

MASTER'S THESIS

**IMAGINING THE METAVERSE WORLDS:
THE PERSPECTIVES OF META AND INDONESIANS**



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ABSTRACT

On October 28, 2021, Mark Zuckerberg announced the rebranding of Facebook to Meta through a keynote video uploaded on Meta's official YouTube channel. The keynote video contains Meta's new vision to build an immersive extended reality world called metaverse. However, the idea of the metaverse is contested. Meta's metaverse has also been a hot debate in Indonesia for several months after Meta's rebranding announcement. In that case, it is promising to investigate this phenomenon through the lens of sociotechnical imaginaries.

As Jasanoff (2015) suggested, a comparison is the best method of conducting research in sociotechnical imaginaries. This thesis aims to compare the perspectives of Meta and Indonesian tech workers in envisioning the metaverse. As suggested by previous research, this comparison also seeks to discover cross-nations and engineer-user relationships, providing contextual settings and actors. In this thesis, the sociotechnical imaginaries are framed into two aspects they are technological and phenomenological. While technological aspects seek to identify the technical concept of metaverse, technological convergence, and transmediality of the metaverse, phenomenological aspects ascertain the key concepts on postdigital, mediatization, and civic imagination. This thesis uses a qualitative multimethod approach. First, qualitative textual analysis is used to analyze the keynote video of Meta rebranding uploaded on YouTube. Second, semi-structured group interviews were conducted with nine female and male Indonesian tech workers living on Java Island, where accessibility is highly concentrated.

The findings illuminate that Meta envisions the metaverse as an immersive Meta ecosystem, a platform to provide digital freedom, and a new experience of living in a hybrid way. Meanwhile, the Indonesian tech workers envision the metaverse as a marketing gimmick, a threat that exacerbates a digital divide, and the contention of living in the real vs. virtual world. In terms of the cross-nation relationship, the findings demonstrate that Meta's vision is tied to Silicon Valley's ideology. In contrast, Indonesian tech workers still urge to prioritize the national digital revolution agenda. Likewise, in terms of the engineer-user relationship, the results also demonstrate the interplay of the topography of agency between the two perspectives in envisioning their sociotechnical imaginaries of the metaverse.

Lastly, the contribution of this thesis is two-fold. First, this thesis contributes to developing sociotechnical imaginaries research by contextually analyzing Indonesia, a Southeast Asia country. Second, this thesis also contributes to discovering the relationship between engineer-users, revealing its topography of agency.

Keywords: *actor-network theory, civic imagination, digital technology, Indonesia Indonesian tech workers, mediatization, Meta, metaverse, postdigital, science and technology studies, sociotechnical imaginaries, technological convergence, transmedia*

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When I was a kid, I used to play a world-theme monopoly board game with my brother and my childhood friends. I used to wonder if there would be a small chance for me to travel abroad instead of playing my piece on a colorful flat paper we put on the floor. At that time, “*it is so impossible,*” said a little boy living in a small village. Now, I have enlivened what my younger me used to look forward to. Thanks to LPDP Scholarship, I could not make my dream come true if it was not because of this generous grant.

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To infinity and beyond,

Hamzah

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INTRODUCTION

1.1 Background of the Study

On October 28, 2021, Mark Zuckerberg announced the rebranding of Facebook Inc. to Meta Inc. in Connect Conference 2021. From this online conference, Mark Zuckerberg introduced Meta's new vision on building an immersive extended reality world called metaverse. He added that the metaverse is "*the next platform*" of internet. Therefore, Meta envisions that people will migrate to inhabit this metaverse world in the future. In the keynote video, Mark Zuckerberg delivered speech about how and why the company decided to change its brand image. Meta envisions the life where technology helps people to connect with each other, building social connection where focus on present. In order to illustrate its vision, the keynote video visualizes what people can expect from this metaverse project, showing how the virtual reality and augmented reality along with the affordance of advanced technologies the metaverse platforms in the future.

From the keynote video, Mark Zuckerberg vividly projects his future-oriented vision, where Meta's invention of the metaverse platform as a part of digital technology brings advantages for society. It confirms the concept of sociotechnical imaginaries, society's shared understandings of visions of desirable futures by the progression of science and technology (Jasanoff, 2015, p.322). However, although the vision of Meta seems like bringing breakthrough for the future technology, there are critics coming towards this metaverse project shortly after the rebranding announcement. The majority of the critics claimed that this technology will worsen the social connection where people are more focused on technology. It clearly contradicts to what Mark Zuckerberg has envisioned. While some said that it will attract investors and bring good convenience, others found that the rebranding will bring negative image to its reputation.

Some preliminary studies about Meta's rebranding were found. Szaniawska-Schiavo (2021) surveyed 1050 people by using Amazon's Mechanical Turk and Reddit to find out what "experiencing the metaverse" could really mean and how it may influence people. The finding shows that approximately 77% of respondents claimed that the metaverse can bring detrimental effects to the modern society. However, interestingly, almost 46% of the respondents want to live and coexist mainly in the metaverse when it is already launched. In addition, Kelly (2022) also examined the critics towards the rebranding of Meta from the

LinkedIn platform. The result shows that most comments focus on the skepticism towards the metaverse project. Most importantly, according to Morning Consult, brand experts are skeptical about this rebranding because they found out that the net trust in Meta is low, which is at negative 5 points (Meyers, 2021). This trend indicates that the rebranding of Meta influences its market favorability. Other critics from many tech experts and enthusiasts see Meta's metaverse as only a gimmick (Meyers, A., 2021; Szaniawska-Schiavo, G., 2021; Kelly, J., 2022; Naughton, 2022).

However, the preliminary findings missed to empirically highlight the users based on its geographical reach. It then raised a question if the metaverse is analyzed through a contextual perspective of particular community would generate different or similar perception. Therefore, this thesis took a case study on analyzing Indonesian tech workers in envisioning Meta's metaverse. It is to critically examine those sociotechnical imaginaries of metaverse are multiple, contested, and commodified (Mager and Katzenbach, 2020).

This thesis considers Indonesians' perspective as unique and insightful to compare with Meta's metaverse. Specifically, there are two governmental institutions in Indonesia are developing the metaverse. It said that it will bring productivities in the name of digital revolution (Widodo, 2021, Sutanudjaja, 2022). Meanwhile, the Indonesian citizens criticize this attempt because there are other things that need to be prioritized (Fadhila, 2022, Samir, 2022). Researching Indonesia is promising given the fact that tech jobs are an emerging job opportunity in the country (Burhan, 2022). Additionally, this thesis looks into Indonesian tech workers as the sampling for this research since they have been exposed and considered have more knowledge in the field of digital technology such as metaverse, compared to commoners. The participants of this thesis are also narrowed down to those who are living in Java Island. Java island is considered most advanced in terms of digital infrastructures compared to other islands in the archipelago. Therefore, the tech workers living in Java Island was considered for this thesis.

Ultimately, this thesis contributes to the enrichment of knowledge in the area of sociotechnical imaginaries by providing contextual findings on two international perspectives and relationship of engineer and user. This thesis is important because it provides challenges and opportunities in implementing metaverse in different countries. Additionally, this thesis is also crucial in order to reveal the topography of agency between engineer and user of the metaverse.

1.2 Research Questions, Aims, and Objectives of the Study

First, this thesis aims to critically analyze the sociotechnical imaginaries of the metaverse from the perspectives and interpretations of Meta and Indonesian users. This thesis looks the top-down and bottom-up approach to see how the topography of agency plays its role in the development of metaverse. Second, this thesis also aims to critically analyzes contextual factors in understanding the metaverse from the perspectives of the United States of America from the keynote video and Indonesia from group interviews on Indonesian tech workers. Third, this thesis aims to identify how engineers-user's interpretations of the Meta vision in the keynote video provide new knowledge in sociotechnical imaginaries of metaverse from the perspective of end users. Three research questions are formulated to address these aims:

1. How does Meta envision metaverse for an immersive digital platform in the keynote video?
2. How do Indonesian tech workers envision Meta's metaverse for an immersive digital platform based on Indonesia and end user contexts?
3. How are the sociotechnical imaginaries of the metaverse compared between Meta and Indonesian tech workers in terms of cross-nations and engineer-user relationship?

In order to achieve these aims and address the research question, the following objectives of the thesis include the concept of sociotechnical imaginaries as a conceptual framework. Some key concepts are drawn to frame and identify how the metaverse can be understood in the field of media and communication studies. They are framed into technological and phenomenological aspects. While technological aspects seek to identify technical concept of metaverse, technological convergence, and transmediality of the metaverse, phenomenological aspects ascertain the key concepts on postdigital, mediatization, and civic imagination of the metaverse. The details about these key concepts are explained in the second chapter of this thesis. Additionally, the third chapter of this thesis explains about methods and methodology. In short, data sets comprise of two empirical materials, they are a keynote video uploaded by Meta on its official YouTube channel, and a set of three group interviews with the Indonesian tech workers who live in Java Island. These data are the main resources in which the idea of sociotechnical imaginaries is embedded and enforced. The fourth chapter details the key findings and analysis of each research question in detail. The analysis was conducted based on the key concepts drawn from the literature review. Lastly, the last chapter recaps the reflection of the key findings of this thesis and demonstrates some suggestions for future research in sociotechnical imaginaries.

LITERATURE REVIEW

This chapter encompasses a literature review about the metaverse as a future digital technology, the metaverse in a postdigital society, sociotechnical imaginaries as a conceptual framework, and digital technology in the contexts of Meta and Indonesia. First, the metaverse is defined and observed regarding its reflection as a digital technology. In correspond to that, related concepts such as technological convergence and transmediality of the metaverse are introduced here. Second, the metaverse is observed regarding its reflection on its postdigital practices. Related concepts of the mediated construction of reality and civic imagination are explained here. Third, the metaverse is examined from the lens of sociotechnical imaginaries, which is the overarching concept of this thesis analysis. Key concepts and literatures about sociotechnical imaginaries and actor-network theory to examine the metaverse are introduced in this subchapter. Lastly, given the multiplicity of envisioning the metaverse, this subchapter provides background information about the contexts of understanding digital technology development in the contexts of Meta and Indonesia. Sociotechnical imaginaries as a tool and method to analyze the imaginaries in both contexts are introduced in this subchapter.

2.1 Metaverse as a Futuristic Digital Technology

In 1992, Neal Stephenson coined the term ‘metaverse’ in the science fiction novel entitled *Snow Crash* (Grimshaw, 2014, p.701-702). Stephenson (2007) depicted the metaverse as an urban environment in a virtual space where users, by wearing goggles, can roam the space and interact with each other as avatars. From the story, metaverse can be broadly described as described the “immersive three-dimensional virtual worlds (VWs) in which people interact as avatars with each other and with software agents, using the metaphor of the real world but without its physical limitations” (Davis, et al. 2009, p.91).

In this digitalization era, the metaverse now has been brought to life. People can use this technology advancement applied in different devices and purposes. For example, the metaverse is mainly used in video games. The first metaverse-based video game is the *Second Life*, which was launched in 2003 (Rymaszewski, 2007). Later, the metaverse has been used in other video games, such as *Minecraft*, *Roblox*, *Active Worlds*, *The Palace*, *Fortnite*, and many other video games which involve the aspects of social media into a constant 3D world with the user projected as an avatar.

Since the development of technological affordances has been getting more advanced, it is necessary for redefining the nature of the metaverse. Davis, et al. (2009, p.92) described the metaverse without incorporating a variety of immersive extra-peripheral devices. In contrast, this paper argues to involve the advancement of technology in constituting the metaverse. Therefore, this paper conceives the definition of the metaverse from Mystakidis (2022, p.486), where metaverse is described as immersive and interactive virtual environments, which enable users to have dynamic interactions with other users by projecting themselves as embodied digital artifacts with the aid of virtual reality and augmented reality technologies.

