

Metaverse Journalism: Opportunities and Challenges for the Media Industry in Indonesia

Felisianus Novandri Rahmat¹, Febi Ramadhani Rusdin², Wida Nofiasari³

^{1,2,3}Universitas Media Nusantara Citra, Indonesia

Email: felisianus32@gmail.com

Abstract

Metaverse journalism is one of the five formats predicted to become a trend in the future. This was revealed in a survey conducted by Nic Newman in early 2022 to media managers in 52 countries. Even though the presentation is still around 8%, when compared to other formats such as podcasts and digital audio (80%), email newsletters (70%), digital video (63%), voice platform applications (14%), metaverse in the world of journalism deserves attention. Its presence cannot be ignored considering the current condition of society where the majority access information via the internet and social media instead of using conventional media. Coupled with the fact that currently, Indonesia is one of the countries with the most internet and social media users in the world, reaching 212.9 and 167 million users, it is not impossible that this metaverse trend will develop rapidly. For this reason, this study aims to analyze the opportunities and challenges of the metaverse of journalism in Indonesia. The method used in this research is a case study with a qualitative approach. Then data collection was carried out through interviews with informants consisting of the press council, editor-in-chief and journalists. The results of the study show that metaverse journalism does not have the potential to be implemented at this time due to several reasons, namely: there is no universally agreed upon metaverse concept, the technology is still in the development stage, its popularity is being surpassed by AI and currently the audience does not yet exist. Meanwhile, the challenges facing him are the need to increase the capacity of human resources, develop digital infrastructure and formulate standard rules or regulations so that the application of metaverse journalism can have a positive impact.

Keywords: *Journalism, Metaverse, Media Industry.*



A. INTRODUCTION

The dominance of digital media in Indonesia is increasingly inevitable. Press Council data shows that the growth of the country's media is dominated by digital media. A total of 1,711 media companies have been verified, 902 of which are digital media, 423 print media, 369 TV and 17 radio (DataIndonesia.id, 2023). The unstoppable growth of digital media is also supported by the fact that currently, Indonesian people are one of the countries with the most internet and social media users in the world, namely 212.9 million users and 167 million users (Agus Tri Haryanto, 2023). In terms of access to information or news, around 88% access via online media and 68% via social media [3]. This makes some print media unable to survive because they are abandoned by readers (Kompas.com, 2022).

The rapid growth of online media, said the Chairman of the Indonesian Press Council, Mohamad Nuh at the commemoration of National Press Day 2022, certainly puts pressure on the media industry. Mass media must prepare themselves to anticipate all the changes that are coming so quickly and be prepared to migrate from

physical to online or even develop both so as not to be left behind (Lenny Tristia Tambun, 2022). Especially in the last few years, a new idea has emerged, namely metaverse technology innovation in the world of journalism, namely journalistic practice in a 3-dimensional virtual space. This allows humans to interact virtually like the real world. For example, journalists present several events by bringing their audience as if they were where the events took place using virtual reality technology.

Metaverse journalism is considered to have great potential in providing information and meeting increasingly diverse information needs. In a survey conducted by Nic Newman, it was revealed that metaverse journalism is one of five news formats that are predicted to become a trend in the future. Nic conducted a survey in early 2022 among media managers in 52 countries (Supriadi, 2022). Although the percentage is still around 8%, when compared to other formats such as podcasts and digital audio (80%), email newsletters (70%), digital video (63%), voice platform applications (14%).

