

DOSSIER

GENERATIVE AI AND DIGITAL NATIVE OUTLETS:

a possible match?



JOÃO PEDRO MALAR¹

University of São Paulo, São Paulo – SP – Brazil

ORCID: 0009-0004-9199-0827

ELIZABETH SAAD²

University of São Paulo, São Paulo – SP – Brazil

ORCID: 0000-0002-4020-7116

DOI: 10.25200/BJR.v21n2.2025.1728

Received in: June 21st, 2024

Desk Reviewed in: June 30th, 2024

Desk Review Editor: Laura Storch

Revised on: April 08th, 2025

Approved on: April 23rd, 2025

ABSTRACT – This exploratory study discusses innovations in journalism in the use of intelligent generative systems. We focus on five native digital Brazilian media outlets that assume, through editorial policies and other forms of advertising, the use of intelligent systems in their editorial processes. We correlate aspects of innovations in journalism, algorithmization and aspects of editorial policy. It was found that AI is an auxiliary tool in journalistic work for certain tasks, and not a substitute for journalists. The published vision, however, may differ from the practical application of the technology.

Key words: Digital natives. Artificial intelligence. Innovation. Journalism.

1 University of São Paulo, São Paulo – SP – Brazil. E-mail: joaopedromalar@usp.br

2 University of São Paulo, São Paulo – SP – Brazil. E-mail: bethsaad@usp.br

IA GENERATIVA E VEÍCULOS NATIVOS DIGITAIS: um encontro possível?

RESUMO – Este estudo exploratório discute as inovações no jornalismo no uso de sistemas generativos inteligentes. Focamos em cinco veículos nativos digitais brasileiros que assumem, por meio de políticas editoriais e outras formas de publicização, os usos de sistemas inteligentes em seus processos redacionais. Correlacionamos os aspectos de inovações no jornalismo, algoritmização e os aspectos de política editorial. Constatou-se que a IA é uma ferramenta auxiliar no trabalho jornalístico para determinadas tarefas, e não um substituto dos jornalistas. A visão publicizada, porém, pode divergir da aplicação prática da tecnologia.

Palavras-chave: Nativos digitais. Inteligência artificial. Inovação. Jornalismo.

IA GENERATIVA Y VEHÍCULOS NATIVOS DIGITALES: ¿un posible encuentro?

RESUMEN – Este estudio exploratorio analiza las innovaciones en el periodismo en el uso de sistemas generativos inteligentes. Nos centramos en cinco medios brasileños nativos digitales que asumen, a través de políticas editoriales y otras formas de publicidad, el uso de sistemas inteligentes en sus procesos editoriales. Correlacionamos aspectos de innovaciones en periodismo, algoritmización y aspectos de política editorial. Se constató que la IA es una herramienta auxiliar en el trabajo periodístico para determinadas tareas, y no un sustituto de los periodistas. La visión publicada, sin embargo, puede diferir de la aplicación práctica de la tecnología.

Palabras clave: Nativos digitales. Inteligencia artificial. Innovación. Periodismo.

1 Introduction

Since late 2022, following the announcement of ChatGPT's public release, generative artificial intelligence (AI) has been portrayed as “the latest” technological revolution of our times. Although this announcement triggered intense media coverage, it is well known that discussions and scientific developments regarding the use of autonomous digital systems across various sectors predate the ChatGPT hype.

Within the field of journalism studies and its practical applications, intelligent systems with varying levels of autonomy have long been a focal point in journalistic innovation. Thus, to understand the contemporary use of generative systems, it is necessary to adopt a broader framework rooted in the digitalization of journalistic processes from its inception (Pavlik, 2000; Baldessar, 2005; Franciscato, 2010; Saad, 2016; Graves et al., 2016; Posetti, 2018; García-Avilés, 2021).

The extensive understanding of the journalism–ICTs relationship doesn't imply a deterministic stance; rather, it represents a vision that preserves the field's central role in the various processes of sociability and public opinion formation resulting from the evolution of technological innovations even in the face of emergent simulacra-entities that proliferate within the digital ecosystem. An active, technologically up-to-date journalism is both necessary and legitimate.

The debates ignited by ChatGPT underpin the reflection in this study. It is therefore essential to revisit the topic of using intelligent systems in journalistic processes as yet another innovation rooted in prior studies and research. These earlier investigations addressed aspects such as the automation of editorial processes (Franciscato, 2019; da Silva et al., 2023), publishing systems (Saad Corrêa & Bertocchi, 2012), data mining and its uses (Lammel & Mielniczuk, 2012; Barbosa, 2007), algorithmization (García-Orosa et al., 2023), synthetic editorial systems, the use of virtual and augmented reality (Ufarte-Ruiz et al., 2023), among other possibilities.

Another aspect that emerges when considering the potential for digitalization in journalistic processes is the capacity for absorbing innovations. In this context, digitally native journalistic ventures are seen as prototypical representatives of this innovative potential. This perspective is supported by Ramón Salaverría (2020) and related authors (Salaverría et al., 2019; Harlow, 2022), who highlight the significant presence of digital natives in Latin America, as well as by studies conducted in Europe and the United States (Sixto-García et al., 2023). The survey conducted by García-Orosa et al. (2020) indicates that

Digital native media emerge to address various needs – in the market, within society, and across journalistic models – and are created by experienced journalists with careers in legacy media. In this sense, these projects exhibit a degree of innovation that sets them apart and, in addition to the technological force they wield, offer renewed approaches that coexist with the fundamental principles of journalism. (García-Orosa et al, 2020, p. 12).

We maintain that digital natives, by their origins, are potentially pioneers in deploying intelligent systems in their production processes (Pinto & Barbosa, 2024). Consequently, this study focuses on the universe of Brazilian digital natives and, among them, seeks to provide a detailed examination of those who have formally and publicly declared the use of generative AI.

The decision to disclose the use of intelligent systems, and more specifically, generative artificial intelligence systems, such as

ChatGPT, Gemini, and others, reflects a transparent stance on the part of the journalistic enterprise regarding technological innovations and, most notably, its audience. The exploratory research led by Professor Suzana Barbosa characterizes such positions:

[...] texts that include their editorial and organizational commitments to accessibility and diversity, along with their respective links. Institutional texts and the documents that define and present the media outlets' editorial policies are relevant sources for inquiry because they document the organizations' mission, principles, and values. More broadly, these texts represent important components of the discourse of these media outlets and, in the context of this research, help elucidate how they have planned for and committed to the focal issues. (Barbosa et al., 2023, p. 55).

