VISUAL REVIEW | Vol. 17, No. 4, 2025 | ISSN 2695-9631
International Visual Culture Review / Revista Internacional de Cultura Visual
https://doi.org/10.62161/revvisual.v17.5984

COMPARATIVE ANALYSIS OF THE EDITORIAL USE OF GENERATIVE ARTIFICIAL INTELLIGENCE IN JOURNALISM EDUCATION: A Case Study

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KEYWORDS

Artificial intelligence
Journalism
Educational innovation
University education
Teaching

ABSTRACT

This research focuses, through the analysis of a contextual review of artificial intelligence (AI) in the media sector and a case study, on how future media professionals use these tools, as well as on assessing their effectiveness and reliability. The approach of the study is based on a comparative analysis between the production of news headlines by journalism students and headlines produced by an intelligent editorial assistant. To carry out the analysis, a group of 80 students brought together, who produced two headlines for a written report they had previously prepared. In the first phase of the process, the students generated a headline with their own reflective process. In the second phase, they created another headline option using an assistant from generative artificial intelligence. The research shows that artificial intelligence creates headlines faster than the students and, moreover, with greater efficiency in all five variables analyzed.

Recibido: 05/ 03 / 2025
Aceptado: 07/ 06 / 2025

1. Introduction

Generative artificial intelligence, henceforth known as IAG, has profoundly transformed the role of many professionals today, regardless of their areas of work. It is logical that various transformations are taking place in the media, given that this is a sector where digital technologies are used in a multi-channel, multi-platform and extensive way. The use of these innovative ways of creating content stems from the growing need to increase the production of up-to-date news and information to target audiences. The impact of AI is already notable and is expected to continue to affect all sectors of production within news companies in a comprehensive and cross-cutting manner (Lopezosa et al., 2024).

Artificial intelligence (AI) represents more than just a scientific discipline dedicated to developing computer programming and solutions. In fact, AI involves the implementation of innovative approaches that carry out operations like those performed by the human mind, such as learning and logical reasoning. This significant technological advance entails a real paradigm shift in various fields, encompassing Education Sciences, Social Sciences and Communication Sciences (Muñoz de Luna et al., 2024).

In the field of journalism, AI enables remarkable optimization in various tasks, such as documentation, production, natural positioning of messages, creation of attractive headlines, re-editing of texts and development of royalty-free images that match the content. This is achieved efficiently thanks to complex algorithms and machine learning, used in programs based on neural networks. In short, the role of AI in journalism is becoming increasingly significant. Technological advances have facilitated the automation of tasks linked to news production, which generates transcendental ethical and professional challenges (Túñez-Lopez et al., 2019).

There has been a shift from the addition and subtraction of physical copies of classical and formalist distribution to the digitization of the use, reading, consumption and enjoyment of content. The reader thus becomes another component in the value chain of media dissemination, who gives his or her opinion, produces information, shares it and even distorts it (Peinado and Mateos, 2016). This distortion and transformation of information has increased in an unlimited way due to the use of generative artificial intelligence tools in multiple formats, media and channels. This research aims to reveal, through the analysis of the market context, the evolution of this technology and a practical case based on how future communication professionals use artificial intelligence tools to create news headlines previously elaborated by humans, as well as to evaluate their effectiveness and reliability.

A relationship has been observed between the increase in the speed of news production and the use of artificial intelligence systems in today's media. One of the editorial resources that facilitates this task is the content manager *Editmaker*, developed by Cibeles Group L.L.C (https://www.*editmaker*.com, 2024), a Spanish company specializing in digital editorial software. This program demonstrates that the creation of headlines, as well as the editing and rewriting of texts, can be carried out more quickly thanks to these advanced technologies. The implementation of these tools will allow journalists to concentrate on more reflective and investigative aspects, while repetitive or less productive tasks will be handled by high-performance artificial intelligence systems.

Likewise, the way universities teach and learn has been transformed by active learning through AI. This fusion of pedagogy and technology enables students to become more actively involved in their own educational process, resulting in more efficient knowledge acquisition. Artificial intelligence is presented as a tool capable of transforming the way education is delivered in schools and universities, establishing itself as valuable support for both students and teachers (Mateos Abarca, 2024a). Its implementation is expected to expand rapidly, becoming an indispensable companion in teaching and academic work (Miranda Galbe et al., 2024). These capabilities are essential for transforming education.

Moreover, AI usage practices such as the one shown in this research invite students to carry out activities with advanced digital production systems, which will be used in newsrooms when they become practicing journalists. From this point of view, the case study analyzed in this study has two aspects: research and university teaching (Mateos Abarca, 2024a).

The challenge lies in the fact that human communication is not restricted to logic alone; its nature encompasses psychological and organic elements that, so far, no machine has managed to imitate. In situations of uncertainty, humans possess the ability to respond and employ their creativity, adapting

to the demands or circumstances presented by their interlocutors during a given interaction (Universidad Internacional Iberoamericana, 2024).

Instead of continuing with conventional methods, students can, through specific practices, enhance their knowledge and skills in relation to generative artificial intelligence (Dempere et al., 2023). The future will be more linked to information than to news, more focused on formats than on media and more related to information intelligence than to data (Orihuela, 2023). In this sense, professionals in the sector face the challenge of deepening their understanding and application of this technology. To take advantage of the opportunities offered by AI, it will be crucial to understand it, as this will make it possible to adapt its benefits to the needs of quality journalistic practice.

In this scenario, training takes on a key role, especially for faculties dedicated to Journalism studies, which face a considerable challenge in terms of content production techniques (Ufarte Ruiz et al., 2021). Based on this premise, this study examines the contents produced through the *Editmaker* content manager and its artificial intelligence system. A comparison is also made between the production of news headlines by human beings - specifically, students in the 4th year of the bachelor's degree in journalism - and the generation of these same headlines using the AI of the content manager.

The findings reveal that the difference between the students and the machine in the creation of headlines is very high in favor of the software, with artificial intelligence producing headlines faster and of higher journalistic quality, based on the parameters defined for the research.

