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Research Article

AI in the newsroom: A case study of investigative journalists in Spain

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ABSTRACT

The integration of artificial intelligence (AI) in journalism is transforming professional roles, skills and attitudes, especially in investigative journalism. This study analyses how investigative journalists in Spain perceive the impact of AI on their job profile and what skills are emerging in the face of this disruption. Using a quantitative, cross-sectional design, a representative sample was surveyed to obtain data on technologies used, automated tasks, perceived occupational risks, and training actions. The results reveal a progressive transformation of functions, without the direct creation or elimination of profiles, and a clear trend towards self-training. Emerging skills include advanced digital literacy, the strategic use of AI tools and the reinforcement of interpretative skills. It is concluded that a hybrid profile of the investigative journalist is emerging, where AI does not replace but redefines the profession by requiring a combination of technological and narrative skills.

Keywords: investigative journalists, artificial intelligence, technologies, professional profiles, media

INTRODUCTION

The arrival of artificial intelligence (AI) technologies in the media offers multiple benefits, such as recommending content to users, automating journalists' tasks, improving audience interaction through chatbots, and verifying information (Rivas de Roca, 2021; Sánchez Esparza & Stracuzzi, 2024). However, the implementation of these technologies faces issues ranging from economic costs to difficulties in hiring experts to develop AI solutions to internal attitudes of resistance to change (Fieiras-Ceide et al., 2022). The speed and quality of implementing these technologies, in the service of truthful information, vary depending on the political context and the perceptions and attitudes of the professionals involved (Ji et al., 2024; Trang et al., 2024).

The presence of AI in journalism has sparked primary debates about the extent of its adoption, and its integration into content production and distribution processes has created new opportunities, but also drawbacks (Noain-Sánchez, 2022). In this sense, the benefits of AI in journalism include the utilization of data. However, challenges such as the lack of high-resolution images, limited technological infrastructure, qualified personnel, and high costs hinder the implementation of AI in media organizations (De Lima-Santos & Salaverría, 2021).

In the case of investigative journalism, it could be argued that the implementation of these technologies has different nuances. General journalism and investigative journalism, while sharing the mission of informing the public, differ significantly in their purpose, depth of investigation, timeframe, and outcomes (da Silva,

2023). General journalism focuses on covering current events to keep the public immediately informed, whereas investigative journalism is dedicated to uncovering more profound truths, often exposing corruption or wrongdoing. The latter requires thorough investigation and rigorous fact-checking, surpassing the superficiality of conventional journalism. Additionally, investigative journalism can span months or even years to produce detailed reports, in contrast to the immediacy of traditional journalism. Finally, the impact of investigative journalism is often more significant, promoting social change and accountability, whereas general journalism is limited to reporting without necessarily provoking more profound implications.

In this sense, investigative journalism faces distinct challenges compared to general journalism and perceives new AI technologies as potentially facilitating its work. Investigative journalists perceive how their investigations can reach audiences in a more personalized and effective way through new interactive formats and how these technologies expand access to information.

In fact, AI and automation are revolutionizing the field of investigative journalism, providing tools that transform how journalists collect, analyze, and verify information. One of the primary contributions of AI is its ability to rapidly process large datasets, enabling journalists to identify patterns and trends that might not be immediately apparent. Additionally, automation tools enhance efficiency by streamlining repetitive tasks, thereby freeing up time for journalists to focus on more complex and in-depth investigations. AI also enhances research by facilitating the collection and analysis of information from diverse sources, thereby improving the accuracy and depth of reports. Finally, automated fact-checking systems allow for real-time verification of information, increasing the reliability of investigative reports. These innovations not only optimize the investigative process but also elevate the standards of quality and accuracy in contemporary journalism (da Silva, 2023). Studies combine machine learning with investigative journalism to combat disinformation. One example is the analysis of *sockpuppet* accounts, which are human-controlled and complicate technological detection. As detection methods improve, disinformers turn to "infiltrators," *sock puppets* that integrate into communities to spread disinformation. This combination of technologies not only detects activity patterns but also helps us understand disinformers' motivations (Schwartz & Overdorf, 2020).

This research aims to explore the impact of AI on investigative journalists' work in Spain, as well as their perspectives on the opportunities and risks associated with the implementation of these technologies. This study aims to fill a gap in the research, as, despite investigations into the implementation of AI tools in journalism and some work on investigative journalism (Fridman et al., 2025; Kunert et al., 2022; Stray, 2019), none have focused on the development of these tools in investigative journalism in Spain.

In Spain, the professional group of investigative journalists is represented by the Association of Investigative Journalists (API), established in 2017. The API has been the first and only professional association that brings together investigative journalists in Spain and is part of the Federation of Press Associations of Spain. It is made up of 62 professionals from various media, and its purpose is to put investigative journalism into practice in public service. In this sense, the API proposes promoting and making visible the techniques of investigative journalism to uphold the highest professional and ethical standards in the practice of this profession, strengthening the ties between journalism and new technologies to apply them to our investigations. This study aims to explore how investigative journalists in Spain are adopting these new tools and technologies and their attitudes towards them.

LITERATURE REVIEW

Mission and History of Investigative Journalism

The Investigative Reporters and Editors (IRE)[1] has been a leading actor in establishing investigative reporting as an institutional asset in American and global journalism (Aucoin, 2022). The IRE defined investigative journalism as the result of an original work of the journalist (as opposed to the result of investigations by the police, the courts, or other agencies), which dealt with a topic of public relevance and

[1] The IRE was created in 1975 to promote investigative journalism in the USA. Through donations, he championed collective projects for the preparation of reports and research analysis and created a documentary collection with all the research works carried out in the history of this discipline.

importance to the audience, and which brought to light information that someone wanted to keep secret (Aucoin, 2022; Casal, 2007; Coelho, 2023).