Thus, we present a multi-thematic and exploratory study that correlates innovations in contemporary journalism, specifically, intelligent generative systems, with their use by Brazilian digital natives, as well as an understanding of how these uses have been embraced by such enterprises through their editorial policies. Our objective is to offer a documentary survey of the announcements regarding the adoption of generative artificial intelligence in Brazilian digital native media, representing a specific snapshot of the adoption process of generative AI in Brazilian journalism.

Our central inquiry is rooted in the assertion by Pinto and Barbosa (2024), which considers the motivations behind the non-adoption of such systems and tools by all media outlets and positions Brazilian digital journalism as occupying a marginal status in terms of technological and financial resource development and access. Consequently, our research question arises: does the editorial policy content of selected Brazilian digital natives reflect the effective use of intelligent generative systems in their daily operations?

This study is organized into the following sections: generative AI in journalism amid recent innovations; editorial policies, transparency, labour, and generative systems; methodology; results and discussion; and concluding remarks.

2 Generative AI in journalism amid recent innovations

Starting from the premise that the adoption of intelligent generative systems by journalistic outlets is part of a broader

process of innovation within the journalism industry, Franciscato (2010) points out that innovation in journalism manifests itself along three dimensions: technological, organizational, and social. This encompasses the adoption of new technologies, changes in production routines and organizational cultures, as well as the emergence of new products, formats, and modes of engaging with audiences. Later, Franciscato (2019, p. 134) emphasizes that “technology assumes a fundamental role in the new configurations of journalistic activity”, within which technological mediation “creates new configurations and media practices in society”.

As noted by Saad (2016), innovation, understood here as both the adoption of technologies and the creation of new processes and products, and its consequences in journalism, “are not uniform, and nor should they be”. Therefore, it is “important to consider all contextual differences, culture, economy, and society, for each journalistic setting”. With this focus, we seek to understand how generative AI has been adopted by Brazilian digital native media and its role in a constant movement toward incorporating new technologies in global journalism.

From a technological standpoint, journalism has increasingly engaged with a wide range of potential technologies that can be integrated into its practices, operating within a scenario of technological convergence described by Barbosa (2007). This scenario is characterized by multiple changes, including developments in content production, the introduction of new roles, and the incorporation of innovative technologies into journalistic work.

Saad Corrêa and Bertocchi (2012) refer to a “technical ensemble” that is essentially centered on data and its emerging role in journalism. Moreover, there is the relationship with digital platforms, their affordances, requirements, and the challenges they pose to journalistic outlets, as noted by D’Andréa and Jurno (2020). It is within this context that the adoption of another technical element occurs: so-called artificial intelligence, and more specifically, generative AI.

Kaufman and Santaella (2024) view generative artificial intelligence as being capable of producing “original content from large databases, that is, using data to generate more data, synthesizing text, image, voice, video, and codes”.

To understand the role of generative artificial intelligence in journalism, we argue that a broader perspective on the process of automating journalistic work is essential. Diakopoulos (2019) points out

that, in contemporary society, automation and algorithms have reached a level of maturity that enables them to “perform genuine journalistic work, contributing to journalistic tasks in a variety of ways” (p. 1).

Even though the researcher’s reflections were shared before the dissemination of generative AI, a development of his object of study, the author’s perspective highlights an important aspect: “There is hardly an aspect of news production, from information gathering through meaning-making, narrative construction, and distribution, that is not increasingly influenced by algorithms” (Diakopoulos, 2019, p. 3).

In this sense, the author argues that it is crucial to understand how the automation of journalistic tasks through artificial intelligence is effectively transforming journalistic work and influencing the very sustainability of the profession. In his view, the trend is toward a “hybrid journalism” (Diakopoulos, 2019, p. 245), in which journalistic practice combines the use of artificial intelligence and the advantages that the technology can bring to journalism with human involvement and supervision.

Marconi (2020) emphasizes that artificial intelligence creates new opportunities and challenges for journalism, precisely because its adoption is taking place during a transitional period in the model of journalistic practice itself. He argues that AI can “enhance, not automate, the industry, enabling journalists to produce more news more rapidly while simultaneously freeing up time for deeper analysis” (p. 11). Furthermore, he contends that, given the tendency for technology to become more affordable, artificial intelligence and its tools will be increasingly employed by journalistic outlets.

Although the aforementioned authors almost present AI adoption as inevitable, this does not mean that the process is free of challenges. Diakopoulos (2019) points out that we must reflect on ethical considerations and intrinsic biases in the development of AIs, which in turn affect the tasks they perform. On this topic, we note the diversity of critical studies on various aspects of artificial intelligence, from the necessity of incorporating ethical concerns and transparency measures from the inception of such systems to their impacts on the environment, as well as on individuals’ physical and mental health (Lindgren, 2023).

The advancement of generative AI has also given rise to several international studies that pinpoint exactly where and how it is being used in journalistic outlets. In the report *Generating Change*, Becket and Yaseen (2023) indicate that access to these tools remains unequal,

particularly harming smaller outlets in the so-called Global South. Simultaneously, 75% of respondents report using artificial intelligence in at least one stage of news gathering, production, or distribution.

The report indicates that financial and technical challenges remain the primary obstacles to AI adoption, yet the tools are already “changing” the work of journalists. Among the concerns raised are ethical issues, impacts on the sustainability of journalistic business models, and errors in content generated by AI tools.

Simon (2023) further points out that the adoption of this technology has been facilitated through the use of tools offered by digital platforms, creating a risk of “exacerbating existing dependencies in news distribution and creating new dependencies in news production”. In general, according to the author, the uptake of platform-provided AI tools is driven by the high cost of developing proprietary tools as well as by resource constraints or lack of interest on the part of many outlets. This serves as an indication of a correlation between generative AI and the platformization of journalism.

If digital platforms have established an asymmetric and highly influential relationship with journalistic practice (Bell & Owen, 2017; Nielsen & Ganter, 2022) through their ability to control “the gateways to all internet traffic, the circulation of data, and the distribution of content” (Van Dijck, 2020, p. 2), then Simon’s (2023) perspective is that platformization is now poised to advance even further. It is shifting its focus from the distribution of journalistic content to its very production, thanks to the provision of generative AI tools. Conversely, the adoption of these facilitating affordances, especially for content production, reconfigures and intensifies the commercial and technological dependence that journalistic outlets already experience.