2. Theoretical framework

The communication sector has undergone significant changes because of AI. These changes have not only been superficial but have profoundly affected the entire organization of the production process. Moreover, multiple aspects related to management, creation, development and distribution of content will undergo alterations. Indeed, as Newman (2022), quoted by Parratt Fernández et al. (2024), points out, AI technologies have become an essential part of journalistic work: from the detection, evaluation, verification, composition and presentation of news to its distribution. As far as cyber media are concerned, they will play a complementary role in the production of various news elements. These elements include news, headlines, headlines, data tables and textual chronological. In addition, cybermedia, thanks to artificial intelligence, facilitate tasks such as translation into other languages, the creation of summaries and SEO positioning (*https://www.editmaker.com*, 2024).

In short, there are significant challenges ahead in several areas such as the social, professional, business, institutional and governmental spheres. Generative AI is classified as a branch of artificial intelligence, where the 'creativity' of machines, both at the hardware and software level, is brought together to generate content that can be manifested in the form of text, audio and/or video. This capability enables the production of works that appear to be authentic and human in origin but lack the nuances of genius that humanity brings to its works, even if it tries to imitate them. Perhaps because of the limited real knowledge we have about our own intelligence (Larson, 2022).

The main difference between AI and IAG lies in the focus and functions that each performs. Generally, the former is limited to the realm of computing, focusing on creating systems that can perform tasks that normally require human intelligence. These capabilities include a wide variety of applications and techniques, such as computer vision, natural language processing, planning and machine learning. Therefore, their main goal is to replicate or simulate human cognitive functions, such as reasoning, learning, perception and problem solving (Mena and Mateos, 2024). While the second, generative artificial intelligence comprises a more ambitious and complex process in the development of AI, which allows, as mentioned above and based on a user request - Prompt - the automated production of high quality textual, graphic, sound and audiovisual content, with relevant implications for journalism, advertising and entertainment' (Franganillo, 2023:1).

Even so, it is important to stress that artificial intelligence cannot replace professionals in the field of communication. The essence of a news story lies in its creation by human beings. Content that has been modified or transformed by a machine does not have the same value as the original news. It is considered new because it is unique, exclusive, novel and current; it arises from a message that interprets the reality of an event occurring for the first time. Reality cannot be created by AI. While the journalist has the responsibility to interpret what is real, AI can modify, re-edit or even generate an alternative reality. However, it is the journalist who is responsible for producing the news from an event

that has occurred and in its most authentic form.

Despite this, the way in which the content is distributed, transformed and positioned can be influenced by changes made to this original news story. In addition, there is the opportunity to enrich this news reality through machine-generated images, video and/or audio, although it is essential - even necessary - that there is human oversight during this process. However, the number of professionals involved in these developments will decrease (*willrobotstakemyjob.com*, 2024). In this sense, Manfredi and Ufarte (2020), in addition to focusing on the danger of automated content generation when used for unlawful purposes, state that the application of AI together with task automation will lead to the reorganization and reconfiguration of newsroom staffs, as well as the elimination of certain jobs, especially those with little added value (Mateos and Gamonal, 2024b).

A clear reaction is being generated in elements of the news business value chain by artificial intelligence (AI). Every year, the use of AI is growing, and it is anticipated that, in the short to medium term, this technology will play a significant role in newsrooms, agencies and media outlets. The arrival of Chat GPT in newsrooms marked the beginning of a new chapter in the 'democratization' of access to advanced technologies for users. Since November 30, 2022, this generative artificial intelligence (IAG) tool has radically transformed the way information is produced, impacting both cyber journalism and cyber media. As a result, numerous industries have begun to adopt artificial intelligence to optimize their productivity (Edwards, 2023).

Research carried out by Mayoral Sánchez et al. (2023) on 88 Spanish media showed that most of the media consulted (60%) were already using AI to perform journalistic tasks, especially for information distribution or audience relations and automated information gathering, although text production was scarce. On the other hand, the same study showed that almost 75% of the journalists surveyed had a positive or very positive opinion of AI.

The influence of artificial intelligence on society is undeniable, and this trend is expected to persist not only in the short term, but also in the medium term (Lopezosa et al., 2023b). With the growth of AI, both in its generic and generative forms, various disciplines have begun to explore new ways of incorporating it into their daily activities, leading to innovative opportunities for the development of research of all kinds (Lopezosa, 2023a).

A clear example of this is that ChatGPT is changing the way researchers work when writing scientific articles (De Vicente-Yagüe et al., 2023). In academia, these initial speculations about the use of ChatGPT as an author have provoked reactions from some analysts. They point out that it would be more appropriate to consider ChatGPT as part of the methodology and source of data in the bibliographic references, but not as an author (Hernández, 2023). This is a controversial issue, as it raises the question of the displacement of human labor in favor of a machine performing these tasks.

Can AI write journalistic texts adequately? The question that arises is whether AI has the capacity to create news content of the necessary quality. In this context, the question arises whether the results obtained by these technologies are comparable to those of a human journalist. Opinions on AI vary among communicators. There are those who believe that this technology can be a significant ally in the practice of journalism. On the other hand, some are assessing what tasks might be at risk due to its implementation. Proponents of AI argue that it can significantly improve the processes of sorting and searching content, overcoming the limitations of conventional software. However, some argue that despite AI's ability to summarize specific events, such as a football match or a war, only a journalist has the capacity to provide the essential narrative value to convey the emotional charge of the protagonists and their experiences. Even if this technology is asked to perform a similar task, the result would always lack depth and realism (Herrera-Ortiz et al., 2024).

The question of the ability of AI to produce journalistic texts appropriately in the field of journalism is becoming increasingly relevant. With the advancement of technologies, there is a growing interest in whether these tools can meet the necessary standards to inform the public. In this context, a debate arises about the effectiveness and accuracy that artificial intelligence can achieve in the writing of news and reports, and in our case, in the elaboration of headlines (Ufarte Ruiz, 2020).