Thus, investigative journalism seeks to uncover and expose hidden truths and hold those in power accountable for their actions. It plays a crucial role in providing the public with accurate and impartial information, promoting transparency and democracy. Through their investigations, investigative journalists strive to bring important issues to light, uncover corrupt practices, and shed light on social, political, and economic injustices. In doing so, they act as a check-and-loop mechanism, ensuring that those in power are held accountable and that the public is informed and empowered to make decisions.

Investigative journalism emerged in the USA at the end of the 19th century and in the early years of the 20th century, thanks to the proliferation of a type of reporter eventually known as the 'Muckrakers', whose journalistic investigations led President Theodore Roosevelt himself to promote legislative measures to address some of the problems denounced.

Although some go even further back in time, it was in the 1880s that the first investigative journalist, Henry Demarest Lloyd, appeared, who caused a considerable stir by publishing a series of articles denouncing the pervasive corruption in American politics and economics in the Atlantic Monthly and North American Review. Since then, he has been considered the first investigative journalist (Rubio Campaña, 2006).

In December 1899, the Arena magazine was founded, specializing in investigative reporting, where poverty, labor exploitation, and child labor were addressed. Years later, in 1902, several publications joined The Arena to advance social reforms through denunciation journalism, thereby consolidating the 'Muckrakers' movement. In the following decades, new local investigations of small magazines, nonfiction books based on journalistic research, and some space on the newborn television would appear, such as that of See It Now on CBS in the 50s (Aucoin, 2022; Casal, 2007).

The definitive irruption of investigative journalism occurred in the 60s and 70s, thanks to individual work and the efforts of newspapers such as the Chicago Tribune on police corruption in Chicago. In 1973 and 1974 came the Watergate scandal over illegal wiretapping in the Democratic Party, and the investigative work of Washington Post reporters Bernstein and Woodward. From that moment on, as imitators of his style proliferated, newsrooms introduced reforms to create investigative journalism units, and the first books on the subject appeared.

In the mid-1970s, the IRE was founded. The institute was created to lay the foundations of investigative journalism as a professional practice, provide it with quality standards, and overcome the isolation and loneliness in which professionals dedicated to this subject used to work. The institute established work techniques and values of professional excellence, created an archive with the history of investigative journalism through the most relevant cases, and promoted investigative journalism projects such as the Arizona Project, in which a group of researchers tackled an ambitious collective investigation into corruption in the state over time. In which almost thirty publications, 37 editors and reporters participated.

Projects such as Arizona provided content to the IRE, a leading institution in investigative journalism, and served as the starting signal for a good number of subsequent journalistic investigations. The genre spread rapidly, and not just in the USA. In the 1990s, dozens of scandals were published in Britain and the rest of Europe, and according to Casal (2007), investigative journalism became an ideal for the profession, and the reporters who practiced it, a kind of hero.

Investigative Journalism in Spain

As happened in the USA with the emergence of the 'muckrakers', the first years of the 20th century saw the birth of what would later become investigative journalism in Spain. A good group of writers and journalists set out to publish this type of work. However, continuity in the practice of this type of journalism did not come until 1921 and 1923, when the reporters Aznar Zubigaray, Ruiz Albéniz, Oteyza, and López Rienda revealed the truth about the disaster of the Spanish troops in Annual, in the then Protectorate of Spain in Morocco (Rubio Campaña, 2006).

After the investigations and reports on the Annual disaster, the investigative genre would suffer a substantial setback, as a result of the iron control imposed on the press by the government of Primo de Rivera after the coup d'état and the subsequent events that occurred in the country and that affected the press, such

as the departure of Alfonso XIII from Spain, the proclamation of the Second Republic, the Civil War and Franco's dictatorship. As was the case in the USA, investigative journalism would not rise from the ashes until the last third of the 20th century.

From that time on, however, this type of journalism appeared strongly, with outstanding professionals and numerous works that provoked a fundamental political, social, legal, and economic transformation of Spain. So it was with the investigations into the anti-terrorist liberation groups (GAL) organized in an obscure way by the state apparatus itself; the CESID papers (regarding the state's unlawful actions in the GAL case); the first cases of corruption that affected the socialist government of Felipe González, such as the irregular financing in the Filesa case; the illegal use of reserved funds, or the corruption of public figures such as the former director general of the Civil Guard, Luis Roldán, among others (Díaz Güell, 2003).

During the first quarter of the 21st century, investigative journalism brought to light a significant number of corruption cases that made headlines, appeared on talk shows, and were reported on radio and television newscasts. The advent of social networks multiplied the impact of this information, especially since the arrival of Facebook. In Spain, an event also marked a change in the social demand for this type of information: the jihadist attacks of 11-M at the Atocha station and the intoxication suffered by the main media about this terrible event. In contrast, the population demanded to know the truth. From 2004 onwards, investigative journalism and review of official versions became a highly demanded product (Tijeras, 2018).

Thus, between 2004 and 2014, and especially during the worst years of the 2008 economic crisis, journalistic reports on corruption scandals experienced a real boom, to the point of multiplying by thirteen compared to previous periods (Sánchez-Esparza, 2015). This avalanche made the magnitude of the problem visible and led to hundreds of dismissals and resignations, accusations, and convictions, in many cases involving public officials in local, regional, and central government administrations. From 2014 onwards, corruption became the second most important problem in the country, according to Spaniards, as reflected in surveys by the Centro de Investigaciones Sociológicas (2018).

Multiple researchers have verified this spectacular increase in this type of information. However, it has not been accompanied by adequate training or support from journalistic companies in terms of means for professionals (Martínez-Sanz & Durántez-Stolle, 2019). Only some postgraduate training proposals have been able to meet the new needs of these journalists.

The most investigated topics in Spanish Media include corruption, political management, party financing, tax evasion, and jihadism. Despite difficulties, journalists work on multiple investigations simultaneously, valuing collaboration and teamwork. Investigative journalism in Spain is of high quality and comparable to international publications, but it needs greater investment in time and resources to further improve (Martínez-Sanz & Durántez-Stolle, 2019).