Metaverse is often referred in many different ways. The terms of metaverse in various research include digital environments (Cagnina and Poian, 2008), web 3.0 (Oxford Analytica, 2022), virtual world (Díaz, Saldaña, and Avila, 2020), 3D virtual worlds (Dionisio, III, and Gilbert, 2013; Ayiter, 2019), and immersive environment (Tadros, 2010). Among the differences, it is important to establish the consistency to determine the metaverse. Therefore, this thesis looks on Ning, et al. (2021, p.12-13) in describing three characteristics of the metaverse: (1) Multi-technology, the integration of a variety of immersive new technologies; (2) Sociality, a new type of social aspects within the metaverse, such as cultural systems, economic systems, and legal systems; and (3) Hyper Spatiotemporal, boundless time and space which involves free and immersive experience. This consideration is helpful to determine the broad definition and converging characteristics of the metaverse given the progression and advancement of the technology in due time. Overall, this thesis employs the concepts of technological convergence and transmediality to understand the metaverse from its technological affordances. By limiting to the technological affordances, both concepts help to dissect how the metaverse influence the user experiences and actions.

2.1.1 Technological Convergence

With a complex combination of technological affordances to build a metaverse digital platform, the construction of the metaverse defines a state-of-the-art of technological innovation. It confirms its capacity as a futuristic and desirable digital technology. This technological progression confirms the metaverse as a product of technological convergence, which is common in the development of new media. Accordingly, this thesis follows Jenkins' (2006, p.2) idea about convergence, that is "the flow of content across multiple media platforms, the cooperation between multiple media industries, and the migratory behavior of media audiences who will go almost anywhere in search of the kinds of entertainment experiences they want." If the metaverse is understood within this concept, the metaverse allows the affordances for

immersing in the virtual world and interacting with each other by using the avatar. In that case, the metaverse users can explore a variety of contents offered in the metaverse world, such as entertainment (Lee, et al., 2021), education (Kabát, 2016), tourism (Gaffar, 2021), and business and marketing (Molina, 2021).

Furthermore, as Dionisio, III, and Gilbert (2013, p.31) pointed out, the increasing popular interest in the innovation of immersive digital environments and its integration with advanced technology contributes to the development of the fully realized metaverse. In other words, people's interest to a more advanced technology, which is immersive and interactive, has stimulated the innovation of the metaverse. The process to realize the metaverse is also not an easy trajectory that can be built in a short time. In fact, from the first time the term 'metaverse' is coined in Neal Stephenson's novel, the metaverse has undergone several convergences for various purposes, such as gaming. Now, the metaverse has been developed to fulfil many other promising demands.

2.1.2 Transmediality

In the narrative aspect, the convergence of the metaverse from science fiction novel to a real-life futuristic digital technology confirms the concept of transmedia storytelling, which is "a process where integral elements of a fiction get dispersed systematically across multiple channels for the purpose of creating a unified and coordinated entertainment experience" (Jenkins, 2011). However, this thesis argues that the concept of transmediality cannot be limited exclusively to the narrative aspect. Transmediality can be "approached in many different disciplinary lenses so that the very definition of transmediality might remain decidedly in flux, meaning different things to different people at times" (Freeman and Gambarato, 2018, p.2). In that case, this thesis stands to the term of 'transmediality' "as a real way of executing projects tackling the complexity of the contemporary media scene" (Ciancia, 2017, p.60). This is because the metaverse should also be closely seen from the integration of different technological affordances, besides its fictional elements. Then, this convergence of different technological affordances provides an immersive and interactive virtual space of the metaverse (Mystakidis, 2022, p.486) where users can generate the sense of 'world making,' which is the main feature of transmedia storytelling (Jenkins, 2006, p.21).

Accordingly, Evans (2011, p.178) argued that there are three key forms of engagement in transmedia text, which include immersion, agency, and immediacy. The idea of immersion provides the greater sense of feeling presence in the transmedia text. In this thesis, the concept

of immersion is highly relevant since the metaverse is aimed to be built to provide immersive environment. Moreover, agency provides the sense of control, in which the users have power to manipulate and stimulate changes in the transmedia text. For example, the metaverse's users are given options to control what are presented and can be accessed on its contents. Lastly, the idea of immediacy refers to the feeling of liveness, which the users can get the sense of being on the exact moment. These three key forms of engagement are potentially significant for the purpose of this thesis. They help to dissect and illuminate how the metaverse can offers such engagements.

2.2 Metaverse as a Frontier of a Postdigital Era

The facts that metaverse has penetrated in any element of the society confirm that postdigital age is now arriving. In that case, metaverse can be considered as a postdigital practice. Postdigital refers to a situation where digital information technology no longer pursues technical improvement or innovation, but digitization is determined as a state that has already taken place and needs to be further reconfigured (Cramer, 2015, p.20). Moreover, this is the situation in which Negroponte (1998) made an analogy, “[l]ike air and drinking water, being digital will be noticed only by its absence, not its presence.” In other words, the digital technology has been taken for granted because of its ubiquity. Everything should be digitized right now. In fact, Pepperell and Punt (2000, p.2) added that postdigital rejects the idea of digital revolution. Thus, the efforts to ‘normalize’ the metaverse in many aspects of humans’ life implies its progression to the next stage after digital revolution.

Moreover, MacKenzie, Rose, and Bhatt (2021, p.xix) argues that “[d]igital technology and media are no longer separate or virtual entities but are life shaping and determining forms that exercise remarkable power and influence almost every aspect of our lives: social, political, economic, and biological.” In that case, the idea of postdigital leans to focus on the experiential rather than the conceptual, seeking “DIY agency outside totalitarian innovation ideology” and “networking off big data capitalism” that becomes commercialized (Andersen, Cox, and Papadopoulos, 2014, p.5).

The metaverse is not a platform built by a single entity or company. There are many companies and institutions across the globe that are developing the metaverse. Meta, Nvidia, Epic Games, Microsoft, Apple, Decentraland, Roblox, Unity Software, Snapchat, and Amazon are to name a few of some popular metaverse companies. Not only is the metaverse designed for individual use, but the projects of metaverse also become immersed in the governmental plan. It greatly

shows that metaverse is becoming a popular demand in many sectors. In South Korea, the Seoul Metropolitan Government is a governmental body that is also working in building the metaverse to fulfil its Seoul Vision 2030 plan (Seoul Metropolitan Government, 2021). Similarly, Indonesia also aims to build their own metaverse platforms in which two governmental agencies, by working collaboratively with private corporates, and Telkom University, in the country are working in building the platform to boost digital advancement in Indonesia (Sutanudjaja, 2022; Telkom University, 2022).

This thesis argues that there are two ways to see the phenomenological aspects of metaverse in social life. The ways users living with metaverse and the ways users living in metaverse as a part of postdigital life. These two-fold ways of analyzing the phenomenological aspects of the metaverse are instigated by the fact that the metaverse is constituted by various high-tech devices embedded in social life, influencing users' behaviors with digital technology, hence the idea of living with the metaverse. Meanwhile, the metaverse also offers virtual environment where the users can interact with each other in online situation, hence the idea of living in the metaverse. Thus, two key concepts are selected to frame the phenomenological aspects of the metaverse, they are mediatization and civic imagination.

2.2.1 Mediatization

In terms of living with technology, the concept of mediatization demonstrated by Couldry and Hepp (2013, p.197) is “a concept that helps us to analyze critically the interrelation between changes in media and communications on the one hand, and changes in culture and society on the other. This theory helps identify to what degree the technology has influenced human life. Furthermore, Finnemann (2014, p.305) stated that the concept of mediatization is related to digitization, a conversion of non-digital materials into digital materials. Finnemann (2014, p.314) added that “[w]hile mediatization is a broader notion than digitization, because it includes non-digital media, digitization is still a broader notion than the concepts of mediatization developed so far, because digitization includes not only digital materials, but also the coexistence of digital materials, digital media, and digital search facilities.” For the metaverse, many human activities can be done in the virtual world depending on its agency. every non-digital material such as music, pictures, and so on can be digitized and enjoyed into the virtual world. Therefore, digitization contributes to the process of mediatization since many real-life activities can be done online, influencing people's behavior and attitude. By using the mediatization concept, the effect of metaverse can be identified to what extent it has influenced people's life.

Furthermore, Couldry and Hepp (2013, p.58) also added that mediatization allows to obtain how the consequences that the mediatization processes have changed the social life with the emergence of various media. Couldry and Hepp (2013, p.53) even demonstrated the concept of deep mediatization, which is the intricate establishment of social life becomes implicated in the daily uses of media and the interdependence between the media themselves, involving the datafication and algorithm. This concept even provides more understanding how the mediatization can convert human attitude to data and use it for specific purposes to influence human life.

2.2.2 Civic imagination

In relation to living in the metaverse world, this thesis takes into account the idea of civic imagination. Jenkins (2020, p.5) described the idea of civic imagination as “the capacity to imagine alternatives to current cultural, social, political, or economic conditions; one cannot change the world without imagining what a better world might look like.” By definition, metaverse offers an interactive space where people can connect to each other in a virtual world. Accordingly, Peters-Lazaro (2020, p.180) argued that virtual reality, which is one of foundations of metaverse, is a powerful instrument of the civic imagination for “it represents an opportunity for a new generation of citizens to develop their voices and visions in new ways and to create fantastically immersive experiences that share their vision in whole new ways.” The concept of civic imagination helps clarify what kinds of social life that are imagined in terms of living in the virtual environment. Therefore, this thesis seeks to identify this aspect in the metaverse.

2.3 Sociotechnical Imaginaries as a Conceptual Framework

This thesis follows the central aim of science and technology studies in “[b]ringing social thickness and complexity back into the appreciation of technological systems” (Jasanoff, 2015, p.2). In doing so, this thesis adopts science and technology studies, “an interdisciplinary field that investigates the institutions, practices, meanings, and outcomes of science and technology and their multiple entanglements with the worlds people inhabit, their lives, and their values” (Felt, Fouché, Miller, and Smith-Doerr, 2016, p.1). Moreover, there are certain aspects of studying the interplay between material and social dimensions of the development of technology and humans in science and technology studies. Science and technology studies are often connected to visions and expectations of future possibilities in the social organization and practices of science and technology (MacKenzie, 1996; Fujimura, 2003). Furthermore, these visions and expectations of future possibilities inform and influence direction of research and

innovation (Hedgecoe and Martin, 2003; Borup et al., 2006). However, Jasanoff and Kim (2009, p.122-123) emphasized that those visions and expectations are not connected to future possibilities exclusively over scientific or technological practices given its implicit understandings of what is good or bad for society. This society's shared understandings of defining good and bad are encoded and can coexist in multiple imaginaries as a productive dialectical relationship (Jasanoff, 2015, p.4). In that case, Jasanoff and Kim (2015, p.322) concept to draw together the normativity of the imagination with the materiality of networks, called sociotechnical imaginaries:

collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology.

By the definition, sociotechnical imaginaries, as a concept, do not only resist the belief in technological determinism nor the social construction of technology. Besides, as a concept, sociotechnical imaginaries also tackle the lack of specificity to interpret particular existing problems and challenges of the modern technoscientific world such as the coproduction aspect and contextual knowledge of certain social systems (Jasanoff, 2015, p.3). However, sociotechnical imaginaries should be not confused with technoscientific imaginaries. In technoscientific imaginaries, the interest is highly laid "in the imaginaries of scientists tied more closely to their current positionings, practices, and ambiguous locations in which the varied kinds of science they do are possible at all" (Marcus, 1995, p.4). To distinguish this, the sociotechnical imaginaries work on examining the ways the imaginaries function in different social actors in involving the performance and production of diverse visions of the shared materials to the wider scales (Jasanoff, 2015, p.11). From studying the sociotechnical imaginaries, the findings can reveal the origins, embedding elements, momentous resistance, and the extension of the collective belief conception in scientifically and technologically involved societies (Jasanoff, 2015). However, this idea is debated. Mager and Katzenbach (2020, p.3) argued that sociotechnical imaginaries should not be treated as monolithic or institutionalized by state actors because imaginaries are multiple, contested, and commodified, indicating the more or less power embodied in different actors. As a response to that, this thesis agrees to the previous statement. Metaverse is a product of many actors. As previous chapter has mentioned, many bodies such as public figures, corporates, governmental bodies, and universities, have been expecting, envisioning, and building the metaverse in many different conceptions. Therefore, it is agreed that metaverse holds multiple imaginaries rather than institutionally stabilized.

