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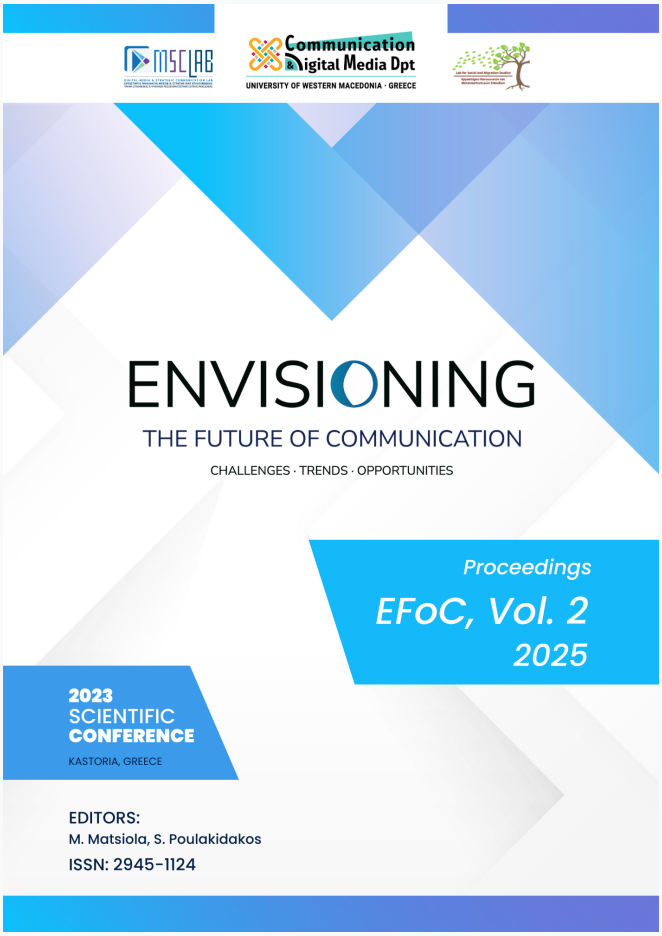

AI in Communication and News Media Organizations

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AI in Communication and News Media Organizations: Current Transformations and Future Directions

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Abstract

The current article focuses on the changes Artificial Intelligence (AI) has brought in the communication field as well as on how the news media organizations are transformed and need to be adapted to those changes. Through our research we aim to highlight the changes that AI brings to news media organizations, how and to what extent the work of journalists changes. AI-driven newsrooms are redefining the journalistic landscape, allowing for real-time data analysis and personalized content generation. Some of the hypothesis that are tested refer to the use of AI and the ethical considerations in order to ensure a more responsible and user-centric news environment, to the lack of support from tech companies to small news media organizations impacting their sustainability. Our methodology is qualitative with interviews with journalists working in small news media organizations with the aim to examine the current changes and finally to propose future pathways for the field.

Keywords: Artificial Intelligence, Small news media, Newsrooms, Sustainability.

Introduction

Artificial Intelligence has dramatically changed our lives the last few years. AI-based solutions can be defined as systems with the ability to act intelligently, correctly interpreting external data, and using these objectives to execute particular tasks by a flexible configuration, even to the extent of reproducing human behaviors with cognitive, social, and emotional intelligence (Di Vaio et al., 2020 at Johnson, Laurell, Ots, & Sandström, 2022:2). Information in AI is not self-explanatory; it is context-dependent. It can "extrapolate" to produce a sentence, or given a topic sentence, can extrapolate to produce a paragraph. Transformers like GPT-3 detect patterns in sequential elements such as text, enabling them to predict and generate the elements likely to follow. In GPT-3's case, AI can capture the sequential dependencies between words, paragraphs, or code in order to generate these outputs (Kissinger, Schmidt and Huttenlocher, 2021:52-89).

AI is used in the production and processing of news content; the news production and processing mode supported by AI technology takes advantage of the massive information content under the context of big data, making the news production and processing mode present new characteristics of precision, intelligence, and diversification. The application of AI

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technology in content distribution and transmission can be divided into three categories according to the different recommendation algorithms, including content-based recommendation systems, collaborative filtering recommendation systems, and hybrid recommendation systems. The application of AI technology in content interaction and experience mainly includes automatic broadcast, sign language synthesis, and sound synthesis broadcast. Lastly, the application of AI technology in content censorship and intellectual property monitoring includes the identification of information related to terrorism and violence and harmful information that distorts facts, as well as the detection of news copyright (Sun, Hu, & Wu, 2022:3).