The landscape of these professionals has also been transformed in recent decades by the digital revolution and the arrival of new technologies, as well as by the emergence of big data and the approval in Europe and Spain of laws on transparency, which have meant the obligation of the State and the authorities to provide information about their activities and the use of public money. This has changed the type of sources and the dynamics and methodologies of work. If leaks have traditionally been at the origin of many journalistic investigations (Martínez-Sanz & Durántez-Stolle, 2019), nowadays it is the use of large amounts of open data and collaborative work in a network that leads to extensive investigations, which appear simultaneously in different national and international newspapers. As Stray (2019) indicates, the most considerable near-term potential for AI in investigative journalism lies in data preparation tasks, such as data extraction from diverse documents and probabilistic cross-database record linkage.

Technological disruption is therefore transforming the way these journalists work and, with it, their professional profiles. For more than a decade, computational journalism techniques have provided new materials and support for original investigative journalism and have expanded the reach of new forms of reader interaction (Flew et al., 2012). Computational journalism provides an excellent opportunity to improve the production of original investigative journalism and attract and retain online readers.

The Transformation of Investigative Journalism by Technology

The development of digital technologies has driven a profound transformation of investigative journalism. The changes brought about by digitalization have provided journalists with new tools and platforms that simplify the exploration, analysis and dissemination of information. These changes have impacted not only the methodologies used in their research but also their scope, depth, and effectiveness.

The emergence of digital platforms has, first, made it easier for journalists from all over the world to collaborate on investigative projects, sharing resources and knowledge. This has led to research and collaborations between media outlets in different countries, broadening the scope and impact of the topics discussed. In addition, the use of digital tools has also helped citizens and organizations with very diverse profiles to support and disseminate the work of journalists, providing additional resources and giving greater scope to their investigations.

The Panama Papers represent an excellent example of this type of investigation. Following the leak of more than 11.5 million confidential documents from the law firm Mossack Fonseca, the International Consortium of Investigative Journalists launched an extensive investigation in 2015 involving more than 400 journalists from various media outlets worldwide (López López, 2018).

After more than a year of research, in which digital technologies were instrumental in the acquisition, analysis, and processing of the leaked data, on April 3, 2016, the coordinated publication of the information began with more than 109 media outlets from 76 different countries. The revelations that emerged, in addition to having a significant political impact at the global level, had a decisive influence on the promotion of legal measures to combat tax avoidance and evasion internationally (O'Donovan et al., 2019).

Nevertheless, in addition to facilitating collaboration among journalists, digital technologies have played a key role in the increasing democratization of access to information. Before the advent of digital systems, obtaining information involved a considerable investment of resources and often delivered unreliable results. In fact, in the pre-digital age, the success of investigative journalists depended to a large extent on their ability to obtain information from journalistic sources and access leaks. Today, the abundance of information generated by digital systems enables less mediated access, translating into greater independence and the ability to conduct deeper and more complex investigations.

As a result of these transformations, digital technologies have opened up new opportunities for the creation of journalistic content. The growing trend towards the opening of data by public and private organizations or the emergence of tools and technologies that allow the extraction, processing and analysis of large data sets for informational purposes (Henninger, 2013, p. 158), has promoted the emergence of a new type of investigative journalism that, with a strong technological base. It uses data as a fundamental material in constructing the informative story. This form of journalism, known as data journalism, has an eminently multidisciplinary character, integrating elements from the social sciences, statistical analysis, computer science and information design (Fernández, 2017).

Currently, data journalists produce complex journalistic work by merging their investigative skills with data analysis. Through interactive visualizations, mobile apps, and other forms of non-linear storytelling, data-driven stories offer an immersive user experience and a deeper understanding of the topics researched (Jessica et al, 2022). Not only does this promote transparency and accountability, but it also stimulates public participation in the process of news discovery and dissemination.

In this context, generative AI tools can help journalists gather and process information at an unprecedented speed and scale. Through algorithms capable of automatically monitoring and extracting information from diverse sources (Hansen et al., 2017), AI not only enables journalists to collect more data but, above all, to process it and interpret its meaning more efficiently, quickly, and accurately.

Some authors argue that the most significant short-term potential for AI in investigative journalism lies in data preparation tasks, such as extracting data from various documents and probabilistic linking records between databases (Stray, 2019).

The Implementation of AI Technologies in Media

In the media industry, AI creates significant changes and challenges. Some authors speak of the Fourth Industrial Revolution, driven by AI and automation, which is already transforming the way news and media content is produced, distributed, and consumed. This transformation raises questions about media accountability, the role of journalism, and freedom of expression (Vučković, 2023).

AI is currently used in the media to optimize and improve operations, such as data analysis and multimedia content generation (Sančanin & Penjisevic, 2022), and also to automate processes, including social media management, where algorithms can be trained to analyze users' actions, preferences, and reactions (Canavilhas, 2022; Al Husseiny, 2023). The implementation of AI on social media platforms is becoming inevitable, with applications including chatbots, which detect harmful behaviors, analyze data, and strategize (De Lima-Santos & Ceron, 2022).

AI is also used in the news industry to disrupt traditional approaches, leveraging machine learning, planning, scheduling, and optimizing processes, which are increasingly developed (Eva, 2022). For media professionals, this transformation is a liberation from routine tasks that allows them to produce higher-quality content. However, it also raises concerns about the growing reliance on technology platforms and the risk to editorial independence. Media workers perceive a threat to their jobs and to their symbolic capital as intermediaries between reality and audiences (Peña-Fernández et al., 2023).

