajo. Se concluye que existen importantes deficiencias en la

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highlighting the need to update study programs and incorporate interdisciplinary approaches. It is suggested to train educators and promote collaboration with technology experts to prepare future journalists for the ethical and critical use of automated tools.

Keywords:

Artificial Intelligence; automated journalism; journalistic training; profile and work routines.

formación universitaria en IA para periodistas, resaltando la necesidad de actualizar los programas de estudio e incorporar enfoques interdisciplinarios. Se sugiere capacitar a docentes y promover la colaboración con expertos en tecnología para preparar a los futuros periodistas en el uso ético y crítico de herramientas automatizadas.

Palabras clave:

Inteligencia artificial; periodismo automatizado; formación periodística; perfil y rutinas de trabajo.

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1. Introduction

Artificial Intelligence (AI) is increasingly being implemented in journalism, leading to the development of a profitable industry in the communications sector (Sánchez and Ruiz, 2020). However, the widespread use of these technological tools, along with their greater accessibility, has generated uncertainty among journalism professionals due to a general lack of understanding about their applications and consequences. This highlights the necessity of learning to use AI as a means of evolving, adapting, and surviving (del Águila, 2023).

One recognized application area is the automation of news writing, also known as automated journalism (Graefe, 2016). This phenomenon is spreading within the profession, alongside systems for topic detection, content verification, source checking, video analysis, among others (Cohen et al., 2011; García-Marín, 2022). The various uses have sparked a debate about whether tools like ChatGPT will replace journalists (Terol, 2023).

The introduction of new logics driven by technological evolution, particularly AI, is changing the workplace and its dynamics, necessitating changes in education at all levels to create new profiles that go beyond mere digitalization (Bocîi and Ursua, 2023).

In the specific case of journalism, journalists in media newsrooms are reshaping work organization, reflecting a change in how they confront the profession and machines (Parratt-Fernández et al., 2021). However, the authors argue that as a profession that requires intellectual, creative, and emotional skills, journalism faces various challenges in adapting to Artificial Intelligence (Meso et al., 2023).

It is essential for both current practitioners and journalism students to acquire knowledge relevant to the profession, along with the tools and skills to work alongside AI (Salazar, 2018). This context demands a renewal of university educational models to teach digital tools and develop technological environments aligned with the job market (Ocaña-Fernández et al., 2019).

The aim of this research is to analyze the training approaches in journalism within higher education institutions and their relationship with the competencies demanded by the job market in the context of artificial intelligence and automated journalism, based on a systematic review of recent scientific literature.

It may be thought that this topic is not extensively covered in universities and specialized journalism programs, given its recent rise and the complexities of adapting curricula to continually evolving themes. However, there is scientific literature

demonstrating that the journalistic profile demanded by the job market has evolved in response to changes brought about by information technologies.

2. Method

This study follows a methodological design of systematic literature review with a descriptive approach to scientific texts regarding the implementation of content on Artificial Intelligence in journalist training for the development of competencies in automated journalism.

Systematic review was used as the main methodology due to its ability to integrate and synthesize previous studies, identifying patterns, gaps, and trends (Manchado et al., 2009) in the relationship between Artificial Intelligence and journalist training. This approach provides a solid foundation for critical reflection on the competencies required in automated journalism and how these are addressed in journalism training programs.

Thus, this approach allows for the identification of trends and shortcomings in the training of competencies related to AI in the university context, providing a more comprehensive perspective. Established protocols were followed for the selection of relevant articles, based on thematic and temporal criteria (Begoña et al., 2018).

The selection of articles was conducted in several stages. First, studies were identified through academic databases (Scielo, Dialnet, Google Scholar), using the descriptors (Table 1) "artificial intelligence," "journalistic training," and "automated journalism".

Table 1. Descriptors and Search Criteria

Search	Descriptor 1	Descriptor 2	Search Criteria
1	Journalist Profile	Artificial Intelligence	Automated Journalism and Artificial Intelligence.
2	Journalistic Training	Artificial Intelligence	Journalistic Training and Artificial Intelligence.
3	Journalism Program	Artificial Intelligence	Journalism Program and +Artificial Intelligence.

