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AI Ethics in Digital Media Ecosystems: Balancing Algorithmic Efficiency and Human Protection

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Abstract

The development of artificial intelligence (AI) in the digital media and communication ecosystem has brought a leap in efficiency through the automation of content production, personalization of information distribution and optimization of audience engagement. However, behind the efficiency of the algorithm arise various ethical issues related to privacy, bias, polarization, manipulation and protection of vulnerable groups. This study aims to critically understand the ethics of artificial intelligence (Al) in the media and digital communication ecosystem by highlighting the tension between algorithmic efficiency logic and the need for human protection. This study uses a qualitative approach by combining interviews and systematic literature review. In-depth interviews with key informants consisting of media practitioners, regulators, AI communications and ethics expert and academics to explore empirical experiences and normative views related to the use of A/ in the media. Meanwhile, literature reviews are conducted on journal articles, academic books and policy documents discussing ethics in the media and digital communication sectors. The thematic analysis was carried out by mapping the practice of using Al in three main domains, namely journalism, social media and video/digital advertising platforms. The results show that the application of Al in the media tends to be driven by efficiency and commercialization, while ethical dimensions such as justice, transparency and accountability and respect for human dignity are often not adequately integrated in the design and governance of algorithms. This article proposes an ethical responsibility framework that places media companies, digital platforms, AL developers, regulators and users as actors in the development of human centered and responsible AL practices in the media sector, especially in the context of digital transformation in developing countries such as Indonesia.

Keywords: Ethics of Artificial Intelligence, Digital Ecosystem, Digital Media and Communication, Algorithms and Human Protection

INTRODUCTION

The use of artificial intelligence (AI) in the media and digital communication industry has grown very rapidly in recent years (Danzon-Chambaud, 2021; Dorr, 2016). In the newsroom, algorithms are used to automate data-driven news writing, manage audience analytics in real time, and personalize news presentations through a recommendation system. On social media, AI organizes the flow of information through feed and ranking algorithms, recommends accounts and groups, and runs automated content

moderation. Meanwhile, on video and digital advertising platforms, recommendation systems and programmatic advertising optimize the watch duration, click-through rate, and conversion of marketing campaigns. Various studies show that the integration of AI in media brings significant improvements in terms of speed, cost efficiency, and scalability of content distribution (Gutierrez Caneda et al., 2024)

Behind these advantages, there are serious concerns regarding the ethical and socio-political impacts of algorithms that work massively but tend to be non-transparent (Ananny & Crawford, 2018; Burrell, 2016). Researchers and practitioners highlight the risk of algorithmic bias, discrimination against certain groups, the strengthening of filter bubbles and echo chambers, and the reproduction of inequality of access to credible information (Runhe Gu, 2025). Controversial cases also show how social media algorithms and video platforms can accelerate the spread of misinformation, hate speech, and extreme content, especially when engagement-based and advertising-based business logic is more dominant than ethical considerations and public interest (Gorwa et al., 2020).

Globally, various initiatives have emerged to organize AI ethics, one of which is the UNESCO Recommendation on the Ethics of Artificial Intelligence (2021) which emphasizes the protection of human rights, human dignity, justice, non-discrimination, and accountability as the main principles of the development and utilization of AI (UNESCO, 2025). In Europe, AI ethics guidelines and draft AI regulations also underscore the importance of trustworthy and human-oriented AI (Hofeditz et al., 2025). However, at the practical level in the media industry, various studies show that there is a gap between these normative principles and the reality of implementation, especially related to algorithm transparency, privacy protection, and accountability mechanisms when losses occur due to AI system decisions (Porlezza & Schapals, 2024a).

In the context of developing countries such as Indonesia, this issue is becoming increasingly crucial (Masduki, 2021). Digital transformation in the media and communication sectors is accelerating, driven by the penetration of the internet and global platforms, but ethical governance and regulations on AI are still in the process of growing and often lag behind innovation (Ariansyah et al., 2023). The discourse on AI in the media focuses mostly on technical aspects and economic opportunities, while the ethical dimensions, citizens' digital rights, and long-term impact on the quality of democracy have not been systematically discussed in communication studies (Calvo-Rubio & Ufarte-Ruiz, 2021). This article seeks to fill this gap by critically analyzing how the ethics of artificial intelligence are fought in the digital media and communication ecosystem, focusing on the tension between algorithmic efficiency and human protection.