For all of the above, the implementation of AI in the media poses social and epistemological challenges for journalists and the profession. There is a debate about the use of these technologies in the media within public institutions such as the European Union. Until now, regulatory frameworks related to AI rarely include the media; when they do, they address issues such as misinformation, data, AI literacy, diversity, plurality, and social responsibility (Porlezza, 2023). However, for the time being, policy documents adopted at the European level do not take into account the sector's specificities (Pierson et al., 2023).

Meanwhile, AI is revolutionizing the way media outlets operate and deliver content to their audiences. With the advancement of this technology, the media have found new ways to collect, analyze, and present information in a more efficient and personalized way. Machine learning algorithms can analyze large amounts of information in a short amount of time, making it easier to identify patterns and trends in data. This has improved the accuracy and speed of news delivery, allowing publishers to provide up-to-date, relevant information to their audiences more quickly.

The arrival of AI in the media does not completely replace human work, but for the time being complements it and streamlines specific processes. Media professionals play a crucial role in monitoring, making decisions, and ensuring the quality of AI-generated content. AI has the potential to help journalists craft new and original content, engage with audiences, verify online media content, and more, making media processes more efficient and impacting yet-to-be-determined outcomes.

Professionals face the challenge of adapting by learning AI techniques amid a sea of questions about the performance of their functions. There are already numerous cases of synthetic media that generate their content completely automatically using algorithms, without the intervention of journalists (Ufarte-Ruiz et al., 2023).

The algorithms used by these media simulate human behavior in the information process and learn from an initial set of data to produce and distribute artificial digital content with a realistic appearance and sound, including text, audio, and video. Through automated procedures, they generate personalized content and develop data verification processes. The algorithms thus allow media organizations to quickly select and receive topics in a fully customized way.

Transformation of Professional Profiles With AI

AI is reshaping professional profiles in the media industry. AI is expected to extend automated news to audio and video formats, to change business models, and to modify journalists' roles to focus on higher-value tasks (Noain-Sánchez, 2022; Túñez-López et al., 2021). The digital transformation of the media ecosystem requires new journalistic profiles that combine traditional journalistic knowledge with technological skills (García-Caballero, 2020).

AI can improve journalism by enabling faster breaking news and deeper analysis, emphasizing the need for editorial oversight when integrating AI into newsrooms (Marconi, 2020). Overall, AI is revolutionizing media professions, as it demands professionals to adapt to new roles and skills while also leveraging AI's capabilities to improve journalistic practices.

The media sector has undergone a profound restructuring due to the digital transformation of the media ecosystem, requiring new journalistic profiles with new skills and abilities (García-Caballero, 2020; Sánchez-Esparza et al., 2024). New professional identities in the media are evolving in response to technological changes, audience transformations, and the demands of the media environment.

The emergence of non-media actors producing content and the decline in the audience's interest in news are also determining factors in this transformation (Buck, 2014). These new identities must now be characterized by the ability to adapt to digital formats and engage in storytelling on online platforms; multi-disciplinarity; proficiency in emerging technologies; a focus on the audience; data management skills; collaboration and teamwork; and social media engagement and management, among other issues.

In this context, the arrival of AI in the media accelerates the transformation of journalists' professional profiles, moving them toward a less operational role, avoiding routines that can be imitated by machines, and increasing cognitive contributions to news analysis and production (Túñez-López et al., 2021).

The implementation of AI in the media industry brings benefits, including improved journalists' capabilities, time savings, and increased productivity (Peña-Fernández et al., 2023). However, challenges arise, such as the need to change mindsets, prioritize training on AI tools due to a lack of knowledge, and address ethical dilemmas arising from the integration of AI into newsrooms (Noain-Sánchez, 2022).

AI also presents obstacles related to media organizations' upholding editorial independence and the potential threat to journalists' jobs and symbolic capital (Abdulmajeed, 2023). In addition, AI systems can inadvertently perpetuate historical inaccuracies and biases, leading to discriminatory attitudes and behaviors in news content (Leiser, 2022). Overcoming these challenges requires a societal approach that takes into account the impact of AI on people, journalists, and the public, emphasizing the appropriate use of AI for the benefit of the profession and society (Túñez-López et al, 2021).

Objectives

The objective of this research has been to know the perspectives of investigative journalists about the arrival of AI in their sector, specifically analyzing the vision that the members of the API of Spain have on these technologies.

To achieve this general objective, the following specific objectives were proposed:

- Describe the implementation of AI technologies in terms of their types, origin, uses, frequency, and area of activity from the perspective of investigative journalists integrated in the Spanish IPA.
- Determine how these AI technologies have affected the professional profiles of investigative journalists.
- Identify the benefits, problems, obstacles, and challenges of AI concerning professional profiles in the opinion of IPA members.

MATERIALS AND METHODS

A non-experimental research design was employed, with a quantitative approach, characterized as field research with a descriptive cross-sectional level, as it studied the perspective of a group of individuals over a short period. The research was conducted with journalists who are members of the API.

The research was divided into two phases. The first phase involved a literature review, exploring documentary sources from available scientific databases such as Web of Science, Scopus, and Google Scholar. Additionally, the SCISPACE platform was utilized to enhance the search for scientific publications by integrating AI. The second phase consisted of fieldwork through the information collection instrument and descriptive analysis, where frequencies and percentages for each question were calculated, providing a

distribution of responses and the prevalence of certain opinions or behaviors among the participants surveyed by the API.

To conduct the study, the survey technique was used, and a data collection instrument called a questionnaire was developed, which was administered to a sample of 35 investigative journalists from the API of Spain, out of a total of 62 members. This represents 56% of the group, which, according to Palella and Martins (2017), is a sufficiently representative number of the population.

The instrument was structured into 41 mixed questions (dichotomous, multiple-choice, and open-ended). The instrument's validity was verified by three experts: one in research methodology, one in journalism and communication, and the other in data engineering. The aforementioned experts proposed improvements to the instrument in both form and substance, which were incorporated into the final version.