AI cannot be compared with human intelligence in grasping the nonlinear development of complex problems and predicting the unexpected challenges of human development. The advantage of human journalists is that they hone their thinking and write empowering stories that address realistic subjects and issues. Although robot writing is becoming more and more normal, the mediocre writing style and lack of humanistic feelings are still its unavoidable shortcomings. AI could improve the efficiency of information dissemination but regulation is needed. For example, we should pay attention to the transparency in AI by integrating legal, social, and ethical aspects (Sun, Hu, & Wu, 2022:14-18).

Leading organizations such as the Associated Press, Forbes, Reuters, The New York Times, and many others already use AI in their work and rely on it to automatically generate a large number of journalistic texts in a shorter time. But they are also using it to eliminate some of the errors that are often attributed to the human factor. For example, the Associated Press first launched an automatic text production system using sports data in late 2013, and later used a similar system to generate economic and corporate reports (Marconi and Siegman, 2017 at Barceló-Ugarte, Pérez-Tornero, & Vila-Fumàs, 2021:139-140). According to this organization, the advantages of using AI in journalism include: reducing the workload of journalists, allowing them to spend more time on more complex tasks; improving communication and collaboration among journalists; allowing journalists to filter large data, texts, images, and videos; helping journalists to communicate with their audience; and enhancing the creation of new types of journalism.

In 2019, only 37% of newsrooms had a dedicated AI strategy (Beckett 2019) which coupled with ‘automation anxiety’ (Akst 2013), has led to resistance by journalists to technological advances for fear of losing their status or jobs. Context plays a crucial role in adopting new technologies (Broussard et al. 2019, Bastian, Helberger, and Makhortykh 2021); for instance, journalists may be more interested in tools which may free them up from repetitive tasks, as opposed to marketing analytics. In addition, some newsrooms have been more open than others: the BBC, where our research took place, has shown itself repeatedly welcome to study the innovation diffusion that has taken place in the corporation for several decades (e.g., Cottle and Ashton 1999; Wallace 2013; Hannaford 2015; Jones and Jones 2019).

Algorithms can write news without human intervention with a set of stereotypes and statistical information. Each stage of news production becomes automatic, and thousands of news can be created in seconds at a low cost. In the context of newsrooms, we can distinguish between the use of AI for story production, and story distribution and promotion. In planning and implementing AI-driven tools in newsrooms, journalists should keep the audience informed on what AI tools are being used and how much of the news production process is handled by AI. The newsroom transformation should not be solely about what technology to use but also about how this technology can act in the public interest and best serve journalism and better protect people's democratic rights. As audience metrics have long played a central role in the editorial process, shaping many editorial choices, having an audience-oriented AI strategy should be a priority for any forward-looking newsroom (Marinescu, Fox, Roventa-Frumusani, Branea, & Marinache, 2022:307-309). Fully automated and semi-automated forms of gathering, filtering, composing, and sharing news occupied a greater place in a growing number of newsrooms opening discussions about shifts in the norms, patterns, and routines of news production were happening, and at a more fundamental level, taken-for granted ideas about by who (or what) journalism was being challenged. Implementing AI tools in newsrooms refers to a wide journalism usage such as finding and contacting sources, adjusting objects faces or colors, converting speech into text, editing audio and video, identify sentiment of readers in different platforms.

ChatGPT is an emerging technology set to change the landscape of conversation agents and builds on the prospects of the chatbot, making conversation more human, answering questions, generating ideas, and suggesting solutions. It has been considered to shape journalism, law and marketing with its content-creating strategies (Dwivedi, Kshetri, Hughes, Slade, Jeyaraj, Kar, & Wright, 2023:16). ChatGPT is just that, a tool, that can be embraced like other tools (e.g., Grammarly) to improve the quality of writing. For instance, often the review process ends with the tedium of shortening the paper to meet length requirements. Think of alleviating the difficulty in deciding what to cut by using the tool.