In media and communication studies, some research have also applied sociotechnical imaginaries in examining media framings on technology (Miller, 2020; Molas and Whittaker, 2021), digital technology (Sadowski and Bendor, 2019; Egliston and Carter, 2022; Haupt, 2021; Liao and Iliadis, 2021; Mützel, 2021), and virtual education (Chang, 2019). Specifically, research on sociotechnical imaginaries for digital technology (Sadowski and Bendor, 2019; Egliston and Carter, 2022; Haupt, 2021; Liao and Iliadis, 2021; Mützel, 2021) studied corporations, instead of the state actors or public institutions. As Dolata (2017, cited in Mager and Katzenbach, 2021, p.8) elaborated that "utopian visions of the future are mostly led by “big five” corporations, which are Amazon, Apple, Facebook (now Meta), Google, and Microsoft, that propel and dominate most digital markets. Moreover, Mager and Katzenbach (2021, p.8) added that while those companies claim to deal with the challenges and problems which are often handled and governed by state actors, the companies are also chasing the opportunities to gain profits for their own business and marketing interests. It implies that the companies hold more power than the governments. One note, most of the previously mentioned research only address one side of imaginaries, which is from the producer side. In addition to analyzing the imaginaries from the producer side, Egliston and Carter (2022) also collected the samples of YouTube comments to understand the imaginaries from the end user’s side. Such research provides richer information about the relationship between technology and society. However, Egliston and Carter (2022) laid out only the perception of the prospective end users through values and perception of possible problems from an Oculus future. The research does not reveal the engineer-user relationship and questioning which side holds more power to extending the ‘Oculus imaginary’ in everyday life. Possibly, it is because the research did not situate the context of the samplings so that the results were too broad and more theoretical, rather than contextual.

In relation to that, Jasanoff (2015, p.24) stated that conducting a comparison across social and political structures does not only help to identify the content and contours of sociotechnical imaginaries, but it also helps to avoid conceiving the universal epistemic and ethical statements that are situated and contextual. This is because there are multiple imaginaries existing in different societies, and therefore, should not be generalized. Jasanoff and Kim (2009) compared the sociotechnical imaginaries of nuclear power in the United States and South Korea, and the results show that two countries hold different imaginaries to project the power plant idea. Moreover, Jasanoff (2015, p.24) added that the comparison should not be limited in the nation scale only. Therefore, this thesis aims to fill this gap by situating the contexts of the

sociotechnical imaginaries of the metaverse in two different perspectives: two different nations, and two different actors, who are the producer and users. Eventually, this thesis does not only provide information about “the ingrained normative commitments that distinguish political communities, such as their ways of knowing and reasoning (Jasanoff, 2015, p.24), but this thesis also provides the framework to examine the engineer-user relationship of sociotechnical imaginaries of the metaverse, which can reveal “the distributed character of the practices that hold imaginaries in place” (Jasanoff, 2015, p.25). In order to conduct the research based on comparing two actors, some analytical tools in studying sociotechnical imaginaries are required. For conducting the research within sociotechnical imaginaries field, Jasanoff and Kim (2015) introduced four key problems into questions: (1) Difference, why societies differ due to the imaginaries; (2) Time, how the imaginaries evolve in the course of time; (3) Space, how the imaginaries disseminate through space; and (4) how the imaginaries embodied in human identities and subjectivities. From these key problems, the interplay between material and social dimensions can be revealed.

2.4 Actor-Network Theory

Dionisio, III, and Gilbert (2013, p.31) explained that the increasing popular interest in the innovation of an immersive digital environments and its integration with advanced technology contributes to the development of the fully realized metaverse. In other words, people’s interest to a more advanced technology has stimulated the innovation of the metaverse. In the study of social construction of technology, it is the human action that shapes technology, not the other way around (Pozzebon, Diniz, and Jayo, 2009, p.33). If the metaverse is understood using the lens of social construction of technology, it means that humans have control to materialize the metaverse. In contrast, Collins (2008) argued that the human changing needs do not shape the innovation of the virtual worlds, but it is the virtual worlds that change the way humans can access and experience information and the way humans can access and connect with each other. The previous statement echoes to the concept of technological determinism. Technological determinism is a reductionist theory which questions the degree to which human action or thought is influenced by technological factors (Hauer, 2017, p.1). In fact, the concept of technological determinism often receives skepticism and criticism, confronting that studying technology needs the involvement of its social aspects (Winner, 1978; Mackenzie and Wajcman, 1999; Green, 2002; Murphie and Potts, 2003; Feenberg, 2010). Apart from the different views of concepts regarding human relationship with the technology, this thesis argues that in order to examine the interplay between technology and society, it needs to

involve a critical investigation of the metaverse as a technological affordance and society's perception in creating meaning towards the metaverse.

Developed in the science and technology studies, a constructivist approach of actor-network theory is applied in this thesis. Actor-network theory offers an approach to examine the way social action influences technology and the way technological innovation affects social actions (Carroll, Richardson, and Whelan, 2012, p.54). Additionally, using actor-network theory as an approach in understanding the phenomenon in science and technology studies provide a valuable function to take into account any aspect of material and social dimension in investigating all the compass points of the forces in making meaning (Jasanoff, 2015, p.16).

Technology and humans should be treated equally. This actor-network theory focuses on the establishment of discursively and materially heterogeneous relations that generate and restructure all kinds of actors such as technologies and humans (Law, 2007, p.141). In actor-network theory, human and nonhuman are considered actants, which "modify a state of affairs by making a difference" (Latour, 2005, p.71). If applied to the metaverse, the actor-network theory helps reveal the relationships between technology and human. Besides, it can also help dissect what roles do the technologies and humans do to influence each other. As Inglis and Thorpe (2018, p.250) argued, the networks which made of material and discursive things and relations between them are tenuous and open to alteration. For example, technologies provide features that constitute its affordances (Gibson, 1967), influencing specific actions and limits humans can control (Couldry and Hepp, 2017, p.89).

2.5 Situating Two Different Imaginaries

This thesis aims to compare two perspectives: Meta and Indonesian tech workers. This is conducted to fill a research gap in which Jasanoff (2015, p.24) suggested, that is to provide contextual background, which is distinguishable for one circumstance to others, especially cross-nations. Moreover, this thesis takes further comparison to not only cover cross-nations context, but it also includes engineer-user relationship. This is also to follow Jasanoff's (2015, p.24) recommendation that comparison in sociotechnical imaginaries is not only limited to nation-states alone. Specifically, the two case studies provided in this thesis offer two contexts. First, both cases coming from two different geographical location, Meta in the United States of America, and Indonesian tech workers in Indonesia. Both two countries have different value and attitude in terms of social, political, and cultural life. Based on that fact, there is a need to investigate the perception and expectations about technology, particularly the metaverse, from

both countries. Secondly, Meta stands as one of a few companies inventing the metaverse platform. Hence, Meta acts as a group of engineers making the metaverse platform into reality. Meanwhile, Indonesian tech workers are considered the prospective end users for the metaverse. As users, they have contextual perception about it.

2.5.1 Meta

First, this thesis considers research conducted by Haupt (2021), which explored the future imaginaries that Facebook has been constructed from 2004 to 2017 across different contexts delivered by Mark Zuckerberg. Prior to becoming Meta now, Facebook has demonstrated its evolving visions about the future in its corporate communications. Haupt (2021, p.245) deduced that Facebook's visions for a better world have been centralized around the ideas of "global connectivity" and "global community." In terms of living with digital technology, Facebook formulated the idea of "global connectivity" as a human rights to connect people and to overcome universal social problems by strengthening mutual relationships. Meanwhile, the notion of "global community" refers to the agenda of living in digital technology by centering on the quality of connections and inclusion. Moreover, Haupt (2021, p.253) also argued that the "[t]he entire narrative is supported by a normative framework containing clear concepts of humanity, business, organizational culture, and the entrepreneurial self, rooted in the cultural history of Silicon Valley." In terms of Silicon Valley, Turner (2006, p.246) stated that the cultural roots and history of Silicon Valley are centralized around technological deterministic values. Thus, this value has embedded in the vein of Facebook as a digital technology company.

Second previous study related to the visions of Meta was conducted by Egliston and Carter (2022). The research discussed the visions of Oculus suite of virtual reality technologies after its acquisition by Facebook and how the visions are contested, shown in the YouTube user comments (Egliston and Carter, 2022, p.70). This research is potential for this thesis because it focuses on the virtual reality aspect, which is related to the development of metaverse. This virtual reality technology is also a part of building blocks that Meta's metaverse has developed. Furthermore, Egliston and Carter (2022, p.85) demonstrated that the Oculus imaginary is now no longer focused on gaming media, instead as a part of daily activities and communication where the end users can create and distribute their own contents. It is believed that Facebook-specific vision of virtual realities is constructed and marketed in Oculus visions. Moreover, there are also some contestations in this Oculus imaginary. Some comments are related to privacy or expression of using the platform and the potential problems about Oculus future (Egliston and Carter, 2022, p.85).

Overall, two research above are considered as previous studies for this thesis, particularly to identify which starting point that this thesis explores to research Meta's visions. First, this thesis seeks to work on the continuation of research in Facebook's imaginaries about the future. As Haupt (2021, p.254) also suggested, further research should make valuable contributions by considering how "the users of the social network see themselves as co-producers of the imagined futures." This is the precise gap that the current thesis seeks to fill in. Second, the research conducted by Egliston and Carter (2022) provides more nuanced case of Facebook's imaginary embedded in virtual reality of Oculus, which is highly relevant for the current thesis to seek how this idea expands after the rebranding of Facebook to Meta. In addition, Egliston and Carter (2022) also aimed to explore users' perception about Facebook's imaginary towards the end users, which is also relatively similar to what current thesis seeks out. However, the research conducted by Egliston and Carter (2022) focused on users' comments on YouTube platform, which did not situate the users in a particular setting. As a response, this thesis argues that the research on users should be contextualized. According to Tapsell (2017, p.xiii), many research on converging digital technologies are predominantly western-centric and only a few studies representing the contexts on any country or region in Southeast Asia. Therefore, this research aims to fill this gap by considering Indonesia as the case study.

2.5.2 Indonesia

As previously mentioned, it is truly difficult to find relevant studies related to the use of digital media and in the context of Indonesia, especially regarding the metaverse. However, if the metaverse is considered as a future digital technology, it is then needed to trace back to what extent Indonesia is now in terms of the development of digital technology. Therefore, this part explores the imagination of digital technology conceived in Indonesia. It takes into account research on technological and phenomenological aspects of digital technology to achieve the notion of imagined community in Indonesia, influencing people's attitude to live with and in digital technology. Accordingly, this thesis considers two research conducted by Lim (2018) and Fadhila (2022) as previous studies, particularly for the case of Indonesia and digital technology.