These innovations not only facilitate tasks and generate content but also offer opportunities for more personalized reader engagement. They also aim to ensure rigorous fact-checking and enable the creation of original and unique content in textual, interactive and audiovisual formats, using advanced algorithms and neural networks. However, we believe that AI does not have the capacity to replace professional communicators, since, at its core, news is entirely generated by human beings. Content that has been altered or transformed by a machine cannot create the original news.

In the same context, Zizek (*Bloghemia.com*, 2024) shared his concerns about the growing dependence on artificial intelligence. According to his observations, he emphasized that the real risk is not in chatbots providing simple answers or being mistaken for human beings. Rather, the real danger is that interaction with these chatbots could lead people to communicate as if they were human themselves. Artificial intelligence does not have the capacity to replace professional communicators, since, at its core, the news is entirely generated by humans. However, the way in which this original news is modified can influence how the content is distributed, transformed and positioned. Moreover, it is possible to enrich this news reality with machine-generated images, video and/or audio. In this process, human supervision will play a crucial role, although it seems clear that the number of professionals involved in these developments will decrease. According to some authors, such as Walsh (2018), the quality of the texts produced is so high that it is difficult to differentiate them from those produced by human writers. However, for Boden (2017), one of the most controversial fields within artificial intelligence is the production of content. He emphasizes that the level of security offered by a tool depends on how it is used.

In this context, one of the most debated aspects of machine learning is the creation of texts that simulate human writing, which has implications that go beyond simple advanced machine-generated writing. In news production, cybermedia will not be able to do without generative artificial intelligence, which will become an essential resource. That this situation creates tension between the industry and the profession of journalism is undeniable, as it not only highlights significant opportunities for increased efficiency in news production and distribution but also introduces a risk: the danger that machine-generated 'rehashes' could replace quality journalism (Mateos and Gamonal, 2024b).

The implementation of these applets is done through integration of APIs in content management systems (CMS). Through the programming of functionalities that are pre-configured and self-managed by the publishers themselves and their development teams, a link is established between the IAG and the result of the content generated. Similarly, video editing tools that incorporate generative artificial intelligence have established themselves as essential components for professionals and amateurs alike. These tools simplify the post-production process and open the door to new creative possibilities (Mena and Mateos, 2024). In this scenario, it is essential to identify how these innovations are changing the way we relate to technology and the environment around us. Thus, it becomes clear that AI has a significant and lasting impact on contemporary society.

However, difficulties persist in the case of longer and more complicated constructions, where it seems unable to sustain a coherent 'narrative thread' (Du Sautoy, 2019). The impact of AI, through ChatGPT, has become evident in multiple productive sectors around the world. This development, which was created by OpenAI, is characterized by its ability to automate process optimization. In the social and journalistic field, such as the one we are dealing with here, numerous debates have arisen and there are different opinions about it. In this sense, the arguments range, for example, from the proposal in the *European Commission's White Paper on artificial intelligence* (2020), which considers that its use can make it possible to address challenges such as improving the quality of democracy, in which the journalistic profession has much to say, or the provision of quality public services, to those who highlight the dangers that may arise from its implementation, such as the increase in existing gaps - of gender, race, social class, etc. -, the intrusion into private life, the redefinition of current journalistic models or the possible problems of job insecurity that it may cause among journalists (Peña Fernández et al., 2023).

In relation to the specific work of journalism, what distinguishes us from other species is our ability to produce long texts and to have a global perspective. We also possess competences to compare and abstract information, as Carrión (2023) points out. Several experts argue that, while artificial intelligence can produce a quality press release or newsletter, it will not be able to produce a truly good news story. However, its usefulness in data collection is notable, as this could provide the journalist with more time to research and express his or her opinion on a specific topic.

3. Research objectives

"Headlines are the main element of a news item" (El País, 1996: 59). Thus, we can understand them as brief and concise sentences that summaries the essence of a news item, capturing the reader's attention and offering a clear vision of the content of the article. Their main function is to effectively inform and

attract the public, acting as the first gateway to the information. A good headline should be informative, attractive and relevant, but it should also "be unambiguous, concrete, accessible to all types of readers and free of any kind of sensationalism" (Ibid.: 59).

The importance of headlines relies in their ability to influence reading decisions. In a saturated media environment, where readers are faced with an abundance of information, a well-crafted headline can make the difference between an article being read or ignored. Headlines also play a crucial role in constructing the news narrative, as they can emphasise certain aspects of a story and guide public perception of relevant issues. In short, journalistic headlines are not only informative tools, but also strategic elements in media communication that have an impact on the dissemination and reception of news, always in compliance with journalistic deontology and journalistic ethics (Ruiz Alonso, 25 January 2024).

The purpose of this study is to evaluate the reliability of an artificial intelligence system used by journalism students to generate headlines. This system is integrated into a content management system and will be subjected to the task of creating a headline for a news story, in order to verify its validity and usefulness as an assistant for journalists in a practical context. The focus of this study relies in the comparison of journalistic headline writing skills between Journalism Degree students and the generative artificial intelligence of a media content manager called *Editmaker*.

The following objectives were established, based on analyzing the skills of journalism students in comparison with artificial intelligence when creating headlines for a report:

O1) Comparing the skills of journalism students with artificial intelligence in writing headlines for a report.
O2) Recognize the capabilities of AI as a producer of high-quality journalistic headlines.
O3) Demonstrate that the speed of creation of many headlines by the AI machine is much faster than that of a 4th year journalism student.

The question that arises is whether artificial intelligence has the capacity to create news content that meets journalism standards, whether it can do it faster, and on what variables. Regarding the delimitation of variables, the following comparative concepts are defined based on five parameters: creativity, clarity, accuracy, impact and style. For this purpose, human headlines and those generated by the content manager's AI were analyzed and compared.