The most obvious opportunities for applying generative AI to news are in bringing new efficiencies to specific and familiar steps within the existing news production workflows supporting an organization's existing news products. This 'more-efficient-production-of-existing-products' strategy is attractive in its simplicity, but its benefits will almost certainly be short-lived because it assumes that the existing media environment will continue roughly in its existing form. There are early indications of this in the nascent generative search experiences offered by Google and Microsoft, in the user control of consumption experiences offered by well-funded news aggregators. A 'more-efficient-production-of-existing-products' strategy is clearly a reasonable place to start, but it does not fundamentally compete with new AI-enabled experiences and therefore may not remain sufficient for long (Caswell, 2023).

A more enduring strategy for news in the age of AI will necessarily be centered on differentiation and competitive advantage, offering exclusive news products that remain

uniquely valuable to audiences even as the information ecosystem changes. This 'unique products' strategy is challenging because it will be audiences that decide on the relative uniqueness of a newsroom's products, not newsrooms. A differentiation strategy might still potentially fit well with some of the values and brand attributes of traditional journalism, especially if the information ecosystem begins to significantly degrade under the onslaught of AI-generated content. All these opportunities, however, will likely need to be comprehensively optimized using generative AI to remain competitive within an AI-mediated information ecosystem, even if their core value is differentiated. Developing forms of differentiation will likely be very challenging for many news organizations, especially for those whose current product is largely built on packaging commodity information, however there may eventually be no alternative (Caswell, 2023).

Regardless of where a news organization might be in its path towards a strategy for responding to AI, there is an urgent strategic need that requires early attention – that of communicating the organization's approach to AI to stakeholders, funders, staff and audiences. The urgency of strategic communication about AI for news organizations comes from the awareness that every individual connected with the organization already has about the abilities of these tools and their potential for dramatic disruption. Most people in the news industry are already playing with the tools, reading the reports, assessing the potential and asking the obvious questions. A more practical communication strategy at this stage might consist of acknowledging the situation, articulating how the organization is engaging with and learning about AI, providing clear guidelines for its early or limited use, demonstrating new approaches to innovation, signaling adaptability and generally preparing for change (Caswell, 2023).

Any strategy for adapting a newsroom to an information ecosystem defined by generative AI is of little use without specific, practical projects that translate that strategy into useful outcomes. Identifying such projects is obviously difficult during this current period of exceptionally rapid change, because of the considerable risks of wasted investments, embarrassing missteps or potential damage to brands or trust. In addition, projects can only contribute meaningfully towards a strategy if they can be applied in routine, day-to-day operations, rather than merely as testable prototypes or demonstrators. A relatively low risk category of generative AI projects is purely back-end applications. These are applications with no direct audience-facing output, not even draft text, but which instead deliver their value to journalists or to businesses. In addition to being relatively low risk, back-end AI applications are also relatively easy to implement as they are often 'loosely coupled' to news production workflow and infrastructure. Such applications can sometimes be managed by stand-alone tools disconnected from the primary publishing stack of the organization, operated by specialized staff separate from the main editorial workflow. The increased risk associated with knowledge task projects comes from the significant potential for hallucinations, simple error from training data, biases, out-of-date context and other limitations inherent in language models. As with language tasks, knowledge tasks can be integrated into workflows in different ways and can contribute to

different strategies. They, too, are a fundamental category of journalistic task in an AI-enabled newsroom.

Unlike language tasks and knowledge tasks, these applications typically depend on special-purpose medium-to-medium transformation models, often used in combination with general-purpose large language models within complex workflows. Such special-purpose models include speech-to-text models (transcription), text-to-speech models (synthetic voices), text-to-video models (synthetic avatars, automated generation of B-roll video, etcetera), text-to-image models and others. These tools are still at an early stage. But they are developing very quickly, are widely available, and already easily match human quality in many cases. These tasks are most useful for a product expansion strategy. Some potential barriers to implementing this category of projects include the need for an editorial producer with experience in the output medium to ensure quality, the not insignificant cost of using the specialized models, and the challenge of distributing the same story in several different media.