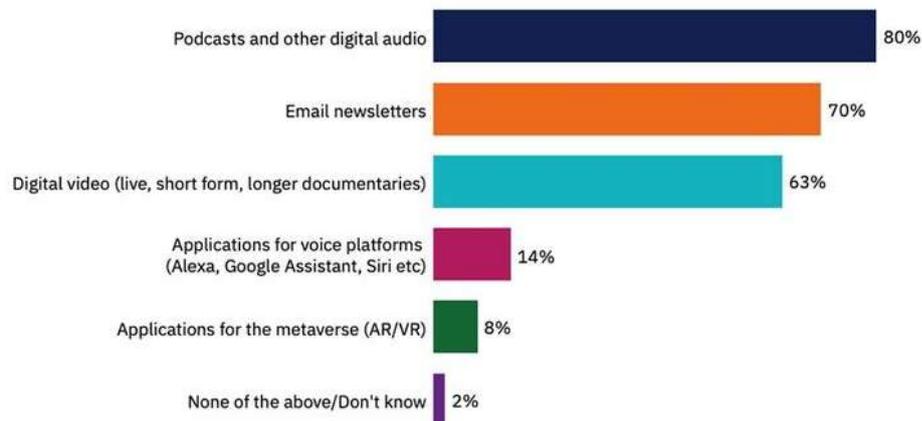


Figure 1. News Format Trend Survey Results

For this reason, this research seeks to see the opportunities and challenges of metaverse journalism in Indonesia. There are at least several reasons why research on metaverse journalism is important, namely: first, metaverse is a new phenomenon and has great potential as a platform for various activities, including journalism. Second, the metaverse offers new opportunities for journalism. For example, journalists can report news in a more interactive and immersive way. Not only that, metaverse is considered to be able to facilitate audiences and journalists to collaborate and enable audiences to participate in news creation directly. In addition, the statement by the Chairman of the Indonesian Press Council, Mohamad Nuh at the commemoration of National Press Day 2022, said that the growth of online media is so fast and rapid which will certainly put pressure on the media industry. So according to him the mass media must be able to explore the metaverse in the development of the world of the press in the country. Mass media must prepare themselves to anticipate all the changes that are coming so quickly and be prepared to migrate from physical to online or even develop both so as not to be left behind (Lenny Tristia Tambun, 2022).

Third, as a new technology, the presence of the metaverse certainly has risks and challenges for journalism. For example, is the ecosystem ready, both in terms of resources and infrastructure needed to develop and manage metaverse content, which may be expensive and difficult to access. Another aspect is of course the standard legal umbrella by the government so that security risks or various violations that will occur can be anticipated. Therefore, this research is important to do to understand the opportunities and challenges of using metaverse technology for the media industry in Indonesia. Later, it is hoped that the results of this research can help develop guidelines on the application of metaverse journalism in an effective and responsible manner as well as having a positive impact on future media development.

Not only that, this research is relatively new because in recent years, metaverse has become a hot topic of conversation in technology, business and media circles. Previously, there were several previous studies that studied the development of the metaverse in the education sector using literature review methods such as that carried out by (Yose Indarta, 2022) who studied the metaverse: challenges and opportunities in education. Then, research (Martadi, 2022) and (Setiawan, 2022) both discuss opportunities for metaverse implementation in the world of education. Research (Rahmi, 2022) Metaverse: Learning Media in the Era of Society 5.0 to Improve the Quality of Education, (Iswanto, 2022) regarding the Use of Metaverse in the Education Sector Utilization of Metaverse In Education as well as research (Kye, 2021) related to the metaverse concept for application in education. Research (Gata, 2022) is slightly different because it discusses the sentiment analysis of Indonesian people on Twitter about the metaverse using the support vector machine method.

Meanwhile, journalism studies have not specifically discussed this new genre (metaverse). However, innovation in journalism that continues to occur and is even difficult to stop since digital technology began to appear has actually received attention in previous studies. Research (Fauzi, 2021), (Y.I, 2021), which shows that digital technology makes journalism transform in many aspects starting from the way journalists work, news presentation formats, media organizational structures, relations between media, reporters and audiences, business models to display and so on. Then, (Ariestyani, 2019) discusses the challenges and opportunities of using automated journalism or journalistic content that is produced autonomously through computer algorithms. Research (Paramitha, 2022) discusses immersive journalism, the concept and implications of its implementation which are linked to public participation in the media industry.