It is also important to note that this dependency is amplified by other historical and social dynamics, especially when considering the reality of the Global South. As Cassino et al. (2021) point out, platforms linked to Big Tech create a typical scenario of “data colonialism”, establishing overtly extractivist neoliberal dynamics whereby large volumes of data feed their operations and sustain their profits. Consequently, reflections on the adoption of generative AI in journalism must also take into account the potential intertwinements and consequences of this asymmetric movement.

Simon (2024, p. 3) further indicates that the adoption of AI, particularly generative AI, in journalistic outlets is driven by “recent technological advances, market pressures partly resulting from the

industry's financial challenges, a competitive dynamic focused on innovation, and a widespread sense of uncertainty, enthusiasm, and hope" on the topic. In his view, current cases of using these tools bring about "relatively mundane" benefits, they are not a "silver bullet". While there are gains in efficiency and productivity in some instances, these benefits depend on the specific automated task and the context of each application.

Carneiro dos Santos and Figueiredo (2024, p. 39) highlight that generative AI can potentially bring advantages such as operational efficiency, accuracy, speed, and increased reader engagement, but it also requires human oversight to ensure adherence to "ethical and quality standards". This underscores the challenges in adopting these tools and calls for an "approach that balances innovation with responsibility".

Finally, the *Journalism, Media, and Technology Trends and Predictions 2024* report by the Digital News Project (Newman, 2024) indicates that among the 314 global journalistic market leaders interviewed, 56% believe that the most significant use of generative AI will be the automation of internal news production processes, followed by enhanced recommendations (37%) and commercial applications (28%).

3 Editorial policies, transparency, work, and generative systems

The dissemination of generative AI use cases has also led to the development of editorial policies at news outlets. These policies specify when and how such tools may be employed, in addition to conveying the outlets' perspectives on the subject (Beckett & Yaseen, 2023). Becker and colleagues (2023) analyzed 52 publicly shared editorial policies in 2023, including one from a Brazilian outlet. The authors indicate that despite the differing contexts, these policies exhibit "signals of homogeneity, which may have emerged in response to the uncertainty created by the rise of generative AI".

In general, the policies focus on aspects of transparency regarding the use of these tools, specifying the occasions on which they can be used, the prohibited uses, and the uses requiring prior authorization, as well as the necessity for human oversight. However, the authors also note that "national and organizational idiosyncrasies remain important in shaping the practices of outlets" (Becker et al., 2023). This observation underscores the need for more segmented

analyses. In this regard, we believe it is timely to understand how generative AI is being adopted in Brazil.

A study performed by Pinto and Barbosa (2024) identified 45 initiatives employing artificial intelligence (non-generative) in Brazilian journalistic outlets between 2016 and 2023. These initiatives span activities from news production to information gathering, data analysis and visualization, audience engagement, and content distribution. In total, these initiatives were implemented by 23 outlets, with the digital native Núcleo Jornalismo leading with seven initiatives. Additionally, digital native outlets launched more AI projects, which accounted for 40% of the total.

Pinto and Barbosa (2024, p. 334) further point out that “most of the journalistic use of artificial intelligence still depends on some level of human oversight or editing”. Moreover, when updating their research with 2023 data, the authors did not find any publicly disclosed instances of generative artificial intelligence use.

It is also important to note that the material conditions of Brazilian journalistic outlets, especially those of digital natives, which are the focus of this article, must be taken into account. Silveira and Ramos (2022) indicate that, in general, these outlets face challenges regarding commercial sustainability, relying heavily on external organizations’ “patronage” and replicating traditional models in journalism, such as dependence on advertising. Although such conditions may hinder the incorporation of innovations, the authors also suggest that this not only represents a common practice but also a deliberate strategy of publicizing, aimed at generating value and attracting audiences and supporters. This implies that this group may be more inclined to adopt new technologies despite the material challenges they face.

Concerning journalism more broadly, Vos and Craft (2016) argue that transparency has increasingly become a space for legitimizing journalistic activity. Transparency has emerged as an alternative means to mitigate the credibility crisis confronting the field and holds the potential to validate journalistic work, a role that was once occupied by the notion of objectivity.

From Charaudeau’s (1996) perspective, the drive for transparency can be viewed as an update to the communicative contract established between outlets and the public, one that clarifies what the audience may expect and demand from the outlets about the adoption of generative AI. While this contract is not invariably adhered to, its existence serves to legitimize journalism and distinguish the outlets from one another,

while simultaneously bolstering their competitiveness. Discussing the adoption of generative AI is also a way for an outlet to differentiate itself from competitors by emphasizing innovation, ethics, and transparency.

From an internal perspective, editorial policies also introduce new prescribed work standards (Schwartz, 2006) for journalists, that is, a set of antecedent norms, rules, and prescriptions concerning how a particular tool should be used, for which tasks, and in which contexts. The convergence of these prescribed tasks, the material conditions under which a worker operates, and the worker's own conceptions and customary practices results in what Schwartz (2006) terms the "actual work", whereby the worker devises alternative methods to perform their tasks and to utilize the newly introduced tools.

For journalists, these potential new prescribed tasks are introduced within a context marked by the precarization of the profession (Figaro & Marques, 2020). This is characterized by what Salaverría (2014) describes as the versatility expected of the "multimedia journalist", in which technological innovations simplify the processes of content gathering and editing, thereby concentrating these tasks in the hands of the journalist. In this article, we regard generative AI as a continuation of this process, in which the use of digital technologies and platforms within a capitalist framework has contributed to widespread precarization and automation of work, replacing human labor with mechanized or "dead" labor (Antunes, 2023). Specifically in journalism, Nicoletti and Figaro (2024) point out that the current scenario of the platform-based economy is marked by professionals who face high levels of stress, heavy workloads, and long working hours, negatively affecting both physical and mental health.

4 Methodology

This study employs a thematic and methodological triangulation between the use of intelligent generative systems, focusing specifically on Brazilian digital natives, and the public disclosure of their editorial policies, along with other formats used by each digital native outlet. We are conducting an exploratory and qualitative study based on documentary analysis.

In this regard, we aim to understand how generative AI tools have been incorporated into journalism. Digital native outlets were selected because of the increasing importance of this type of media

in Brazil and Latin America. A study by SembraMedia (2017) found that 88% of Brazilian digital native outlets had their stories covered by national media and 68% by international media, while 16% received more than one million monthly accesses and reported over US\$200.000 in revenue in 2016. Given this relevance, it is essential to comprehend how these outlets are using generative AI, the use cases adopted, and the new prescribed practices emerging from this adoption.