Source: Sivira, R. (2024)

The inclusion criteria were: 1) articles in Spanish published between January 2022 and December 2023, 2) studies that explicitly address the relationship between AI and journalist training, and 3) open access to ensure the replicability of the study and that the results can be contrasted and reviewed. Articles were excluded if they: 1) did not mention the key descriptors, 2) focused on AI applied to social media or marketing rather than journalism, and 3) were published prior to the defined search period.

It is worth noting that the established timeframe for reviewing published research articles is due to the exponential growth of AI in journalism by that date and the emergence of generative tools like ChatGPT 4 (Lopezosa et al., 2023) and other Natural Language Processing (NLP) systems. Additionally, in the post-pandemic phase, between 2022 and 2023, efforts to adopt AI

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technologies intensified across various sectors, such as journalism and education (Álvarez and Biurrun, 2022; Migueláñez, 2022).

2.1. Population and Sample of the Scientific Literature

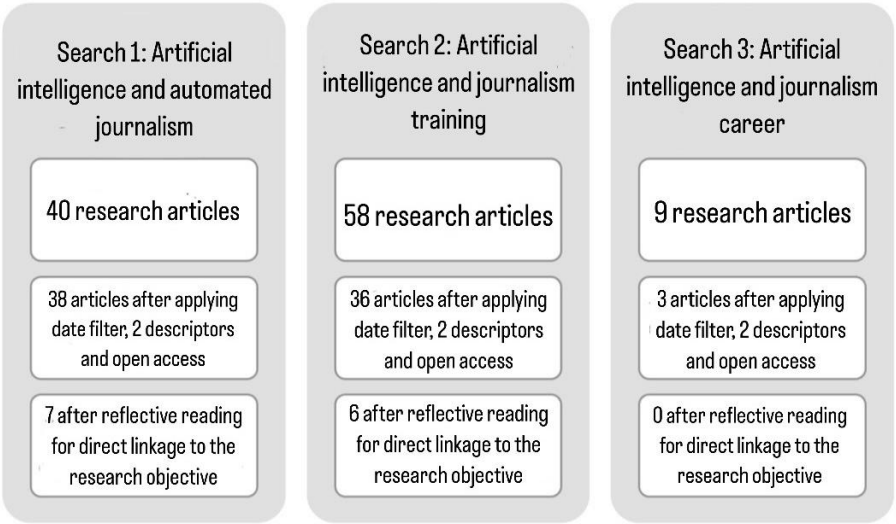
The total number of scientific articles considered in this review was 107 documents, extracted from databases and academic search engines, which were selected according to the predefined search criteria for the study.

After the initial selection, the articles underwent reflective reading and categorization based on their relevance to the research topic. A qualitative content analysis technique was employed to identify the key areas in which Artificial Intelligence has been integrated into journalism training programs.

The articles were evaluated across three main categories: 1) incorporation of AI into university curricula, 2) technological competencies required by journalism students, and 3) ethical and deontological implications of AI in journalism. These criteria facilitated a comparative analysis that highlighted common patterns and areas where training gaps still exist.

The initial number was reduced to 71 articles, which, based on a data extraction form designed for the research, were systematized according to their direct relevance to the study's objectives. From this, 13 scientific publications were selected as a sample for analysis and discussion (Figure 1).

Figure 1. Diagram of the Article Selection Process for Analysis



Source: Sivira, R. (2024)

To ensure the validity of the findings, a methodological triangulation strategy was applied, which included the review of previous studies and the comparison of results across different databases. Additionally, a double review by the author was conducted to ensure the consistency and quality of the conclusions. These measures provided a more accurate view of the state of AI training within the journalistic field.

2.2. Selected Articles for Analysis

Tables 2 and 3 present a summary of the 13 research articles selected and analyzed for this study, based on the previously mentioned search criteria and the objectives of the systematic review.

The bibliometric method was applied following the procedures outlined by authors such as Canavilhas and Giacomelli (2023), who indicate that this methodology enhances clarity in the literature review process in qualitative research. This encompasses everything from the development of the research question, conceptual framework, and construction of selection criteria to the selection of studies, evaluation of their quality, synthesis, and reporting of results.

For the content analysis, the main categories were coded: 1) integration of AI in university programs, 2) technological competencies taught, and 3) perceived impact on professional journalism routines. This provided a structured view of how AI training is addressed in educational institutions and in the scientific literature.