Thus, this research seeks to explain the opportunities and challenges of metaverse journalism for the media industry in Indonesia, understand the impact of this new technology on the world of journalism and how journalism in Indonesia will respond to this trend in the future, preparing the ecosystem, human resources, legal umbrella and so on. So, the presence of this new technology can have a positive impact not only on the media industry, but also the government and society.

B. LITERATURE REVIEW

The term metaverse began to boom in society when the owner of Facebook, Mark Zuckerberg, rebranded his company to become meta, at the end of 2021. Since then, metaverse vocabulary has become popular and widely discussed. What Facebook did then made many other tech giant companies such as Google, Microsoft, Binance, Tencent and Epic Games to start developing their own metaverse. Then South Korea wants to create the world's first metaverse country. In Indonesia alone, Accenture's findings indicate that this new technology is ready to be tested in various sectors such as education, business, tourism, banking, media and so on. What's more, the fact that Indonesia is one of the countries with the most internet and social media users in the world and the government is aggressively transforming the digital sector by building a 5G network evenly can be the reason why the metaverse has a great opportunity to develop in Indonesia. Currently, for example, there are already banks and several companies that are starting to try out this new technology by trying to hold virtual concerts in May and June 2022.

The term metaverse itself has actually been known since 1992 by Neal Stephenson in his novel entitled *Snow Crash*. In the novel, humans are depicted as avatars who interact with other avatars in a three-dimensional virtual space. However, technology that combines elements such as augmented reality (AR), virtual reality (VR) and blockchain has only been widely discussed in the last two years. This started with the rebranding of the Facebook company which changed its name to meta at the end of 2021 (Supriadi, Kompas.com, 2022). The definition of the metaverse was also put forward by Kominfo, namely a collaborative universe that combines human interaction with avatars and various products and services between the real world and the digital world without boundaries, where everything can take place simultaneously and in parallel (Kominfo, 2022).

The metaverse actually refers to a three-dimensional virtual space that allows humans to interact virtually like the real world or a kind of simulation of the real world in virtual space. From the origin of the word, according to Mystakidis metaverse is a combination of the words meta and verse. Meta means outside or above and verse which means universe. So etymologically the metaverse is understood as outside the universe or beyond the universe (Mystakidis, 2022). Meanwhile Hollensen, et al provide an explanation of the metaverse as a digital copy of how we work in the real world, where in this 3-dimensional space users can gather through avatars that resemble them (Svend Hollensen, 2022). This view is then in line with what Nicely conveyed. According to him, the metaverse is a realistic 3-dimensional virtual environment, a shared online world similar to video games like *Pokemon Go* or *Second Life*, where people can explore the space and interact with other people in real time (Forbes, 2022),

In journalism there is no standard definition to describe the metaverse. However, according to Dandi Supriadi in his article published on *kompas.com*, this metaverse journalism refers to activities that can provide new experiences for the audience in obtaining information. According to him, the existence of the metaverse

allows the audience to interact directly both with the events and with the actors involved virtually. For example, in a word broadcast (talk show), for example, a conversation between two people who are actually in different places can appear as if they are together in the same studio. Audiences who are in their respective residences will feel that they are in the studio as if they are watching a live event (Supriadi, Kompas.com, 2022). Then, metaverse journalism can also be interpreted as the practice of journalism in virtual spaces, such as in games or virtual reality platforms. In this context, a journalist can use his avatar to report or cover an event in a virtual space.

C. METHOD

This research uses a case study method with a qualitative approach. The data collection technique used by researchers was in-depth interviews with informants consisting of the press council, journalists and editor-in-chief. These three elements were chosen because they were considered to be directly related to the problems studied by researchers. The next stage is data analysis, where data or information obtained from informants will be processed or processed into new information so that the characteristics of the data become easier to understand and useful for answering research problems. Data analysis is also interpreted as an activity carried out to change research data into new information that can be used to draw conclusions. For this reason, in this research the research data will be analyzed by coding. As according to (Gunawan, 2017) there are 3 stages in data analysis, namely, open coding, axial coding and selective coding. In these three stages, the data obtained from interviews with informants will be grouped first. Then, the data will be arranged into several categories or classified as well as categorizing the interview data. Finally, the researcher will select the data systematically so that he can find out which data answers the problem or is appropriate or not in accordance with research needs.