In particular, this article answers three questions: (I) how to configure the use of Al in journalism, social media, and digital video/advertising

platforms as portrayed in the current literature; (2) what ethical risks are most prominent and how they relate to the logic of algorithmic efficiency; and (3) what kind of accountability framework needs to be developed to balance technological efficiency with human protection in the digital media ecosystem. The answer to this question is expected to enrich the study of communication about media ethics in the Al era as well as a reference for policymakers, media actors, and civil society in formulating a more human-centered Al governance in Indonesia.

THEORETICAL FRAMEWORK

Artificial Intelligence in the Media and Communication Ecosystem

In general, artificial intelligence (AI) can be understood as a computational system often based on machine learning that is able to learn from data, recognize patterns, and then generate predictions, decisions, or recommendations automatically or semi-automatically to carry out tasks that are usually associated with human intelligence (Guzman & Lewis, 2020; Kaplan & Haenlein, 2019). In the media ecosystem, Al is no longer just a "technical tool", but a structural part of the infrastructure and governance of the platform that helps regulate the process of production, curation, distribution, and consumption of content (Gorwa et al., 2020; Nieborg & Poell, 2018). A number of studies have also mapped the realm of the use of Al in the media in three major areas, namely digital journalism (e.g., automation and augmented newsroom), social media (e.g., feed curation and content moderation), and video platforms and digital advertising (e.g., recommendation systems and programmatic advertising) (Broussard et al., 2019; Sayedi, 2018).

Al's Ethics and Al's Human-Centered

Al ethics refers to the normative study of how the Al system is designed, used, and supervised in order to be in harmony with moral values, human rights, and the prevention of adverse impacts on individuals and society (Mittelstadt et al. 2016). In the literature, Al's ethical framework evolved due to the "proliferation of principles", so consistent mapping of core principles is needed to avoid confusion of application in the field (Floridi & Cowls, 2019a). Global mapping shows that many of Al's ethical guidelines intersect with themes such as justice, transparency, accountability, privacy, and safety even though they differ in the emphasis on implementation (Jobin et al., 2019). In the context of communication, Al ethics is important because algorithms mediate visibility, priorities, and information flows that have an impact on public space and power relations (Diakopoulos, 2015).

Human-centered Al emphasizes design that maintains human control and automation support in a balanced manner to improve performance, safety, and user trust (Shneiderman, 2020).

Trustworthy Al is generally understood as an Al that fulfills legal, ethical, and robust aspects throughout the life cycle of the system, not just "functional" technically (Lemonne, 2018). At the global policy level, trustworthy Al is also associated with respect for human rights, democratic values, and strengthening the accountability of the actors who build and operate Al. Human-centered approach presupposes the existence of real human agency and human oversight so that algorithmic decisions can be challenged, corrected, or stopped when there is a risk of harm (Shneiderman, 2020).

The principle of beneficence demands that Al provide clear benefits to the human being and the affected communities (Floridi & Cowls, 2019b). The principle of non-maleficence emphasizes the prevention of harm, including social risks arising from model failures, mispredictions, or use outside the appropriate context The principle of justice/fairness demands the management of bias and equal treatment, including an evaluation of impacts that may harm certain groups (Mehrabi et al., 2022). The principles of transparency and explicability require an explanation of how the system works and the reasons for the output of the system so that Al's decisions can be understood and accounted for (Floridi & Cowls, 2019b). The principles of privacy and data governance demand the protection of personal data, restrictions on the purposes of processing, and meaningful control over the data used by Al (Wachter et al., 2017). The principle of accountability requires a clear person in charge, an audit mechanism, and a path to recovery when Al causes a negative impact (Ananny & Crawford, 2018). The principles of safety and robustness require a system that is reliable, safe, and resistant to interference, manipulation, and failure in real conditions (Floridi et al., 2018).

In the media, ethical ethics are crucial because the system of recommendations, rankings, and moderation shapes the visibility of issues and opportunities for public participation (Helberger, 2019). Human-centered frameworks demand meaningful choices for users, such as control over personalization and sufficient explanation of content curation (Lemonne, 2018). Trustworthy frameworks demand a balance between content distribution efficiency and human protection, especially when engagement incentives have the potential to encourage amplification of risky content. At the institutional level, Al's ethical approach encourages media organizations to develop algorithmic audit SOPs, policy transparency, and complaint mechanisms to maintain legitimacy in the public space (Diakopoulos, 2015).