For this purpose, we present an analysis of the use policies and procedures related to this technology, as disclosed by five Brazilian digital native journalistic outlets during 2023 and 2024, up to the final moment of data collection on July 8, 2024: Agência Tatu, Aos Fatos, Núcleo Jornalismo, Revista AzMina, and Agência Pública.

The construction of the corpus was based on the reconciliation of two authoritative sources that aggregate digital native journalistic ventures: the most recent SembraMedia report, already cited in this text, and the list of members from the Brazilian Association of Digital Journalism (Ajour), which features a set of 152 associates on its website.

Once the universe was defined (without intending to be exhaustive of all Brazilian digital natives), we conducted a documentary survey of announcements and disclosures regarding any editorial process based on intelligent systems. We delimited the period from January 2023 to July 8, 2024, for document collection. The search for disclosures combined a) an examination of each website's content; b) information published on media outlets and by representative entities in the sector, for example, Ajour; c) a Google search parameterized with the keywords "artificial intelligence", "generative artificial intelligence", and the name of the digital native outlet.

It is important to note that the chosen period was intentional to correlate announcements stimulated by the ChatGPT hype, even though it is clear that the outlets had earlier announcements related to some form of algorithmic intelligent system.

The documentary survey identified the following outlets as constituting the analysis corpus: Agência Tatu (both a use case and an editorial policy were disclosed), Aos Fatos (both a use case and an editorial policy were disclosed), Agência Pública (editorial policy disclosed), Núcleo Jornalismo (both a use case and an editorial policy were disclosed), and Revista AzMina (editorial policy disclosed).

We documented eight news articles and publicized content, which were analyzed based on three indicators:

- 1. Content of the editorial policies and the outlets’ own articles regarding their views on generative artificial intelligence in journalism;
- 2. Indicators of procedures implemented at each outlet, based on the procedures outlined in table 1 presented herein;
- 3. Indicators of potential practical effects on journalists’ work following the adoption of artificial intelligence

The categorization for the content analysis was based on the literature review presented previously in this article. From it, we extracted a set of editorial procedures that reflect the use of generative systems. Thus:

TABLE 1
Editorial Procedures

Fact-checking, analysis, and combating misinformation
Content personalization and automation
Articles summarization
Creation of texts (e.g., emails, article headlines, social media posts)
Development of chatbots for engaging with audiences and sources
Coding (e.g., for charts)
Generation of images, graphics, audio, and videos
Editing of texts, images, audio, and videos
Grammatical review of texts
Data extraction
Creation of artificial “newscasters”
Research
Translation
Data analysis (identification of trends, outliers, and highlights)
Enhancement and creation of dynamic paywalls
Content tagging
Article recommendations for the audience
Production of journalistic articles and ideation of topics
Application of SEO best practices in articles

The following item presents and analyzes the resulting content.

5 Analysis results

Agência Tatu was founded on April 25, 2017, and describes itself as the “first outlet specialized in Data Journalism in the Northeast”, relying on the exploration of databases about the Brazilian Northeast region for the production of journalistic content. For the analysis, we considered the “artificial intelligence usage policy” disclosed in 2023 as well as an article published by the outlet promoting the “SururuBot”, which is described as a “robot that writes public utility news articles with the aid of AI” and was launched in October 2023.

Aos Fatos is a fact-checking agency created on July 7, 2015, with operational fronts in journalistic production, intelligence, and technology. It aims to integrate teams of journalists, data scientists, programmers, digital investigation specialists, and “innovation leaders”. For the analysis, we considered an article published by Ajour in 2023 regarding the integration of generative AI with an existing bot at the agency, along with a disclosure of its AI usage editorial policy.

Agência Pública was founded in 2011 and claims to be the “first non-profit investigative journalism agency in Brazil”, producing “in-depth reports guided by public interest” while focusing on the coverage of the Brazilian public administration as well as topics related to the environment and violence. For the analysis, we took into account the disclosure of the “artificial intelligence usage policy” published by the outlet in 2023.

Núcleo Jornalismo describes itself as an “initiative that covers the impact of social networks and artificial intelligence on people’s lives, at the intersection of journalism and technology”. Created in 2020, the outlet seeks to combine the production of journalistic content with the creation of use cases for new technologies. For this research, we considered the outlet’s disclosure in 2023 of its “artificial intelligence usage policy”, which, according to our findings, was the first such policy published by any Brazilian journalistic outlet, in May 2023, and an article published by the outlet on March 20, 2024, regarding Nuclito Resume, a tool that uses artificial intelligence to summarize the outlet’s own articles.

Revista AzMina is “a journalistic outlet focused on covering diverse topics through a gender lens”. Created in 2015, the outlet later became part of the Instituto AzMina, a non-profit organization whose mission is to promote gender equality. For the analysis, we considered the disclosure of the “artificial intelligence usage policy” published in 2023.

Based on the above, the analysis yielded the following result, as expressed in table 2:

TABLE 2
Analysis results

Outlet/ Category	View on AI (generic and/ or opinionated perspective)	Procedures	Changes in editorial routines
Agência Tatu	AI as a “support tool”.	Creation of content (texts and graphics); creation of a bot, and the SururuBot.	Content review; internal tests; recommendation of AI use; correction in case of error; and training in the use of AI.
Agência Pública	AI as a “support tool” for journalistic work.	Social media and database analysis; summarization and pattern identification; transcription; creation of images and videos; development of social media posts; and production of audio readings for news articles.	Human verification of generated images, audios, and videos; team accountability rather than attributing errors in AI-generated content to “robots”; reviewing and finalizing AI-created social media posts; providing descriptions of AI use in news reports; conducting internal tests; and disclosing AI use in images and videos.
Revista AzMina	AI has the potential to optimize internal processes and enhance content production; “structural responsibilities and limitations associated with the use of AI”; and AI plays an “auxiliary role” in journalistic work.	Spelling correction; title suggestions; social media posts; translations; SEO optimization; summarization of pieces; data analysis; image creation; transcription; subtitling; and correction and optimization of codes.	Need for review of any AI-generated content; description regarding the use of AI for data analysis; management or board authorization for using generative AI; correction of distortions in “biased and prejudiced representations”; and disclosure of codes.