The preselection of articles was carried out under strict relevance criteria, ensuring that each study included was directly related to the central themes of the analysis: the incorporation of AI in journalistic training and the impact of automated journalism on educational programs. Only those that offered a rigorous and explicit treatment of how AI is being implemented or discussed in the field of journalism education were selected.

Care was taken to ensure that the sample was representative of different methodological approaches and geographical areas within the Spanish-speaking world.

Table 2. Selected Articles According to Search Criteria 1

N°	Author/s	Article	Year of publication	Objective	Methodology or Research Technique
1	Fieiras-Ceide, C., Vaz-Álvarez, M., & Túñez-López, M.	Strategies of Artificial Intelligence in European Public Broadcasting: Uses, Provisions, and Future Challenges.	2023	To analyze the presence of AI tools in public audiovisual corporations.	In-depth, semi-structured interviews with a convenience sample of 15 corporations from 12 countries (Germany, Belgium, Denmark, Spain, Finland, France, Great Britain, Netherlands, Ireland, Italy, Sweden, Switzerland, and members of the EBU).

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2	Lopezosa, C., Codina, L., & Ferran-Ferrer, N	Application of Artificial Intelligence in Journalism: ChatGPT and the Uses and Risks of an Emerging Technology.	2023a	To outline the current landscape of AI usage in newsrooms by providing an overview of applicable AI tools.	Analysis of benchmarking or performance comparison of AI tools applied to journalism. Conduct a "walk-through" experience or essay with ChatGPT, involving the participation of 12 journalists from various age groups and sectors.
3	Peña-Fernández, S., Meso Ayerdi, K., Larrondo Ureta, A., & Díaz Noci, J.	Without Journalists, There Is No Journalism: The Social Dimension of Generative Artificial. .Intelligence in the Media.	2023	To identify the main social and epistemological challenges posed by the adoption of generative AI in the media.	Systematic Review of Research on the Implementation of AI in the Media Since 2000.
4	Sandoval-Martín, T., & La-Rosa Barrolleta, L.	Research on the Quality of Automated News in International Scientific Production: Methodologies and Results.	2023	To identify the dominant methodologies concerning the quality of automated news.	Systematic Review of the Scientific Literature: Search for Articles on "Journalism" and "Artificial Intelligence" (N=670) from 2008—when data journalism emerged as we know it today—through 2022. Content analysis and comparison of formal, quantifiable, and methodological aspects.
5	Aramburú Moncada, L. G., López-Redondo, I., & López Hidalgo, A.	Artificial Intelligence in RTVE at the Service of Empty Spain: Project for Automated News Coverage for the 2023 Municipal Elections.	2023	To understand the functioning of the project proposed by RTVE and the application of Artificial Intelligence in this specific case, including benefits and negative effects, economic and technical viability, characteristics of the generated informational content, and the impact on the population.	Systematic Review of Existing Literature on the Subject. Open interviews with four key stakeholders from the companies involved.
6	Terol, T. M.	Mediatica Innovation: Applications of Artificial Intelligence in Journalism in Spain.	2023	To identify the various uses of Artificial Intelligence (AI) in the production routines of media organizations.	In-depth interviews with journalism professionals from RTVE, El País, and Newtral, along with a literature review.

7	Canavilhas, J., & Giacomelli, F.	Artificial Intelligence in Sports Journalism: Brazil and Portugal.	2023	To understand whether sports media in Brazil and Portugal use AI in their newsrooms (news production process) and to explore expectations regarding the use of these technologies.	Survey of media executives from both countries.