Lim (2018) conducted research about historical development of internet infrastructure in Indonesia. In this research, Lim (2018) argued that there has been a significant evolution of Indonesian internet socially, culturally, and materially. From early 1980s to 1994, the access of internet was exclusively limited to university and research purposes (Lim, 2018, p.158-159). In 1995, the internet penetrated Indonesia's public domain, accommodated by private

commercial Internet Service Providers. From this year, the idea of commercial internet called *warnet* (*warung internet*: internet café) was introduced. Instead of using personal internet at home, the Indonesians prefer *warnet* due to the cheaper costs than that of personal one. In *warnet*, the internet users collectively sit in front of the computer with internet access in the café. However, in 1996, the government of Indonesia, through its national postal service named PT Pos Indonesia, entered this *warnet* business, and called this Wasantara-Net project as *warposnet* (*warung pos internet*: internet and postal café). This project was aimed to reflect “the nation-state’s desire to be part of the global information society and emerging digital economies” (Lim, 2018, p.159). This idea to connect people by using media resembles to what Anderson called as “imagined community” (Anderson, 1983). Ultimately, this *warposnet* project experienced bankruptcy in 2002. However, the *warnet* business was still thriving until the numbers of *warnet* business and users declining since 2014 (Lim, 2018, p.162). Since then, the internet users in Indonesia have moved to mobile smartphones to access the internet. Lim (2018,) argued that there is a shift of behavior in using the digital technology. It begins with the internet users sit down in the *warnet* and access the internet according to their billing time with other people. Now, since the technology is advancing, the mobile smartphone makes people access internet in individual way, meaning that the interconnectedness depends on the user’s disconnection or connection to the internet and mobile phone (Lim, 2018, p.165).

Second, Fadhila (2022) argued that the development of metaverse is related to the advancement of digital revolution in Indonesia. In that case, Fadhila (2022) referred to challenges that the country experience to boost the digital revolution agenda. In that research, Fadhila (2022) concluded that the lack of digital infrastructures and digital technology is the major challenge to realize the metaverse, resulting from the slow advancement of the technology development in the country. Moreover, Fadhila (2022) also analyzed the public’s responses on Twitter regarding the metaverse discourses in Indonesia. Similarly, the Twitter users perceived that Indonesia will not be able to realize the metaverse soon due to the lack of digital infrastructure and concern of data leakage.

Both previous studies about the development of digital technology in Indonesia aid the contextualization of this thesis. This thesis can explore the next step of digital technology development in Indonesia by continuing the research conducted by Lim (2018). This thesis will serve as an extension that the digital technology now has changed even more advanced. In addition, this thesis also follows the research conducted by Fadhila (2022). Fadhila (2022) investigated the users’ perception on Twitter, which does not narrow down the specific users.

Therefore, this thesis makes it more contextualized by empirically focusing on Indonesian tech workers living in Java Island.

METHODOLOGY AND METHODS

This chapter covers the methodology and methods implemented in this thesis, starting from methodological approach, multimethod research, and research design. Firstly, the methodological approach explains foundation of the research method for this thesis. Secondly, multimethod research part describes the methods to collect the data, including the sampling and procedure. Lastly, the research design part provides the methodological framework, data processing and analysis, and the reflection of the pilots from the two methods.

3.1 Methodological Approach

As mentioned in the previous chapter, sociotechnical imaginaries are under science and technology studies. Hence, this thesis uses science and technology studies as the methodological approach. Based on the aims of this thesis, science and technology studies are suitable for understanding the sociotechnical imaginaries since this thesis deals with metaverse as a technology and its “multiple entanglements with the worlds people inhabit, their lives, and their values” (Felt, Fouché, Miller, and Smith-Doerr, 2016, p.1). Furthermore, developed in science and technology studies, a constructivist approach of actor-network theory is applied in this thesis because it offers an approach to examine the reciprocal relationship between technology and society. Moreover, actor-network theory is one of the building blocks for the concept of sociotechnical imaginaries. Given its equal attempt to examine technology and humans, this thesis considers actor-network theory as a suitable entry point to examine the relationship between society and the metaverse. This actor-network theory helps investigate the topography of agency between Meta and its prospective end users in developing the metaverse sociotechnical imaginaries.

In addition, a qualitative research approach is used within the framework of this science and technology studies research because it focuses on “observing, interpreting, and analyzing the way that people experience, act on or think about themselves and the world around them” (Bazeley, 2013, p.4). This type of approach corresponds to the idea of sociotechnical imaginaries that is “collectively held” and “animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology” (Jasanoff and Kim, 2015, p.322). In addition, as Jasanoff (2015, p.322) laid out, sociotechnical imaginaries are held differently depending on varied social and cultural contexts and sociotechnical imaginaries help reorient the progression of those contexts. This argument

connects to Flyvbjerg's (2001, p.72) idea of phronetic social science in which to develop a "nuanced view of reality" through case studies that generate "concrete, context-dependent knowledge."

Based on the research questions, this thesis aims to compare two perspectives: Meta and Indonesian tech workers. This is conducted to fill a research gap in which Jasanoff (2015, p.24) suggested. With the reasons that are mentioned on the previous chapter, those two gaps are to investigate cross-nations comparison and to reveal engineer-user relationship between the two perspectives regarding imagining the metaverse. For the engineer side, this thesis acknowledges Meta as the producer, engineer, or corporate of the metaverse. Meanwhile, Indonesian tech workers act as the prospective end users of this thesis given their background knowledge on the metaverse technology.

3.2 Research Design

To achieve the aims of the study, this thesis follows the four key problems of sociotechnical imaginaries theorized by Jasanoff and Kim (2015): difference, time, space, and identity. However, Jasanoff and Kim (2015, p. 24) recognized that imaginary is an abstract concept, in which it needs analytical concept to measure the imaginaries. Thus, this thesis adopts actor-network theory into the analysis of sociotechnical imaginaries. Actor-network theory offers a treatment to agency and structure as one important notion about the process itself because the theory focuses on "networking activity of actors" (Steen, Coopmans, and Whyte, 2006, p.305). Using actor-network theory for this thesis helps disrupting the flatness of the relationship between structure and agency, "revealing the topographies of power," which is the goal of sociotechnical imaginaries (Jasanoff and Kim, 2015, p.18).

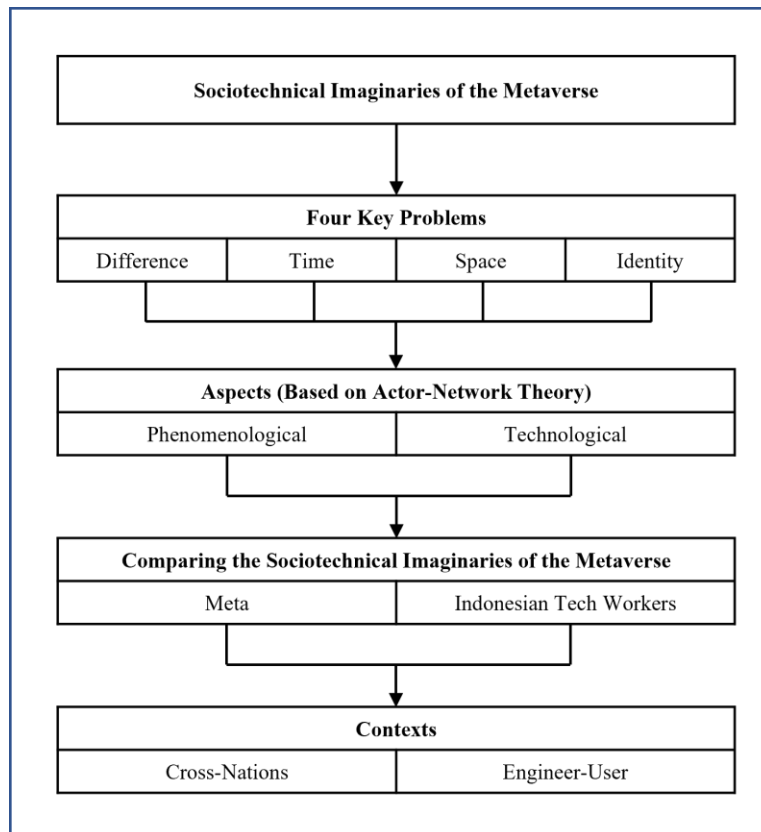


Figure. 3.1 Methodological Framework

Furthermore, this thesis manifests the human and nonhuman of actor-network theory as phenomenological and technological aspects to see its reciprocal relationship. This approach is adopted from Ryan (2001, p.14) in studying virtual world. While phenomenological point of view examines the virtual world through which the end users feel corporeally embodied to the metaverse world, the technological perspective investigates the features of the technical affordances in building the metaverse digital technology (Ryan, 2001, p.14). Additionally, this consideration is also supported by the fact the discourses around the metaverse circulating around its social impacts and technical affordances (Fowler, 2021; Alvim, 2022; Palermo, 2022).

Moreover, given that this thesis situates the research on Meta’s metaverse and Indonesian tech workers, the metaverse context of this thesis is to be specific the metaverse platform built by Meta. To clarify, Meta is the company, whereas the metaverse is the new platform that Meta is developing now. Therefore, the keynote video of Meta, which was uploaded on its official YouTube channel on October 28, 2021, was used as a starting point for instigating conversation around metaverse with the Indonesian tech workers. Then, the two aspects were used as analytical codes on the coding process. The coding analysis was conducted separately between the two. Once the coding was done, several analytical tools were discovered. The research then

proceeded to analyze the sociotechnical imaginaries of Meta and Indonesian tech workers, supported by key concepts drawn from literature review. At last, the results between Meta's and Indonesian' perspective were compared to reveal different contextual findings of cross-nations and engineer-user in envisioning the metaverse. This is the contribution of the thesis to enrich research in Sociotechnical Imaginaries.

3.3 Multimethod Research

Resources for investigating sociotechnical imaginaries are varied. Sociotechnical imaginaries may infiltrate into popular culture, such as mass media and advertising, while others can be found in policy documents and specific verbal tropes in people's mind (Jasanoff and Kim, 2015, p.27). Meta, as a corporate, promotes its imaginaries through the keynote video uploaded on YouTube for its rebranding. Meanwhile, Indonesian tech workers express their expectation towards the metaverse tacitly, in which some questions need to be asked to them. Both the keynote video and interview transcripts from Indonesian tech workers are the empirical materials for this thesis. In that case, this thesis needs multimethod research design for data collection. Firstly, this thesis uses qualitative text analysis (Kuckartz, 2014) to look into the keynote video uploaded by Meta on YouTube for answering the first research question about deconstructing Meta's vision towards the metaverse. Secondly, this thesis also uses group interviews to acquire collective ideas about the metaverse in the lens of Indonesian tech workers for answering the second research question about Indonesian tech workers perspectives towards Meta's vision towards the metaverse. This multimethod helps acquire the insights of sociotechnical imaginaries from those two different data sources. Accordingly, multimethod research helps reach triangulation and increase the reliability and validity of the findings (Hansen and Machin, 2019, p.7)

3.3.1 Qualitative Text Analysis

On October 28, 2021, Meta uploaded a keynote video entitled "*The Metaverse and How We'll Build It Together -- Connect 2021*"¹ on its YouTube channel. No physical keynote event was hold during that time due to lockdown. The video contains speeches and conversations of Mark Zuckerberg and other figures, explaining the metaverse developed by Meta. Therefore, this thesis uses qualitative text analysis to investigate the sociotechnical imaginaries of the metaverse from Meta's perspective through the transcript of the spoken text of the video². The

¹ https://www.youtube.com/watch?v=Uvufun6xer8&ab_channel=Meta

² Full transcript can be retrieved directly from the keynote video uploaded on its YouTube channel. The full script is not provided in the appendix because it is too lengthy.

transcript of spoken text of the video is considered sufficient since the verbal cues and sounds do not provide significant result for the research process. Since sociotechnical imaginaries are interpretative in nature, this thesis will use qualitative text analysis as “[i]t connects a hermeneutical understanding” (Kuckartz, 2014, p.15), which deals with the interpretation of the text. The data collection started with transcribing the keynote video. Fortunately, an English subtitle is embedded on the keynote video on YouTube, so it made the process of transcription easier. After the transcription was done, the coding process began.