Aos Fatos	The use of AI in journalism is “inevitable”, but it requires responsibility.	Creation of images and videos; development of a “fact-checking robot”, FátimaGPT; an automatic transcription service called Escriba; and adaptation of content originally produced by humans (summaries, translations).	Disclosure of AI use; quality control of the created bot; mandatory human supervision; disclosure of sources used by the AI; and risk analysis and creation of “editorial quality control processes”.
Núcleo Jornalismo	AI brings “novelties and opportunities”, but also “challenges and pitfalls”; AI tools aim to facilitate journalistic work, not perform it; and AI products serve merely as tools.	Text summarization (including a specific tool, Nuclito Resume); creation of illustrations; text editing and proofreading; creation of social media posts; research; creation of code and software; automation; and creation of content from databases.	Review of any content generated by AIs; disclosure when the content was produced using AI; human categorization of data for subsequent feeding into AI models; and verification of the effects of code created by AIs.

Regarding the first category of analysis, “view on AI”, all five outlets conveyed in their content that generative AI represents a “tool” to assist in journalistic work. The term “tool” was mentioned 13 times by Agência Pública, three times by Núcleo Jornalismo, five times by Revista AzMina, four times by Aos Fatos, and once by Agência Tatu. Agência Pública emphasizes that generative AI is a “support tool for journalistic work that will never replace journalists, programmers, illustrators, narrators, or designers”, demonstrating a concern to oppose the potential replacement of human professionals by technology – not only journalists but also other professionals in the field.

Similarly, Núcleo Jornalismo asserts that AI tools are designed “to facilitate journalistic work, not to produce it”, meaning they serve as assistants to journalists rather than substitutes. Both Revista AzMina and Aos Fatos also present the notion of complementary support, and Agência Tatu reinforces that “AI is a support tool and will not replace journalists, programmers, or designers”.

Revista AzMina was the only outlet that, in its policy, raised concerns about possible biases inherent in artificial intelligence and how

these might affect the content. This outlet points out that “generative artificial intelligences are subject to biased and prejudiced approaches and representations” and states that it is the responsibility of its team “to correct these distortions before delivering the final product to the audience”. In doing so, the outlet not only diverged from the other four analyzed, which did not address this subject, but also distinguished itself from many international outlets that have disclosed their AI usage policies but did not tackle this issue, as noted in Becker and colleagues (2023). Meanwhile, Aos Fatos explicitly addressed concerns regarding potential violations of intellectual property rights and privacy by these tools, ensuring “respect” for such rights “both in the editorial process and in product development”. The outlet further stated that adopting AI is part of a “pioneering approach in the ethical development and use of artificial intelligence”.

Finally, Núcleo Jornalismo was the only one among the five outlets to divide its policy into two sections, one editorial and another specifically for products and bots, indicating the outlet’s proactive stance on developing new products based on technology, as exemplified by the launch of Nuclito Resume in 2024.

Regarding the second area of analysis, “use cases”, we found that the outlets present use cases similar to those identified internationally: transcription; creation and editing of texts, images, videos, and audios; research; application of SEO techniques; ideation of headlines and topics; spell-checking; content summarization; creation of social media posts; bot creation; and translations.

The most divergent and restrictive editorial policy was that of Agência Pública. This outlet prohibits AI-generated content from being used in news articles, allowing the tools to be used only in internal processes, such as data analysis, and for secondary activities like the creation of social media posts, transcription of materials, generating audio versions of reports through AI, and the creation of images (limited to abstract visuals). As the outlet states: “Thus, the use of AI to write the text of reports published on our site is not permitted”.

The remaining policies do not establish such a clear distinction. However, Aos Fatos notes that AI tools cannot “generate complete content for a publication” or act “as the final editor or producer of a publication”, while Núcleo Jornalismo and Revista AzMina indicate that, although it is possible to use generative AI tools to create images, priority will be given to hiring illustrators. Since the current research did not focus on analyzing news reports

published by the outlets after the disclosure of the policies, it was not possible to identify the practical execution of these proposed use cases – except for the creation of bots, which were developed and disclosed by Núcleo Jornalismo (for content summarization), Agência Tatu (for text creation), and Aos Fatos (for fact-checking).

In an interview for Ajor (2023), Bruno Fávero, the Director of Innovation at Aos Fatos, pointed out that the distinctive feature of generative AI is its ability to “receive a natural language response that compiles the investigations of several news reports into a coherent text that directly answers the question” posed by users interacting with the created bot. He also mentioned that care was taken to restrict the bot’s database, limiting it solely to the outlet’s news reports and fact-checks, in order to reduce possible errors. Similarly, Núcleo Jornalismo limited the database for Nuclito Resume, forming it exclusively with the outlet’s articles. Agência Tatu noted that its bot collects data on job vacancies available on the Sine Maceió platform and converts that information into news articles.

Regarding the last category of analysis, “effects on work”, all the complete AI usage policies disclosed emphasize the mandatory human revision of content produced by these tools, indicating the necessity of incorporating a new work activity into journalists’ routines. All five outlets further reported that it is required to indicate when AI tools have been used in publicly disseminated content, with both Revista AzMina and Agência Pública suggesting that more detailed information regarding this use should be included in each report’s data analysis methodology.

Agência Tatu, Revista AzMina, and Agência Pública also underscore that responsibility for errors in AI-generated content lies with the outlets and their teams. Aos Fatos mentions the need to perform quality control to ensure the effectiveness of the bot created, as well as to carry out risk analyses concerning the use of the tool and the content generated. Additionally, both Agência Tatu and Agência Pública state that internal tests of the tools must be performed before their official implementation, with Agência Tatu further emphasizing the need for team training.

Meanwhile, Revista AzMina establishes that management or board authorization is required for using generative AI tools and that its team must take action to correct distortions in “biased and prejudiced representations” present in AI-generated content. Both Núcleo Jornalismo and AzMina require the disclosure of codes

produced by AI, with Núcleo also mandating the verification of the effects of these codes.

In general, the policies indicate that using generative AI tools creates new tasks that need to be performed and incorporated into journalists' daily routines, in addition to introducing new editorial processes and even management procedures, such as obtaining authorizations and providing training. On the other hand, the policies omit discussion of one crucial task in using these tools: the creation of the so-called prompts or commands that are sent to the tools to produce content. While using these tools inherently requires journalists to generate prompts and interact with the systems, this topic – along with the specific knowledge and processes it entails – is not explored.