Source: Sivira, R. (2024)

Table 3. Selected Articles According to Search Criteria 2

N°	Author/s	Article	Year of publication	Objective	Methodology or research technique
1	Masip, P., López-García, X., Díaz Noci, J., Palomo, B., Salaverría, R., & Meso Ayerdi, K	Past, Present, and Future of University Education in Cyberjournalism: Methods and Trends.	2022	To understand the profile of education related to digital journalism in Spain.	Documentary review of the teaching programs for all subjects related to cyberjournalism (n = 119) published online by Spanish universities, along with a survey of their instructors (n = 51).
2	Fernández Torralvo, Nerea.	Between Lights and Shadows: Artificial Intelligence in Journalism and Its Professional, Ethical, and Social Challenges.	2023	To understand current attempts to implement AI technologies in the field of journalism, as well as the most innovative integrations for the future. To investigate how this implementation is affecting the development of the profession, both in the labor context and in ethical and moral dimensions.	Systematic review of existing literature.Semi-structured interviews with journalists and communication experts.Quantitative and qualitative analysis of the undergraduate training offerings of journalism faculties in Spain registered with the Registry of Universities, Centers, and Degrees (RUCT), focusing on courses related to digitalization and AI, as well as their implications for the profession in both labor and ethical dimensions.
3	Lopezosa, Carlos and Codina, Lluís and Pont-Sorribes, Carles and Vállez, Mari	Use of Generative Artificial Intelligence in Journalist Training: Challenges, Uses, and Educational Proposals.	2023b	To study generative AI from the perspective of journalistic and educational interests.	Conducting of 4 in-depth interviews in Spain. Conducting 28 semi-structured interviews with university professors and researchers in Latin America.

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4	De Vega Martín, A. L.	Digital Teaching Competencies in Vocational Training for Image and Sound.	2023	To analyze the presence of digital competencies in the official curricula of programs related to future communication professionals. To describe the self-perception of vocational training teachers in Image and Sound regarding their digital competencies and the importance they assign to these skills in their students' studies.	Mixed design of concurrent triangulation. Non-random quantitative sample, of teachers involved in the training of future information professionals. Analysis of the presence of digital competence in the official curricula of studies related to future communication professionals.
5	Gómez-Diago-G.	Perspectives on Addressing Artificial Intelligence in Journalism Education: A Review of Research and Teaching Experiences.	2022	To identify perspectives and experiences that provide pathways for introducing AI into communication studies, specifically in journalism education.	Analysis of international research projects and international teaching experiences that address artificial intelligence and integrate it into journalism education.
6	Mancero Mosquera, A. E., & Suárez Ramírez, J. D.	Use of Artificial Intelligence Tools in the Communication. Products of Communication Students.	2023	To identify the advantages of using AI tools by students in the production of communication content.	Survey of students in the Communication program at the State University of Santa Elena Peninsula, Ecuador. Interview with professionals in the field

Source: Sivira, R. (2024)

3. Results

The qualitative analysis of the reviewed articles was deepened, focusing on academic trends and perspectives regarding the incorporation of artificial intelligence in journalism education. This allows for not only assessing current practices but also proposing future directions for teaching AI to journalists.

Out of the 13 articles reviewed, only 3 explicitly mention the inclusion of AI in journalism curricula, and these are limited to the introduction of basic technological tools without a focus on competency development.

In the case of universities offering courses on AI, there are notable limitations in integrating ethical and critical aspects, which could impact the comprehensive training of future journalists.

The results also indicate that the majority of instructors lack specific training in AI, which limits their ability to teach these contents effectively.

3.1. The Application of AI Requires New Professional Profiles

Fieiras-Ceide (2023) studied the application of artificial intelligence in European public broadcasting, recognizing that its implementation is limited and slow. The author emphasized the need to develop journalistic profiles with a strong technological component.

Lopezosa et al. (2023) analyzed the use of AI in newsrooms, focusing on currently available tools. They identified significant benefits in content production but also noted a shift in professional routines. This change could transform the required professional profiles, highlighting the need for greater specialization in these areas.

Peña-Fernandez (2023) systematically reviewed research on the implementation of AI in media since 2000. The study concluded that AI has enabled the automation of routine journalistic tasks, such as writing simple news articles, monitoring social media, and real-time fact-checking. However, the author warned that this implementation should not be limited to technical aspects; it must also be viewed from a social perspective, considering its impact on audiences and the work dynamics of journalists.

In this regard, Aramburú et al. (2023) analyzed the use of AI in RTVE's coverage of the 2023 municipal elections. They concluded that AI provides competitiveness, flexibility, fluidity, and speed to journalism. However, this paradigm shift must be constrained by an ethical code regulating its use.

Sandoval-Martín and La Rosa (2023) identified dominant methodologies in the production of automated news and analyzed the quality of the material produced. They concluded that new methodological approaches are required, both from academia and the media, to develop a human-centered perspective on AI in journalism.

