

## Exploring the potential of immersive journalism in Indonesia

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**How to Cite This Article:** Ananda, S., et al. (2025). Exploring the potential of immersive journalism in Indonesia. *Jurnal Studi Komunikasi*, 9(3). doi: 10.25139/jsk.v9i3.10832

Received: 04-08-2025, Revision: 30-09-2025, Acceptance: 09-10-2025, Published: 29-11-2025

**Abstract** The use of technology in the world of journalism continues to grow rapidly, one form of this innovation being immersive journalism. This study aims to map Indonesia's readiness to develop immersive journalism through the aspects of news reporting, user literacy, as well as ethics and regulations. It uses a qualitative method with a narrative literature review approach to examine the format of immersive journalism in a flexible and exploratory manner, in searching for literature with broad and complex topics. 33 scientific articles and 1 book were selected through a data source evaluation process using inclusion and exclusion criteria based on indexed journals, books, open access, and relevance to the research objectives. In addition, 9 government policy documents were used as grey literature and 3 websites as supporting sources. The findings reveal the advantages of Immersive Journalism in terms of interactivity, presence, emotional engagement, and empathy. Challenges include ethics, implementation, and audience acceptance. Various opportunities emerge from the combination of local potentials such as support from the National Long-Term Development Plan for 2025-2045 policy, production and enhancement of immersive technology education, growth in the virtual reality headset market, and selection of long-term topics. Challenges related to the need for specific ethical regulations for immersive journalism can refer to policies and laws in Indonesia.

**Keywords:** Immersive journalism; media innovation; virtual reality technology

### INTRODUCTION

In recent decades, communication and information technology have advanced rapidly, bringing new challenges to the world of journalism. In response, journalism continues to adopt various technologies (Tesseem et al., 2024) such as the use of artificial intelligence (AI) and natural language processing (Tariq et al., 2024), as well as the application of big data for information analysis (Tejedor et al., 2024). Meanwhile, in Indonesia, journalistic media tend to focus on pursuing instant traffic through clickbait (Kurniawan et al., 2025) and speed of production, as well as submitting to marketing logic rather than maintaining journalistic quality (Lestari & Fitri, 2021). This condition has resulted in a decline in journalists' creativity and the substance of news value, because the media's orientation is more focused on view targets than on fulfilling the public interest (Eddyono, 2022).

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In addition, the Indonesian journalism ecosystem faces challenges with the emergence of hoaxes and disinformation spread through social media, which threatens the accuracy of information (Nugraha & Purwitasari, 2025). Furthermore, there are also political conflicts of interest, where the media are often used as a propaganda tool that benefits certain groups, thereby tarnishing journalistic independence (Khoirunnisa et al., 2025). With the pressure on the media industry to publish news quickly, this has encouraged journalistic practices that neglect facts verification (Akil, 2025). This phenomenon shows the need for an alternative approach to reporting that emphasises quality, integrity, and increased engagement in order to improve the journalistic ecosystem in Indonesia.

To address these challenges, one innovation that can be offered to strengthen the quality and credibility of news reporting is the adoption of immersive journalism (Eskiadi & Panagiotou, 2024; Sánchez Laws, 2020). Immersive journalism is not only engaging but can also enhance credibility and engagement (Pjesivac & Ahn, 2024) through its approach that leverages interactive elements such as technological interactivity and narrative interactivity (Greber, 2024). It utilises XR (Extended Reality) technologies such as virtual reality, augmented reality, and mixed reality (Bressan et al., 2024), as well as other immersive formats such as 360-degree video (Kunert, 2024). Immersive formats have great potential to be developed through a journalistic framework that combines quality and creativity, with an in-depth and unhurried approach (Marín, 2024). In addition, this technology can be a powerful journalistic tool for conveying social issues in a profound and touching way (Davidow, 2024).

Moreover, the main advantage of immersive journalism lies in its ability to evoke empathy and emotional engagement from the audience (Eskiadi & Panagiotou, 2024), enabling audiences to experience a sense of presence by exploring places that are difficult to reach (Herrera Damas & Benítez de Gracia, 2022; Marín, 2024), and having the potential to increase user engagement and participation in controlling digital elements in the depicted environment (Greber et al., 2025; Hernández-Rodríguez & García-Perdomo, 2024). However, the immersive journalism format carries a risk: the complexity of the audiovisual experience can create a cognitive load for the audience, hindering their ability to understand the facts and information presented (Greber, Aldering, et al., 2024).

International media outlets such as The New York Times, BBC, and The Guardian have adopted this technology to present news (Hernández-Rodríguez & García-Perdomo, 2024). This innovation was made due to a decline in audience trust and engagement with conventional journalism, which led to the emergence of Immersive Journalism (Eskiadi & Panagiotou, 2024) to bring a sense of novelty that has the potential to increase audience appeal (Cheng & Verboord, 2024b). This new concept is believed to provide an in-depth and interactive experience that allows users to experience the news directly from a first-person perspective, enabling a more holistic and effective understanding than conventional methods (Brannon et al., 2022; Cheng & Verboord, 2024a; da Rocha & Pase, 2024). In its application, this technology is used to address news topics such as war (Arik et al., 2024; Ponzanesi, 2024), culture (Gonzales & Gutiérrez, 2021), history (Kunert, 2024), tourism (Hui et al., 2023), politics (Sirkkunen et al., 2020), and criminality (Kang et al., 2019).