Reflection for the Qualitative Text Analysis

For the pilot coding, some reflections were found. There were some codes overlap to other categories. Therefore, it hindered the process of analysis. In that case, defining the category formulation to be more exhaustive helps to avoid such overlapping codes (Kuckartz, 2014, p.57). Then, this thesis followed the previous statement for the coding process relatively carefully. At last, some themes, categories, and subcategories were established in the coding scheme.

3.3.2 Group Interviews

As the sociotechnical imaginaries for the Indonesian tech workers are tacit or not explicitly spoken by them, some interviews were therefore needed. In nature, sociotechnical imaginaries are permeated collectively. In that case, semi-structured groups interviews were preferred because of its flexibility to explore the perception and attitudes of the interviewees. Moreover, group interviews provide dynamics where “participants’ beliefs and opinions take shape as they encounter, resist, assimilate, and/or negotiate new information and arguments” (Hansen and Machin, 2019, p.332). The group interviews were conducted and recorded digitally via Zoom due to the current travel restriction and distance. Some criteria were decided for the group interviews. First, the interviewees are female or male who have a working experience in information technology or digital field. In addition, they should be living in Java Island and their age are 20 until 30 years old in the time of the interviews. The sampling also includes female and male workers. Snowball sampling (Hansen and Machin, 2019, p.287) was used for recruitment of the interviewees. Moreover, this thesis managed to recruit 12 individuals for the group interviews. From those 12 interviewees, three interviewees were asked to conduct a pilot interview. Therefore, only nine interviewees were then analyzed for this thesis.

For the group interviews, an interview guide was made to include different topics, ensuring the interviews go efficiently (see Appendix 2). Moreover, a pilot interview was conducted to test

the interview guide, ensuring that no questions are ambiguous and trigger similar answers to other questions. This pilot interview was also tested to check on the practical quality of the interview since the interviews were conducted digitally. One pilot interview was conducted with three individuals, and other three group interviews were conducted with three individuals for each group interview. Furthermore, if the interviewees “speak in their own voices and with their own language” (Byrne, 2012, p.209), it provides flexibility for them to express their ideas without any language barriers. Hence, all the group interviews were conducted in Indonesian since it is the first language of all the interviewees.

Since this thesis deals with people, ensuring their privacy to gain their trustworthiness was highly required (Kvale, 2007, p.27). In order to follow a proper ethical practice in social science research (Holland and Edward, 2013, p.67), a consent form and a brief information about the interview procedure were explained to the interviewees before the interviews began. Furthermore, the names of the interviewees were anonymized for privacy purposes. In addition, the interviewees were asked for a permission to record the interviews. They were also told that the interviews were hold from 30 to 60 minutes, and they were allowed to say as much as they want. This procedure was to ensure that the interviewees acknowledge their “voluntary participation of subjects” (Kvale, 2007, p.27). Once each interview was finished, the recorded interview was then transcribed in Indonesian. After that, the next step was to code them.

Reflection for the Group Interview

After the pilot group interview was done, there was a casual conversation with the participants. Some suggestions and advice were received from the interviewees. They said that some questions were too hard to answer. Therefore, the interview guide was then revised and redeveloped. Most important aspect from the pilot group interview concerned about the generational aspect. For information, this thesis was initially focused on the Generation Z’s perspective because some research suggested that the metaverse will gain interest in the Generation Z age group given the fact that they are the digital natives of the internet technology, making them the early adopter of the metaverse. However, it was noticed that none of the participants mentioned about the generational gap, specifically about Generation Z’s role in the metaverse context in Indonesia during the interview. The participants said that there is little to no difference between Generation Z and older generation (in this case, Millennials) regarding the metaverse, especially for the tech workers. Although the Generation Zs are prone to use digital technology than the older generation, yet the reality is not always true. In fact, the majority of their colleagues are two until six years older than them (25-30 years old;

Millennials). Only a few numbers are Generation Zs. It confirms that contextual background is crucial to define the samplings.

Therefore, the samplings of the group interviews were then reconsidered. If limiting the sampling to only Generation Z would not make any difference to that of the other generation, specifically the Millennials, it was then worthy to reconsider expanding the age group. To support this, some little research about the age group demographic for the tech workers in Indonesia were carried out. It was found out from the latest statistic in 2022 that most of tech workers in Indonesia are those born after 1980s, including 16.63% workers who have basic, intermediate, and advanced skill levels in digital technologies (The SMERU Research Institute, 2022, p.33). Overall, both two generations make up the highest percentage of the country's internet users. The infrastructural gap and low rate of digital literacy, for example, can affect the adoption of new technology so that the early adapter of the metaverse cannot be simply targeted to the Generation Zs only. As a consequence, it was decided that the sampling age group of this thesis was expanded from 20 to 30 years old. Not only did this new sampling group allow to reach more participants and gained new insights from the millennials, but it also helps recruit some more interviewees as the tech sectors in Indonesia are mostly still dominated by the millennials than the Generation Zs.

The other reflection from the pilot interview is the practical problem. Since the interview was conducted online via Zoom, the technical problem was unavoidable. There was a delay during the conversation. Therefore, it hindered the interview process although not significant. The solution to fix this was only by checking the prime condition of the devices and check the good internet connection. In addition, a backup for the interview was also needed.

3.4 Data Analysis

The data analysis began with coding process of the data from both qualitative text analysis and group interviews. The process of analyzing both data from the keynote video and the group interviews are the same, by reading, rereading, and highlighting some keywords from the transcripts from both the keynote video and the group interviews. The coding process for the keynote video was conducted in English as it is spoken on the video. Meanwhile, the coding process for the group interviews was conducted in Indonesian. The reason to analyze the data in its source language is to avoid different meaning and superficial interpretations if the data undergoes a translation process before the analysis (Bazeley, 2013, p.77). However, one sample of a group interview was translated to English for the transparency of this thesis (see Appendix

4). Furthermore, a coding scheme was made in order to organize the coding process. This coding process was carried out with the aid of NVivo software. Using a qualitative data analysis software allows the establishment of connections within the thematic structures between the original data and summaries, enabling quick access to both (Kuckartz, 2014, p.84).

Specifically, this thesis uses mix of deductive and inductive coding approaches for the coding process of both data sources. Therefore, both two data sources were undergoing similar coding process. Moreover, a deductive-inductive category construction enables the adoption of categories that already exist before the collection of empirical material, and it also allows the formulation of categories yielded from the open coding process (Kuckartz, 2014, p.62). As previously mentioned in the previous subchapter, the categories were deductively guided by actor-network theory as the analytical codes: phenomenological and technological. In addition, the data were also analyzed inductively to identify and highlight possible specific themes from the data, allowing the data to “speak it for itself” (Seale, 2012, p.372). Once the open coding was finished, a number of category or themes were established, which correspond to the two deductive analytical codes. Based on this mixed approach, a standard coding scheme for both data sources were made (see Appendix 6 and 7). Then, the analysis began with utilizing the lens of four key problems of sociotechnical imaginaries from each analytical code. Some examples include *Digital Technology*, *Metaverse Technology*, *Everyday Life and Regulation*, *Company-Related Information*, etc.

ANALYSIS

In this chapter, three findings based on the research questions are elaborated. While the first part of this chapter demonstrates the sociotechnical imaginaries from Meta in envisioning or marketing their creation of metaverse platform, the second part of this chapter identifies the sociotechnical imaginaries from Indonesian tech workers in envisioning their ideas of metaverse platform, specifically the metaverse invented by Meta. Key concepts drawn from the literature review were used to frame and examine the findings. This is to make this thesis aligns to the nature of media and communication studies. Characteristics of metaverse technology, technological convergence, transmediality were used to analyze the technological aspect of the metaverse. Meanwhile, postdigital, mediated construction of reality, and civic imagination were used to examine the phenomenological aspect of the metaverse. Lastly, the last part of the analysis chapter deals with the comparison of sociotechnical imaginaries of the metaverse from two different two contexts, they are cross-nations and engineer-user relationship. These two contexts are the contribution of this thesis to fill the gap in the research of sociotechnical imaginaries of what Jasanof and Kim (2015) suggested. The contributions are to discover the differences between the two countries in envisioning the metaverse and to reveal the relationship between the two entities as engineer and user.

4.1 Meta Perspective

Based on the analysis, three key findings about sociotechnical imaginaries of Meta in envisioning the metaverse were discovered.

4.1.1 Immersive Meta Ecosystem

In terms of technological aspect, Meta imagines that the metaverse will be the next digital technology platform that can bring new experiences for its prospective end users. Meta believes that bringing immersion to the metaverse will give new amazing experience to the prospective end users. Meta arguably claims that the immersive metaverse contributes to provide optimal experience, “a deep sense of enjoyment that is long cherished and that becomes a landmark in memory for what life should be like” (Csikszentmihalyi, 2011, p.3). Likewise, Evans (2011, p.178) argued that immersion, agency, and immediacy are three key forms of engagement crucial for the users to drive the development of transmedia. In the keynote video, Mark Zuckerberg stated:

We believe the metaverse will be the successor to the mobile internet. We'll be able to feel present, like we're right there with people, no matter how far apart we actually are. We'll be able to express ourselves in new, joyful, completely immersive ways. And that's going to unlock a lot of amazing new experiences.

Simply, Meta believes that the immersive experience of "*being physically embodied*" in the metaverse world equals to "*new experiences*." The immersive metaverse is the key component that Meta plans to build. Metaverse becoming immersive is based on technologies constructed to provide such user experience. In that case, Mark Zuckerberg mentioned that Meta has been working on "*all kinds of different devices, sometimes using virtual reality so you're fully immersed, sometimes using augmented reality glasses so you can be present in the physical world as well, and sometimes on a computer or phone...*" In addition, Mark Zuckerberg called these already existing technologies as "*basic building blocks*" of the metaverse (Meta, 2021, 03:22). Likewise, this phase of technological integration is also called technological convergence (Jenkins, 2006). In relation to that, Meta echoes Jenkins' (2008, p.69) idea that "[t]he experience should not be contained within a single media platform, but should extend across as many media as possible." Moreover, to provide an even more immersive user experience, Meta has also been devising additional technological affordances to aid and boost the immersivity of its metaverse.

It's going to take about a dozen major technological breakthroughs to get to the next generation metaverse, and we're working on all of them, displays, audio, input, haptics, hand tracking, eye tracking, mixed reality, sensors, graphics, computer vision, avatars, perceptual science, AI, and more.

Meta conceptualizes its metaverse platform to be even more immersive by incorporating those multisensory technological affordances. While deconstructing the multi-technology convergence of metaverse, Ning et al. (2021, p.13) pointed out that the establishment of the concept of metaverse involves five aspects of technologies (network infrastructure, basic common technology, virtual reality object connection, management technology, and virtual reality convergence). However, multisensory technological affordances, which Meta has been building, do not fit into those five aspects of metaverse technologies. Meta expands the concept and makes it more advanced. By modifying the multisensory devices to enhance the immersive in the metaverse, Meta arguably attempts to influence its prospective end users' attitudes toward the metaverse. For immersive feeling contributes to multiple forms of engagement (Evans, 2011, p.85). Rutledge (2018, p.352) argued that "the integration of sensory stimuli in the human brain with conscious understanding of experience plays an important role in creating and sustaining engagement."