Terol (2023) identified the uses of artificial intelligence in journalistic routines within media outlets in Spain. The study pointed out the lack of professional competencies for applying AI projects, indicating the necessity for new journalistic profiles with enhanced technological training and a focus on cognitively enriching content tasks.

Canavilha and Giacomelli (2023) studied the use of AI by sports journalists in Brazil and Portugal. They concluded that the penetration of AI in media is slow due to the lack of technical and professional capacities in artificial intelligence. They suggest that human resources should be trained in AI and that these competencies should be integrated into higher education curricula.

3.2. Journalism Education and Study Programs

Masip et al. (2022) analyzed the curricula of subjects related to cyber journalism and communication technologies in Spanish universities. They determined that, in a context of rapid and continuous changes, it is challenging to keep subjects updated. However, the emergence of new job profiles compels universities to be less resistant to change. The research noted that undergraduate programs do not include AI in their content.

On his part, Gómez-Diago (2022) identified perspectives and experiences for introducing AI into journalism training programs. The study found that while AI is taught from a critical perspective focused on competency acquisition, development is limited, and there are few research initiatives on this topic.

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In this regard, brief case studies extracted from the reviewed literature were integrated to provide concrete examples of how certain universities have begun to incorporate AI into their journalism programs. These studies offer better insight into the practical and pedagogical approaches emerging in this field.

Fernández (2023) analyzed the effects of AI on the profession and described the development of this topic in digital subjects within journalism faculties in Spanish universities. The conclusion was that programs do not address AI in a regulated, in-depth, and organized manner. Content is only covered in a testimonial way –focused on web design and writing for digital media– often viewed through the lens of data journalism (algorithms, databases, and spreadsheets) or its ethical implications.

Lopezosa et al. (2023) studied generative AI from both educational and journalistic perspectives. They emphasized that an AI course in journalism programs should meet the needs of students and the profession from an interdisciplinary approach, connecting work with technical (engineers and IT professionals) and social (linguists and psychologists) areas.

Likewise, De Vega (2023) examined digital competencies among educators in professional training for image and sound, areas of communication. The study found scant specific content on AI in the curricula, and teachers reported limited training in the subject. Nonetheless, they acknowledged that students must acquire this knowledge for the future.

Mancero and Suárez (2023) identified the advantages of using AI tools in the products created by students in the Communication program at the Universidad Estatal de la Península de Santa Elena in Ecuador. They found that the program did not fully adopt AI, resulting in students being unaware of the benefits this new technology offers. The study highlighted that when training future journalists in AI, ethical training, critical thinking, and responsibility must take precedence.

4. Discussion

Regarding the analysis of the state of the art on the approaches to journalism training in higher education institutions and their relationship with the competencies demanded by the job market in the context of artificial intelligence and automated journalism, a review, selection, and study of scientific articles on the topic were conducted. It was found that research on AI in the media and the academic offerings of journalism based on the changes generated by AI is limited compared to other topics such as social media, which could be a hindrance.

The aforementioned relates to what Fieiras-Ceide (2023) states, highlighting the need for journalists with profiles focused on technologies related to the platforms used in the media, as well as a greater societal awareness of artificial intelligence; otherwise, employment opportunities in media with implemented AI will be limited.

However, as technology advances, so do the dangers and deceptions due to the credibility of AI-generated content, similar to what authors like Franganillo (2023) and Marta-Lazo et al. (2020) have stated, indicating that it is necessary to increase public awareness about the use and consumption of this new technology. It is therefore reflected that the profile of the communicator should be that of a professional capable of understanding and managing digital transformation, without neglecting the foundations of the communicative process.

This relates to what the Coordination Committee for Teaching and Learning of the European University Association (2023) has proposed, which identifies the benefits and limitations of using AI. It emphasizes that these applications generate changes

in work profiles or roles, as they transform journalistic routines, as already outlined by Lopezosa et al. (2023a). Journalists, therefore, must continuously train in areas related to journalism and technology.

Therein lies the reason for the necessary specialization in algorithms, therefore for journalists, regarding the need to increase the level of knowledge required for the development of tasks related to AI, which contributes to the information process but demands greater specific preparation.