In Indonesia, immersive journalism is still in its early stages of development and has not yet been widely adopted. News media such as CNN Indonesia have begun to explore immersive formats (Clara & Paramitha, 2023). However, the implementation of immersive journalism in Indonesia still faces various challenges, both technical and economic (Clara & Paramitha, 2023). In addition, there are challenges in terms of ethics (Erken & Brautovic, 2025; Santos, 2023), the production of Immersive Journalism (Eskiadi & Panagiotou, 2024) and user understanding in utilising immersive technology (Pérez Seijo, 2023).

However, amidst these challenges, the rapid development of information and communication technology in Indonesia presents significant opportunities for the growth of Immersive Journalism (Budiman et al., 2025). The high public interest in interactive digital content (Sulianta, 2025) and the development of technology-based creative industries (Tsabit, 2025) are factors that accelerate the adoption of this concept in journalistic practice in Indonesia. In addition, the success of various global media platforms in integrating immersive elements into news presentation shows that Indonesian media have the potential to adapt and compete in an increasingly innovative digital ecosystem.

The success of an innovation is not only determined by its technical superiority, but also by how well the public and institutions are able to understand, test, and assess the benefits it offers. In this case, understanding how a journalistic innovation is introduced can be explained through the perspective of the theory of innovation diffusion, which essentially emphasises that the adoption of an innovation is influenced by the communication process, perception of benefits, and social readiness of individuals and institutions (Cheng & Verboord, 2024b; Eskiadi & Panagiotou, 2024)

By providing an in-depth and interactive experience, immersive journalism is able to create a stronger emotional connection with the audience, enhance their understanding of complex issues, and provide new alternatives for delivering more interesting news. These advantages make immersive journalism a great opportunity for the media in Indonesia to enrich the journalistic experience while strengthening their relevance in the digital age.

This study identifies the readiness of adaptive media in the Indonesian context, covering aspects of news content production, literacy, ethics, and regulation. This framework is synthesised through a narrative literature review (NLR) approach, which is expected to provide a comprehensive overview of opportunities, challenges, ethics, and regulations in Indonesia, as well as optimise the use of technology to strengthen the competitiveness of Indonesian journalism in the digital era. Previous research on the topic of immersive journalism in Indonesia has been limited to initial explorations in local media such as CNN Indonesia (Clara & Paramitha, 2023; Paramitha, 2022). Both studies contributed to introducing the initial concept as well as technical and ethical aspects, but there has been no research that provides a broader mapping of the development of immersive journalism in Indonesia. Therefore, this study attempts to answer the question: what is the potential for the application of immersive journalism in Indonesia?

## **METHODOLOGY**

This study uses qualitative methods with the aim of understanding, identifying the issues being researched, and describing the context in depth (Lim, 2025). Meanwhile, according to Tracy (2024) qualitative methods are investigative procedures for producing descriptive data through social phenomena based on written or spoken words from people and behaviours that can be observed holistically.

This study uses the Narrative Literature Review (NLR) approach to examine the flexible and exploratory format of immersive journalism in analysing and synthesising literature. NLR was chosen because it provides space to explore literature on topics that are still broad and complex and is capable of providing synthesis and interpretation of in-depth understanding (Juntunen & Lehenkari, 2021; Sukhera, 2022). This approach is suitable for identifying strengths and challenges that can be adapted as opportunities for application in Indonesia, given that this topic is relatively new and requires an open synthesis of literature from various perspectives. The review process is carried out iteratively in several stages, such as searching, analysing, writing, and synthesising the literature. This process serves to reflect perspectives and reconsider potential biases in understanding the literature (Ohashi et al., 2024). The following are the research questions to guide the focus of the study:

RQ1: What advantages does immersive journalism offer as a news presentation innovation?

RQ2: What are the primary challenges in implementing immersive journalism?

RQ3: What are the opportunities for applying immersive journalism in Indonesia?

RQ4: What ethical and regulatory dimensions exist, and what do existing policies indicate?

The literature was collected using the Google Scholar search engine, which was used to search for scientific publications from various databases (Turnbull et al., 2023). Google Scholar was chosen based on the researchers' desire to cover a wide range of literature through various types of publications (articles, theses, books, and conference papers). In addition, the researchers were aware of the limitations of this study in accessing paid databases (Cook et al., 2024). Searches using keywords such as *'immersive journalism'*, *'virtual reality'*, *'challenges'* and *'advantages'* were sorted through publications between 2021 and 2025, and the search results yielded 332 scientific publications.

Several other keywords were added to the exploratory literature search process, such as *'360 degree video'*, *'immersive technology'*, *'journalism ethics'*, and also those related to Indonesia, such as *'Indonesia Nickel'*, *'technology immersive Indonesia'*, and *'immersive*

*journalism in Indonesia*'. The researchers evaluated the data sources using inclusion and exclusion criteria in an effort to maintain the necessary academic transparency because the researchers' perspectives influence the selection and interpretation of literature, so that interpretations may differ from those of other researchers (Sukhera, 2022). This consideration is also a form of academic accountability, even though the resulting interpretations may differ from those of other researchers (Sukhera, 2022). A total of 33 scientific articles and one book were selected to be grouped into research themes and sorted based on several criteria, such as indexed/accredited journals, books, open access, and relevance to the research objectives and questions. The researchers also included 9 official documents from laws and regulations as *grey literature* that could serve as a basic reference for formulating the ethics of immersive journalism regulation in Indonesia.