Additionally, Robert (2004, p.122) claimed that marketers should develop multisensory and multimedia experiences to create more vivid impressions and influence the shaping of consumer identifications. Suppose the previous statement is true. In that case, Meta is establishing the branding image of the corporate. In fact, the company's rebranding from Facebook to Meta implies that Meta is making "*a fundamental change*" in the company. The company is working on establishing two disparate segments of its business: "[o]ne for our family of apps and one for our work on future platforms." As a matter of fact, Meta's "*family of apps*" includes Facebook, Instagram, Messenger, and WhatsApp. Meanwhile, the "*future platforms*" refer to Reality Labs, which is Meta's virtual reality and augmented reality division working on the research and development in this field, such as Horizon and Quest (Statista Research Department, 2022). Meta includes those *family of apps* and *future platforms* in the metaverse and make them as the contents of this transmedia platform. In convergence culture, this is called as a flow of contents from multiple media platforms (Jenkins, 2006, p.2). In the keynote video, Mark Zuckerberg also further explained the company's new vision:

But now we have a new north star to help bring the metaverse to life. And we have a new name that reflects the full breadth of what we do. And the future that we want to help build. From now on, we're going to be metaverse-first, not Facebook-first. That means that over time you won't need to use Facebook to use our other services. And as our new brand starts showing up in our products, I hope that people come to know the Meta brand and the future that we stand for.

In other words, Mark Zuckerberg pointed out that Meta is integrating Meta's "*family of apps*" and "*future platforms*" in the metaverse, implying that Meta is creating its own ecosystem. Given that Meta circulates its various products and services into the metaverse, this thesis argues for calling this integration a "Meta ecosystem." At the same time, by infiltrating its "*family of apps*" and "*future platforms*" in building its metaverse platform, Meta exerts its "competences and market experience to establish an 'innovation platform' aimed at complementary products and services" (Hacklin, Battistini, and Von Krogh, 2013, p.69).

4.1.2 Digital Freedom

In the keynote video, Mark Zuckerberg stated that current digital technologies such as smartphones and computers do not have an agency to provide immersive experiences like the metaverse offers.

... you can move around physically. Being able to look anywhere, move freely. It's just a fundamentally different experience from staring at a screen. This quality of being physically embodied, and able to interact with the world and move around inside it. Now, that opens up some completely new experiences that didn't really make sense before on 2D phones or computers.

In fact, agency however contributes to the engagement and value of the audiences (Evans, 2011, p.85). In that case, Meta is developing new digital technologies to provide an agency to the prospective end users. This agency enables them to “*get together with friends and family, work, learn, play, shop, create, as well as entirely new categories that don't really fit how we think about computers or phones today.*” Those daily practical activities are embedded in *family of apps* and *future platforms* as the contents of the metaverse. Thus, the prospective end users can replace their physical activities to the virtual world of metaverse as freely as they want. For example, Meta envisions that the prospective end users can customize their avatars, build desirable environment through the virtual reality, convert physical objects into holograms by using augmented reality, interact with whomever they want through different apps integrated in the metaverse platform, and conduct transaction in metaverse’s marketplace.

By providing the prospective end users a sense of control, Meta believes this interactive feature can make everyday activities to be more efficiently and effectively done in the metaverse world. Meta provides an agency in the metaverse where the prospective end users can assert their interactivity, “a simple, mechanical measure of inputting controls or commands in order to influence onscreen action” (Newman, 2002, p.409). This interactive experience does not only involve operating contents on the metaverse. It also includes but not limited to physical movements in using the metaverse devices and multiple ways to communicate with other users in the metaverse. Accordingly, the prospective end users will have different degrees of interactivity. For example, playing games in the metaverse world can connect multiple players in different locations in real time or people staying on different places across continents can connect or teleport to each other places in the metaverse world in real time. At the same time, the metaverse also exerts the notion of immediacy or liveness (Evans, 2011, p.140). Likewise, optimal experience also relies on the human ability to control what occurs during the exact moment (Csikszentmihalyi, 2011, p.5). The metaverse offers greater degree of immediacy, where the prospective end users can engage in real time with the contents or activities in the metaverse. Being in real time is “tied up to a sense of the present, of occurring now, that fit most easily with concepts” of the metaverse (Evans, 2011, p.141). To execute this, thus, an advanced technology is then developed.

Exactly. So, what you can see here is that a researcher is moving around various objects on the right, and then on the left, you can see the high-fidelity real time rendering of the space and the moving objects on the left without the researcher. So, what's critical here is that this is all happening in real time. That's what's novel here. And that's what differentiates it from CGI.

Not only does the idea of teleporting virtually at anytime and anywhere in the world provides the sense of immersion by being presence, but it also indicates the immediacy of the metaverse to facilitate particular actions in real time. Then, the prospective end users' agency gives them power to interact and control the actions they are doing in the metaverse world.

Furthermore, this thesis argues that the sense of control in the metaverse delivers the quality of digital freedom in which the prospective end users of Meta's metaverse will have. Once the prospective end users have the ability to control, they have certain kinds of digital freedom. To name a few, in the metaverse world, they can have freedom of expression through customizing their avatars, freedom to communicate with others, freedom to access information, freedom of privacy and safety, and freedom of creation. Meta also provides its prospective end users the opportunities to use the metaverse as the source of living. Meta opens chances for creators to sell their products in the metaverse world, and in order to do so, Meta provides online courses so that many more prospective end users "*to train the next generation of creators to build immersive learning content and increase access to devices.*" Not only does Meta use this participatory culture to "complement official marketing strategies," but it also aims to engage more prospective end users (Boni, 2017, p.18). Those are the defining features that offer the prospective end users to grasp their freedom, generating more opportunities and benefits.

But there will also be opportunities and benefits that we can't even imagine yet. For connection, for creation, for learning, and joy. We'll all need to work together from the beginning to bring the best possible version of this future to life. A future where with just a pair of glasses, you will be able to step beyond the physical world and into the kinds of experiences that we have talked about today.

However, Evans (2011, p.148) argued that the sense of immediacy is connected to a limited sense of agency or control. As a company, Meta has power to control and limit what agency the prospective end users can have over the metaverse platform. On one hand, Meta is still working on the development of metaverse. Therefore, the metaverse is not completely fully realized yet. The company certainly has its limit in inventing particular technologies. This limitation then impacts the degree of agency the prospective end users will have over the metaverse. On the other hand, the limitation of Meta is not exclusively related to its technical inventions. The company also has problems with its responsibilities to adhere to regulations and policies. Therefore, it is potential that certain things will not be able to be accessed in the metaverse. Correspondingly, Meta is often accused of being too "*charging ahead too quickly,*" making them playing catching up with the policymakers and regulators. In that case, Mark

Zuckerberg reassured that the company is following its standard of operations while developing the metaverse.

Like I said earlier, interoperability, open standards, privacy, and safety need to be built into the metaverse from day-one. And with all the novel technologies that are being developed, everyone who's building for the metaverse should be focused on building responsibly from the beginning. This is one of the lessons that I've internalized from the last five years. It's that you really want to emphasize these principles from the start.

Although Meta claims that such standard operations have been made since the beginning of the development of metaverse, the detail information is missing from the keynote video. There is no information about in what ways Meta will overcome challenges arising once the metaverse is accessible around the world. Given that every location has its own culture, social, political rules, some adjustments are required to ensure what Mark Zuckerberg outlined as “*Responsible Innovation Principles*.” In turn, in the keynote video, Mark Zuckerberg said that “... *tech people feel that progress can't afford to wait for the slower pace of regulation. And I really think that [regulation over technological progression] doesn't have to be the case this time round because we have years until the metaverse we envision is fully realized.*” Mark Zuckerberg obviously inferred the attitude to uphold the idea of technological determinism. It corresponds to the rhetoric of permissionless invocation, which is “a mobilization of bias toward adaptation to technological change for the benefit for entrepreneurs, innovators, and tech firms” (Dotson, 2015, p.103). Besides, this statement also implies that Meta’s vision to give prospective end users control “*to look,*” “*to move,*” “*to design,*” “*to create,*” or “*to teleport*” as freely as they want is merely a commercial promise for Meta needs to follow regulations, which limit the prospective end users’ agency.

4.1.3 Hybrid Life

In the keynote video, Mark Zuckerberg explained that the metaverse will bring new experiences and new opportunities to its prospective end users.

I’m proud of what we've built so far and excited about what comes next as we move beyond what's possible today, beyond the constraints of screens, beyond the limits of distance and physics, and towards a future where everyone can be present with each other, create new opportunities, and experience new things.

On one hand, the metaverse provides agency which the prospective end users can use “to explore these complex worlds and are encouraged to add content” (Boni, 2017, p.16). As mentioned before, interactive experience in the metaverse is the new user experience that Meta offers to its prospective end users. On the other hand, Meta’s metaverse also exploits the metaverse’s agency to create technology where its prospective end users can generate new

opportunities in its metaverse world. For instance, Mark Zuckerberg explained that Meta's "*strategy and track record show that we will do everything we believe is sustainable to grow the community, the creator economy, and the developer ecosystem.*" In other words, the previous statements actively demonstrate that Meta is inventing "new world" where the prospective end user can thrive sustainably in the future where it is "*beyond anything we can imagine.*"

Although the agency generates new experiences and new opportunities in Meta's metaverse, an active participation of the prospective end users is highly required to the development of this world-building. In that sense, metaverse can be described as "ever-mutating alliances of technological settings and sociocultural uses, which have to be conceived not only as instruments of world transmission, as in top-down media channels, but also as tools that contribute to the active and participatory building of worlds" (Boni, 2017, p.12). Likewise, in Meta's metaverse, the prospective end users can deploy practices of world-building "to create a vision for their future that could be shared intersubjectively both within and beyond their community" (Jenkins, Peters-Lazaro, and Shresthova, 2020, p.24). Similarly, Mark Zuckerberg also highlighted "*the metaverse is all about co-creating.*". Further, Mark Zuckerberg added that Meta is building the metaverse together with creators, developers, and entrepreneurs. This is the act of participatory culture, transforming the experience of media engagement into the creation of new texts, new cultures, and even new communities (Jenkins, 2012, p.46).

These characteristics of world-building and participatory culture are the construction of a "better world" which Meta is currently building for the future. Haupt (2021, p.246) explored that the ideas of "global connectivity" and "global community" have been an important foundation for Meta, which was formerly known as Facebook, to construct its vision of "better world." In that case, Meta believes that by providing agency to provide new opportunities and new experiences for its prospective end users is equivalent to fulfilling its prospective end users imaginative dimension of desirable future world. Additionally, Meta considers metaverse as the alternative imaginary world where Jenkins, Peters-Lazaro, and Shresthova (2020, p.5) referred to as civic imagination. The prospective end users, who include creators, developers, and entrepreneurs, are the communities that build collective identities and shared values to achieve their collective goals in the metaverse world. However, given that the metaverse is still a project and is not fully realized yet, the shared goals in which the prospective end users will achieve in the metaverse is undoubtedly unclear. The question about goals should be asked to the prospective end users. Instead, Meta presumes the alternative imaginations that the

prospective end users want to achieve in metaverse are “*to find one another, to find their voice, to start businesses and communities and movements that have changed the world.*” As a matter of fact, this presumption does not wholly represent what the prospective end users want. Rather, Meta seamlessly provokes that those are the desirable futures that the prospective end users will have through the metaverse.

Furthermore, digital escapism plays a significant role in the establishment of Meta’s civic imagination towards the metaverse. Everything that are less possible or cannot be achieved in the real life is converted and brought to be able in the metaverse world. Such inspiration has always been the idea of digital platform as a place to escape from the lack of freedom acquired in the physical world (Laniuk, 2019, p.25). Although Jenkins, Peters-Lazaro, and Shresthova (2020, p.281) questions the process of bringing the imaginative dimensions to the real-world spaces and places, in contrast, the idea of the metaverse is to bring the imaginative dimension to the virtual world. Accordingly, it is possible to transcend the imaginative dimensions of the prospective end users into the virtual world of the metaverse. Since Meta envisions that the metaverse will bring connectivity and community globally, the idea of civic imagination is then aimed to reach larger communities through the metaverse.