The instrument was administered via Google Forms, directly in the web or mobile browser, and via a link sent to the 62 API journalists. Cronbach's alpha coefficient was also calculated by first encoding the responses into numerical values. Since most of the answers were binary ("yes" or "no"), 1 was assigned to "yes" and 0 to "no". After encoding the responses, the internal consistency of the instrument was assessed using Cronbach's alpha, which yielded a value of 0.736, indicating moderate to good internal consistency in the participants' responses. This value is acceptable, as it is above 0.7.

The instrument investigated two variables, each with its respective indicators: the first related to AI technologies and professional profiles, including the emergence or disappearance of new profiles, the emergence of substitute functions, job loss, and training in their use. The second variable was the implementation of AI Technologies, which examined indicators such as technology types, origin, uses, frequency, area of activity, implementation, benefits, and obstacles. The 41 research questions are included in **Table 1**.

Table 1. Research questions

No	Question
1	Medium in which the company where you work operates
2	Position within the company/rank
3	Time in the position
4	Years of experience in the sector
5	Age
6	Sex/gender
7	In the organization where you carry out your professional activity ... What types of AI-based technologies are currently being used?
8	Where do these tools come from?
9	Frequency of use of AI tools in the company
10	Areas of activity in which AI tools are used
11	Primary uses of AI in the company
12	Do you consider the implementation of AI tools to be beneficial for media organizations?
13	In relation to the above, explain why
14	Do you consider the implementation of AI tools to be beneficial for professionals individually?
15	Explain why
16	Do you think the implementation of AI tools in media organizations will be a reality in the short term?
17	Do you think the implementation of AI will come instead in the long term?
18	Please explain why you think it will come in the short or long term.
19	What obstacles do you foresee in the process of implementing AI tools in media organizations?
20	Which parts of the content creation process are being transformed due to the implementation of AI tools?
21	Do you consider that the use of AI to position content before specific audiences influences the selection of certain topics and the abandonment of others?
22	Explain why
23	Do you think the use of AI for content presentation prioritizes sensationalist approaches to achieve clickbait?
24	Does your company use any AI technology for information verification?
25	What type of verification technology do they use?
26	Do you think AI is helping to spread false content?
27	Explain why
28	Do you think AI can help prevent the proliferation of false content?
29	Explain why
30	AI helps prevent the proliferation of false content ...

Table 1 (Continued).

No	Question
31	AI could increase the spread of false content ...
32	Are media organizations investing in tools aimed at tackling misinformation?
33	Since you have been working at the company, have new professional profiles associated with AI emerged?
34	Please indicate which new profiles have emerged.
35	Have professional profiles disappeared due to AI?
36	Which profiles have disappeared?
37	What functions do you think could be replaced by AI in your company?
38	Do you fear losing your job due to the implementation of AI?
39	In relation to the above, why?
40	If you fear losing your job, have you made any decisions about training and learning to use tools in this area?
41	What decision have you made in fear of losing your job?

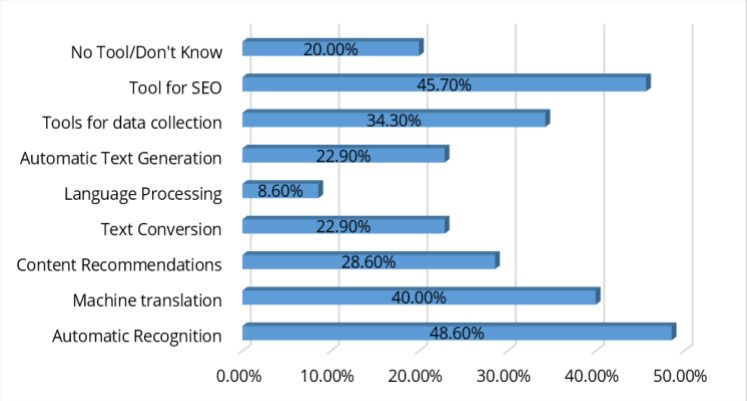

Figure 1. Types of AI-based technology used (survey results) (Source: Own elaboration based on the survey)

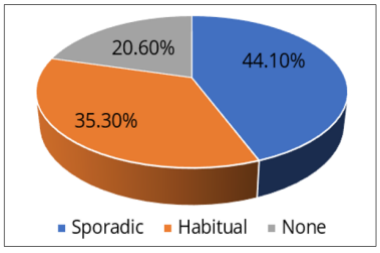

Figure 2. Frequency of use of AI tools (survey results) (Source: Own elaboration based on the survey)

These questions were posed to a significant and diverse sample of professionals. This representative sample of journalists from the Spanish API is distributed as follows:

- 33.33% of the respondents hold the position of editor, which indicates a significant presence of this profile within the media organizations represented in the sample. There is a diversity of journalistic roles among the respondents, with respondents representing journalists (11.11%), reporters (5.56%), and directors (8.33%), among others.
- 46.67% of respondents work in digital media, and the rest in other media, such as print media (23.33%), audiovisual media (23.33%), and combinations of various media (6.67%).

RESULTS AND DISCUSSION

Regarding the variable of perspectives of API investigative journalists on AI technologies, results were obtained on the implementation of AI technologies, including their types, origins, uses, frequency, and areas of activity, from the perspective of API members in Spain.

As shown in **Figure 1**, 48.6% of respondents explain that the AI-based technologies currently used are machine recognition, followed by 40% machine translation, and 45.7% SEO tools. 44% of API journalists use these tools sporadically and 35% regularly, as shown in **Figure 2**.