However, to promote such planning spaces, it is required that the planned logics and methodologies center around audiences and journalists, as Peña-Fernández (2023) suggests. Technological advancement must be understood, developed, and applied as a social construction capable of transforming the relationship between humans and their reality (Tabarez and Correa, 2014).

AI not only works with artifacts and algorithms but also incorporates symbolic elements and social values that influence its interaction with the environment. What ethical implications does the adoption of AI in journalism pose, and how are these addressed in university training?

The biases present in the data that feed AI systems can reproduce social stereotypes, as research on the use of AI in news media has demonstrated (Gómez-Diago, 2022). This poses ethical challenges that must be considered in the design and implementation of these systems.

It is reflected that the use of AI in journalism requires updated methodologies that place humans at the center of decisions and processes, thereby promoting a combination of technical knowledge and critical skills that allow journalists to analyze, interpret, and enrich automated content. This involves an interdisciplinarity that should include collaboration among communication professionals, AI engineers, as well as experts in ethics and linguistics (López-ezosa et al., 2023), in order to ensure responsible and ethical journalism.

Such a proposal is directly related to what Porcello (2020) indicates, recognizing the need for an ethical code that ensures accountability and transparency of algorithmic systems in decision-making. Additionally, norms regarding responsibility and fairness based on human oversight are required.

These logics imbue journalism with characteristics such as competitiveness, flexibility, fluidity, and speed. However, it is reiterated that given the implications of AI, this paradigm shift must regulate its use (Aramburú et al., 2023), which brings back the humanistic logic that in communicative practice, AI will be beneficial as long as its application does not undermine the ethical progress of journalistic activity, based on principles such as explainability, accountability, and self-regulation.

However, the collected data shows that the lack of technical competencies in AI among personnel in journalistic companies limits the penetration of this technology (Canavilhas and Giacomelli, 2023; and Casallas, 2021), leading to poor management and control of processes, which can have negative results at the level of mass communication and influence on public opinion. In this regard, it is essential that universities, in their duty of professional training, recognize that companies seek to hire personnel aligned with the digital age.

In this sense, the question arises: What are the most in-demand competencies in the labor market, and how are training programs responding?

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Changes in the tasks performed by media outlets have been identified, leading journalistic companies to demand technical skills applicable to AI projects (Terol, 2023). Therefore, as Marta-Lazo et al. (2020) note, the training of professionals must be accompanied by the enhancement of cognitive skills that enrich journalistic tasks. This is a reality that has forced universities to rethink the profiles of journalism graduates, adapting their competencies and skills to new media and types of audiences.

Unlike automated AI, journalists not only gather and present data but also interpret the sociocultural, political, and ethical context of events, offering a narrative that can challenge power structures, unmask biases, and highlight nuances that an AI cannot detect. These skills include empathy, which allows journalists to understand and represent the diversity of voices; linguistic creativity, which enriches the narrative through the use of metaphors, irony, and complex rhetorical devices; and critical thinking, essential for challenging official versions, asking deep questions, and avoiding simplifications, as proposed by journalism theorists, mass communication scholars, and thinkers like Kapuscinski (2002), Eco (2004), and Habermas (2014).

Therefore, based on what Masip et al. (2022) propose, the emergence of new professional profiles in journalism requires universities to be more receptive to change, adapting their programs to technological and market demands. To achieve this, it is necessary to analyze the phenomenon of artificial intelligence and measure its impact in order to have a diagnosis that allows for the identification of the weaknesses in current curricula and to adjust them for the training of professionals capable of employing new technologies.

Universities and their journalism programs are beginning to adapt their curricula to the changes brought about by AI. However, the specific subjects and proposals dedicated to the transformations of journalistic work due to AI and its applications are limited in scope (Calvo-Rubio and Ufarte-Ruiz, 2020).

The resistance to adapting traditional pedagogical paradigms to AI is concerning, as failing to align with the models and competencies demanded by society will result in outdated education with little influence on social dynamics. This is evident from studies like that of Fernández (2023), who argues that study programs including artificial intelligence in their content do not address it in a regulated and in-depth manner, which is related to the limited number of studies analyzing the application of AI content in university curricula.