4. Methodology

In today's digital era, the production of news content has undergone a significant transformation thanks to the advancement of technologies, especially in the field of artificial intelligence. This research focuses on analyzing and comparing news headlines generated by AI algorithms with those produced by journalism students. This approach responds to the growing presence of automated tools in the field of journalism, as well as the need to evaluate their effectiveness and quality in comparison with human work.

Headlines, as we have already seen, are crucial elements in journalism, as they not only capture the reader's attention, but also synthesize the essence of the news story. In this context, the question arises as to whether artificial intelligence can match or surpass the creativity and critical sense of future journalism professionals. To answer this question, a comprehensive analysis was carried out, involving the collection of data on headlines produced by both parties, followed by a qualitative assessment. The methodology employed consisted of selecting a representative sample of recent news items, covering diverse topics such as politics, economics, science and culture. Each news item was accompanied by two types of headlines: one generated by an IAG system and the other elaborated by journalism students (Zorrilla, 1996).

The study was carried out using a methodology that combines explanatory, descriptive, qualitative and quantitative approaches. The objectives of this research are to evaluate the reliability of an OpenAI system integrated by means of an API (Aplication Programme Interface) o the *Editmaker* content manager. This software, developed by Cibeles Group, acts as a media content manager and integrates artificial intelligence technologies to optimize the creation and management of journalistic content. Behind this software product is the AI known as ChatGPT, in this case in its GPT-3.5 TURBO version of the renowned technology created by OpenAI. An API interfaces ChatGPT with various fields

programmed to perform specific journalistic actions within the CMS.

To carry out this research, a group of 80 4th year students were assembled and tasked with producing two headlines for a written report. In the first phase of the process, the students had to generate headlines independently. Then, in the second stage, they were asked to create another option using the IAG, specifically through the *Editmaker* software. To create this second headline using *Editmaker*, the student simply placed the body of the news or feature story in a field and clicked the 'Create Headline' button. This approach has made it possible to collect data related to the variables mentioned above, as well as to make a direct comparison between each student and the AI. It is essential to note that this study focuses exclusively on the overall results, without delving into the individual details of each student in relation to the IAG.

The research methodology, which involves the authors in the analysis of the results of numerical fieldwork with subjective factors, is quantitative, qualitative, exploratory and descriptive research. This hybrid methodology falls under the umbrella of grounded theory, which is a qualitative research approach developed by Barney Glaser and Anselm Strauss (1967). Its main objective is to generate theories from empirical data, rather than to test pre-existing hypotheses. This method is commonly used in social sciences, health and other disciplines where complex phenomena are to be understood.

In particular, the reflexive approach allows researchers to acknowledge and articulate their own position, experiences and biases in relation to the object of study. This implies that authors not only collect data, but also actively participate in the interpretative process, which can enrich the analysis by considering how their own experiences and contexts influence their understanding of the phenomena studied. Likewise, participatory methodologies, such as action research, also involve participants in the analytical process, allowing for a co-creation of knowledge that reflects diverse subjective perspectives.

The method is characterized by its flexibility and adaptability, allowing researchers to formulate theories that are both meaningful and relevant, based on the data collected, enabling:

- A defined framework for data analysis and theorizing, providing researchers with a tool that allows them to control subjectivity and bias in their analysis.
- An approach that appreciates the perspective of study participants and promotes the inclusion of diverse voices and viewpoints in the analysis and formulation of theories.
- The ability to create theories that link closely to the empirical reality of the individuals who are part of the study. This aspect is particularly beneficial, in this case, in the field of social sciences.

The study was based on the students' initial reflection on a news item, considering it as an informative message. Based on this message, the effectiveness *Editmaker* IAG in carrying out the above-mentioned task was evaluated. Subsequently, the results obtained by the software were compared with those of a human journalist in training. These five variables were rated as positive or improvable. When the two field researchers considered that a headline was better in each of the five aspects under analysis, the point was awarded to the generative artificial intelligence or to the student.

The comparison between the two results reveals the contrast between the work done by an artificial intelligence programme and that of a professional journalist, who performed the same tasks. The elaboration of the headlines has been conceived only as a journalistic writing exercise, based on a matrix text created by a person -an initial reflection-, and not as the generation of a news item from its origin, since the news items were generated by each student before the headline.

Eighty news items of different topics and journalistic genres were selected. For each news item, two types of headlines were generated: one using an IAG of *Editmaker* tool and another created by a group of journalism students. Subsequently, a qualitative evaluation was carried out to measure the creativity of both sets of headlines. The evaluation was carried out by an analysis of the two researchers who conducted the study: doctors, researchers, teachers, practising professionals and specialists in multimedia content and information science. In total 160 headlines were analyzed and compared, 80 created by the journalism students and 80 created by the machine, generated by the 80 students clicking on 'Create Headline'.

As a caveat, the IAG headlines generated by each student could be more than one, given that the machine generates headlines five by five, with the participants choosing the one of the headlines generated by the machine that the student considered most appropriate for the news item.

Table 1. Number of news items and headlines generated by students and the IAG, as well as the response time of the IAG and students in generating the headline.

Fieldwork and sample data	
Number of participants	80 students in the 4th. Year of Journalism.
Developed news	The students wrote 80 news items on a variety of topics.
Human headlines	Each student wrote a headline for their news story.
Headlines by IAG	Each student requested a headline generated by IAG with *Editmaker*.
Total headlines generated	A total of 160 headlines were generated.
Time spent by the IAG	The response time of the IAG was 3 to 10 seconds.
Time spent by students	The time taken by students to produce the headline ranged from 1 to 7 minutes.

Source: Own elaboration, 2024.

The assessment parameters were creativity, clarity, accuracy, impact and style:

A) Creativity: when we talk about creativity in a news headline, we are referring to the ability to capture the reader's attention in an original and effective way. A good headline not only informs about the content of the news but also arouses curiosity and provokes an emotional reaction. Let's say we are reading a newspaper or surfing the Internet. We are confronted with a series of headlines competing for our attention. In this context, creativity becomes an essential element. Ultimately, a good creative headline is one that manages to communicate the main message while stimulating the im IAGnation and interest of the audience (Méndez and Ghitis, 2015).