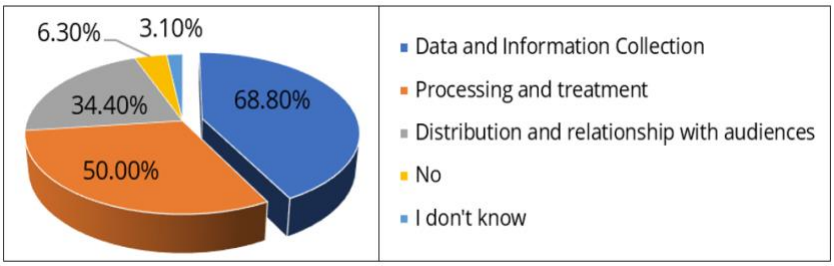

Figure 3. Areas of activity where they use AI tools (survey results) (Source: Own elaboration)

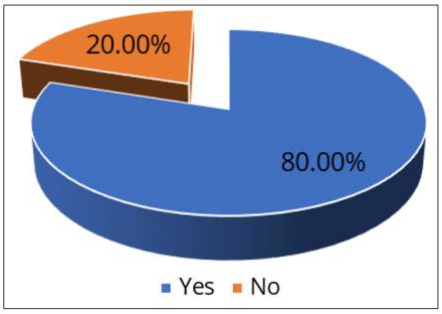

Figure 4. Implementing AI is beneficial (survey results) (Source: Own elaboration)

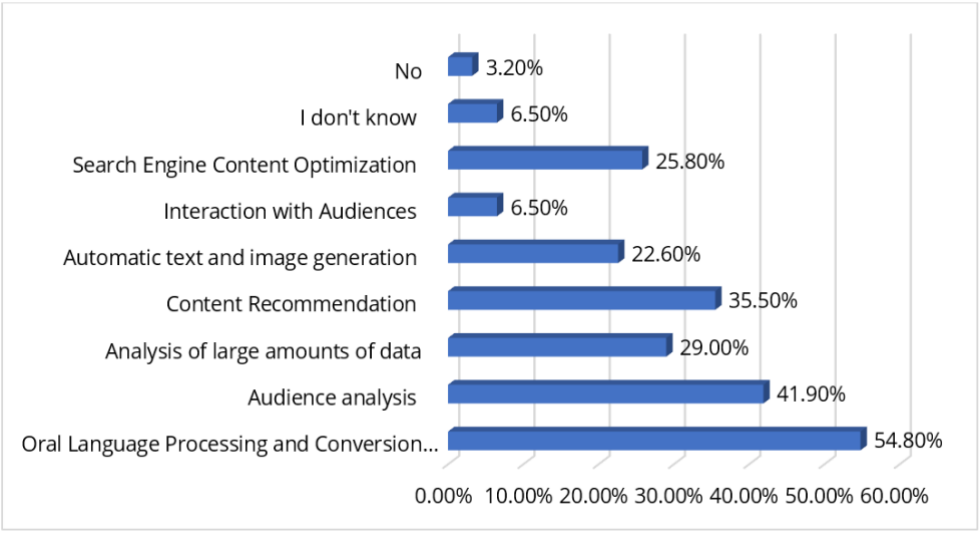

Figure 5. Uses of AI in the enterprise (survey results) (Source: Own elaboration)

Regarding the areas of activity in which they use AI tools, 68.8% answered that they use data and information collection, 50% use processing and treatment, and 34% use distribution and audience relationships, as shown in **Figure 3**.

A significant 80% consider AI tools to be beneficial for businesses and organizations (**Figure 4**). 77% believe it is also beneficial on an individual basis, compared to 11% who believe it is not.

Regarding the primary uses of AI, 54.8% opted for the processing and conversion of oral language into writing, 42.8% for the analysis of large amounts of data, 45.7% for content recommendation, 41% for audience analysis and automatic text generation, and 25.8% for the optimization of content in search engines (**Figure 5**).

For respondents, the implementation of AI tools will be beneficial for media organizations because it improves efficiency and automates tasks. This can lead to better use of resources and higher-quality content production. Several comments highlight that AI can save significant time on tasks such as transcribing interviews, generating images, and making videos, thereby reducing costs and increasing productivity. AI can

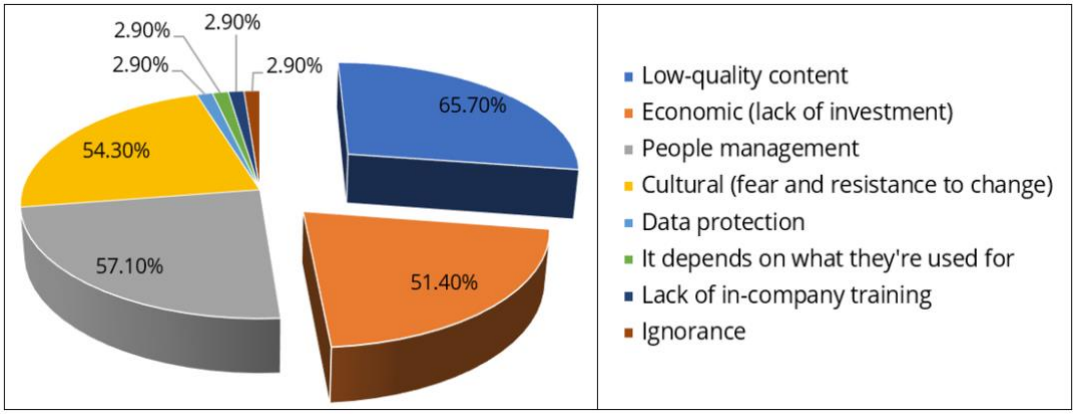

Figure 6. Obstacles in the implementation of AI tools in media organizations (survey results) (Source: Own elaboration)

