

Robot Journalism in Indonesian Digital Media: Implementation and Impact of Kompas.com and Liputan6.com

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abstract

The phenomenon of applying artificial intelligence (AI) in journalism practices in Indonesia is growing, especially in national online media such as Kompas.com and Liputan6.com. This study aims to examine how AI is applied in content production in both media and its impact on journalism practices and the role of journalists. This study uses a qualitative method with in-depth interview techniques with informants from Kompas.com and Liputan6.com to explore the application of AI in the news production process. The research findings show that at Kompas.com, AI is used for various functions such as automatic content recommendation, virtual host, and text-to-video modification. The application of AI aims to increase efficiency and productivity in content production without fully replacing the role of humans, especially in sensitive issues. Meanwhile, Liputan6.com implements AI through avatar presenters in news programmes, which replace real presenters to deliver information quickly and interactively. Both media continue to develop the use of AI as a response to the advancement of the digital era. The implications of this research underline the important role of AI in expanding the reach and efficiency of journalism, while still placing human control as an important element in maintaining journalistic quality and ethics. This research is the first to examine the application of robot journalism in Kompas.com and Liputan6.com, which is expected to be an important reference for future studies in the field of digital media in Indonesia.

Keywords: Robot Journalism; Artificial Intelligence; Kompas.com; Liputan6.com

INTRODUCTION

In recent decades, the development of digital technology has significantly changed various aspects of human life, including journalism. Mass media is now moving faster towards digitalisation, where automation and artificial intelligence (AI) have become important elements in the news production process (Carlson, 2018; Hassan & Albayari, 2022; Huang, 2022; Thurman et al., 2017). In many countries, robot journalism has been implemented to increase efficiency and speed up content production (Consortium, 2021; Wölker & Powell, 2021). Robot journalism is the use of AI in creating or compiling news automatically, but still involves human labour to validate the data. This trend has sparked debate among academics and media practitioners, especially regarding its impact on the traditional role of journalists and journalistic quality. Indonesia is not immune to this trend, with several major media outlets such as Kompas.com and Liputan6.com having started to implement AI technology in their content production.

A number of studies have been conducted on the application of AI in journalism, in developed and developing countries in the Americas, Europe and Africa (Diaz-Noci, 2020; Jamil, 2021; Kothari & Cruikshank, 2022; Moravec et al., 2024; Parratt-Fernández et al., 2021; Soto-Sanfiel et al., 2022; Sun et al., 2022). For example, (Broussard et al., 2019; Quinonez & Meij, 2024; Soto-Sanfiel et al., 2022; Túnñez-López et al., 2020) examines how AI can be used to automatically curate news in American online media. In Europe, the study (Porlezza, 2023; Túnñez-López et al., 2020) explains how the use of AI technologies in news media and journalism is currently regulated and debated. The study (Crespo & Pinto-Martinho, 2021) explains how robot journalism can improve speed and accuracy in reporting complex data-driven news, such as financial reports and sports statistics. While in Africa, studies (Kothari & Cruikshank, 2022; Munoriyarwa et al., 2023) reveal the application of artificial intelligence in newsrooms.

Some of the studies above show that the use of AI in journalism can speed up the news production process, reduce operational costs, and allow journalists to focus on more complex investigative tasks. However, most of the research still focuses on media in Western countries such as Europe, America and Africa, and only a few studies have examined how AI is applied in developing countries in Asia such as Indonesia. In Indonesia, the adoption of AI in journalism is still relatively new and limited to a few major media such as Kompas.com and Liputan6.com. The application of this technology is expected to help improve efficiency in delivering news to the public, but it also raises challenges related to journalistic ethics and the role of humans in overseeing AI-generated content. However, not many studies have explored in depth how AI is implemented in Indonesian digital media and how it impacts the role of journalists and the practice of journalism itself.

Research on robot journalism in Indonesia is still very limited. Most of the existing research focuses more on the technical aspects of AI implementation in other sectors, such as banking, health, and education (Ririh et al., 2020; Sudaryanto & Hanny, 2023; Ullly et al., 2023), with little attention to the media industry. In fact, studies related to the impact of AI on journalism in Indonesia have not been found in the academic literature, both in terms of journalistic ethics, productivity, and how AI affects the quality of content produced. In addition, although Kompas.com and Liputan6.com are two of the largest online media in Indonesia that have started to implement AI in their content production, there is no research related to AI implementation in these two media that comprehensively examines the impact of AI implementation on the changing role of journalists.