Additionally, since every imagination is thought to be conducted in the metaverse, thus, it goes to the process of digitization, a process where non digital originals are converted into a collective physical format that can be technically process into digital forms (Finnemann, 2014, p.301). Finnemann (2014, p.312) argued that “digitization should be seen as a particular mode of mediatization or rather a set of particular modes of mediatization.” Hepp (2020, p.3) defined mediatization as the ubiquity of technological communication media in social domains, dramatically changing the everyday experience, culture, and society. Correspondingly, as everyday practical functions can be digitized into digitized materials in the metaverse platform, there is a potential that the metaverse will be mediatized in the future. In other words, human will change their activities to adapt into the metaverse world. Meta also imagines making the metaverse embodied physically to the prospective end users, where they only need to wear glasses to perform or experience content from the metaverse world. Mark Zuckerberg even said that:

In the next 5-10 years, a lot of this is going to be mainstream, and a lot of us will be creating and inhabiting worlds that are as detailed and convincing as this one on a daily basis.

Meta operates and projects the metaverse as a playground for the prospective end users to interact and co-create the environment of the metaverse. With the agency provided in the metaverse, Meta envisions that the prospective end users can perform everyday practical functions effectively and efficiently, making it “*a lot easier to be productive.*” By imagining that people will live and inhabit the metaverse world in the future, Meta implies that near future will be a postdigital era. As a matter of fact, the prospective end users will not only migrate from working physically to virtually through the metaverse, but they will also be able to project digital materials “*into the physical world as holograms in augmented reality too.*” In that case, Mark Zuckerberg called it as being “*hybrid.*”

We know from the last couple of years that a lot of people can effectively work from anywhere. But hybrid is gonna be a lot more complex, when some people are together and others are still remote.

Meta seeks to envision the possibilities of instrumental efficiencies as the metaverse increasingly permeate social life (Jandrić, et al., 2018, p.895). However, interestingly, Meta uses the lockdown effect as the restriction measurement to reduce the spread of coronavirus pandemic as the starting point to introduce the mode of hybrid life, living between offline and online world. What can be conducted via online will be doing remotely, endorsing the life where digital technology and media is no longer “separate, virtual, ‘other’ to a ‘natural’ human and social life” (Jandrić et al., 2018, p.893). It potentially becomes the fundamental idea to why Mark Zuckerberg deliberately stated that Meta has been building “*technology around people.*”. However, Mark Zuckerberg admitted that “[y]et here we are in 2021 and our devices are still designed around apps, not people.” These contradictory statements delineate the inconsistency of Meta. Moreover, Mark Zuckerberg believed that “*the basic story of technology in our lifetimes is that it’s given us the power to express ourselves and experience the world with ever greater richness.*” The previous statement confirms that Meta is upholding the idea of technological determinism (Hauer, 2017). Besides the fact that Meta’s civic imagination towards metaverse is vague, Meta’s ideology in believing that technology provides power to human also contradicts the argument of Jenkins, Peters-Lazaro, and Shresthova (2020, p.7), claiming that civic imagination rejects the idea of technological determinism. While Meta implies that human possess less power than technology, Meta also indicates its intention to persuade the prospective end users that the digital technology is increasingly growing and developing so that they should also adapt with the technology.

4.2 Indonesians Perspective

Similar to those of Meta in envisioning the metaverse, three key findings were also revealed during analyzing Indonesian tech workers' perspectives in imagining the metaverse.

4.2.1 Digital Vs Real Life

During the interviews, the participants were asked about their expectation and potential impacts about the metaverse if it is finally fully realized. Most of the participants articulated the comparison of living in digital world and real world. First, most of the participants viewed that metaverse is about digitizing non-digital materials to digital world.

So, Meta wants to move almost all activities in the real world that we usually do often. The world of social media but by adding more input. For example, now we interact on social media with text or video, video call at least. In the future, we will really use VR, use all kinds of VR tracks, then all activities can run there.

(Yahya, 26, a male software engineer – backend who lives in Sidoarjo),

Although it is true that many real-world activities can be done in the metaverse world, the statement above does not correspond to what Meta calls as hybrid life. Meta is not working only on digitizing non-digital materials, but it also wants to integrate digital artifacts into real-world by projecting it with augmented reality. Although metaverse technology is proven to generate positive influences toward perceived pleasure, perceived curiosity, and self-efficiency (Aburbeian, Owda, and Owda, 2022, p.299), aiding activities to be more efficient and effective. The participants further mentioned some sectors that can benefit from the metaverse technology. One participant said that it will benefit for education.

As a result of the pandemic, education must move on from offline to online. It's like we really moved the world where previously students had to come to class, but now we can learn from home too. As a result, no wasting time on the road, taking transportation, causing traffic jams, everything. It will be greatly reduced, like that. So, it will be very useful. Moreover, in areas where the infrastructure is not good, where you must pass rivers, climb mountains, wade through valleys, and walk through the forest. It's more efficient if there is this Metaverse. It's more real than just Zoom.

(Ryan, 24, a male IT researcher who lives in Jakarta).

The excerpt above confirms the power of agency that Meta promises to its prospective end users. The students will feel more immersed, and more importantly, everything is more efficient and effective. In fact, although the metaverse is firstly thought to widen the digital divide, the participant also thought that the metaverse can also contribute to provide quality and equal education for those who are not able to receive education privilege due to geographical problem. Certainly, the previous statement will not be able to be realized if the supporting infrastructures

such as internet are not evenly distributed in the first place. Another example of digitalization of human routines can also be found on work-related field. One participant even imagined the idea of the metaverse to present his project at work.

My current job is leaning more towards the reconstruction industry. How can Metaverse be more useful in my field. For example, in monitoring the work, you can use Metaverse. So, a client doesn't have to intervene and has to go to the field to check the work we are doing. They could see it as a prototype in the metaverse. (Zayn, 27, a male digital marketer who lives in Surabaya).

Both the examples above confirm that the agency of metaverse to provide its prospective end users to “teleport” virtually from one place to another is considered efficient. This technological convergence influences the shaping of user behavior, changing the ways industries operate and the ways user perceive their relationship with digital technology (Jenkins, 2006, 243). One more interesting expectation is that if the metaverse will be fully realized, people can use it for governmental administration matters. For example:

Especially if the Indonesian government has already used Metaverse, right? Next time, if we want to take care of the administration, we don't need a photocopy of the ID card or family certificate. You can directly come from Metaverse, hehehe. Now, even though we already have an electronic ID, we are still asked to make a photocopy. Maybe the government has entered the Metaverse too, all administration is easier, I guess. maybe. (Iris, 25, a female system implementor in a hospital who lives in Jombang)

The example above articulates the participant’s expectation that the metaverse can be the solution of the governmental-administrative problem. It fulfils the participants’ expectations on their civic engagement to be more convenient. Since convergence is about the flow of content across platforms (Jenkins, 2006, p.2), the participants project the contents offered in the metaverse to be varied. As explicated above, some contents include affordances involving education, work, and governmental administrative. Those contents are undoubtedly the contents of everyday activities, which are digitalized and mediatized into digital contents.

Besides the positive expectations towards the metaverse, the participants also mentioned some potential negative impacts. Although the metaverse offers immersive and new experience, one participant felt that it cannot replace the feeling of meeting in person. Manolo (26, a male multimedia officer who lives in Surabaya) described the metaverse will make people feel “*so close yet so far, and so far yet so close.*” Manolo added that meeting people in person feels more precious than being mediated by digital technologies. Moreover, he did not only mention the influence the metaverse gives to social life, but he also questioned its influence on spiritual life.

I work at a church. There has been talk, discourse, that later worship can be in the metaverse. So that raises many questions. Can it be called worship or what?
(26, a male multimedia officer who lives in Surabaya)

This argument disrupts what Meta imagines as making the time spent on the metaverse feel more meaningful. Furthermore, another participant interestingly mentioned about the impacts of metaverse towards mental health, specifically to identity crisis.

But if you look at the negative impact, I feel, there will be many people who I think have an identity crisis. So, I think that's right... in the real world and in the Meta world, they can appear different. They can change their identity like that, right, so uh... a lot of people don't believe in their true identity. In fact they are comfortable in Meta. Then they don't believe in themselves anymore to meet people, socialize because they are more comfortable socializing on Meta.
(Iris, 25, a female system implementor in a hospital who lives in Jombang)

This identity crisis is mainly caused by the affordance of the metaverse to keep its users anonymous. Everyone can participate in the metaverse as this platform is one of transmedia channel. The prospective end users can create and do whatever they want in the metaverse. Thus, although the prospective end users have the agency to customize their profile freely in the metaverse world so that they can express their freedom, it does not mean that they have the same agency in the real life. As a result, the prospective end users will have double or even multiple identities between the real life and the virtual world.

Besides the above potential negative impacts, norms and regulations in the metaverse are also considered ambiguous. Like in real life, regulations and norms are exist in the metaverse world. However, virtual world is considered loosely governed. It relies upon the company to provide particular rules that limit the agency of its prospective end users. "*If the community [in the metaverse] was launched without a regulation, it would be a big problem*" said Alexander (26, a male game developer who lives in Surabaya). This concern was also pointed out by another participant.

And as Ashraf also mentioned earlier, maybe in the future many aspects of the real world will be moved there, such as advertising and laws as well, later there will be laws in the Metaverse world and laws in the real world as well.
(Yahya, 26, a male software engineer – backend who lives in Sidoarjo),

Furthermore, the aspect of privacy and safety is the major problem in the digital world. The participants argued that the metaverse should be made in accordance with the regulations that the governments made. This is to avoid possible violations in the future. For example, one participant mentioned about the sexual harassment happened in the metaverse a while ago. He

also criticized what kind of actions should arise to punish such violation whether in real life or virtual.

As for going to the Metaverse, maybe ee... what is it? If a community is built, there must also be something called regulation. If only the community was launched without a regulation, it would be a big problem too. There must be rules in that virtual world too. For example, yesterday there was a problem too, when there was someone who in the Metaverse world, was abused verbally and visually, and what about physically. But the physical is virtually. How are they going to sue? Moreover, the account itself is anonymous. No one knows who has harassed her. Well, if it's like a system, there are no regulations and no one to regulate it, it will be chaotic, that's for sure.

Alexander (26, a male game developer who lives in Surabaya)

The participant was so sure that there were little to no regulations have been made to accommodate the matters regarding such violations. Although the metaverse is “subject to industrial logics that regulate and authorize some potentialities (and not others) as viable, valuable, or virtuous” (Johnson, 2017, p.130), some participants wondered which regulations they should follow, the regulations from which governments or the metaverse platform.

From Indonesia itself, there is no standard operation yet. Then, how can we trade in the Metaverse? [...] We can't necessarily compare technology that was sourced from the United States and tried here. It must also take time. It was the government agency that had to change the concept first. When the government already has the laws, then we can implement them. (Zayn, 27, a male digital marketer who lives in Surabaya).

In relation to that, one important thing about enacting such regulation is who has the power over policymaking. If Meta controls the regulations within the virtual world, then the government should be the one who manage the problems. However, different social, political, and cultural autonomies have its own regulations which cannot be run similarly to others. This is what missing from the keynote video Meta published.

4.2.2 Digital Divide

During the interview, all participant agreed that mainstreaming the metaverse in Indonesia markets is difficult. The participants believed that the metaverse will take longer than what Meta expected (5-10 years) to be mainstream in the country. For that reason, the general impression of discourses around the metaverse with the participants during the interview center around cynicism, skepticism, and satirical. Manolo (26, a male multimedia worker who lives in Sidoarjo) said that “*the metaverse devices is too expensive.*” Later, Zayn (27, a male digital marketer who lives in Surabaya) replied that “*five million rupiah is the cheapest. The price of one motorbike.*” Manolo added “*for you, Zayn, you'd better use that money to throw a wedding*

party.” From this dialogue, the idea of the metaverse is contested by calculating the opportunity cost comparison. The participants made the satirical jokes to highlight that with such amount of money, they can purchase something that is more valuable than the metaverse. In that case, what Mark Zuckerberg said on the keynote video that Meta is making the metaverse affordable so that more people can access the platform does not target these Indonesian tech workers as its market audiences.