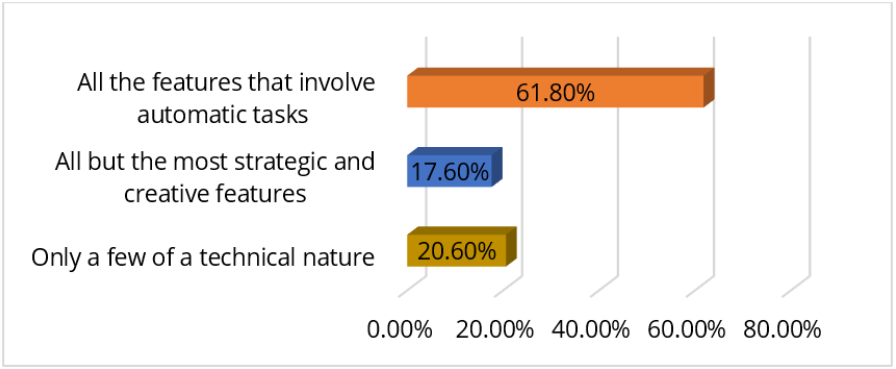

Figure 7. Functions that could be replaced by AI (survey results) (Source: Own elaboration)

also facilitate tasks that are tedious or recurrent for journalists, improving their quality of work life and allowing them to spend more time on other, more creative, or analytical activities. It is also mentioned that AI can help with the personalization and optimization of content, which allows you to reach specific audiences more effectively and improve interaction with them. It also improves data processing and prediction, which contributes to more informed and accurate decision-making.

Despite a few contrary opinions mentioning concerns about the potential loss of jobs or the low quality of AI-generated content, most responses reflect a positive perception of the potential benefits of implementing AI tools in media organizations. Regarding the obstacles and adverse effects of implementing AI in media organizations, 65.7% of API journalists believe that it will lead to low-quality content, which could negatively affect the reputation and credibility of media organizations. In addition, 57% of respondents expressed concern about the impact AI could have on existing jobs, which could lead to resistance to change and affect employee morale (**Figure 6**).

In 54% they venture cultural problems (for example, fear, or resistance on the part of those who feel threatened by changes in their job roles or in the way tasks are performed), and in 51.4% economic problems due to lack of investment in the adoption of technologies, since AI may require significant investment in infrastructure, training and skills development, which can be challenging for some media organizations, especially smaller ones. These obstacles can pose significant challenges to the successful implementation of AI tools in media organizations and will require carefully planned strategies to address them effectively.

In the companies where API members work, 100% of those surveyed say no professional profiles have disappeared, and no new profiles have appeared. However, some are arriving early. 61.8% of respondents believe that AI could replace all functions involving automated tasks in their company. This suggests a widespread perception that AI technologies can play an important role in automating routine and repetitive processes in the workplace. 20.6% of respondents said that only some technical functions could be replaced

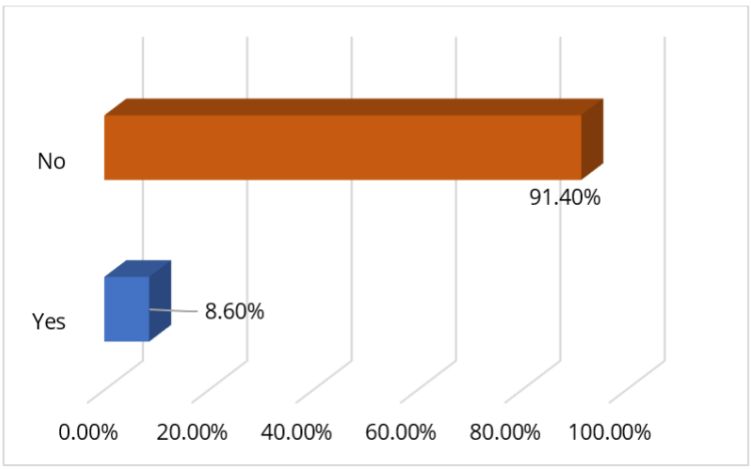

Figure 8. Fear of losing a job (survey results) (Source: Own elaboration)

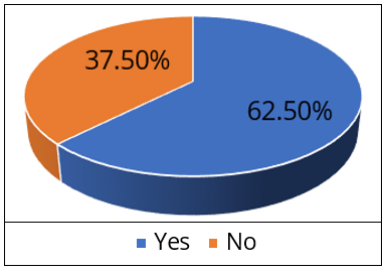

Figure 9. Fear of losing a job (survey results) (Source: Own elaboration)

by AI, while 17% of respondents said that all but the most strategic and creative functions could be replaced by AI (**Figure 7**).

This perspective highlights the importance of unique human skills, such as creativity, strategic decision-making, and adaptability, which may not be easily replicated by AI. 91.4% of respondents do not fear losing their jobs due to AI (**Figure 8**). When asked why they were not afraid of losing their jobs, 62.07% of respondents expressed that AI cannot replace their work due to the human component in their work, contact with sources, the ability to detect stories through conversations, and decision-making based on human experience and judgment. 20.69% of respondents highlight that an AI cannot replicate their creative work, as they rely on the unique ability of human beings to generate original ideas and approaches.17.24% of respondents say that AI can be a helpful tool to improve certain aspects of their work, but it requires human intervention to use it effectively and ensure the quality of the results.

We see that while AI may pose a potential threat to specific jobs, it is recognized that there are aspects of human job roles that are difficult for AI to replicate, such as creativity, specialized knowledge, and a unique focus on problem-solving. Respondents show interest in developing skills to excel in areas where AI cannot yet fully match human capabilities, such as generating original content and a deep understanding of specific topics. **Figure 9** shows that 62.5% of respondents have decided on training and learning to use tools in this area, while only 37.5% have not considered training.

52.38% of respondents have decided to face the risk of losing their jobs by investing in AI training. This reflects a proactive attitude towards change and a desire to acquire new skills to adapt to the evolving work environment. 14.29% of respondents plan to continue working creatively and innovatively to stay in the job market. 33.33% of respondents do not express a significant fear of losing their jobs due to AI. This suggests confidence in their abilities and an optimistic outlook on their future career.

Finally, the sample results offer insight into API journalists' perceptions, attitudes, and concerns regarding the implementation of AI in journalism. While some challenges and obstacles need to be addressed, there are also significant opportunities to improve the efficiency and quality of journalistic work through the responsible and effective use of AI.