Overall, we observed that Agência Tatu had the least in-depth AI editorial policy among the outlets that disclosed complete policies. Conversely, Núcleo Jornalismo adopted a pioneering approach, becoming the first Brazilian outlet (whether from traditional or digital native media) to publish an AI use policy. In this case, further studies would be pertinent to understand whether the policy's disclosure is driven by an ethical concern about the issue, an effort to enter public debate, an attempt to position itself as innovative in relation to competitors, or an effort toward transparency to legitimize the outlet with the public.

Another notable absence in the policies is any reflection on how the use of AI tools might deepen dependencies on digital platforms controlled by big tech companies, which, in turn, are increasingly connected to the creators of the large language models behind AI tools, as pointed out by Simon (2023). The policies provide no information about which tools may be used, why they can be used, or the implications this has for the outlets' relationships with other companies. However, the disclosures regarding the bots from Núcleo Jornalismo, Agência Tatu, and Aos Fatos address this aspect: in all three cases, the outlets used GPT, the large language model developed by OpenAI and utilized in ChatGPT. Microsoft, a big tech company, is directly linked to OpenAI, acting as both a partner and an investor. This correlation may suggest that disclosure is facilitated when there is a concrete use case, such as the final products created.

We also note that both Núcleo Jornalismo and Agência Tatu disclosed that their bots, created with generative AI, were part of the “Acelerando Negócios Digitais” initiative, developed in 2023 by

the International Center for Journalists (ICFJ) and Meta, the big tech company behind the social media platforms Facebook, Instagram, and WhatsApp. This again highlights the presence of these companies in the sector and the complex relationship between them and journalistic outlets.

The lack of public reflection on the issue aligns with the findings of Becker and colleagues (2023) in their international analysis. Another common omission is any discussion of the use of “sustainable AIs” and the environmental impact of using these tools.

In general, however, there is an effort on the part of journalistic outlets to bring transparency to how AI tools are used, notably through the mandatory disclosure of methodologies by Agência Pública and Revista AzMina, as well as mandatory indications by the other outlets, for example, specifying when tools have been used for tasks such as translation.

6 Conclusions

In a short period, the use of generative AI tools has become an important subject of discussion, planning, application, and research. In the context of journalism, we believe that it is essential to understand how this technology is being adopted by media outlets, taking into account their distinct contexts, limitations, and possibilities. While the use of AI attracts significant attention, the transparency policies, as analyzed earlier, indicate that the “how” and the “why” of using it are particularly pressing issues in the debate.

In this article, we aimed to present how five Brazilian digital native media outlets have addressed these issues through the disclosure of their editorial policies regarding the use of artificial intelligence, as well as through the reporting of use cases involving generative AI. Revisiting our research question, we observed that the outlets indicated usage procedures that align with those identified in international studies, and we thus infer that, despite differences in contexts, resources, and structures, the applications of generative AI that have been envisioned and shared with the public are considerably similar to the practices observed among the digital natives studied.

At the same time, it was possible to note a consensus among the analyzed outlets regarding the role of generative AI: it is seen as an auxiliary tool in journalistic work to facilitate certain tasks rather

than as a substitute for journalists themselves. However, the published view may diverge from the practical application of the technology – not to mention that there are cases from outlets not analyzed in this article, which may already be replacing or even considering replacing journalists with AI, a topic that demands further study.

In general, the analyzed materials illustrate an effort to reduce the time spent on some tasks through the use of generative AI, for instance, in headline production, optimization using Search Engine Optimization (SEO) resources, content creation and planning, grammatical proofreading, summarization, and translations. On the other hand, this adoption introduces new tasks such as verifying the content produced by generative AI tools, drafting prompts for these tools, and obtaining approval from superiors for the produced content or new uses. In summary, the purported time savings and reduction in the journalists' workload might not materialize, which is another issue that will require future investigation.

Another relevant topic for further study is the extent to which the policies disclosed by the outlets are effectively adopted by journalists in their daily routines, and the degree to which discrepancies may arise in everyday practice, a common dynamic when theory and practice diverge in the use of new tools and techniques (Schwartz, 2006). Although these policies prescribe new tasks for journalists, they will only occasionally become effective new tasks, depending on how the guidelines are received, interpreted, and implemented by the journalists. It is important to note, however, that any new task adds to an already burdensome scenario of long, exhausting, and excessive working hours, potentially worsening the situation, a concern that the outlets did not raise. Moreover, by highlighting the identified use cases, we also seek to contribute to debates on the potential skills that need to be imparted to both current and future journalists for incorporating and using these tools in their professional training.

The outlets' positions centered their ethical concerns regarding artificial intelligence on the potential impacts of these tools in automating processes and replacing human labor, thereby presenting a critical and negative perspective on this movement. In contrast, there was no reflection on how to address, identify, or mitigate the environmental impact of the technology. Although aspects of bias were mentioned and criticized, there were few practical suggestions for reducing such biases. We observed that the approach to ethics regarding these tools remains rather limited, with

some of the more controversial aspects of AI left out of the published policies. There are occasional exceptions in the policies of Aos Fatos and AzMina; however, their approaches are neither deeply developed nor particularly propositional.

Another relevant point that was omitted from the materials is the consideration of a possible increased dependency of media outlets on big tech companies and their platforms (Simon, 2023). Publications from three of the five analyzed outlets indicated the use of AI models provided by big tech-related companies and their platforms, suggesting that the adoption of these tools might be intensifying the platformization of journalism and the consequent dependency on these companies, ultimately resulting in a greater concentration of power among big tech in today's informational ecosystem. In this regard, we advocate for further investigations into the origins of the tools used by journalistic outlets and how they impact dependency relationships with technology companies.

Other promising lines of investigation include aspects such as whether the published policy served as a “response” to the soaring popularity of generative AI at the time and to the debates stimulated by this movement; the extent to which the disclosure represents an effort by the outlet to engage in these debates; the degree of genuine ethical concern regarding transparency of use; and the extent to which these disclosures have served as instruments for market positioning, image promotion, and the establishment or reinforcement of a pioneering status relative to competitors.

In this way, we consider that the analysis, despite being based on a final corpus that is not exhaustive of the segment, presents a relevant overview of the current state of the art among Brazilian digital native media outlets regarding the adoption and use of generative artificial intelligence. It contributes to and dialogues with global studies on the subject, opening new avenues and raising further research questions on this topic.