B) Clarity: clarity in a news headline refers to its ability to accurately and understandably convey the essential information to be developed in the article. A good headline should be direct, avoiding ambiguities and unnecessary complexities, allowing the reader to quickly grasp the main theme of the news item.

Firstly, the language used should be accessible, it should not include technical jargon or complicated words that may confuse the reader. On the other hand, a clear headline is usually concise, using as few words as possible without sacrificing informative content. This helps to keep the reader's attention and facilitates quick comprehension. Another key feature of clarity is the structure of the headline, which should follow a logical order to understand the who, what, when, where and why of the story. In short, a clear headline is one that effectively communicates the core message of the news story in a simple way, allowing the reader to quickly understand the content of the article without the need to read further. Clarity is essential to attract the public's attention and ensure that the information is accessible to all (Ruiz Alonso, 25 January 2024).

C) Accuracy: accuracy in a news headline refers to the accuracy with which the information is presented. An accurate headline should capture the essence of the news without distorting the facts or exaggerating details. This implies that the language used should be clear, direct and unambiguous, allowing the reader to immediately understand the main issue being addressed. When a headline is accurate, it not only reports what has happened, but also sets an appropriate context. Readers tend to look for sources that present information honestly and objectively, so an inaccurate or sensationalist headline can lead to misunderstandings or even misinformation. Finally, a good headline must be true to the facts, accurately reflect the content of the article and provide the reader with a quick and effective understanding of the news (Cervera, 2014).

D) Impact: when we talk about the 'impact' of a headline, we refer to the ability of the headline to capture the reader's attention and generate immediate interest. A good headline not only informs the content of the news but also provokes an emotional reaction or curiosity in the reader. Imagine you are browsing a website full of news, where you come across several headlines, some of which are simple and straight forward, while others use powerful words, surprising figures or pose intriguing questions.

The impact may also depend on the context and current events. In this sense, a headline that

addresses a hot topic or one that is relevant to the audience may resonate more deeply. In addition, the use of active verbs and vivid descriptions can intensify that sense of urgency and importance. Impact is crucial because it is the first impression the reader receives. A powerful headline not only attracts attention but also sets the tone for the rest of the story and can influence the decision to read further (Migura, 2014).

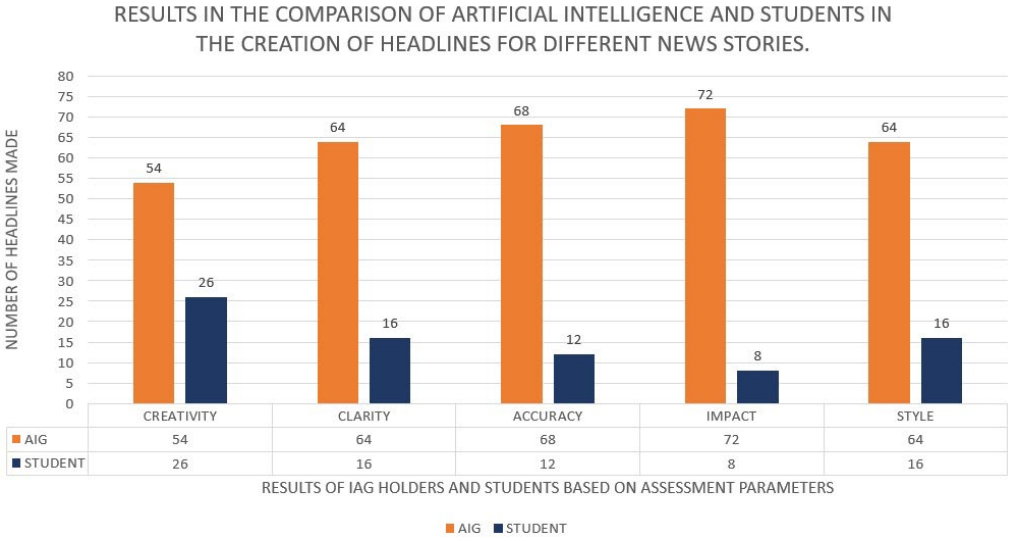
E) **Style:** style in a news headline refers to the way the information is presented, including tone, word choice and structure. A good headline should be clear, concise and attractive and capturing the essence of the news story in a way that engages the reader. In narrative terms, style can reflect different approaches. On the other hand, it can adopt a more sensational or emotive tone, seeking to provoke an immediate reaction in the reader. This can be achieved using punchy adjectives or intriguing phrases. Style also involves considering the target audience. A headline for a specialized newspaper may have technical and specific language, while a headline for a general audience should be accessible and easy to understand. Style is an elementary concept for capturing attention and conveying the main message effectively and connecting with readers (Zorrilla,1996).

4.1 Results

The results obtained provide a defining insight into the differences and similarities in style, clarity, emotional impact and reporting accuracy between AI-generated headlines and those created by students. This comparison not only highlights the current capabilities of automated tools in journalism but also invites reflection on the future of journalism in a world where technology is advancing by leaps and bounds.

Throughout this research, we will present the most relevant findings, including a critical analysis of the professional implications that arise from the increasing use of artificial intelligence in the creation of news content. In doing so, we hope to contribute to the debate on the place of journalists in a media environment increasingly influenced by automation.

Table 2. Results of the comparitive análisis in the writing of a news headline between AI and 4th year journalism students.



Sourde: Own elaboration, 2024.

Note. Results based on the five parameters analyzed: creativity, clarity, accuracy, impact and style.
Note. The number of headlines was 160: 80 generated by the students and 80 by the IAG.

The results of academic research comparing headline generation by generative artificial intelligence (IAG) and journalism offer a revealing perspective on the current capabilities of these technologies in the field of journalism. The remarkable superiority of IAG in almost every aspect assessed raises substantial questions about the future of journalism and the role machines will play in the field.