Regarding the impact of AI on investigative journalists' professional profiles, the results show that while there are concerns about potential declines in content quality and job losses, the majority of respondents do not fear losing their jobs to AI. This suggests an optimistic perception of the unique human ability to generate original ideas and make decisions based on experience and judgment.

However, there is a clear awareness of the need for training and adaptation to new skills, which reflects a shift in journalists' professional profiles towards less operational roles and more focused on higher-value tasks, as pointed out by authors such as Túñez-López et al. (2021). Regarding the identification of benefits, problems derived from AI, obstacles, and challenges for professional profiles, the sample reveals a generalized positive perception about the potential benefits of AI, such as the improvement of the efficiency and quality of journalistic content. However, concerns about potential declines in content quality, impacts on existing jobs, and ethical and training challenges are also highlighted. These findings coincide with the idea that AI presents opportunities to improve journalists' capabilities. Still, it also poses challenges related to editorial independence, professional ethics, and the need to adapt to an evolving work environment, as mentioned by authors such as Peña-Fernández et al. (2023) and García-Caballero (2020).

The sample results offer a comprehensive view of how the implementation of AI is impacting investigative journalists' professional profiles, highlighting both the potential benefits and the challenges and obstacles that need to be addressed to ensure a successful and sustainable integration of AI into journalism. The results obtained from the questionnaire have helped to map out the main types of AI technologies being implemented in the daily practice of media outlets and investigative journalism professionals in Spain, as well as the uses and frequency with which they are employed, thus achieving the first of the three specific objectives of this research.

Furthermore, the second specific objective, which seeks to determine how these AI technologies have affected the professional profiles of investigative journalists, has been addressed through the responses to questions about the incorporation or disappearance of new profiles in newsrooms, the areas where AI is being used, or the functions that could be replaced by AI, among others. The third specific objective, aimed at identifying the benefits, problems, obstacles, and challenges of AI concerning the profiles of these professionals, has been addressed with the responses to questions regarding the possible fear of job losses, professionals' perceptions of the quality of their work and its irreplaceable nature, and attitudes towards training and skill development related to these new tools, among others. Thus, the survey instrument has helped map the perceptions and perspectives of Spanish investigative journalists regarding the advent of AI, which they mostly embrace as positive.

CONCLUSIONS

After the research, we found that the findings are novel, as the existing literature does not address AI implementation among investigative journalists in Spain. Investigative journalists, grouped in the API, consider that automatic speech recognition and tools for data collection and/or processing are the most used technologies in organizations where the participants carry out their professional activities. On the other hand, natural language processing seems to be less commonly used.

The processing and conversion of oral language into writing is currently the primary use of AI in media companies, followed by content recommendation and analysis of large-scale data. Automatic text generation, audience analysis, and search engine content optimization are also important uses of AI, although less frequent compared to language processing.

AI technologies will be beneficial for both media organizations and individual practitioners. Among the primary uses of AI are processing and converting spoken language into writing, analyzing large amounts of data, and audience analysis. One-third of respondents regularly use AI tools. The areas where the tools are most used are data collection and information processing.

Although only a small percentage of respondents have experienced the emergence of new professional profiles associated with AI, it is evident that there is an emerging trend towards the integration of technical and specialized roles in SEO with AI in media companies. This suggests the need for organizations to adapt to technological advancements and provide adequate training for their employees in these emerging areas.

They have not yet seen the need to incorporate new AI-related professional profiles into their teams. This may be due to a lack of understanding of AI's potential in the media realm or resistance to change. The implementation of AI tools in media organizations is a reality in the short term. The obstacles that journalists foresee in the process of implementing AI are the proliferation of low-quality content, job losses, as well as fear and resistance to change. For the time being, no new or disappeared professional profiles associated with AI have appeared.

The functions that could be replaced are all those that involve automatic and technical tasks. Respondents are not afraid of losing their jobs due to the implementation of AI, because AI cannot replace their work due to the human component in their work, contact with sources, the ability to detect stories through conversations, and decision-making based on human experience and judgment. AI cannot replicate their creative work, as it relies on the unique human ability to generate original ideas and approaches.

AI can be a helpful tool for improving certain aspects of your work, but it requires human intervention to use it effectively and ensure the quality of the results. This reflects a balanced view that recognizes the value of AI as a complement, but not a complete replacement, for human skills in journalism.

Although the results indicate that they do not fear losing their jobs to AI, most show awareness of the importance of adapting and being prepared for the changes AI may bring to the job market. This is reflected in the high proportion of responses that include measures such as AI training, finding creative and innovative ways to work, differentiating themselves from AI capabilities, and considering switching sectors should their current jobs be threatened.

Most respondents highlight the importance of AI training to evolve and adapt in the workplace and recognize the need to acquire new AI-related skills and knowledge, either to use it as a support tool in their current jobs or to explore opportunities in other fields. Regarding the limitations of this work, it should be noted that this is a first contact with the map of AI in investigative journalism in Spain. It is an initial look at a reality that is alive and highly dynamic. The picture of AI in the media and journalism changes rapidly with technology and tools, requiring continuous monitoring.

The study would need to be continued over several years, with periodic surveys to test the evolution of this technological implementation. The research has also been limited by the difficulty in obtaining a larger number of responses, although those obtained are rich and come from highly representative professionals in the sector.

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AI statement: Generative AI tools were employed during the preparation of this manuscript exclusively to support the search, retrieval, and preliminary organization of scholarly materials relevant to the theoretical framework and state of the art. These tools assisted in identifying sources, summarizing existing literature, and compiling conceptual ideas, but all analysis, interpretation, argumentation, and final writing were carried out solely by the author. No AI system was used to generate original academic content, nor to draft, restructure, or edit the final manuscript beyond standard proofreading utilities. The author assumes full responsibility for the accuracy, integrity, and originality of the work submitted.

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