Whether back-end tasks, language tasks or knowledge tasks, and whether employed as part of an efficiency strategy, a product expansion strategy or a product differentiation strategy, all applications of generative AI in newsrooms are fundamentally dependent not just on the models used to execute them, but also on the prompts used to direct those models. Just evaluating the outputs of prompts applied to stochastic models fed by diverse source documents presents a combinatorial editing challenge unlike anything previously seen in news work. All of this requires infrastructure – databases, tools, user interfaces, schemas, integration, processes, analytics, training and documentation. Assuming that adequate 'prompt-to-publish' infrastructure is in place, a newsroom still requires an interface between this infrastructure and its journalists. Even with a coherent strategy, a set of applications that support that strategy and a prompt management process that professionalizes the execution of those applications, the extent of AI-enabled news production will still be limited by the available content management, serving and distribution infrastructure. This is especially true of a product expansion strategy executed using language tasks or medium-to-medium transformations (Caswell, 2023).

AI can reduce risks of placing anticipatory trust bets, which can inform decisions to trust through heightening trust towards primary and secondary objects. Namely, through automated-journalism where news stories are algorithmically generated exogenous to human intervention. According to Robertson, & Ridge-Newman, (2022:135-138), four macro-societal variables should be recognized to foster the emergence of a trust culture towards AI and the social institution of journalism. Trust towards and historical perceptions of AI have potential to be marred by nefarious use of the technology, namely through deepfakes. The first variable is 'normative coherence' within AI-journalism. AI must strive to achieve normative ideals. Algorithms must be developed that strive to provide accurate journalism that can remove misinformation and potential algorithm production bias. If AI is effectively utilized, in-built algorithms could mitigate these factors internally, relying on verified information, swiftly written through automated-journalism. This will develop ideal-type journalism that enacts

normative ideals of informing publics with fact-driven reportage. Secondly, the journalistic institution must be transparent. The audience must have knowledge that AI is being utilized and the creation of the story is not an entirely human construct. If the institution transparently uses AI, people are more likely to place trust bets and not be deceived by algorithmically generated news. Publics should be aware of how AI-journalism is conducted and be able to report inaccuracies or bias in reportage. This will foster a horizontal journalist–audience relationship and allow consumers to help develop ideal-type AI for journalism to improve it going forward. With AI being used and continually developed in the public domain, its usage is becoming increasingly transparent. Thirdly, breeding familiarity can foster trust. The opposite of this, secrecy breeds uncertainty and distrust of emerging technology. People may be hesitant about AI and associate the technology with untrustworthy historical applications if the organization is not transparent. Gradually instigating AI in journalism will increase familiarity of the technology amongst publics. This increased familiarity will reduce the risk in placing trust bets. Doing so will provide the audience with knowledge that AI-journalism will be accurate, trustworthy, and guaranteed to meet expectations once it has become an accepted facet of journalism. Finally, these variables can inform the accountability of the social institution of journalism and AI. AI-algorithms should be tested to produce accurate news. Institutions should be transparent in utilizing AI. This will then become familiar within journalism.

Normative coherence, transparency, familiarity and accountability are the ideals which AI should seek to cultivate. If these are achieved, then an individual will firstly have confidence in AI-journalism as a credible source of information. This will then foster anticipatory trust in the source to act in their best interests. With these ideals met, the likelihood of trust bets failing to meet expectations will be low. This will therefore increase primary trustworthiness in AI-journalism; in media corporations as a secondary target for providing trustworthy coverage that meets normative ideals; and in the social institution of journalism for widespread use of AI. There are many barriers to overcome before AI can repair trust disparities. This includes regulating deepfakes, reducing algorithmic bias and minimizing data inequalities. As AI operates to recommend content and connections, categorize information and concepts, and predict user preferences and goals, it may inadvertently reinforce particular individual, group, or societal choices. For societies accustomed to the free exchange of ideas, grappling with AI's role in assessing and potentially censoring information has introduced difficult fundamental debates. As the tools for spreading disinformation become more powerful and increasingly automated, the process of defining and suppressing disinformation increasingly appears as an essential social and political function (Kissinger, Schmidt and Huttenlocher, 2021:100-116).