This research offers something new by focusing on analysing the implementation of robot journalism in Indonesian digital media, especially in Kompas.com and Liputan6.com. This study not only examines the technical aspects of AI implementation, but also examines the impact of this technology on the role of journalists in the two media. This research is the first to combine technological and ethical perspectives in understanding how AI affects journalistic practices in Indonesia, especially in media that are pioneers in the implementation of AI in Indonesia. As such, this study is expected to fill a gap in the existing literature, as well as provide new insights into how AI technology can be developed and integrated in Indonesia's journalism ecosystem without disregarding the role of humans.

This study is to explore the application of robot journalism in Indonesian digital media, specifically in Kompas.com and Liputan6.com. The main objective is to understand how AI is applied in content production in both media, as well as its impact on the role of journalists. Specifically, this research wants to find out the extent to which the use of AI can increase efficiency and productivity, as well as how AI interacts with ethical aspects in journalism, especially in handling sensitive issues that require human judgement. In addition, this study also aims to look at the implications of implementing robot journalism for the media industry in Indonesia as a whole. The practical implications of this research include recommendations for digital media in Indonesia in developing and managing AI ethically, while still paying attention to the role of humans in maintaining the quality and integrity of journalism. In addition, this research is also expected to help policy makers in the media industry in formulating appropriate regulations to govern the application of AI in the mass media, so as to minimise the risks that may arise from the use of this technology.

RESEARCH METHODS

This study focuses on a qualitative research with a case study approach to understand the implementation and impact of robot journalism in Kompas.com and Liputan6.com. Data was collected through in-depth interview techniques with informants who are digital media professionals from both media. Additional information was also collected through direct observation and documentation related to the application of AI in the news production process. Data analysis was conducted using an analytical descriptive approach, where the results of interviews and observations were compared with existing literature to illustrate the application of AI in a broader context. This research provides an in-depth picture of how AI affects the work process of journalists at Kompas.com and Liputan6.com, as well as its long-term impact on the practice of journalism in Indonesia.

Thematic and narrative data analysis techniques were used in this study to explore the main patterns that emerged from in-depth interviews and observations related to the application of AI in the news production process at Kompas.com and Liputan6.com. In the thematic analysis, researchers identified key themes related to how AI is implemented in journalism, as well as its impact on the role of journalists and news quality. These themes were then further analysed to see how they reflect the social and cultural context of the media in Indonesia. Meanwhile, narrative analysis was used to understand how stories or narratives were constructed by informants regarding their experiences working with AI, and how these changes affected their journalism practices. This approach allows researchers to connect individual experiences with a broader picture of the development of robot journalism in Indonesia, as well as its long-term impact on the media industry.

RESULTS AND DISCUSSION

Results

Application of Artificial Intelligence in Kompas.com and Liputan6.com

The study findings show that Kompas.com started using predictive AI in 2016 and then expanded to use generative AI in 2020-2021, especially for text and video production. One of the main functions of AI in Kompas.com is the Quick Read feature and classification of articles based on SDGs goals. AI is also used to automatically summarise articles and provide content recommendations, thus improving work efficiency. Meanwhile, Liputan6.com began intensively using AI in 2024, especially for rewriting content such as press releases. This is done to differentiate the published content with other media. AI is also used to increase the productivity of SEO-orientated content.

Table 1. Tabulation of Interview Data with Key Informants

Informant	Statements	Thematic Coding
Laksono Hari Wiwoho	"AI is used for predictive AI since 2016 and generative AI for text and video production since 2020-2021."	AI Application, Generative AI, Predictive AI, Content Production
Laksono Hari Wiwoho	"AI is used to summarise articles (Quick Read) and classify articles based on SDG goals."	Quick Read, SDG Goals, Content Recommendation, Content Classification
Raden Trimutia M Hatta	"AI began to be used intensively at Liputan6.com in 2024 to rewrite press release content to be different from other media"	AI for Rewrite, Press Release Content, Content Differentiation
Raden Trimutia M Hatta	"AI does not replace the role of journalists in the field, but is used for soft news content and SEO."	Journalist Role, Hard News, Soft News, SEO
AA Gde Bagus Wahyu Dhyatmika	"AI has started to become a tool that helps editors, both in business and content. Some media that have used AI were presented as examples at the event."	Use of AI in Editorial, Examples of Media Using AI
AA Gde Bagus Wahyu Dhyatmika	"The development of AI in mass media is accelerating, with	Speed and Technology Adoption

	massive adoption in the past year."	
Ninik Rahayu	"The development of artificial intelligence technology has increased significantly around the world, including in Indonesia. The use of AI is expanding in various industry sectors, including the press industry."	Global and Local Development of AI Technology, Adoption and Implementation of AI in Various Sectors
Ninik Rahayu	"Although AI exceeds the expectations of its creators, ethics remains a concern in the realm of business and journalism."	Ethical Challenges in the Use of AI