To strengthen the mapping of opportunities for the application of Immersive Journalism, 3 websites were utilised as supporting information sources, namely the official government website, market trend data, and local technology-based platforms. All sources were selected and identified reflectively and purposively (Parviz, 2023). The researchers grouped the findings into strengths and challenges and then formulated them into the existing potential, development, education, ethics, and regulations in Indonesia. The researchers grouped the research results and discussions into four main themes, namely Strengths, Challenges, Opportunities, and Ethics and Regulations.

## RESULTS AND DISCUSSION

### What is immersive journalism?

The term "immersive journalism" has been defined as the production of news that allows people to have an immersive first-hand experience of the event or situation being reported, thereby enabling a more holistic and effective understanding than conventional methods (Brannon et al., 2022; Cheng & Verboord, 2024b; da Rocha & Pase, 2024; Ngene et al., 2023). Immersive Journalism is based on two main ideas, namely the simulation of situations similar to real situations to increase audience engagement (Eskiadi & Panagiotou, 2024) and the utilisation of first-person perspectives that provoke deep emotional responses from audiences (Kunert, 2024).

There are three main dimensions to immersive journalistic production; (1) Level of Inclusivity, is the degree to which technology replaces physical reality, (2) Likelihood of Interaction, refers to the user's interaction in controlling mechanisms within the virtual environment such as the ability to look around and choose the storyline, (3) Immersive Narrative Structure, is a storyline designed to give the audience a more active point of view through the utilisation of first-person narration and the inclusion of avatars, which creates *embodiment* so that the audience feels directly involved in the story (Greber, 2024; Greber et al., 2023, 2025; Greber, Lecheler, et al., 2024).

Immersive journalism can be seen using various types of technology, with different levels of inclusiveness depending on the device elements used such as 2D screens (computers, tablets, and smartphones) with lower levels of inclusiveness than devices such as, head mounted displays (HMDs), VR headsets, and CAVE systems (de Bruin et al., 2022). Immersive technologies can be found in XR (Extended Reality), this term is an umbrella to classify various types of imaged technologies that are generated to warp reality from user interpretation (Bressan et al., 2024).

One of the XR areas is Virtual Reality (VR) by providing an experience that fully utilises CGI (Computer Generated Image) with 3D digital visuals projected onto the real world, allowing users to see and move in the virtual world (Erdem, 2023; L. K. Lee et al., 2024; Sánchez Laws, 2020). Another immersive technology that can be employed is 360-degree video, which provides a similar experience but with a different level of immersion and display. This technology uses omnidirectional cameras that allow users to move their viewpoint, look in all directions, experience the scene and control their movements (Pjesivac & Ahn, 2024).

### **RQ1. Advantages: What advantages does immersive journalism offer as a news presentation innovation?**

The development of immersive journalism stems from the news media's belief in a new approach to attracting audience attention (Marín, 2024; Sanchez-Acedo et al., 2023). Therefore, immersive journalism presents itself as a news format that differs from conventional media (Zinovieva, 2024)

by providing the audience with a first-person perspective (Pjesivac & Ahn, 2024), creating a situation where users feel as if they are actually present at the event within a virtual environment (Aitamurto, 2023; MARÍN, 2024; Pérez Seijo, 2023) thereby encouraging active participation from users while increasing their sense of involvement in consuming news (J. Lee & Kang, 2024). Immersive journalism significantly influences the level of user satisfaction with a news story (Hernández-Rodríguez & García-Perdomo, 2024), thereby creating a connection between users and emotional engagement (Cheng & Verboord, 2024b; Herrera Damas & Benítez de Gracia, 2022; Pötzsch, 2023). It not only affects factual information but also shapes individual attitudes and contextual understanding (Gallego Abellán et al., 2024) related to individual emotions and empathy (Davidow, 2024). Therefore, immersive journalism technology can be utilised to increase public knowledge of social issues through emotional understanding (J. Lee & Kang, 2024). The employment of immersive formats such as 360-degree video using HMDs is believed to strengthen engagement, thereby encouraging real action from the public (Gallego Abellán et al., 2024).

Thus, immersive journalism is not merely a technical innovation, but a paradigm shifts in news consumption towards a more participative and emotionally engaging experience. These findings indicate that immersive technology represents an effective strategy for improving the quality of journalism in Indonesia, which still faces challenges such as clickbait and disinformation.

## **RQ2. Challenges: What are the primary challenges in implementing immersive journalism?**

### *Immersive ethics crisis*

Behind the advantages offered by immersive journalism lie complex issues that present the greatest challenges and remain unresolved to date (Pérez Seijo, 2023), such as ethical guidelines (Erken & Brautovic, 2025; Vázquez-Herrero, 2024), accuracy (Davidow, 2024), emotional manipulation (Eskiadi & Panagiotou, 2024; Santos, 2023), privacy (Aitamurto, 2023) and conflicts of interest (Gallego Abellán et al., 2024; Greber et al., 2025).

Journalism formats that utilise immersive technology require specific ethical guidelines for sustainable adoption (Erken & Brautovic, 2025; Santos, 2023) because of the potential for misuse and even discomfort experienced by the audience (Vázquez-Herrero, 2024) and the breach of normative values in journalistic practice. The challenge of accuracy remains an issue in distinguishing digital reality from the real world. This is because VR technology with computer-generated images (CGI) risks violating the accuracy and objectivity of reporting if it is not accompanied by transparency (Aitamurto, 2023; Davidow, 2024). Therefore, clarity is needed in the presentation of news when providing the immersive journalism format experience (J. Lee & Kang, 2024). This ethical crisis emphasises the need for specific regulations and professional standards so that innovation does not undermine the basic principles of journalism.