Newsrooms including USA Today, The Atlantic, National Public Radio, the Canadian Broadcasting Corporation and the Financial Times have since the early of 2023 developed AI guidelines or policies. AI policies and documents from commercial news organizations, compared with those that receive public funding, "seem to be more fine-grained and contain significantly more information on permitted and prohibited applications". Commercial news

organizations are more apt to emphasize source protection, urging journalists to take caution when, for example, using AI tools for help making sense of large amounts of confidential or background information. Many organizations are really concerned about not losing their credibility, not losing their audience, not trying to give away what makes journalism stand out. Just over 71% of the documents mention one or more journalistic values, such as public service, objectivity, autonomy, immediacy — meaning publishing or broadcasting news quickly — and ethics. Nearly 70% of the AI documents were designed for editorial staff, while most of the rest applied to an entire organization. This would include the business side, which might use AI for advertising or hiring purposes. One policy only applied to the business side. And 69% mentioned AI pitfalls, such as "hallucinations," the authors write, in which an AI system makes up facts. About 63% specified the guidelines would be updated at some point in the future — 6% of those "specified a particular interval for updates," the authors write — while 37% did not indicate if or when the policies would be updated. Around 54% of the documents cautioned journalists to be careful to protect sources when using AI, with several addressing the potential risk of revealing confidential sources when feeding information into an AI chatbot. Some 44% allow journalists to use AI to gather information and develop story ideas, angles and outlines. Another 4% disallow this use, while half do not specify. Meanwhile, 42% allow journalists to use AI to alter editorial content, such as editing and updating stories, while 6% disallow this use and half do not specify. "According to Merrefield (2023), only 8% of the policies state how AI regulations would be enforced, while the rest did not mention any accountability mechanisms (Merrefield, C. (2023) Researchers compare AI policies and guidelines at 52 news organizations, The Journalist's)."

Three key components of AI literacy are knowledge about artificial intelligence (including its genealogy, moving beyond fantastic or dystopian claims about impact and effects, and understanding AI in the world as a subject of critical journalism); the ability to recognize instances (such as particular workflow processes, stories and packages) where AI might be usefully and creatively applied – and when it should be avoided;' skills to help, coach or teach others when strategically understanding, imagining, developing and implementing AI. As a first step, the persistent notion of AI as an all-powerful technology needs to be dispelled. The normative story of AI and automation in journalism should not be a story of technology, but one of people: the people who train the AI, the people navigating through these systems to report and relate to audiences, and the people developing relations of trust with journalism and journalists through a variety of platforms. Beyond displacement there is a wealth of opportunity for AI in journalism, importantly including those related to critical awareness of the various ways in which AI tends to amplify existing social and digital inequalities when left to technology companies and software-as-a-service industries. There is an uncanniness in the way many in the industry tend to look at journalism through the lens of AI, which opens opportunities for positional reflexivity – ways of knowing ourselves in the context of machines. It is this kind of AI literacy that we would advocate for journalism (and journalists) to develop (Deuze, & Beckett, 2022:1917).

Methodology

Our methodology is based on qualitative research which involves in-depth interviews. In this method, the questioning approach is varied. Although the researcher enters the project with a specific set of questions, follow-up questions are developed as needed. The variables in qualitative research may or may not be measured or quantified. This method allows a researcher to observe behavior in a natural setting without the artificiality that sometimes surrounds experimental or survey research. In addition, qualitative techniques can increase a researcher's depth of understanding of the phenomenon under investigation. This is especially true when the phenomenon has not been investigated previously. Finally, qualitative methods are flexible and allow the researcher to pursue new areas of interest. A questionnaire is unlikely to provide data about questions that were not asked, but a person conducting a field observation or focus group might discover facets of a subject that were not considered before the study began. Qualitative research appears to be easy to conduct, but projects must be carefully designed to ensure that they focus on key issues. Qualitative research uses smaller samples of subjects or respondents. While these two points may affect some qualitative research, the fact is that sample sizes in both qualitative and quantitative can be the same (Wimmer and Dominick, 2013:48-62). On the qualitative research, we will use hermeneutic phenomenology, where the researcher is required to discover a way into the world to reveal that world to others in contrast with the already presented researches where there is a lack of this methodology.