Tabulation of Interview Data by the Author, 2024

From table 1. above, this study reveals the application of artificial intelligence (AI) technology in the media industry, particularly in content production and the role of journalists in the newsroom. Based on interviews with key informants, it was found that AI has been used in various forms, such as predictive AI and generative AI, to improve efficiency in content creation. Laksono Hari Wiwoho revealed that since 2016, AI has been used for prediction, and since 2020-2021, it has been used to generate text and video, as well as to summarise articles and classify content based on sustainable development goals (SDG goals). This allows the media to produce articles that are more targeted and relevant to global interests.

In addition, AI is also used to support editorial operations, as explained by Raden Trimutia M Hatta. At Liputan6.com, AI was used intensively in 2024 to rewrite press release content, so that the published content could be different from other media. However, AI does not replace the role of field journalists in making hard news that requires in-depth research and interviews. As a tool, AI is very useful in soft news content creation and SEO optimisation, but there is still a need for human involvement in more complex processes that require in-depth analysis.

In addition, the rapid development of AI in the media industry was also highlighted by AA Gde Bagus Wahyu Dhyatmika, who stated that AI has become a tool that helps newsrooms, both in terms of business and content. He also added that the adoption of AI in Indonesia is expanding, as more media outlets integrate the technology to improve the efficiency of content production. However, Ninik Rahayu cautioned that there are ethical challenges that must be faced in the application of AI, especially in the realm of business and journalism. The use of AI must still be balanced with human supervision to ensure quality, transparency, and accountability in every content produced. Therefore, this research shows that although AI brings positive impacts in efficiency and innovation, it still requires supervision and clear ethical policies in its use.

Impact of Artificial Intelligence Implementation in Kompas.com and Liputan6.com

Table 1. Tabulation of Interview Data with Key Informants

Informant	Statements	Thematic Coding
Afwan	"AI is used for predictive AI since 2016 and generative AI for text and video production since 2020-2021."	Application of AI, Generative AI, Predictive AI, Content Production
Afwan	"AI is used to summarise articles (Quick Read) and classify articles based on SDG goals."	Quick Read, SDG Goals, Content Recommendation, Content Classification

Gde Wahyu Dhyatmika	Bagus	"AI has started to become a tool that helps editors, both in business and content. Some media that are already using AI were presented as examples at the event."	Use of AI in Editorial, Examples of Media Using AI
Gde Wahyu Dhyatmika	Bagus	"The development of AI in mass media is accelerating, with massive adoption in the past year."	Speed and Technology Adoption
Hendry Bangun	CH-	"AI began to be used intensively at Liputan6.com in 2024 to rewrite press release content to be different from other media."	AI for Rewrite, Press Release Content, Content Differentiation
Hendry Bangun	CH-	"AI does not replace the role of journalists in the field, but is used for soft news content and SEO."	Journalist Role, Hard News, Soft News, SEO
Ninik Rahayu		"The development of artificial intelligence technology has experienced a significant increase around the world, including in Indonesia. Its use is also increasingly widespread in various industrial sectors, including the press industry."	Global and Local Development of AI Technology, Adoption and Implementation of AI in Various Sectors
Ninik Rahayu		"Although AI exceeds the expectations of its creators, ethics remains a concern in the realm of business and journalism."	Ethical Challenges in the Use of AI
Ninik Rahayu		"The implementation of ethical aspects of artificial intelligence is demanded in two domains at once, namely the realm of business and the realm of journalists in newsrooms, both of which demand to work in a policy manner."	AI Ethics in Business and Journalism
Ninik Rahayu		"The government, the Ministry of Communication and Information and the Press Council must collaborate to build awareness of the importance of ethics in the development of the application of this technology."	Institutional Collaboration, Community Strengthening
Edmon Makarim		"AI is an intelligence that imitates humans in doing their work...AI only analyses the data that humans put into it, while human intelligence searches for new data independently."	The Difference between Human Intelligence and AI
Edmon Makarim		"Human intelligence is slower in processing data, while AI processes data quickly and performs one or two tasks at a time."	Processing Speed, AI Limited Tasks
Edmon Makarim		"Human intelligence masters lifelong skills, while AI is designed for only a few specific tasks."	AI Task Limitations vs. Human Intelligence