D. RESULT AND DISCUSSION

1. Metaverse Journalism Opportunities for the Media Industry in Indonesia

It has indeed been predicted that the discourse on the combination of journalism and the metaverse will become one of the new trends in the media industry in the future. This was revealed in a Newman survey which placed metaverse as one of the trending news formats, namely around 8%. The innovations presented by metaverse technology, such as bringing users into a 3-dimensional virtual world, are considered to provide new alternatives and experiences. Audiences or users will be taken to a virtual space to experience and enjoy mass media content as if they were in the real world. In Indonesia, metaverse journalism actually has quite a potential considering that Indonesia is one of the fifth metaverse user countries in the world, which is around 35% below India (48%), Vietnam (43%), Hong Kong (42%) and the United Arab Emirates (38%) (dataindonesia.id, 2023). In addition, the fact that there are so many internet and social media users in Indonesia, namely 212.9 million and 167 million users in 2023, so it is not surprising that the domain of community activity is in cyberspace, including accessing information.

However, based on the results of this research, it can be said that the opportunities for metaverse journalism in Indonesia are still very small for several reasons:

a. Metaverse concept

Conceptually, until now there is no definition of metaverse that is universally agreed upon by all parties. The world's giant technology companies such as Meta, Microsoft and Apple have different concepts and approaches to this technology. The common definition will be very important to determine the agreed standards, how they work and the direction of future development. If at the level of global companies alone the metaverse concept is still being debated or there are still pros and cons, then it is certain that the opportunity to use this technology in the media industry or other fields is estimated to only occur in the next 5 or 10 to 15 years. It's different when www starts to appear, or more recently Artificial Intelligence (AI), everyone understands and accepts it because it is more practical and the benefits are immediately felt because it can be accessed with various practical devices.

b. The metaverse technology is still in the development stage

It cannot be denied that when this metaverse discourse emerged to the public during the pandemic, many companies flocked to invest there. You name it, Google, Microsoft, Binance, Tencent, Epic Games and in Indonesia there is Telkom, Wir Asia. However, according to informants, the situation has changed since the Covid-19 pandemic ended. People are starting to return to old habits, namely doing more outdoor activities, which means the popularity of the metaverse is starting to fade. In fact, many companies, including meta itself, withdrew from this project and shifted their focus to developing Artificial Intelligence (AI). Quoted from the article about Letting Go of Metaverse and NFT, this is Facebook's New Ambition, Mark Zuckerberg emphasized that Facebook is stopping metaverse and NFT projects and shifting focus to AI development. This step was taken after AI was considered successful and many global giant companies were fighting in this sector (cnbcindonesia.com, 2023).

In addition, according to Country Managing Director for Meta Indonesia, Pieter Lydian, talking about the metaverse may only reach its implementation in the next 5 to 10 years because many components need to be integrated. Not just VR or AR, but in the future there will likely be other applied technologies (selular.id, 2023). So, it can be said that if at the level these companies are still in the development stage and are even currently postponing continuing the project, then the media will also be waiting. What's more, currently the media is also trying to survive after being hit by a pandemic for almost 3 years. So, the option to enter and invest in the metaverse requires a fairly large budget and is considered too risky.

c. The popularity of metaverse is lost to Artificial Intelligence (AI)

Since its appearance in October 2022, AI or artificial intelligence has immediately become popular and received a positive response among society.