In most cases, the available analyses refer to the use of artificial intelligence as a means or resource for the application of teaching and learning methodologies (Aguilar et al., 2023; Yanqui, 2023; Falla-Falcón, 2023; Gutierrez, 2023), which is far from training new journalistic profiles and competencies in response to the demands of the communication and information industry (Peña et al., 2020).

Therefore, there is a need for new subjects to train profiles in direct relation to both more technical professionals, such as engineers, and social professionals, such as linguists, based on a model grounded in the foundations of AI and the technical and ethical competencies required for its use (Lopezosa et al., 2023b). According to Liu (2023), the rapid application of AI makes it necessary for educational practices to be constantly updated and adhere to ethical considerations, as well as critical and responsible thinking.

This aligns with what De Vega (2023) proposes, stating that these new educational practices require academics trained in the use of AI tools in the teaching-learning process and in journalistic practice, so that professional training meets the demands required by communication companies. However, teachers report lacking sufficient competencies to address AI-related

content. This is why an AI Literacy Plan is needed to allow teachers to train in technical, ethical, and philosophical areas, which would also change the teaching profile (Flores-Vivar and García-Peñalvo, 2023).

Although the application of AI in education is in its early stages, it is becoming an increasingly utilized tool (Adalid, 2023), thus requiring professionals with critical thinking who can contribute to the social environment. The inclusion of AI in curricula and teaching should therefore be approached from a critical perspective and with a focus on competency acquisition (Gómez-Diago, 2022).

Journalism students enrolled in university programs that claim to include AI content are unaware of the benefits it offers in professional practice, as the adoption of the topic is not comprehensive (Mancero and Suárez, 2023). However, modern education must be aligned with the sociocultural reality of the environment in which it takes place.

Therein lies the reason why universities, in formulating their curricula, must include essential elements that allow for the training of competent professionals with the potential to navigate their workspaces, with quality serving as an indicator of education that is fully recognized by society. This includes content on artificial intelligence applicable to areas such as journalism.

Despite the revealing results, it is important to acknowledge that the language barrier limited the scope of the research by restricting the review to studies in Spanish. This reduced the number of available articles and excluded relevant research in other languages, particularly in English. Nevertheless, the results obtained fulfill the objective of analyzing the academic trends and perspectives regarding the incorporation of artificial intelligence in journalistic training.

5. Conclusions

The applicability of artificial intelligence in the field of journalism is still under development, and the characteristics of its integration depend on the competencies of the professionals within the industry, responsible for executing automated journalism projects.

The advantages and benefits of AI in journalistic work are recognized, as well as the need to formulate new professional profiles that address the demands of the media. Progressively, and based on economic reasons, the communication industry is adopting tools from artificial intelligence, which is why journalists with greater technological training and a focus on cognitive and human tasks that enrich content are needed.

Currently, university training in AI for journalists presents significant deficiencies. Many university educators admit that their knowledge on the subject is limited, which affects the quality of teaching. Therefore, universities must prioritize the updating of their study programs, incorporating specific modules on AI that include both its technical use and the ethical implications of its implementation.

Thus, universities face the challenge of renewing their content and adopting an interdisciplinary approach that integrates technical skills, such as AI programming, along with traditional competencies, such as critical and ethical analysis of discourse. One possible strategy is to include specialized subjects in automated journalism and practical courses where students work with AI in simulated journalistic writing tasks.

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To facilitate this process, it is essential to train educators in these areas and promote interdisciplinary collaboration with experts in technology and social sciences, so that future journalists can play an active role in transforming the industry. In this way, future journalists will be prepared to integrate automated tools into their routines while maintaining a critical and ethical perspective in their work, thus collaborating with artificial intelligence for the benefit of the communication process.

To delve deeper into the topic, it is proposed to conduct a detailed review of journalism study programs, which will allow for the collection of primary data on the integration of AI-related competencies. Additionally, it will be valuable to complement this analysis with interviews or surveys of those responsible for academic programs to gain insights into how curricula are adapting to the new demands of automated journalism.

Future research lines are also proposed, such as the need for longitudinal studies that follow the evolution of AI teaching in journalism or evaluating pilot programs at universities that are already implementing AI in their curricula.

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7. Conflict of Interest

The author declares that there is no conflict of interest contained in this article.

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