### *Limitations of immersive implementation*

The development of immersive journalism currently faces major production and technical barriers with high costs (Erken & Brautovic, 2025; Eskiadi & Panagiotou, 2024). The unclear monetisation mechanism of news media has a direct impact on the source of financing in content development (Herrera Damas & Benítez de Gracia, 2022). Finally, news media find it difficult to produce immersive journalism, especially when compared to other news presentations that are easy to produce (de Bruin et al., 2022). This poses an obstacle to the integration of this format into the mainstream news media reporting model and is a fundamental consideration that newsrooms have yet to resolve.

Another issue comes from the need for immersive journalism to use specialised equipment (Eskiadi & Panagiotou, 2024). The technology of immersive devices (such as VR headsets or HMD) has developed rapidly, but their use is still limited and not widespread despite the enthusiasm of audiences (Kunert, 2024; Vázquez-Herrero, 2024). These devices are considered heavy, and users are still reluctant to invest in the technology (Davidow, 2024; Tessem et al., 2024). In addition, infrastructure support is still uneven, especially in rural areas (Erken & Brautovic, 2025). These inequalities make it clear that a well-established ecosystem and technological mechanisms are needed to adopt this format extensively.

Various problems related to devices and infrastructure also influence the pattern of content consumption by the public. Immersive journalism content can still be accessed through

2D screen devices, but the quality of the experience is not maximised, resulting in low levels of immersion (Pérez Seijo, 2023). Immersive journalism projects do not last long because the audience is still small and most media only create this format to make them look modern and innovative (Cheng & Verboord, 2024b). In addition, the content is also difficult for audiences to find, which limited its adoption and reach (Marín, 2024). This creates hesitation from newsrooms and investors to invest, which has a major impact on the sustainability of the format.

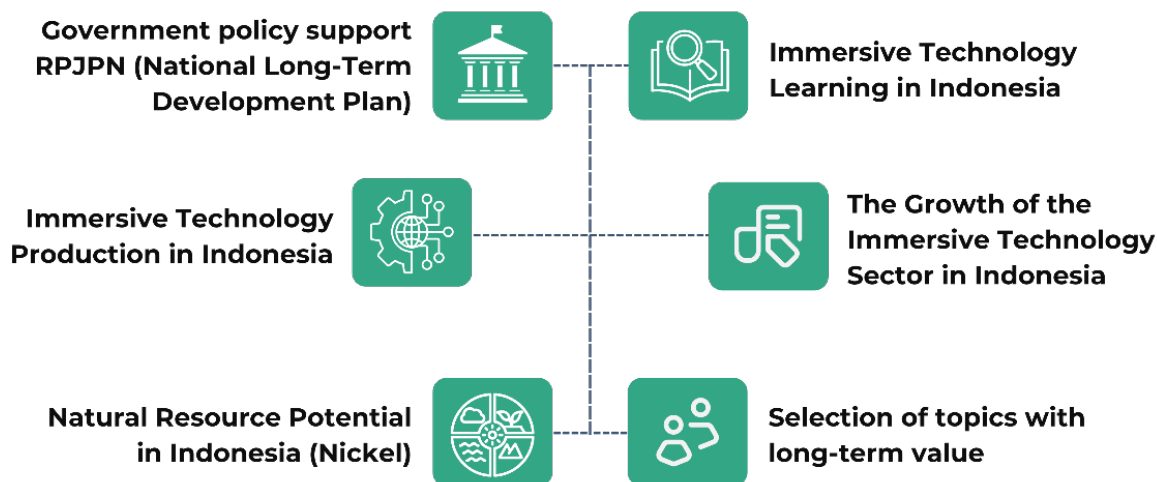
#### *Immersive audience limitations*

Immersive journalism is believed to be able to provide a different experience through a projected virtual environment, which is one of the initial reasons for adopting immersive formats. With the experience of producing a distinct way of consuming news, it creates a new challenge because people themselves do not yet possess full literacy of this technology (Erken & Brautovic, 2025; Pérez Seijo, 2023).

As it evolved, Immersive journalism began to dominate the connotative effect and slowly overshadowed the denotative side of the news (Aitamurto, 2023). This means that this format creates a risk of understanding bias and tends to lead to emotion and empathy from users, potentially ignoring the facts of news information. Besides the advantages of immersive journalism in creating interactivity for users, a paradox arises, namely the increased subjectivity of the audience in understanding the information presented (Greber, Aaldering, et al., 2024). This happens because journalists do not have full control over the news, while users' understanding of the news tends to be based on their own preferences (Pötzsch, 2023). In addition, its implementation presents another challenge, namely the ability of users to remember news facts and information. This problem arises because the human brain is unable to process the complex experience of visual elements and news information in a virtual environment simultaneously, thus increasing the cognitive load of the user and affecting the ability to remember information and facts (Greber, Aaldering, et al., 2024).

These results show that immersive journalism is still in the process of finding its shape due to obstacles such as the risk of emotional manipulation, high production costs, equipment limitations, and uneven infrastructure support, which limit its integration into mainstream news practices. Low cognitive capacity and literacy make audiences vulnerable to bias and difficulty in comprehending information. Therefore, the sustainability of this format requires ethical guidelines, infrastructure support, and more advanced public education.