REFERENCES

Agência Pública. (2023, n.d.). *Política de Uso de Inteligência Artificial (IA)*. Pública – Agência de jornalismo investigativo. Retrieved from <https://apublica.org/politica-de-uso-de-inteligencia-artificial-ia/>

Agência Tatu. (2023, n.d.). *Política de Uso de Inteligência Artificial*

(IA). Retrieved from www.agenciatatu.com.br/politica-de-uso-da-inteligencia-artificial-ia/

Agência Tatu. (2023, October 16). *Agência Tatu lança robô que escreve matérias de utilidade pública com auxílio de IA*. Retrieved from www.agenciatatu.com.br/noticia/agencia-tatu-lanca-robo-que-escreve-materias-de-utilidade-publica-com-auxilio-de-ia

Ajor. (2023, November 9). *Aos Fatos testa nova versão de robô checadora que incorpora tecnologia de linguagem natural*. Retrieved from <https://ajor.org.br/aos-fatos-testa-nova-versao-de-robo-checadora-que-incorpora-tecnologia-de-linguagem-natural/>

Aos Fatos. (2024, July 7). *Política de uso de inteligência artificial do Aos Fatos*. Retrieved from www.aosfatos.org/politica-ia

Antunes, R. (2023). *Icebergs à Deriva: o Trabalho nas Plataformas Digitais*. Boitempo Editorial.

Baldessar, M. J. (2005, n.d.). *Jornalismo e tecnologia: pioneirismo e contradições: um breve relato da chegada da informatização nas redações catarinenses*. Revista PJ:Br. Retrieved from https://pjbr.eca.usp.br/arquivos/documento5_a.htm

Barbosa, S. (2007). *Jornalismo digital em base de dados (JDBD): um paradigma para produtos jornalísticos digitais dinâmicos* [doctoral dissertation, Universidade Federal da Bahia]. Repositório Institucional da UFBA.

Barbosa, S., Palacios, M., Beraldo, C., Alcântara, M., Tourinho Lima, R., Quadros, C., da Silva, F., Caetano, K., Belarmino, J., Sacramento, E., Cezar, K., Mota, A., Fonseca, A., Herrera, A., Martins, E., Vieira, L., Costa Pinto, M., Souza Filho, W., Holanda, A., & Vizoso, Á. (2023). *#AcesseJOR: Por um jornalismo digital acessível, inclusivo e inovador*. Editora LabCom.

Becker, K. B., Simon, F. M., & Crum, C. (2023). Policies in Parallel? A Comparative Study of Journalistic AI Policies in 52 Global News Organisations. *Digital Journalism*, online first, 1–37. DOI: <https://doi.org/10.31235/osf.io/c4af9>

Beckett, C., & Yaseen, M. (2023). *Generating Change: a global survey of what news organisations are doing with AI*. Polis. London School of Economics. Retrieved from www.journalism.ai/info/research/2023-generating-change

Bell, E., & Owen, T. (2017). *The Platform Press: How Silicon Valley reengineered journalism*. Tow Center for Journalism.

Carneiro dos Santos, M., & Figueiredo, M. A. V. de. (2024). Utilização de inteligência artificial generativa no jornalismo – possibilidades e desafios. *Mídia E Cotidiano*, 18(2), 27–42. DOI: 10.22409/rmc.v18i2.62870

Cassino, J. F., Souza, J., & Silveira, S. A. da. (2021). *Colonialismo de Dados: Como Opera a Trincheira Algorítmica na Guerra Neoliberal*. Autonomia Literária.

Charaudeau, P. (1996). *O discurso das mídias*. Editora Contexto.

Craft, S., & Vos, T. P. (2016). The Discursive Construction of Journalistic Transparency. *Journalism Studies*, 18(12), 1.505 – 1.522. DOI: 10.1080/1461670X.2015.1135754

Diakopoulos, N. (2019). *Automating the news: How algorithms are rewriting the media*. Harvard University Press.

Figaro, R., & Silva, A. F. M. (2020). A comunicação como trabalho no Capitalismo de plataforma: O caso das mudanças no jornalismo. *Contracampo*, 39(1), 101-115. DOI: 10.22409/contracampo.v39i1.38566

Fransiscato, C. E. (2010). Uma proposta de incorporação dos estudos sobre inovação nas pesquisas em jornalismo. *Estudos em Jornalismo e Mídia*, 7(1), 8-18. DOI: 10.5007/1984-6924.2010v7n1p8

Fransiscato, C. E. (2019). Tecnologias digitais e temporalidades múltiplas no ecossistema jornalístico. *Contracampo*, 38(2), 132-146. DOI: 10.22409/contracampo.v0i0.27115

García-Avilés, J. (2021). Review article: Journalism innovation research, a diverse and flourishing field (2000-2020). *Profesional de la información*, 30(1), 1-34. DOI: 10.3145/epi.2021.ene.10

García-Orosa, B., López-García, X., & Vázquez-Herrero, J. (2020). Journalism in Digital Native Media: Beyond Technological Determinism. *Media and Communication*, 8(2), 5-15. DOI: 10.17645/mac.v8i2.2702

García-Orosa, B., Canavilhas, J., & Vázquez-Herrero, J. (2023). Algorithms and communication: A systematized literature review. *Comunicar*, 31(74), 9-21. DOI: 10.3916/C74-2023-01

Graves, L., Nyhan, B., & Reifler, J. (2016). Understanding innovations in journalistic practice: A field experiment examining motivations for fact-checking. *Journal of communication*, 66(1), 102–138. DOI: 10.1111/jcom.12198.

Harlow, S. (2022). A new people's press? Understanding digital-native news sites in Latin America as alternative media. *Digital Journalism*, 10(8), 1.322 - 1.341. DOI: 10.1080/21670811.2021.1907204

Jurno, A. C., & D'Andréa, C. F. de B. (2020). Facebook e a plataforma do jornalismo: um olhar para os Instant Articles. *Revista Eletrônica Internacional De Economia Política Da Informação Da Comunicação E Da Cultura*, 22(1), 179–196. Retrieved from <https://periodicos.ufs.br/revista-economia-politica-da-informacao-da-comunicacao-e-da-cultura>

br/eptic/article/view/12084

Lammel, I., & Mielniczuk, L. (2012). Aplicação da Web Semântica no jornalismo. *Estudos em Jornalismo e Mídia*, Florianópolis, 9(1), 180-195. DOI: 10.5007/1984-6924.2012v9n1p180

Lindgren, S. (2023). *Handbook of Critical Studies of Artificial Intelligence*. Edward Eger Publishing.