Currently, this artificial intelligence technology has reached 100 million users. Even in Indonesia, iNews recently launched a virtual presenter who reads the news in one of the segments. According to informants, AI through its chatGPT feature has brought major changes not only in the media industry but in almost all sectors. In the media industry, for example, the presence of AI makes content creation, news writing, editing, creating news angles, layouts and so on very easy just by using chatGPT. Even the level of plagiarism or similarity of the news produced is below 20%. The informants also agreed, the popularity of AI certainly cannot be separated from the convenience it gets because it is only accessed through websites using laptops, computers and smartphones without having to use sophisticated equipment and the costs incurred are very low. Unlike the metaverse, it requires sophisticated equipment and is expensive. As stated by the Director of Digital Business Telkom Indonesia, Fajrin Rasyid in his article published by (usezone.id, 2023) that what makes AI so popular is a matter of use and case, where AI does not need devices that are strange or as sophisticated as the metaverse. AI can only be accessed on websites with various devices owned by users. Meanwhile, Metaverse cannot reach all groups because it requires devices such as VR, AR Headsets, Smart Glass AR, high-spec computers with quite expensive prices and payments also use digital currency. Not only that, AI, according to informants, has more value and its impact is felt more quickly by the public as users (audience) compared to the metaverse, which is considered to be gray.

d. Currently the audience does not exist or has not been mapped

The audience is one of the important elements in the sustainability of the media industry. Audiences or also known as recipients of information can determine the sustainability of a media. Because of that, in practice, the media continues to improve itself to keep up with technological developments and the will of the audience. However, in the context of the metaverse, the audience doesn't yet exist, so it's hard to map. The question is: will the audience in the metaverse still have the same characteristics as the audience in the real world? Will they be more interactive, passive, or even totally different in their participation? Uncertainty regarding the audience in the metaverse has implications for the opportunities for implementing metaverse journalism in Indonesia are still small. Advances in digital technology, although significant, are not necessarily accompanied by the penetration of complex metaverse technologies.

In addition, the characteristics of Indonesian audiences in the real world may not be directly transferable to the metaverse context. Currently, the media is still in a transitional phase after being hit by a pandemic for almost 3 years. Many reductions and some are forced to close. In addition, currently the media industry has to compete with social media because today's readers have a lot of activities in cyberspace. Like, what Cathy Hackl said, that in the early 2000s, maybe many companies didn't think about exploring social media. But now take a look, the market there is all busy.

Something similar might happen in the 2020s and above must involve the metaverse team to survive in the Web 3.0 era (detik.com, 2021).

2. Challenges of Metaverse Journalism for the Media Industry in Indonesia

From the results of this research, it was found that there are several challenges in facing the future development of metaverse journalism.

a. Need to Increase the Capacity of Human Resources (HR)

In responding to future developments in metaverse journalism, the media industry must immediately improve itself and be required to be adaptive if it does not want to be left behind. Currently, media actors such as journalists must be able to do everything (multitasking) and have many abilities (multiskilling). What does this mean, journalists today must be aware of the various demands and challenges of work that are increasingly dynamic, adaptive and competitive. Not only can you write, interview, report directly, collect news, research, but you must also have content editing skills for various formats, digital skills such as managing social media and so on. The findings in the field are also in line with what was conveyed by the General Chairperson of the Central Indonesian Journalists Association (PWI), Atal S Depari, who said that journalists must develop themselves and must multitask, namely being able to produce journalistic products in various formats such as photos, videos, texts with a purpose to attract the attention of the audience if you want to continue to exist in the digital era and not be eroded by the times. (antaranews.com, 2022).

The same thing will also happen when the metaverse is actually applied. Journalists, editors, editorial staff or media players as a whole must be equipped with sufficient knowledge and skills. So that they can adapt to the required technologies that support the metaverse. Starting from how to use the tools, the production process to the presentation and distribution process in the metaverse space.

b. Digital Infrastructure

Metaverse requires new equipment not only in the production aspect, but also equipment for coverage, presentation and so on. For example, for coverage and production processes at the editorial desk, supporting devices are needed so that they can produce content that can be enjoyed in a 3-dimensional virtual space by the audience. Likewise, if the audience wants to access information in the metaverse, they must have the equipment, headsets and Augmented Reality (AR) and Virtual Reality (VR) glasses, which of course are quite expensive. Michael Budi, Co-founder and CEO of WIR Group, acknowledged the high cost of this device in his review quoted (katadata.co.id, 2022). According to him, currently devices such as glasses are still expensive, but in the future they will be cheaper because this technology continues to develop and global companies such as Meta and Apple will produce devices on a massive scale.