Tabulation of Interview Data by the Author, 2024

This research explores the application of artificial intelligence (AI) technology in the media industry, particularly in the context of robot journalism, through interviews with informants from various media backgrounds. The interview results show that AI, although used to increase efficiency in content production, does not replace the role of human journalists. Afwan revealed that AI is used for predictive AI since 2016 and generative AI for text and video production since 2020-2021, as well as for summarising articles and classifying content based on sustainable development goals (SDG goals). This indicates that AI has become a very important tool in improving the efficiency of news production, but still requires human intervention in maintaining the quality and relevance of the content.

In addition, other informants, such as Gde Bagus Wahyu Dhyatmika and Hendry CH-Bangun, highlighted that AI is now widely used by large digital media, such as Liputan6.com, to rewrite press release content to be different from other media and to improve efficiency in soft news content creation and SEO optimisation. However, Hendry emphasises that AI cannot replace the role of field journalists in producing hard news, which still requires in-depth research and interviews. Therefore, while AI can speed up the news-making process, humans still play a role in the more complex aspects that require in-depth analysis.

The importance of ethics in the use of AI was also a key focus in this interview, as explained by Ninik Rahayu. She revealed that although AI technology has developed rapidly, there are major challenges related to ethics in the realm of business and journalism. The use of AI must still follow clear policies to ensure that the news produced remains accurate and not misleading. Ninik also emphasised the need for collaboration between relevant institutions in Indonesia, such as the government, the Ministry of Communication and Information, the Press Council, and law enforcement agencies, to build awareness of the importance of ethics in the use of AI technology and strengthen oversight of the implementation of this technology.

Edmon Makarim provided an interesting perspective on the difference between human intelligence and AI. He explained that although AI has the advantage of speed and capacity to process data, it can only work based on data entered by humans and is limited to certain tasks. In contrast, human intelligence can search for new data independently and handle more complex tasks. This comparison highlights that while AI has great potential, there are certain aspects that only humans can address, such as complex decision-making and contextual understanding.

These findings illustrate that AI has great potential to improve efficiency in the media industry, but also presents ethical challenges that need to be addressed. The use of AI must be balanced with policies that regulate its ethical use, while still paying attention to the role of human journalists in maintaining news quality and integrity. Collaboration between various institutions, including the government, the Press Council, and law enforcement agencies, is needed to ensure that AI is used wisely and responsibly in the media industry.

DISCUSSION

The application of artificial intelligence (AI) in journalism has become a growing trend in various countries, including Indonesia. Findings from various sources, such as Kompas.com and Liputan6.com, show that AI plays an important role in supporting routine tasks in the industry. The use of AI in journalism includes activities such as summarising long articles, recommending relevant content for readers, and rewriting content from press releases. These capabilities help journalists' work efficiency by reducing the time spent on administrative tasks and allowing them to focus on the creative and analytical aspects of journalism.

Not only does it increase productivity, the utilisation of AI in journalism also expands the scope of information distribution to audiences. AI algorithms allow media platforms to personalise content according to readers' preferences, thereby increasing their engagement and satisfaction. However, the adoption of AI in journalism is not free from challenges, such as potential algorithm bias and threats to the sustainability of the human role in the media ecosystem. This points to the need for oversight and regulation that ensures that these technologies are used ethically and still support the principles of responsible journalism.

This is in line with previous research in the US and Europe which shows that AI can accelerate the news production process and improve operational efficiency in newsroom management (Broussard et al., 2019; Chan-Olmsted, 2019; Crespo & Pinto-Martinho, 2021; Marconi, 2020; Miroshnichenko, 2018; Wu et al., 2019). However, unlike in developed countries, in Indonesia, the application of AI is still very new and faces various challenges, including high technology costs and limited Indonesian pronunciation.

A study by Porlezza(2023) in Europe highlights the importance of strict regulations for the use of AI in journalism to maintain news integrity. In Indonesia, based on interviews with sources from Kompas.com and Liputan6.com, AI does help in increasing productivity, but human control remains an important part, especially to ensure accuracy and ethics in news coverage. As explained by Laksono Hari Wiwoho from

Kompas.com, AI is used to support the production process, but not to manage sensitive content or actual news without human supervision. This shows that in developing countries like Indonesia, the presence of AI does not directly replace the role of journalists, but more as an auxiliary tool.