Algorithmic Personalization, Bubble Filters, and Digital Rights

The literature on social media algorithms and digital platforms highlights filter bubbles and echo chambers as two important mechanisms that contribute to the fragmentation of public spaces (Cinelli et al., 2021). Filter bubbles refer to algorithmic personalization that limits the user's exposure to information or views that align with previous preferences (Flax-

man et al., 2016). Meanwhile, echo chambers emphasize the role of selective social interaction in reinforcing homogeneous views within online communities (Del Vicario et al., 2016).

Several studies have shown that the combination of platform commercial logic, user behavior data, and algorithm design can reduce information diversity, reinforce polarization, and weaken the quality of public deliberation (Moller et al., 2018). Digital rights perspectives, problem filter bubbles, algorithmic bias, and datafication are directly related to the right to privacy, the right to access diverse information, and the right to non-discrimination (Van Dijck, 2014).

When important decisions such as content visibility, decreased reach, account deletion, or the serving of political ads are driven by a non-transparent AL system, accountability issues and clarity of the decision-making process become crucial (Ananny & Crawford, 2018). This situation raises questions about the mechanism of public lawsuits, the responsibility of platform actors, and the capacity of the state/supervisory institution in regulating the governance of platforms operating across jurisdictions (Gorwa et al., 2020). At the same time, the debate on the right to an explanation of automated decisions presents conceptual and practical challenges in ensuring the protection of citizens' rights in the digital space (Wachter et al., 2017).

Studies on Al Ethics in Journalism and Media

Several recent studies explicitly examine Al's ethics in journalism and the media, and show that journalism studies have begun to shift from just a debate about technical automation to issues of accountability, transparency, and democratic consequences when Al's participation in determining the production process of news distribution and information power relations (Diakopoulos, 2015; Porlezza & Schapals, 2024b).

Iain's research conducted a bibliometric review of Al's literature (including its ethical slices) in journalism and found that themes such as algorithmic bias and fairness, editorial accountability for automated output, misinformation, and ethical governance were dominant concerns while marking the increasing urgency of a clearer accountability framework between newsrooms and platform ecosystems (Molla & Ahsan, 2025; Sonni et al., 2024) In Indonesia and the Global South region, studies on journalism automation and integration of Al in local media are starting to grow, but their contribution is still uneven compared to the Global North region, so that research agendas on social impact, employment, and platform power relations are often not adequately mapped in the mainstream literature (Moller et al., 2018; Tapsell, 2015).

These studies are an important foothold for this article to formulate an analytical framework on the tension between algorithm efficiency and human protection, especially since Al governance demands the principles of fairness,

transparency, and accountability that can be operationalized across actors (media industry platform countries) in order to protect the public interest (Cath, 2018; Porlezza & Schapals, 2024b).

METHODOLOGY

This research uses a qualitative approach with an exploratory design to understand in depth the ethical dynamics of artificial intelligence in the media and digital communication ecosystem. The qualitative approach was chosen because it allows researchers to explore the experiences, meanings, and practices of media actors and stakeholders related to Al in a contextual and in-depth manner (Creswell & J David, 2018).

Primary data were collected through semi-structured in-depth interviews (DiCicco-Bloom & Crabtree, 2006) with informants, namely media practitioners, media and digital space institutions. The selection of informants is carried out purposively by considering their involvement in the use, regulation, or critical study of AI in the media sector, as well as utilizing snowball sampling to expand the network of relevant sources (Kallio et al., 2016).

Secondary data was collected through a literature review directed at indexed journal articles, academic books, and international and national policy documents that discuss AI, ethics, media, and digital rights. The literature review process follows methodological guidelines that emphasize the systematics of searching, selection, and synthesis of findings to produce clear conceptual contributions (Snyder, 2019).

Interview data were analyzed using thematic analysis by following the steps of data introduction, initial coding, theme development, review, theme naming, and narrative writing (Braun & Clarke, 2006). The findings of the literature review are synthesized narratively by grouping relevant studies into main themes and then comparing them with the results of the interviews (Snyder, 2019). The validity of the findings is maintained through triangulation of methods and data sources, namely by comparing the consistency of patterns that emerge from interviews and literature reviews, so as to provide a more comprehensive understanding and increase the credibility of the research (Snyder, 2019).