Then, (voi.id, 2023) through an article about the CEO of Meta Calling the New Apple Vision Pro Headset Expensive but Not the Metaverse, reviews the price of devices such as headsets alone, around Rp. 7 million for those produced by meta and

around Rp. 52 million produced by apple. So that it can be said that the media must make a large investment if this metaverse technology is applied. Meanwhile, it must be admitted that the media industry is currently stuck, surviving to get out of the difficult post-pandemic situation which was marked by the large number of reductions in employees and even the media which was forced to stop operating. Not to mention that currently the media is racing to compete with social media and currently all conventional media have a special team to manage all activities in today's virtual space.

In addition to improvements on the media side, another challenge is also a matter of network. If implemented, Metaverse requires a stable network, for example 5G which is currently being built by the government. But in fact, currently in Jakarta alone there are still locations that are indicated as blind spots or not covered by the network. What's more in other regions or cities where not all of them are currently covered by the internet network. So that the readiness of this infrastructure will be a challenge in itself if this metaverse journalism is to be used.

c. Drafting Regulations or Laws

This effort needs to be done immediately so that it becomes a guideline for the use of metaverse journalism. This is done so that its implementation can provide benefits and not harm either party. Currently, the guidelines used are Press Law number 40 of 1999 and the Journalism Code of Ethics. However, it must be admitted that currently the regulations are considered not to cover all the problems that exist in the media industry today. For example, regarding ethical and privacy issues, as in other technology journalism, metaverse journalism also involves complex ethical and privacy considerations. The question of how to identify and protect user identity in the metaverse is becoming increasingly important. For example, the case of the Tempo and Erick Tohir podcast some time ago.

Apart from the user side, the media side also needs to be really paid attention to. As stated by informant 1, currently, for example, the press council continues to improve its regulations, especially regarding the management of social media accounts. This effort is being made so that conventional media can be protected by the ITE Law. However, please note that the product posted is a journalistic product. Several other informants also expressed the same thing, that regulations must be prepared carefully so that they can serve as guidelines for the future when this metaverse is adopted by the media in Indonesia. Don't let problems like today, where the ITE Law often become controversial because many people are involved in cases, including journalists. As is known, the Head of the Advocacy Division of the Alliance of Independent Journalists (AJI), Erik Tanjung, stated that since the ITE Law was born and revised in 2016, the number of cases that ensnared journalists and 4 of them ended in prison (Trisna Wulandari, 2023). This then forced many groups to propose revisions to the law, especially articles that were controversial and had the potential to trigger conflict.

The drafting of regulations also said Tomy Patria, a professional in the IT field, in his opinion about: "Metaverse, Threats or Opportunities for Humanity", which was

published on detik.com on November 25, 2021, indicating that the problem is not in the development of technology. But it touches on issues regarding the direction of development and how to apply ethics to its users. Because, Meta will not be the sole player in terms of development. In the future, many other companies will join and develop this metaverse according to their respective imaginations. It is this condition that is considered to complicate things later, so joint discussions are needed from various elements so that the rules made are truly useful. For example, to what extent can anonymity and freedom be enabled within the metaverse? How strong can the law be to address "crimes" committed by avatars against other avatars in the metaverse? How can social norms and traditions be applied in the metaverse? As with other technologies, it is important that users do not become "slaves" of the metaverse's technology. So that later, the benefits of the metaverse can be widely felt, both by the media industry, the community as users and other parties involved.