### **RQ3. Opportunities: What are the opportunities for applying Immersive Journalism in Indonesia?**



**Figure 1.** Strategic opportunities for immersive journalism development in Indonesia.  
Source: Primary data, processed (2025)

Innovation in the development of immersive journalism (See Figure 1) is an experiment in breaking through conventional journalistic presentation style by producing a different experience (Cheng & Verboord, 2024b). Previous studies indicate optimism that the Immersive Journalism format will remain resilient for the next two decades (Herrera Damas & Benítez de

Gracia, 2022) and introduce a new paradigm in the field of journalism (Marín, 2024). With established literacy, the experience gained by the audience is not only emotional but also expected to stimulate critical and analytical thinking abilities regarding the news from immersive journalism (Pöttsch, 2023).

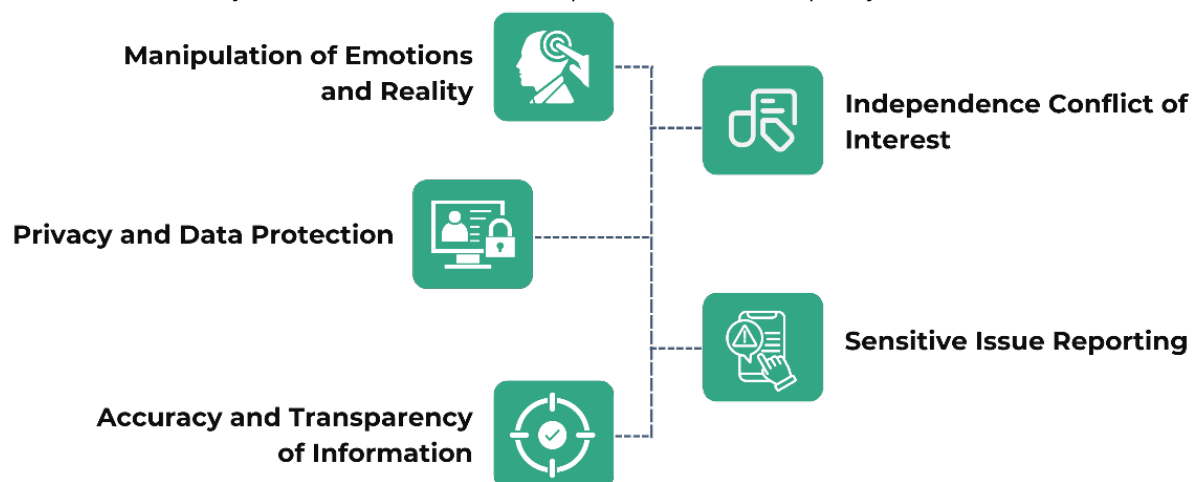
Immersive journalism provides a new form of presentation in the field of Indonesian journalism. Several content providers have presented their content using 360-degree technology, such as the tourist attractions of Tebing Gunung Kawi Temple (Sanjaya & Mahendra, 2023), Borobudur Temple (Direktorat Jenderal Bimbingan Masyarakat Buddha, 2023), and a Virtual Tour of the Aik Berik Lombok Tengah Tourism Village (Saputra et al., 2024). Meanwhile, CNN Indonesia has covered several traditional cultural ceremonies, but due to visual modes, narratives, and other limited features, the immersive experience presented is still relatively low (Clara & Paramitha, 2023).

Although the accessibility of immersive content remains limited (Marín, 2024), the growth of the VR headset market in Indonesia shows a positive trend, with revenue reaching USD 97.0 million in 2023 and projected to continue rising to USD 862.2 million by 2030 (Grand Review Research, n.d.). These opportunities are also evident in the efforts of Indonesian institutions to independently develop immersive technology, such as Shinta VR (Kariko & Takai, 2024) and Molca Teknologi Nusantara, which focuses on VR/AR (PT Molca Teknologi Nusantara, 2025), as well as research and innovation from universities such as Telkom University in the development of virtual reality technology (Utomo et al., 2021).

In addition to development through local institutions and projects, the existence of Indonesia's strategic resources can support the domestic production of immersive technology. As one of the world's largest nickel producers (Mahbubi et al., 2025), Indonesia plays a significant role in the global energy transition. Nickel itself can be used to manufacture battery components (Rosikin et al., 2025), which can be installed directly into locally made immersive devices, thus having great potential to reduce imports and support the production of immersive technology within the country.

Indonesia is a country rich in social and cultural diversity (Idi & Priansyah, 2023) and history (Arief et al., 2021). However, with the rapid pace of globalisation, people are beginning to abandon local cultures and shift to popular cultures (Syakhsyiyah et al., 2025). Geographically, Indonesia is located at the meeting point of four active tectonic plates and lies on the ring of fire, making it highly vulnerable to both small and large-scale seismic activity. Approximately 184 million Indonesians live in disaster-prone areas (Krisdiyanto & Farihah, 2024).

Despite its great potential, the success of immersive journalism in attracting audience attention is highly dependent on technical aspects and content design. Some media outlets have turned immersive production into a competition and a point of differentiation between media outlets, resulting in productions that seem rushed to keep up with conventional models, even though this technology is very different, both in terms of technique and audiovisual narrative (Herrera Damas & Benítez de Gracia, 2022). Its development requires the design of ideas, immersive elements, and storyline structures to achieve optimal audiovisual quality.



**Figure 2.** Ethical and regulatory dimensions of immersive journalism.  
Source: Primary data, processed (2025)

The complexity of audiovisuals also risks overloading the audience's cognition, reducing understanding and retention of facts (Greber, Aaldering, et al., 2024) and emphasising emotional aspects over critical thinking (Pötzsch, 2023). Another problem stems from immersive journalism's ability to generate interactivity that allows audiences to take control of the news, which then triggers multiple interpretations because audiences judge based on their familiar memories and personal preferences, potentially ignoring other points of view (Greber, Aaldering, et al., 2024).