Table 1. Informants

No	Name	Faculty
1.	Vrita Nabila	Media Practitioner/Journalist
2.	Dina Aprilita	Media Practitioner/Journalist
3.	Fahmi	Kominfo

4	Harun Muhtar	Pakai AI

Source: Researcher's Data, 2025

RESULTS AND DISCUSSION

Interview Results

Configuring AI Utilization

From the results of the informant's interview, AI is used mainly for "editorial support" work such as script summaries, title ideas/SEO, transcription, translation, and audience analytics, not as the main writer of the news. This view is in line with news organization guidelines that emphasize GenAl's output should be treated as raw material that remains mandatory to be verified and decided through human editorial judgment. At the strategy level, the informant said that "internal AI governance" began to be built through training, a list of allowed use-cases, and restrictions on high-risk tasks (e.g. the creation of final content without review (Jess Weatherbed, 2025). However, informants also assessed that internal policies often lag behind daily practice due to the pressure of production speed and competition for attention on platforms (Amy, 2024).

Configuring the use of Al on social media, Informants see AI on social media as dominant as a curation engine (ranking/recommendation), ad optimization, and moderation automation, so that "attention management" becomes the center of platform power. Consequently, algorithmic decisions are perceived as "non-neutral" because they are related to engagement incentives that can encourage sensational, polarizing, or misinformation content (Zuboff, 2020).

Informants also emphasize privacy risks and data-driven surveillance, especially when personalizing ads and recommendations utilize highly granular behavioral tracks. At the same time, practitioner informants acknowledge that AI helps with work efficiency (scheduling, copywriting, social listening), but demand clearer transparency standards so that the public knows when to interact with automated systems (UNESCO, 2024).

While the use of Al in video platforms, Informant describes that video platforms combine Al for recommendations, autocaptioning/translation, violation detection, and distribution optimization, so that the scale of content dissemination increases drastically. On the risk side, informants highlight the rise of synthetic and manipulative content (including "deepfake-like content"), making the need for tagging/labeling and verification literacy a prominent ethical issue.

Literature Review Results

Efficiency that should be "human-centred"

The global policy literature places human rights, human dignity, fairness, transparency, and accountability as the ethical foundation of Al, not just the technical goal of efficiency (UNESCO, 2024). The "trustworthy Al" framework also requires risk management throughout the system life cycle (govern map measure manage), so media organizations need to treat Al as a socio-technical system that has an impact on the public (Tabassi, 2023). Normative standards such as the Al Bill of Rights affirm protection from algorithmic discrimination, data privacy, notice/explanation, and human alternative options when automated systems affect citizens (The White House, 2022). In regulatory contexts, risk-based regimes such as the EU Al Act strengthen transparency and risk mitigation obligations for specific categories of systems, which are relevant to the media ecosystem (e.g. synthetic content tagging and information obligations) (Regulation (EU), 2024).

Key ethical risk clusters in the media ecosystem

First, the literature highlights the risk of "automated untruthfulness" (e.g., hallucinations in generative models) that can undermine the integrity of information when newsrooms chase speed without verification (Bender et al., 2021). Newsroom guidelines emphasize that Al does not "investigate" and does not automatically list sources, so verification, attribution, and editorial accountability remain irreplaceable.

Second, bias and inequities can arise from training data and evaluation design, including inequities in accuracy in certain demographic categories that have been shown in facial recognition studies (Buolamwini & Gebru, 2018). Therefore, the literature recommends documentation and reporting of models/datasets (e.g. model cards and datasheets) so that the public and auditors understand the context of use, limitations, and impacts (Mitchell et al., 2019)

Third, privacy risks and "data extraction" increase in ad and recommendation personalization systems, so distribution efficiency is often paid for by the expansion of behavioral surveillance (Zuboff, 2020). The policy framework demands data controls, purpose limitations, and accountability mechanisms when personal data is used for automated decisions that affect citizens (The White House, 2022).