E. CONCLUSION

Based on the discussion above, it can be concluded that the opportunity for implementing metaverse journalism in the Indonesian media industry is currently still relatively small. This indication arises for several reasons, namely that the metaverse concept is currently still being debated because there is no more general definition and many leading technology companies have different approaches regarding this technology. Then, the development stage of metaverse technology and the shift of focus of large companies to AI imply that the implementation of metaverse in journalism still takes quite a long time. In conditions like these, focusing on developing AI and other technologies is more practical and quickly adopted.

Another reason why this technology has not yet been implemented is the emergence of AI with its chatGPT which beats the popularity of the metaverse. This artificial intelligence technology is considered more practical and impactful because the benefits are immediately felt. In addition, in terms of financing and equipment required, AI is relatively more affordable than the metaverse, which requires expensive investments. Lastly, uncertainty about the audience in the metaverse. The possibility of changes in audience behavior and interaction in virtual spaces cannot be fully predicted, and this affects the suitability of journalism content with audience preferences and expectations.

Meanwhile, the various challenges that will be faced in the future by the media industry if the metaverse is actually implemented are preparing quality human resources, building and developing digital infrastructure and the surrounding ecosystem as a support and drafting regulations that are relevant to the needs of the metaverse. Thus, the media industry can prepare itself for rapid and effective adaptation to the development of metaverse technology.

REFERENCES

1. Agus, T. H. (2023, februrari 2023). *Detik.com*. Retrieved from detikinet: <https://inet.detik.com/telecommunication/d-6582738/jumlah-pengguna-internet-ri-tembus-2129-juta-di-awal-2023>
2. antaranews.com. (2022, September 13). *antaranews.com*. Retrieved from antaranews.com: <https://www.antaranews.com/berita/3114901/pwi-dorong-multitasking-jurnalis-menjaga-masa-depan-wartawan>
3. Ariestyani, K. (2019). Meninjau Automated Journalism: Tantangan dan Peluang di Industri Media di Indonesia. *Konvergensi: Jurnal Ilmiah Ilmu Komunikasi*, 51-65.
4. cnbcindonesia.com. (2023, Maret 17). *CNBC INDONESIA*. Retrieved from CNBC INDONESIA: <https://www.cnbcindonesia.com/tech/20230317154248-37-422662/lepas-metaverse-dan-nft-ini-ambisi-baru-facebook>
5. dataindonesia.id. (2023, Februari 23). *dataindonesia.id*. Retrieved from dataindonesia.id: <https://dataindonesia.id/digital/detail/indonesia-termasuk-negara-pengguna-metaverse-terbanyak-pada-2022>
6. DataIndonesia.id. (2023, Februari 9). *DataIndonesia.id*. Retrieved from DataIndonesia.id: <https://dataindonesia.id/ragam/detail/media-digital-semakin-mendominasi-di-indonesia-pada-awal-2023>
7. detik.com. (2021, November 25). *Detik*. Retrieved from detik.com: <https://news.detik.com/kolom/d-5826538/metaverse-ancaman-atau-peluang-bagi-umat-manusia>
8. Fauzi, M. &. (2021). Jurnalisme di Era Digital. *ICOMS: Journal of Islamic Communication and Media Studies*, 16-37.
9. Forbes. (2022, Mei 25). *Forbes.com*. Retrieved from Forbes.com: <https://www.forbes.com/sites/theyec/2022/05/25/4-enterprise-areas-for-business-leaders-to-explore-in-the-metaverse/?sh=5a578c8222be>
10. Gata, A. A. (2022). Sentimen Analisis Masyarakat Indonesia di Twitter Terkait Metaverse dengan Algoritma Support Vector Machine. *Jurnal JTIK*, 548-555.
11. Gunawan, I. (2017). *Metode Penelitian Kualitatif: Teori dan Praktek*. Jakarta: Bumi Aksara.
12. Iswanto, d. (2022). Pemanfaatan Metaverse di Bidang Pendidikan Utilization of Metaverse In Education. *Jurnal Tematik*, 44-52.
13. katadata.co.id. (2022, April 5). *katadata.co.id*. Retrieved from katadata.co.id: <https://katadata.co.id/desysetyowati/digital/624c21db02571/metaverse-tren-kacamata-ar-dan-vr-diramal-gantikan-ponsel-pada-2027>
14. Kominfo. (2022, Januari 14). *Kominfo.go.id*. Retrieved from Kominfo.go.id: https://www.kominfo.go.id/content/detail/39354/siaran-pers-no-8hmkominfo012022-tentang-indonesia-berpeluang-besar-dalam-pengembangan-metaverse-dunia/0/siaran_pers
15. Kompas.com. (2022, Juni 17). *kompas.com*. Retrieved from kompas.com: <https://www.kompas.com/cekfakta/read/2022/06/17/153126682/survei-reuters-68-persen-masyarakat-indonesia-mengakses-berita-dari?page=all>