#### **RQ4. Ethics & Regulations: What ethical and regulatory dimensions exist, and what do existing policies indicate?**

Ethics and regulations are crucial aspects in the development of immersive journalism in Indonesia (See Figure 2), considering that the immersive format not only presents information but also involves direct participation from the audience and its ability to create a sense of presence whilst encouraging deep emotional feelings and empathy (Vázquez-Herrero, 2024). Despite the vulnerability to exploiting users' emotions (Gallego Abellán et al., 2024; Greber et al., 2025; Pötzsch, 2023), immersive journalism also has enormous potential in shaping different understandings and perspectives that are not only based on data but also on the experiences and feelings of users (Gallego Abellán et al., 2024).

In Indonesia, regulations provide important guidelines for this practice. *Press Council Regulation Number: 02/Peraturan-dp/xi/2022 on Diversity Issue Guidelines emphasises the obligation of journalists to understand issues, consider their impact, and avoid content that is demeaning or causes negative stigma (regulatory). Meanwhile, Press Council Regulation Number: 1/Peraturan-Dp/l/2025 on Guidelines for the Use of Artificial Intelligence in Journalistic Works Chapter II Article 3 stipulates that press companies must always verify data, information, visuals, and audio and label journalistic works that utilise digital engineering, including the use of Immersive (Regulatory).*

The ethics of immersive journalism in Indonesia must refer to universal values as stated in the Press Council's Journalistic Code of Ethics (KEJ), whereby journalists have an obligation to present factual, non-misleading information and uphold the public interest (Regulatory). In line with this, the issue of privacy is another crucial dimension that cannot be ignored in the development of immersive journalism. This format often uses 360° footage or location-based data, which technically allows individuals to be recorded unknowingly and without permission. This breaches the right to privacy as stipulated in Law No. 27 of 2022 concerning Personal Data Protection (Regulatory).

The use of VR/AR enables the collection of users' biometric and location data, which poses a risk of privacy breaches (Aitamurto, 2023). In accordance with *Press Council Regulation Number: 02/Peraturan-Dp/lv/2024 concerning Guidelines for the Prevention and Handling of Sexual Harassment in the Press Environment*, which sets out guidelines on online gender-based violence, including privacy violations, journalists are prohibited from using spyware or similar technologies without consent, as well as using GPS or geo-locators without permission.

Additionally, the practice of immersive journalism must take into account media independence to avoid potential conflicts of interest, such as pressure from particular parties or political affiliations that influence the news perspective. Although there are no specific regulations governing the practice of immersive journalism in Indonesia, the Journalistic Code of Ethics and Press Law No. 40 of 1999 remain important foundations for its practice, as stated in *Press Council Regulation Number: 6/Peraturan-DP/V/2008 on the Journalistic Code of Ethics in Article 1 "Indonesian journalists declare their independence, produce accurate, balanced, and fair news"* (Regulatory). This means that journalists must convey information based on verified facts, remain neutral, free from any intent that may harm the public, and act without interference from any party.

This shows that the practice of immersive journalism in Indonesia must maintain a balance between innovation and ethical compliance. Regulations act as guidelines for journalists to avoid media abuse and protect the privacy of their audience. By adhering to these fundamental principles, the adoption and development of immersive technology-based journalism can maximise the potential for an in-depth user experience without compromising journalistic integrity.

## Theoretical Discussion

Although it is difficult to envisage immersive technology becoming mainstream in journalism in the near future, the potential remains open for realising immersive journalism if its advantages can be optimised and the challenges identified earlier can be addressed. Based on the perspective of innovation diffusion theory, these conditions indicate that Indonesia is still in the persuasion and decision stage, where the public and the media are considering the benefits and risks before fully adopting it. It should be emphasised that the success of adoption in Indonesia depends on the extent to which immersive journalism is developed seriously as a sustainable form of journalism.

First, content selection and feature optimisation are important factors. Findings from previous studies show that CNN Indonesia's 360-degree video project failed to attract attention due to limitations in visuals, narration, and interactivity. This failure indicates weak trialability, or a lack of opportunity for audiences to try the technology with an adequate experience. This shows that Indonesian media has not been fully able to utilise Immersive Journalism. If optimised properly, this format has the potential to serve as a tool for cultural and historical preservation in Indonesia, due to its ability to provide experiences from situations that are difficult to access in the real world. This can certainly strengthen emotional understanding of humanitarian issues, thereby encouraging concrete action from the community (Gallego Abellán et al., 2024). Thus, the selection of topics is not merely a matter of variety, but rather a form of strategy in maximising immersive characteristics. This format approach must adapt to features and content that are considered more interesting by the public (Greber et al., 2025), and the identified advantages must be optimised.

Second, the exploration of in-depth narrative development is a very important factor in shaping a deep user experience (Vázquez-Herrero, 2024). Immersive journalism is considered to have storytelling power because it makes events feel more real (Cheng & Verboord, 2024b), so creation through interesting narratives is very relevant to the delivery of complex issues (Erken & Brautovic, 2025) while also demonstrating its relative advantage, namely the superiority of the immersive format over conventional journalism because it is able to provide practical benefits as well as an emotional experience. Considering that Indonesia is geographically prone to disasters due to seismic activity and other natural phenomena. The combination of disaster topics with strong narratives will be effective in increasing public knowledge through training programmes to recognise and respond to situations in the face of disasters. With the ability of immersive technology to produce mental image simulations that allow users to know the circumstances and situation of a person in the news (J. Lee & Kang, 2024). Thus, it provides an in-depth and educational experience while opening opportunities as a vehicle for social awareness and disaster situations in Indonesia.