First, the fact that the creativity of the headlines generated by the IAG is 80% higher than the 20% of

the students suggests that automated tools can produce more innovative ideas. This could be interpreted as an indication that AI has access to a vast amount of data and patterns that allow it to generate more original proposals. However, it is also crucial to consider whether this "creativity" translates into truly relevant content or whether it simply reflects an ability to combine words and concepts effectively without a deep understanding of the context.

Accuracy of headlines is another significant aspect, with 85% for AI versus 15% for students. This finding reinforces the idea that machines can process information and extract the gist more effectively than humans on certain tasks. We believe it is essential to highlight what 'accuracy' really means in the context of journalism. Accuracy implies not only factual accuracy, but also an understanding of nuance and social context, which can be difficult for a machine to fully grasp.

The impact of headlines, where IAG reaches an impressive 90%, raises questions about how that impact is measured. While algorithms may be able to create eye-catching headlines that attract clicks, this could lead to superficiality in news content, prioritizing sensationalism over substance. On the other hand, students, while less effective according to this metric, may be producing more thoughtful or ethically responsible headlines. Expository clarity is another indicator where AI showed significant dominance (80% vs. 20%). This suggests that machines are capable of articulating complex messages in an understandable way. However, we must question whether this clarity is sufficient when it comes to sensitive or controversial topics; this is where human judgment may be indispensable in guiding the reader through the maze of information.

Table 3. Total headlines generated, total where IAG outperforms students on all five variables, total where students outperform IAG and total percentages of IAG vs. student scores.

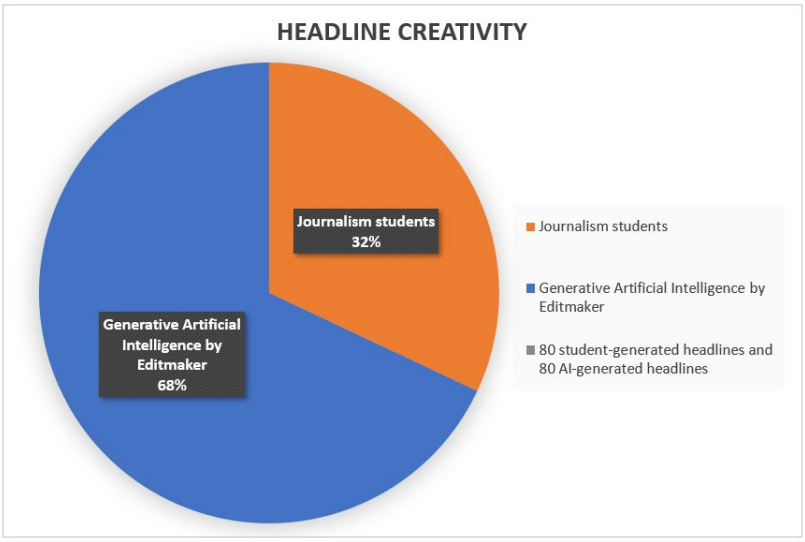
Parameters	Total IAG holders and students	Total better IAG	Total better students	Total percentage IAG	Total percentage of students
Creativity	160	54	26	68%	32%
Clarity	160	64	16	80%	20%
Accuracy	160	68	12	85%	15%
Impact	160	72	8	90%	10%
Style	160	64	16	80%	20%

Source: Own elaboration, 2024.

Finally, style also favors AI with 80%. This may imply that machines are learning to imitate successful styles based on large amounts of analyzed text. However, style should not only be seen as a technical issue; it is also linked to the voice and identity of the journalist or media outlet. Stylistic uniformity produced by algorithms could lead to a homogenization of news content.

Although the results clearly show that artificial intelligence has significant advantages over students in terms of creativity, accuracy, impact, clarity and style in generating headlines, these findings should be viewed with caution. Human interaction remains essential in journalism to ensure not only the technical quality of content but also its social and ethical relevance. The essential question will be how to integrate these technological tools without sacrificing the core values of journalism: truth, accountability and integrity.

Figure 1. Differences between headline creativity. Percentages of optimal AI headlines versus optimal student headlines.

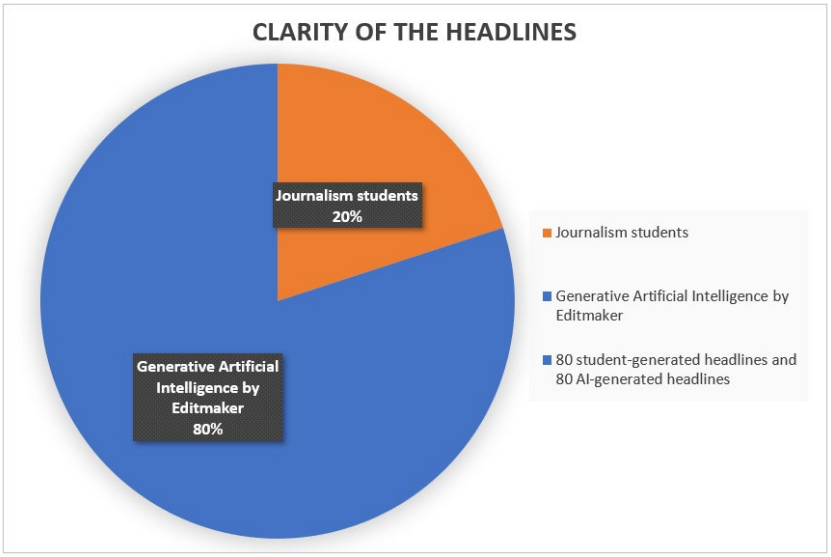


Source: Own elaboration, 2024.

Through a comprehensive analysis of 80 written headlines, it has been observed that the headlines produced by the IAG outperformed those generated by students by 68%, which achieved only 32% in terms of creativity. Headline creation is a crucial skill in journalism, as headlines are the reader's first contact with the news. In today's digital age, where the public's attention span is fleeting, creative headlines can make the difference between an article being read and one being ignored. The results were surprising. The students managed to grasp elementary aspects of the content, but their submissions often lacked the wit needed to stand out in a competitive environment.