While in Africa, Kothari & Cruikshank's study(2022) shows that AI can replace some of the roles of journalists, especially in compiling news based on data. However, in Indonesia, AI is more widely used to help edit and summarise news rather than write the full news. Based on an interview with Raden Trimutia M Hatta from Liputan6.com, AI at Liputan6.com is more focused on soft news and SEO content, while journalists still carry out their main duties in the field to cover hard news and investigations. This shows a gap in the use of AI between developing countries like Indonesia and African countries, where AI adaptation is more gradual in Indonesia.

This finding underlines that AI in journalism in Indonesia has not yet reached the level of full automation as it has in some Western countries. Nevertheless, the application of AI in Indonesia is starting to emulate the global trend, where AI is used to improve efficiency without neglecting the role of humans. This is in line with research findings in Latin America (Soto-Sanfiel et al., 2022) , which emphasises that AI can make it easier for journalists to focus on more creative and complex tasks. In Indonesia, the biggest challenge is to ensure that AI does not reduce journalistic quality, especially in terms of ethics and accuracy.

There are also challenges to AI deployment in Indonesia, findings from Kompas.com and Liputan6.com reveal, such as the high cost of developing AI technology and less natural language pronunciation, adding to the complexity of AI adoption. In the research (Porlezza, 2023) , the importance of AI technology that is tailored to local needs is one of the key points. In Indonesia, cultural and language factors affect AI implementation, requiring more specific technology modifications to operate effectively. This indicates that AI implementation in Indonesia cannot simply be adopted from Western countries, but requires customisation to the local context.

The research gap lies in the lack of studies examining the impact of AI on journalism in developing countries such as Indonesia. Most research still focuses on Western and African countries (Díaz-Noci, 2020; Kothari & Cruikshank, 2022) , while Indonesia as one of the countries with rapid growth of digital media has not been explored much. This research contributes to filling that gap by providing an overview of the implementation of AI in media newsrooms in Indonesia, as well as the challenges and opportunities it faces. The research shows that the application of AI in journalism in Indonesia is still in its infancy, with unique challenges relating to cost, regulation and technology customisation. However, there is great potential for AI to continue to grow in the Indonesian media industry, provided that the role of humans, especially in terms of ethics and accuracy, remains a top priority.

CONCLUSION

This research raised two main issues related to the application of artificial intelligence (AI) in journalism in Indonesia, particularly in major online media such as Kompas.com and Liputan6.com. First, how AI is applied in the content production process and its impact on journalism practices. Secondly, how AI affects the role of journalists, as well as the challenges that arise in maintaining journalistic quality and ethics amid the application of increasingly advanced technology. This research found that at Kompas.com, AI is used for various functions, such as automatic content recommendation, virtual host, and text-to-video modification, with the aim of increasing efficiency and productivity in content production without fully replacing the role of humans, especially in handling sensitive issues. Meanwhile, at Liputan6.com, AI is used through avatar presenters in news programmes, replacing human presenters to deliver information quickly and interactively. Both media continue to develop the use of AI as a response to the development of the digital age, while still maintaining the role of human journalists in maintaining news quality and ethics. The implication of these findings is that while AI can help speed up and expand content production in the media, it is important for media to maintain human control in the editorial process to maintain journalistic quality and ethical standards. This requires clear policies and strict supervision of the use of AI in newsrooms. The research also

points to the need for training and capacity building of journalists to work with AI to maximise the potential of the technology without compromising the basic principles of journalism. Some of the weaknesses of this study include the limited sample that only includes two major media outlets, namely Kompas.com and Liputan6.com. This means that the findings of this study cannot be generalised to the entire media industry in Indonesia, especially for smaller media or those that have not yet adopted AI technology significantly. In addition, the qualitative approach with in-depth interviews, while providing rich insights, has limitations in terms of subjectivity, so it may not be fully representative. Future research can expand the scope by involving more media, especially small and independent media, to get a more complete picture of AI implementation in the Indonesian media industry. In addition, quantitative research involving larger data analyses can be conducted to measure the objective impact of AI on news quality and audience perception. Further research can also explore more in-depth ethical challenges in the use of AI, as well as how more comprehensive regulatory policies can be implemented to regulate this technology more effectively in Indonesia.

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