Intensive interviews are unique because they provide detailed background about the reasons respondents give specific answers. Elaborate data concerning respondents' opinions, values, motivations, recollections, experiences, and feelings are obtained. They allow for lengthy observation of respondents' nonverbal responses. They are usually long. They can be customized to individual respondents. Intensive interviews allow interviewers to form questions based on each respondent's answers. One benefit of the online interview is that the interview can take place at the respondent's convenience. The interviewer can post one or more questions, and the respondent can take as long as he or she likes (usually up to a week) to answer. The extra time can allow respondents to reflect about their answers and may provide the researcher with richer content and additional insights. Another benefit is that interviews can be conducted with people over a wide geographic area, without travel expenses. Finally, this method may be helpful in collecting data from people who might be uncomfortable in a face-to-face situation (Wimmer and Dominick, 2013:139-140).

We have focused on intensive interviews with journalists and representatives from small news media organizations with the aim of addressing the challenges. Our hypotheses include:

1. The use of AI in media organizations arise ethical considerations that need to ensure a more responsible and user-centric news environment.

2. While larger news organizations often receive substantial support from tech companies for AI integration, smaller news media organizations lack the same support and as a result it impacts their sustainability.
3. There is a need from tech companies to contribute in the support of smaller news media organizations that can learn important lessons from examining the experience of larger counterparts in the effective adoption of AI in journalism.

The interviews were conducted in a period of a month, the number of the interviewees was aimed at 10-15 people but finally only 10 have been made because of research saturation. The interviews were conducted online through Zoom, a document of consent was sent to the interviewees as well as a document which ensured anonymity. The interviewees were people from small and local news media organizations in Greece and the interviews were conducted in Greek. Each interview had the duration of 10 to 15 minutes. The questions asked were about the use of AI in newsrooms, the level of integration, the widening of gap between big and small news media organizations, ethical concerns, narratives and behaviors by journalists and opinions in newsrooms on how they do perceive AI and their willingness to integrate it further. Another important issue discussed was the level of support from technological companies as well as the lack of funding to booster the use of AI impacting their sustainability.

Research findings

Current Usage of AI in News Media

According to our research, the majority of news media organizations are either not using AI platforms for content production or are still considering their use. Only two organizations have adopted early-stage AI platforms like ChatGPT. This limited adoption is primarily due to financial and technical constraints faced by smaller news media organizations, which lack the capacity to invest in and train personnel for AI technologies. In contrast, larger organizations have the resources to implement and benefit from these technologies more rapidly.

Potential Benefits of AI integration

AI has the potential to revolutionize various aspects of journalism, including the fast and easy content production. AI can streamline the process of creating news articles, allowing journalists to produce content more quickly. "AI might replace some of our tasks, but it can also help us find timely topics and understand audience preferences better," noted one journalist. AI can efficiently search and utilize archived content to enhance current reporting. AI can assist in gathering information from various sources and analyzing press releases. AI can be used to broadcast news bulletins or shows with virtual presenters. AI can develop tools for fact-checking information and understanding audience preferences. Despite these advantages, the integration of AI in newsrooms remains limited, which has prevented significant changes in journalistic work.

Journalistic Concerns and Predictions

Journalists express concerns about the potential impact of AI on their profession, predicting both positive and negative outcomes. There is a fear that AI might replace journalists. "The use of AI in newsrooms could lead to trust issues with our audience. We need to ensure that the human touch in journalism is not lost," expressed a concerned journalist. AI could increase trust issues with audiences, who might question the authenticity of AI-generated content. AI could fundamentally alter media operations at all stages and it might alleviate some of the workload and assist in finding timely topics and understanding audience preferences.

AI as a Double-Edged Sword

AI is perceived both as a useful tool and a potential threat to journalistic quality. AI might initially lead to a decline in content quality but over time, AI could facilitate journalists' work by saving time and effort. Moderation and a legal framework protecting journalists' intellectual rights are necessary to ensure AI serves as an aid rather than a replacement. "Funding and proper training are critical. Without these, smaller news media organizations will struggle to keep up with the technological advancements that larger organizations can easily adopt," commented a senior editor.