The creative superiority observed in the IAG-generated headlines raises questions about the future of journalism. While human creativity remains invaluable, automated tools are proving to be serious competitors in areas where conciseness and impact are essential. Moreover, it must be considered that creativity is not only measured by originality; it also includes cultural and social context that can be better understood by humans. In conclusion, it is worth noting that it is in this variable that students achieve the best results compared to IAG. Human creativity, when dealing with headlines, obtains the best percentage of success of the five variables analyzed (without surpassing IAG).

Figure 2. Differences between the expository clarity of headlines. Percentages of optimal AI headlines versus optimal student headlines.

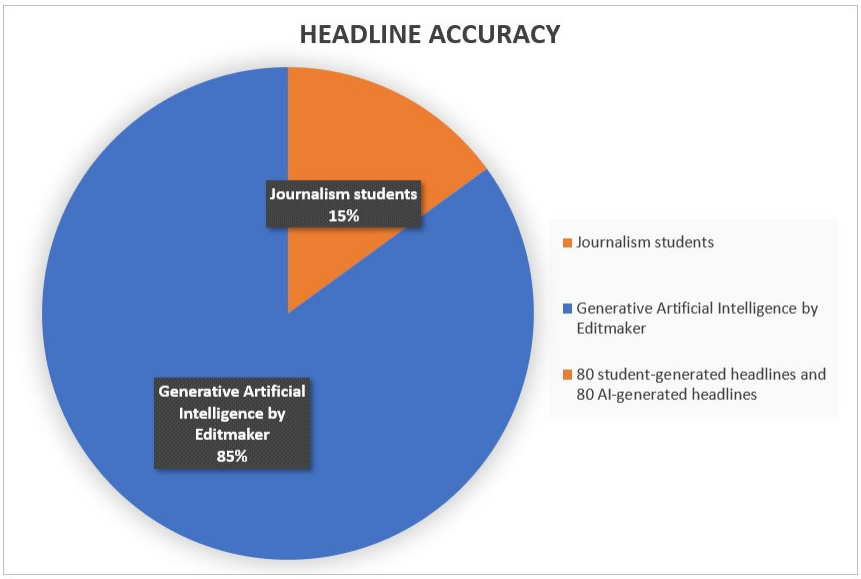


Source: Own elaboration, 2024.

The results revealed that the headlines generated by the IAG had a remarkable superiority in terms of expository clarity. In fact, 80% of the headlines produced by the artificial intelligence system were considered clear and effective according to the established criteria. In contrast, only 20% of the headlines created by the students managed to achieve the same level of clarity.

It is appropriate to consider what *expository clarity* means in the context of a headline. Clarity can be related to the ability of the headline to effectively communicate the main content of the news item, capture the reader's attention and facilitate a quick understanding of the subject matter. The results suggest that IAG algorithms are able to synthesize information and present it in a more direct and understandable way, which could be an indication of their potential to improve communication in journalism.

Figure 3. Differences between headline accuracy. Percentages of optimal AI headlines versus optimal student headlines.

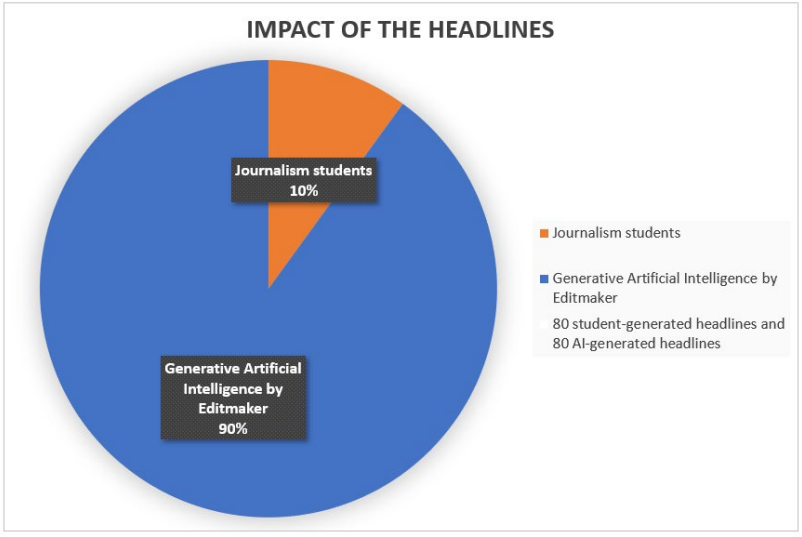


Source: Own elaboration, 2024.

After establishing specific metrics to measure accuracy, such as fidelity to the original content, clarity of message and ability to engage the reader. The results were surprising: headlines generated by the IAG showed an accuracy of 85%, while those produced by the students achieved just 15%. This significant difference raises questions about the future of journalism and the role artificial intelligence will play in this field.

The high accuracy rate observed in IAG-generated headlines can be attributed to several factors. Firstly, these models are trained in large volumes of data and possess a deep understanding of natural language, allowing them to synthesize complex information into concise and effective sentences. In addition, their ability to analyze patterns in language use gives them an advantage in creating engiagng titles that capture the reader's interest. On the other hand, the low performance observed among students may reflect the limitations inherent in their experience and background. Although they are creative and have a good sense of language, they may lack the necessary training to quickly identify the most relevant elements of a news item or to formulate headlines that are both informative and eye-catching (Nadal Palazón, 2012).

Figure 4. Differences in headline impact. Percentages of optimal AI headlines versus optimal student headlines.