Third, the framework and strategy for developing immersive journalism. Content accessibility remains an issue, particularly due to the audience's unfamiliarity with technology (Marín, 2024), so the media needs strategies to promote news products in this format through proper market analysis to make them easily accessible to the public. In addition, content must be tailored to the needs of a diverse audience, especially those who are less tech-savvy, by providing tutorials and training to make it easier for them (Eskiadi & Panagiotou, 2024). Based on this, the development of immersive journalism reflects the obstacle of complexity at this stage, where the audience is in the knowledge stage and needs initial understanding and technical skills before they can fully adopt immersive journalism content. This format also supports the development of interactive documentary news styles, but its application requires a framework for analysing approaches, tool development, and analysis systems to assess and evaluate immersive reporting (Hernández-Rodríguez & García-Perdomo, 2024), because this format has different characteristics and rules than conventional formats, so it must be treated as a new form of media (Kunert, 2024). This condition is relevant to the trend in journalistic media in Indonesia, which only focuses on speed of production and instant traffic, thereby reducing the creativity of journalists and the substance of the news (Eddyono, 2022; Lestari & Fitri, 2021). This phenomenon confirms the need for an approach that emphasises quality over quantity. Slow journalism focuses more on maintaining the quality of news against the tide of fast news, with unhurried production and a creative style of delivery (Marín, 2024).

Fourth, the improvement of human resources and support from the government are crucial factors in the development of immersive journalism. Several local agencies, educational

institutions, and companies have contributed directly to immersive technology development projects. However, these efforts are still limited and require expansion through curriculum integration and collaboration between media organisations, universities, and technology companies (Erken & Brautovic, 2025). These actors serve as change agents that accelerate the adoption of innovation by providing legitimacy and institutional support. In addition, government support is an important instrument in the development of this format, in line with the policy of *Law of the Republic of Indonesia Number 59 of 2024 concerning the 2025-2045 National Long-Term Development Plan* by improving the quality of human resources through education, training, and mastery of technology. This encourages the creation of competent human resources who can master the concepts and techniques of immersive journalism production in Indonesia. Therefore, it is necessary to adapt to these innovations in terms of technology and audience needs (Cheng & Verboord, 2024b).

Fifth, the utilisation of domestic industry and natural resources. Strengthening the manufacturing industry is necessary through the development of mature mechanisms and ecosystems in Indonesia. *Law No. 4 of 2009* and *Regulation of the Minister of Energy and Mineral Resources (ESDM) No. 11 of 2019* support the position of the domestic industry by prohibiting the export of nickel in its raw form and requiring mining companies to process it first (Sitohang et al., 2025). This policy encourages downstream growth and increases domestic added value related to nickel processing (Santoso et al., 2024), thus having great potential to independently produce immersive technology if the local technology industry, human resource competency development, and Indonesia's strategic position work together synergistically. This process is in line with the decision stage towards confirmation, when the domestic industry successfully implements innovations and shows results, strengthening the belief that immersive journalism is worthy of widespread adoption in Indonesia. With this, Indonesia will not only be able to reduce its dependence on imported technology but also has the potential to become a centre for the development of local immersive technology, while creating jobs and strengthening the independence of the national industry.

Sixth, managing interactivity and audience recognition in immersive journalism. Immersive journalism has the potential to overload the audience's cognition, reducing retention and understanding of the facts presented in the information (Greber, Aaldering, et al., 2024), especially since the experience generated is only emotional without critical thinking (Pötzsch, 2023). To reduce risk, several design mitigations are employed, such as guided paths that help the audience follow a structured flow of information; information panels that provide important explanations; overlays with explanations during breaks that allow the audience to understand complex elements before continuing; debriefing screens that summarise key information; and accuracy sidebars. This strategy has the potential to improve trialability, making it easier for audiences to evaluate innovations. The implementation of immersive journalism must involve audiences according to their needs, adjusting sensory and motor stimuli, and increasing familiarity with the technology so that it encourages users to use it in the long term (Greber et al., 2025). However, interactivity that gives control to the audience has the potential to cause subjectivity due to the reduced control of journalists, which then triggers multiple interpretations because the audience judges based on their familiar memories and personal preferences, thus potentially ignoring other points of view. (Greber, Aaldering, et al., 2024). Therefore, production must emphasise the quality of journalistic products that are unambiguous, without any double messages that encourage similarities in perception and avoid disinformation and hoaxes.

Concerns about the application of immersive journalism are increasingly urgent when compared to the challenges in conventional journalism, which are generally limited to framing or manipulating text and images. In immersive journalism, the risks are far more vulnerable and fatal because they include intense emotional manipulation, the potential creation of a false reality that the audience is unaware of, privacy violations through sensory data, and severe psychological impacts.

Based on the Innovation Diffusion framework, these risks pose obstacles at the persuasion stage because the public may reject adoption if ethical, regulatory, and security aspects are not explained transparently. In Indonesia, this possibility is even greater because the spread of hoaxes, manipulation, and privacy violations are still common in the digital public sphere. Therefore, strict ethics, regulations, and operational standards are needed to control

and supervise immersive journalism practices, so that their existence remains in accordance with professional norms and applicable laws.