Marconi, F. (2020). *Newsmakers: Artificial intelligence and the future of journalism*. Columbia University Press.

Nicoletti, J., & Figaro, R. (2024). Platform economy and journalism: another side to the precarious labor environment in Brazil. *Observatorio (OBS*)*, 17(5), 154–169. DOI: 10.15847/obsOBS17520232423

Newman, N. (2024). *Journalism, Media, and Technology Trends and Predictions 2024*. Digital News Project.

Nielsen, R. K., & Ganter, S. A. (2022). *The Power of Platforms – Shaping Media and Society*. Oxford University Press.

Núcleo Jornalismo. (2023, n.d.). *Política de uso de inteligência artificial*. Retrieved from <https://nucleo.jor.br/politica-ia/>

Núcleo Jornalismo. (2024, March 20). *Núcleo cria aplicação para resumir conteúdo próprio com inteligência artificial*. Retrieved from <https://nucleo.jor.br/institucional/2024-03-20-nucleo-lanca-app-resumir-conteudo-inteligencia-artificial/>

OpenAI. (2024). *ChatGPT*. Retrieved from <https://openai.com/chatgpt>

Pavlik, J. (2000). The Impact of Technology on Journalism. *Journalism Studies*, 1(2), 229–237. DOI: 10.1080/14616700050028226

Pinto, M. C., & Barbosa, S. O. (2024). Artificial Intelligence (AI) in Brazilian Digital Journalism: Historical Context and Innovative Processes. *Journalism and Media*, 5(1), 325-341. DOI: 10.3390/journalmedia5010022

Posetti, J. (2018). *Time to step away from the ‘bright, shiny things’? Towards a sustainable model of journalism innovation in an era of perpetual change*. Reuters Institute for the Study of Journalism.

Revista AzMina. (2023). *Revista AzMina: Usamos informação, tecnologia e educação para combater a violência de gênero*. Retrieved from <https://azmina.com.br/revista-azmina/?swcfpc=1#uso-de-inteligencia-artificial>

Saad Corrêa, E., & Bertocchi, D. (2012). A cena cibercultural do jornalismo contemporâneo: web semântica, algoritmos, aplicativos e

curadoria. *Matrizes*, 5(2), 123-144. DOI: 10.11606/issn.1982-8160.v5i2p123-144

Saad Corrêa, E. (2016). Inovação e empresas informativas: aliados, inimigos ou em permanente estado de 'discussão da relação'? *Parágrafo: Revista Científica de Comunicação Social da FIAM-FAAM*, 4(2), 73-87. Retrieved from <https://revistaseletronicas.fiamfaam.br/index.php/recicofi/article/view/482/408>

Salaverría, R. (2014). Multimedialidade: Informar para cinco sentidos. In J. Canavilhas (Ed.), *Webjornalismo: 7 características que marcam a diferença* (pp. 25 - 53). Labcom Books.

Salaverría, R. (2020). Exploring digital native news media. *Media and communication*, 8(2), 1-4. DOI: 10.17645/mac.v8i2.3044

Salaverría, R., Sádaba, C., Breiner, J. G., & Warner, J. C. (2019). A brave new digital journalism in Latin America. *Communication: Innovation & Quality*, online first, 229-247. Retrieved from https://link.springer.com/chapter/10.1007/978-3-319-91860-0_14

Santaella, L., & Kaufman, D. (2024). A Inteligência artificial generativa como quarta ferida narcísica do humano. *MATRIZES*, 18(1), 37-53. Retrieved from www.revistas.usp.br/matrizes/article/view/210834

Schwartz, Y. (2006). Entrevista Yves Schwartz. *Revista Trabalho, Educação, Saúde*, 4(2), 4571-466. Retrieved from www.scielo.br/scielo.php?script=sci_arttext&pid=S1981-77462006000200015

Sembramedia. (2017, n.d.). *Ponto de Inflexão - impacto, ameaças e sustentabilidade: um estudo dos empreendedores digitais latinoamericanos*. Retrieved from <https://data.sebramedia.org/?lang=pt-br>

Silveira, S. C. da, & Ramos, A. N. C. (2022). Sustentabilidade de arranjos jornalísticos empreendedores no Brasil: um estudo de sete nativos digitais. *Brazilian Journalism Review*, 18(2), 290-315. DOI: 10.25200/BJR.v18n2.2022.1496

Simon, F. M. (2023). Escape Me If You Can: How AI Reshapes News Organisations' Dependency on Platform Companies. *Digital Journalism*, 12(2), 149-170. DOI: 10.1080/21670811.2023.2287464

Simon, F. M. (2024, February 6). *Artificial Intelligence in the News: How AI Retools, Rationalizes, and Reshapes Journalism and the Public Arena*. Tow Center for Digital Journalism. Retrieved from www.cjr.org/tow_center_reports/artificial-intelligence-in-the-news.php

da Silveira, S. C., & Nunes, C. (2023). Jornalismo automatizado na prática: o uso de geração de linguagem natural para cobertura eleitoral. *Chasqui*, (154), 193-210. Retrieved from <https://revistachasqui.org/index.php/chasqui/issue/view/193>

Sixto-García, J., & López-García, X. (2023). Innovative innovation in journalism. *Journalism*, 26(1), 65-88. DOI: 10.1177/14648849231219359

Van Dijck, J. (2020). Seeing the forest for the trees: Visualizing platformization and its governance. *New Media & Society*, 23(9), 2801-2819. DOI: 10.1177/1461444820940293

Ufarte-Ruiz, M. J., Murcia-Verdú, F., & Túnuez-López, J. (2023). Use of artificial intelligence in synthetic media: first newsrooms without journalists. *Profesional de la información*, 32(2), 1-17. DOI: 10.3145/epi.2023.mar.03

JOÃO PEDRO MALAR. Journalist, master's student in Communication Sciences at the School of Communications and Arts of the University of São Paulo. Researcher in the COM+ research group. Contribution to the article: conception, conceptualization, data curation, formal analysis, investigation, methodology development, and writing. E-mail: joaopedromalar@usp.br

ELIZABETH SAAD. Senior full professor at the School of Communications and Arts of the University of São Paulo (ECA-USP). Coordinator of the COM+ research group. Contribution to the article: conception, conceptualization, methodology development, writing, review, data validation, and supervision. E-mail: bethsaad@usp.br

TRANSLATED BY: Claudinei Lopes Junior