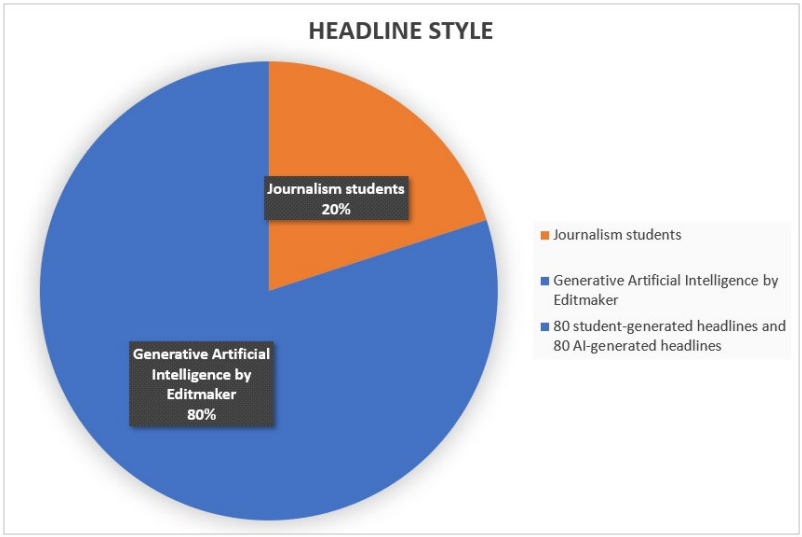


Source: Own elaboration, 2024.

IAG-generated headlines demonstrated 90% higher impact compared to 10% for student-created headlines. This finding suggests that the IAG is not only able to generate content quickly but also produces more engiagng and effective headlines to capture the audience's attention.

Detailed analysis showed that IAG-generated headlines tended to be more concise, direct and aligned with current trends in language used on digital platforms. In addition, these headlines were found to incorporate emotional and provocative elements that resonated better with contemporary audiences. On the other hand, the headlines produced by the students, while well-structured and informative, often lacked the same level of immediacy and emotional appeal.

Figure 5. Differences in headline style. Percentages of optimal AI headlines versus optimal student headlines.



Source: Own elaboration, 2024.

Academic research that has been conducted on the expository clarity of headlines generated by IAG compared to those produced by student journalists reveals significant results worthy of critical analysis. Observing that 80% of headlines generated by IAG are considered clearer in their exposition than only 20% of headlines created by students raises several questions about the effectiveness and implications of the use of advanced technologies in journalistic production.

5. Conclusions

After a detailed analysis of the data, it can be stated that AI has the ability to write news headlines, reports, interviews and other journalistic genres more efficiently than student journalists and at a much faster speed. Given the advancement of this technology, it can be deduced that, in the near future, it

could take over tasks related to journalistic writing in the news business.

However, this superior clarity also invites reflection on the skills and competencies being developed in the academic training of future journalists. While it is true that students may lack the necessary expertise to create powerful and clear headlines, it is also substantial to question whether their training is aligned with the current demands of the media sector. The discrepancy observed could point to an urgent need to revise educational curricula, incorporating technological tools that complement traditional learning and foster greater communicative effectiveness.

The superiority of the "machine" invites reflection on the skills and competencies being developed in the academic training of future journalists. While it is true that students may lack the necessary expertise to create powerful and clear headlines, it is also substantial to question whether their training is aligned with the current demands of the media sector. The discrepancy observed could point to an urgent need to revise educational curricula, incorporating technological tools that complement traditional learning and foster greater communicative effectiveness.

Throughout this research, factors such as students' perceptions of both types of headlines were also considered. Through student consultations, it was found that many preferred IAG-generated headlines because of their ability to quickly capture their interest. However, some participants expressed concerns about the lack of authenticity and depth in the automatically produced content. This bias was likely due to the use of the *Editmaker* content manager's *Clickbait* sub-program, which boosts news click-through, sometimes creating headlines that are too flashy or shocking, and could even be labelled as sensationalist at times.

C1) The significant difference between the two groups can be attributed to several factors: while IAG models are designed to optimize communication using large volumes of data and linguistic patterns, students may still lack full mastery of effective techniques for synthesizing complex information into short sentences. AI models are found to be able to generate headlines that are not only informative, but also eye-catching and understandable to the public.

C2) This finding implies that AI-based tools can offer a valuable alternative in the generation of journalistic content, especially in terms of creating headlines that are easily understandable to the public. The five variables analyzed show that IAG outperforms students, in general, in creating well-written and eng IAGng headlines.

C3) The research reveals that the difference between machines and students is hardly identifiable, as the headlines generated present remarkably similar content and intentions. Headlines produced by Generative AI (IAG) are faster, more creative, clearer, accurate, impactful and stylistically superior compared to those of students. Speed is a cardinal factor in the production of content in modern newsrooms. This is perhaps the most far-reaching in terms of results. The IAG is much faster at creating long-form headlines.

The study not only highlights the advantages of using advanced technologies in journalism, but also raises questions about the future of journalism work and journalism education. While it is essential to recognise the creativity and critical judgment that students bring to the writing process, the results indicate that artificial intelligence-based tools can complement these skills by providing clearer, faster and more concise options for headlines. On the other hand, this finding also reflects a growing trend towards automation in journalism. While this may offer advantages in terms of efficiency and speed, it is imperative to consider the ethical and professional implications, as these technologies continue to raise questions about the quality and authenticity of the information generated (Associated Press, 2023), as well as their impact on society (Lambert and Stevens, 2023).

In short, human intervention remains essential to ensure responsible journalism that not only informs, but also educates and inspires the audience, given that, unsurprisingly, the original news is generated by humans based on the interpretation of reality that communication professionals, journalists, make of it. Without reality, facts, events, existence and the tangible plane, machines would be no more than a mere appendage of a diffuse condition without objective purpose.

In conclusion, this research highlights not only the advanced capabilities of artificial intelligence in the field of journalism, but also the urgent need to adapt educational programs to prepare future journalists for these new technologies. By integrating tools such as IAG into their training, students could benefit from learning to work along artificial intelligence, thereby improving both their own

performance and the overall standard of modern journalism.

In terms of future research, it would be interesting to expand the number of participants in both the student group and the evaluations, to include different journalistic genres, to assess variations in results, and to investigate how the cultural context influences the perception of creativity, both human and artificial.

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