Fourth, trust and legitimacy risks arise when the public is not informed that they are interacting with the Al system or when synthetic content is not adequately labeled (UNESCO, 2025). Public perception literature also shows

that Al's acceptance in journalism is greatly influenced by the transparency of use and the belief that humans remain in editorial control (Amy, 2024).

cross-chain accountability

The study of journalism emphasizes the need for algorithmic accountability reporting to unlock the workings of computational systems that shape information visibility and power distribution (Diakopoulos, 2015). At the same time, the relationship between publisher platforms in the GenAI era shows a new negotiation about transparency, copyright, and the media's bargaining position towards the technology ecosystem (Peter Brown and Klaudia & Jazwinnska, 2025).

Integrative Discussion
Algorithmic efficiency

Interview and literature findings both indicate that Al is indeed accelerating workflows and expanding the scale of production/curation, but the hidden cost is the need for stricter risk governance (Tabassi, 2023). In other words, algorithmic efficiency that is not accompanied by ethical design and organizational controls tends to shift the burden of risk to the public (misinformation, bias, privacy), rather than eliminate it (UNESCO, 2025).

Human protection as a of the information ecosystem

UNESCO and OECD principles place dignity, human rights, and democratic values as parameters for Al's acceptance, so the media needs to assess Al not only from the KPI engagement but from the impact on citizens (UNESCO, 2024). In the realm of journalism, this orientation means that "human-in-the-loop editorial" should be understood as a mechanism of public accountability, not just an internal procedure

From normative ethics to operational ethics

In order for ethics not to stop at slogans, the literature encourages the translation of principles into operational artifacts such as risk assessment, model/dataset documentation, bias testing, and reporting of system limitations (Tabassi, NIST Al RMF helps to link these practices to the system lifecycle, so that media organizations can set minimum standards before Al is used in sensitive functions.

Multiactor Ethical Responsibility Framework

Here's a multiactor framework that you can make a subpart of a conceptual model, with the logic of "sharing responsibility" along the Al value chain (UNESCO, 2025).

1. The newsroom/publisher is responsible for verifying, attributing sources, labeling of Al's use, and setting use-case limits that protect editorial integrity.
2. Platforms (social media & video) are responsible for providing curation transparency, systemic risk mitigation, and design that does not exploit user vulnerabilities for the sake of engagement (Zuboff, 2020)
3. The model/technology provider is responsible for documentation, bias evaluation, security, and clarity of capability limits so that user organizations do not rely on the system incorrectly (Mitchell et al., 2019)
4. Regulators are responsible for creating risk-based rules, audit mechanisms, and proportionate sanctions to prevent "unacceptable risk" practices in the public space (Regulation (EU), 2024)
5. Civil society/academics are responsible for conducting monitoring, impact research, and public literacy so that accountability does not depend solely on vendor or platform claims (UNESCO, 2024)
6. Users/audiences play a role through literacy verification, reporting, and information consumption decisions, but this role should not replace structurally stronger actors' ethical obligations (UNESCO, 2024)

CONCLUSION

This study confirms that the use of artificial intelligence (Al) in the media and digital communication ecosystem in journalism, social media, and video platforms provides real algorithmic efficiencies (accelerating production, curation, distribution, and moderation), but at the same time presents no less great ethical risks. Based on interviews and literature reviews, it can be seen that the main challenge is not just "can or shouldn't use Al", but how Al is positioned: whether as a tool that strengthens information integrity and human protection, or as an engagement optimization engine that magnifies bias, misinformation, privacy violations, and ambiguity in accountability. The findings also suggest that the dilemma of "efficiency vs. human protection" can only be addressed if Al's ethics are translated into operational practices: human-inthe-loop editorial, rigorous verification and attribution, transparency of Al's use (including labeling of synthetic content), bias and impact audits, and data governance that limits surveillance. In other words, human protection is a legitimacy condition for Al's innovation in the public space, not an optional addition once the system is up and running. Finally, the study proposes that ethical responsibility should be understood as a multi-actor responsibility: newsrooms/publishers maintain editorial integrity and standards, platforms are responsible for safe curation and moderation design, technology providers ensure documentation and risk mitigation, regulators organize risk-based rules and audit mechanisms, while academics/civil society oversee and strengthen public literacy. The big

takeaway: Al can strengthen the information ecosystem only when algorithmic efficiency is always "locked" by the principles of accountability, transparency, and human protection along the value chain.

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