First, the risk of emotional and reality manipulation. The innovation of immersive journalism is not only about providing an immersive experience but also concerns the impact of that experience on society, along with the ethical responsibilities it entails. (Pötzsch, 2023). Handling sensitive issues in news reporting is crucial (Herrera Damas & Benítez de Gracia, 2022). Therefore, any manipulation carried out by journalists, such as VR that depicts an environment entirely generated by CGI and editing that removes journalists in 360-degree videos, must be accompanied by clear labelling to prevent misunderstandings among the audience when consuming news presentations (Aitamurto, 2023). Without clear ethical boundaries, journalists can create exaggerated, dramatic effects using visual elements, sound, and narration, thereby preventing audiences from thinking rationally and risking blurring objectivity and increasing the potential for emotional disinformation, especially when content that appears real is only a simulation or reconstruction.

Second, accuracy and transparency of information. Immersive journalism production requires multiple layers of verification and openness to the public to maintain trust (Eskiadi & Panagiotou, 2024). Journalists must confirm with relevant experts, especially on sensitive issues, and provide explicit explanations in immersive content such as 'reconstruction based on BNPB data', ensuring that the audience is not misled. Therefore, accuracy not only encompasses the content of the news but also includes the manner of presentation, the technological format used, and how the experience shapes public perception.

Third, user privacy and data protection. The potential to record sensory data through VR and AR devices, such as head movements, iris movements, or user location, poses a risk of violating privacy. Therefore, the application of informed consent and minimisation of geolocation data are important elements in accordance with *Law No. 27 of 2022 (Regulatory)* on personal data protection to ensure that technological innovations do not infringe individuals' rights to control their personal information. Journalists need to obtain explicit consent from individuals who are closely recorded or recognisable in immersive content, especially if the recording is carried out in public spaces such as hospitals, places of worship, or refugee camps. Fourth, independence from conflicts of interest. Immersive journalism has the potential to be used to shape public opinion and exploit the format for the interests of certain groups (Davidow, 2024; Greber et al., 2025). Therefore, Indonesian media must uphold editorial independence and conduct ethical audits of the content they produce. An ethical evaluation of all content produced is essential, and media organisations must disclose to the public if editorial integrity cannot be guaranteed. This approach is in line with the press's function as a social control and responsible information provider.

Based on the results of the discussion, the implementation of immersive journalism in Indonesia is still in the early stages of exploration. This study shows that there is great potential, but also a number of obstacles in terms of ethics, production, and audience readiness. Thus, this study concludes that the successful adoption of immersive journalism in Indonesia is highly dependent on the readiness of the media ecosystem, public understanding and literacy, and direct support from the government. This study highlights the challenges of implementing immersive journalism in Indonesia. These challenges include high implementation costs, monetisation mechanisms, technical knowledge, and uneven infrastructure. However, these challenges can be overcome through the potential of natural resources, government policy support from the National Long-Term Development Plan (2025-2045), and infrastructure equalisation through collaboration between technology agencies, media organisations, and domestic education institutions.

On the other hand, accessibility and minimal public interest in consumption are also obstacles. Therefore, an effective strategy through thorough market analysis is needed to promote and facilitate public access to content. The growth of the VR headset market in Indonesia also opens up opportunities to expand the potential for immersive journalism adoption by the public with the right production and distribution strategies. The risk of bias in understanding and subjectivity from the audience arises due to a lack of technological literacy and the complexity of the audio-visual content presented. To minimise this, immersive journalism production needs to consider user needs, build public familiarity with this format, and simplify the message to minimise ambiguity and ensure a common perception. There are

challenges in terms of ethical guidelines, accuracy, emotional manipulation, privacy, and conflicts of interest in Indonesia. Although there are no specific ethical guidelines and regulations related to immersive journalism, a number of laws and policies applicable in Indonesia can be used as a starting point for formulating specific and applicable policies for the practice of immersive journalism in Indonesia.

## CONCLUSION

Immersive journalism is a journalistic innovation that provides an in-depth and participatory reporting experience by combining interactivity, presence, emotional involvement and empathy, enabling audiences to experience first-hand perspectives on complex issues. Research is still limited to the initial stage of identifying the application of immersive journalism in Indonesia. Therefore, an in-depth study is needed, namely through empirical research to understand the audience's perspective, level of interest, understanding, and user barriers in accessing and appreciating this format. As well as an in-depth exploration of media that no longer adopt immersive journalism projects to reveal the internal and external dynamics that hinder its existence in the digital media and journalism ecosystem. The researchers also recommend the need for research that focuses on examining ethical aspects in journalism practice in order to formulate appropriate, applicable and contextual ethical guidelines, considering journalistic principles and the legal system in Indonesia. A series of future studies is expected to strengthen the theoretical and practical foundations for building an inclusive and sustainable immersive journalism ecosystem in Indonesia.

This study recommends three strategic stages for implementing immersive journalism in Indonesia: a) 0-6 months: implementation of pilot SOPs for producing 360-degree video content with at least two editorial rooms to test basic practices. b) 6-18 months: forming a Press Council working team to develop Immersive Journalism Ethics Guidelines, based on the journalistic code of ethics and relevant regulations in Indonesia as outlined in this study. c) 18-36 months: Launching examples of Slow Journalism projects highlighting themes of history, disaster mitigation education, and cultural heritage, while also linking these to public education to improve literacy and understanding among the community.

With these stages, it is hoped that the development of immersive journalism will be able to exist in the future. It can also serve as a foundation for building a quality journalism ecosystem in Indonesia.

## ACKNOWLEDGMENTS

The author would like to express his deepest gratitude to the Faculty of Communication Sciences, Islamic University of Riau, for facilitating and supporting the writing of this article.

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