16. Kye, d. (2021). Educational Applications of Metaverse: Possibilities and Limitations. *Journal of Educational Evaluation for Health Professions*, 468-497.
17. Lenny Tristia Tambun . (2022, Februari 7). *Berita Satu*. Retrieved from beritasatu.com: <https://www.beritasatu.com/nasional/888259/ketua-dewan-pers-dorong-media-massa-eksplorasi-metaverse>
18. Lenny Tristia Tambun. (2022, Februari 7). *berita satu*. Retrieved from beritasatu.com: <https://www.beritasatu.com/nasional/888259/ketua-dewan-pers-dorong-media-massa-eksplorasi-metaverse>
19. Martadi, I. A. (2022). Analisis Potensi Implementasi Metaverse pada Media Edukasi Interaktif. *Jurnal Barik*, 37-51.
20. Mystakidis, S. (2022). Metaverse. *Encyclopedia*, -.
21. Paramitha, C. (2022). Jurnalisme Imersif dan Partisipasi Publik dalam Industri Media. *Jurnal Komunikatif*, 137-149.
22. Rahmi, D. M. (2022). Metaverse : Media Pembelajaran di Era Society 5.0 untuk Meningkatkan Kualitas Pendidikan Indonesia. *JPOL*, 52-61.
23. selular.id. (2023, Maret 24). *Selular*. Retrieved from selular.id: <https://selular.id/2023/03/adanya-ai-metaverse-dilupakan-ini-penjelasan/>
24. Setiawan, D. (2022). Analisis Potensi Metaverse pada Dunia Pendidikan di Indonesia. *Jurnal Ilmiah Ilmu Pendidikan*, 4606-4610.
25. Supriadi, D. (2022, Februari 2022). *Kompas.com*. Retrieved from Kompas.com: <https://www.kompas.com/tren/read/2022/02/14/090735765/metaverse-dalam-jurnalisme?page=all>
26. Supriadi, D. (2022, Februrari 12). *Kompas.com*. Retrieved from Kompas.com: <https://www.kompas.com/tren/read/2022/02/14/090735765/metaverse-dalam-jurnalisme?page=all>
27. Svend Hollensen, P. K. (2022). Metaverse – the new marketing universe. *Journal of Business Strategy*, -.
28. Trisna Wulandari. (2023, Agustus 7). *Detik.com*. Retrieved from Detik.com: <https://www.detik.com/edu/detikpedia/d-6863808/aji-kasus-kekerasan-terhadap-jurnalis-meningkat-di-tahun-politik>
29. usezone.id. (2023, Juni 24). *usezone.id*. Retrieved from usezone.id: <https://uzone.id/ai-makin-populer-bikin-metaverse-tenggelam->
30. voi.id. (2023, Juni 9). *voi.id*. Retrieved from voi.id: <https://voi.id/teknologi/285684/ceo-meta-sebut-headset-baru-apple-vision-pro-mahal-tapi-bukan-metaverse>
31. Y.I, I. (2021). Masa Depan Media Massa di Era Digital. *Jurnal Ilmiah Muqoddimah*, 24-37.
32. Yose Indarta, A. D. (2022). Metaverse: Tantangan dan Peluang dalam Pendidikan. *Jurnal Basicedu*, 3351 -3363.