Financial and Ethical Challenges

Many news media organizations lack the funding to fully utilize AI, relying on free versions without exploring their full potential. Efforts are underway to secure funding and participate in European programs to train journalists from smaller organizations in using AI platforms. Journalists highlighted several ethical considerations for AI use like ensuring AI-generated content is original and not plagiarized, safeguarding the anonymity and personal data of individuals, maintaining democratic control over digital data and ensuring accountability and ensuring AI is impartial and does not contribute to the spread of fake news.

Lack of Support from Tech Companies

None of the surveyed journalists who work in news media organizations, have been provided support by tech companies for AI integration in news media organizations. Nonetheless, many organizations are willing to embrace AI initially through pilot phases to explore its integration with existing journalistic norms.

Conclusions

Our findings are in agreement with several studies in the literature review. Brennen, Howard, and Nielsen (2022) discuss the ethical considerations and transparency issues surrounding the use of AI in journalism, which aligns with our findings that ethical concerns are a major issue in AI integration in news media. Gutierrez Lopez et al. (2023) emphasize the lack of knowledge and need for proper training for the effective integration of AI tools in journalistic routines, which supports our conclusion that smaller news organizations struggle due to a lack of

technical and financial resources. Moran and Shaikh (2022) highlight the discourse around AI as a potential threat to traditional journalism roles, which mirrors our findings about the perception of AI as a substitute rather than a tool. However, there is some disagreement with other studies regarding Lewis, Guzman, and Schmidt (2019) suggest a more collaborative future between AI and journalists, focusing on augmentation rather than substitution, which contrasts with some of our findings where AI is seen more as a threat than an aid. Simon (2022) discusses the autonomy of journalists being potentially compromised by AI, a point which we did not explore in depth but is relevant to the ethical considerations we mentioned. Additionally, the work by Dwivedi et al. (2023) on the broader implications of generative AI highlights both opportunities and challenges, indicating a nuanced view that supports the need for guidelines and frameworks, as we concluded.

Finally, we can summarize that our first hypothesis is confirmed that the use of AI in media organizations arise ethical considerations that need to ensure a more responsible environment. Guidelines and specific norms and legal framework need to be developed for the integration and use of AI platforms by news media organizations because issues of transparency, lack of knowledge on the use of AI, content moderation and trust are contingent. The ethical considerations arise problems as it regards the integration of AI by news media in general due to the lack of knowledge about it and the precipitance as an enemy for journalism and a substitution of their work. This consideration can lead to damaging results for small news media organizations who should use and utilize AI as a tool for journalist. Our second hypothesis is merely confirmed, because even though we could not confirm that large news media organizations receive support from tech companies, the small news media organizations lacked support for the integration of AI, resulting to important issues of sustainability. More specifically, this situation is growing the gap between small and big news media organizations because the first one's lack of financial and technical capacity while the second one's had the capacity of training of their personnel resulting to be faster with those processes. Our second hypothesis is continued and completed by our third hypothesis which is confirmed the fact that tech companies need to contribute in the support of small news media organizations which can learn important lessons from examining the experience of larger counterparts in the effective adoption of AI in journalism. Small news media organizations lack of funding to use AI, and this one is one of the motives that AI has not been yet integrated in the daily practices of newsrooms. The media environment in Greece and in small news media organizations is organized by the utilization of free versions, lacking the chance of exploring the full possibilities of it. European programs can be developed for journalists where small news media organizations will be funded for training their staff. Another aspect is the receptance of support by tech companies as a pilot phase to examine small news media organizations how AI can be integrated in the existing journalistic norms.

Artificial Intelligence is not yet integrated in the journalistic practices even though it has revolutionized the way journalists think of it. The transformation in news media organizations,

and especially the small ones that we are currently examining, is not still obvious due to the lack of integration and the experimentation with it only in early stages. AI undoubtedly brings tremendous changes in news production that still need to be explored with a more neutral view, avoiding to perceive AI only as a threat. Newsrooms from big and small news media organizations can cooperate for the integration of AI and develop creative ideas or seek grants. The development of AI literacy skills is needed in newsrooms so as to have prepared journalists, so trainings need to be developed and offered.

One of the limitations of our research is the lack of quantitative analysis and the covering only of Greek media, so we do not have fully applied research. Future research can focus on small news media organizations across Europe and could be longitudinal as well as to include cases of AI integration in newsrooms.

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