Maybe for now, those who can use it might be from a certain group huh. Maybe from the upper class who have the money to use such a system. For those of us, such as standard people or those in the lower classes, it will not be possible. Maybe we can't use that software yet.

(Zayn, 27, a male digital marketer who lives in Surabaya).

This discrepancy of economy between elites and low-income citizens establishes the conception that metaverse is an exclusive, luxurious digital technology. In other words, it exacerbates the digital divide between classes in the country. Andersson (2017, p.48), argued that beginning the examination from social phenomenon is necessary to understand the mediatization process contextually. This bottom-up approach confirms that this digital divide influences the mediatization of metaverse in Indonesian society.

However, discrepancy of economy is not the only factor determining the mediatization of metaverse in Indonesia. Other factors such as slow infrastructural development and low digital literacy skills among the citizens also contribute to the mediatization of the metaverse. To illustrate, one participant explained that in the slow internet speed in Indonesia will hinder the utilization of the metaverse.

The internet connection in Indonesia, when compared to international internet connections, is quite slow. It's been slow, the quota price is still expensive. So, I sometimes imagine that if, for example, Metaverse, all of its activities are based on big data, such as images or videos, it will eat up a lot of bandwidth. The biggest challenge, perhaps, is connectivity. And the internet network is also not evenly distributed throughout Indonesia. 5G alone is still in big cities.

(Yahya, 26, a male software engineer – backend who lives in Sidoarjo),

With the unequally proper internet infrastructure, the division between rural vs urban areas become even clearer. Jurriens and Tapsell (2017, p.2) confirmed that ensuring equal society by providing internet access in urban vs rural areas is one of Indonesia's greatest challenges to progress to digital revolution. Therefore, Ashraf (25, a male full stack software engineer who lives in Mojokerto) argued that “*the metaverse can be applied in Indonesia if the infrastructure development is increasing massively.*” It actively demonstrates that ensuring the equal access to the internet should be more prioritized before starting to inhabit in the metaverse world.

Indonesia's quest on digital revolution can be traced back since the Soeharto era, when building a national infrastructure was required to build an information society (Barker, 2015, p.209). This information society is the degree of civic imagination that Onno Purbo, "the father of the Indonesian Internet," envisioned. As a vanguard vision, Onno Purbo imagined the information society as a community where everyone can assert their freedom and democratization through the internet (Barker, 2015, p.209). Given that Indonesia is still struggling to fulfil its dream of digital revolution to realize its imagined community (Anderson, 2006), the idea of postdigital life through the metaverse seems unrealistic to do. In other words, the concept of building civic imagination in Indonesia seems impractical since the country needs to improve its digital divide in real life. Suppose that the metaverse is forcedly implemented in current condition. In that case, digital freedom is nowhere to achieve but exacerbating digital divide.

Furthermore, digital literacy skill also contributes to achieving such civic imagination. Only 51% of Indonesians have basic to advanced digital skills of utilizing digital technologies (The SMERU Research Institute, 2022, p.33). The relatively high number of digitally unskilled citizens in utilizing digital technology can slow down the realization of digital revolution in the country. One participant mentioned a concrete story about that, especially in the time of lockdown effect as a restriction rule due to the coronavirus pandemic.

One of my family members is a teacher, she is old. So, in the early days of online learning. And to adapt to Zoom or Google Meet and so on, it's still a bit difficult. So, I think there will be certain people, I mean certain groups, who have a hard time adapting to the Metaverse.

(Najwa, 25, a female IT researcher who lives in Malang)

The excerpt above explicates the generational factor of low digital literacy skill level. This problem is commonly to be found in the category of laggards in the diffusion of innovations theory developed by Rogers, Singhal, and Quinlan (2014). Likewise, by following the same theory, another participant also pointed out the chance for future generation to master digital skills.

Yes, in terms of age range. For now, young children are already good at getting to know technology, let alone the Metaverse. To play digital games, they're already good at it. Yes, they can also get to know the Metaverse, there's nothing wrong with that, you know. There is nothing wrong with elementary school children. To make money in the digital field is now also quite easy than in the old days when we were little. For now, elementary school children can use Metaverse, no problem.

(Zayn, 27, a male digital marketer who lives in Surabaya).

Moreover, a light is not only found in the generational gap. Another participant argued that certain group of pioneer communities can also play a role to influence the movement of acquiring digital literacy skills.

Regarding human resources, in my opinion, it might be a bit different from Ashraf's opinion. I think that if people are familiar with the metaverse, the knowledge can develop quickly. I think so. For I believe that human resources in Indonesia are easily and rapidly developing, especially if being introduced to them by social media influencers.

(Iris, 25, a female system implementor in a hospital who lives in Jombang)

As shown from the argument above, those social media influencers have influential force to encourage its fans in engaging with digital technologies. Likewise, the metaverse of Meta is also propagated by key influencers such as YouTubers, gamers, and social media influencers. They are potential to be the pioneer communities of the metaverse, the collective actors supporting the media-related transformation of society as a whole (Hepp, 2016, p.920). This one group of pioneer communities is believed can indirectly help amplify people's digital skills by showing themselves as an example to the public.

4.2.3 Marketing Gimmick

During the interview, nearly all participants said that the first time they knew about the term "metaverse" is from the rebranding of Meta. This rebranding includes the keynote video, the advertisement on social media, and even as small as the Meta's logo on its family of apps.

I knew about the concept of metaverse before the term metaverse was introduced by Facebook. I have a lecturer in the class, his name is Mr. Sugeng. He has an interesting project, namely making a virtual news simulation using VR. VR is indeed interesting, but there was no concept that the ecosystem was as complete as what Meta has now. For, at that time, there was no metaverse concept yet. Well, after a few years passed, Facebook, a big company, changed its name for a new business purpose. That means something really big and it's quite attention grabbing. Well, from there, I just got to know the names Meta and Metaverse. Well, it turned out to be connected with VR, AR, and others. And then I became interested in finding info about the metaverse.

(Mahatma, 24, a male IT researcher who lives in Malang)

From that utterance, instead of acknowledging the term of metaverse as it is firstly coined by Neal Stephenson in 1992, the participant thought that the concept of metaverse is originally from Meta, introducing its new project on creating an immersive virtual world. Meta, as one of big five corporations, has the power to command more public attention (Moore, 2016, p.22). The power of controlling the discourse does not only influence the gain of public attention, but it also contributes to reaching global market. This argument is also supported by Yahya (26, a

male software engineer – backend who lives in Sidoarjo), who said that “*Facebook is the first company in the world to actually have a commitment to building the Metaverse ecosystem.*”

Likewise, the participants also viewed this strategy as to be more distinguishable compared to other competitors such as Apple, Google, and Microsoft. While comparing the prices of metaverse devices from two different corporates, the participant explained the difference between each corporate product in terms of each technology, “*Facebook focuses on VR, while Microsoft focuses on AR, Augmented Reality*” (Mahatma, 24, a male IT researcher who lives in Malang). Later, another participant claimed that this difference is just merely “*concept and product competition*” (Ryan, 24, a male IT researcher who lives in Jakarta). Moreover, the participant also admired Meta’s bold decision to acquire several companies in building the metaverse and compared it with another digital technology businesses.

I have a mindset, I don’t know right or wrong, a good idea needs support system to be implemented. One of the main supports is capital. Facebook is really crazy. I once read the news, as a software company, Facebook indeed created the Metaverse concept, but it has also acquired several technological companies to invent something such as haptic gloves. There are also VR glasses development companies. So indeed, the preparation was very thorough. It prepared everything to support the business. If we compare it with Apple, the chip manufacturers are produced elsewhere, not their own. However, Facebook organized the acquisition companies that made it. So, support each other. Their preparation was very thorough.

(Mahatma, 24, a male IT researcher who lives in Malang)

The utterance above points out that Meta is working collaboratively with other companies to aid the technical convergence of the metaverse. As a result, this technological convergence of the metaverse provides an opportunity to benefit in economic value (Jenkins, 2006, p.104). On one hand, by acquiring several companies to deliver the immersive metaverse world, Meta has been working on creating its metaverse ecosystem. Hacklin, Battistini, and von Krogh (2013, p.69) argued that such a strategy is called ecosystem aggregators, in which large corporations try “to exploit the market opportunities resulting from a wave of emerging technologies.” On the other hand, Meta’s attempt to combine all of its products and services including *family of apps* and *future platforms* most likely represents the attitude of economic deterministic, instead of technological deterministic. Economic deterministic is “monocausal determinism by material, economic factors” (Bakker, 2007, p.1293). In other words, metaverse is merely a gimmick. Correspondingly, the participants were aware of this capitalist attitude. Moreover, one of the participants spoke out his concern about the relation between corporate strategy to get profits and the protection of privacy data in the metaverse.

How Meta can protect user privacy data without compromising advertising interests. We know that metaverse is ultimately a business, right? But the business is often at a disadvantage when it comes to data privacy. So, it's like the developer company is selling privacy data from the user which causes the user to suffer financial and psychological losses.

(Ryan, 24, a male IT researcher who lives in Jakarta).

Nonetheless, the issue with data is a part of the problems in deep mediatization. Algorithms, data, and digital infrastructures contributes to the understanding and construction of the social world (Hepp, 2020, p.5-6). If Meta wants to reach global market, it means that Meta is trying to collect a massive global data. Thus, Meta possesses control over the data to do whatever the company wants with it. As the above excerpt illuminates, the participant was aware that their data is subject to be used by Meta for advertising purposes. The participant also spoke about the potential impact the selling of privacy data will have for the prospective end users. Moreover, the participant even further mentioned specific case of how privacy data on the internet can be misused for multiple purposes, specifically politics.

The more sophisticated a platform, the more privacy data has the potential to be misused. Yes, indeed, most of the platforms provide advertisements. For example, ads on our YouTube account must appear and are adjusted to what we want as users. That's enough. Don't use it into other things. For example, the issue of Facebook using the privacy data of US residents for the past 2016 election, isn't it? That's really a very detrimental thing. Moreover, it is as if a company becomes an empire that can steer a country, can choose a leader, who can win an election with our privacy data. That's a very risky thing.

(Ryan, 24, a male IT researcher who lives in Jakarta).

The issues of personal data by tech giants have always been on the hot debates. As one of the big five corporates, Meta “[c]ontrols and collects unprecedented amounts of data about human activity and turn it into products and services that have fueled stunning commercial growth” (Moore, 2016, p.Foreword). Meanwhile, in terms of security and privacy, the problems centers around to what the degree of which governments should or should not have the access to the user data (Moore, 2016, p.58). In that case, the prospective end users have little to no agency to control what kind of privacy data in the metaverse. There is no choice than allowing and giving up the personal data to the company for whatever purposes if they want to use the metaverse, given that data is always embedded on digital technologies, and it is almost impossible to avoid.

4.3 Comparing Sociotechnical Imaginaries of Metaverse

Based on the findings and analyses above, some key findings can be compared to see the difference between Meta and Indonesian tech workers in imagining the future of metaverse.

Two contexts are provided in this analysis. Some key concepts drawn from literature review were also employed to critically look into the findings.

4.3.1 Engineer-User

In terms of engineer-user relationship, Meta clearly has power to generate the idea of metaverse and materialize it. As a company, Meta asserts its dominance over the global market and advances the concepts of metaverse to make it more outstanding compared to its competitors. In doing so, Meta incorporates the multisensory devices so that the prospective end users can feel more immersed in the metaverse platform. By providing the optimal experience for the prospective end users (Csikszentmihalyi, 2011), the company aims to integrate its diverse products into one unity. This integration, then, has received many critics from many tech experts and enthusiasts as gimmick (Meyers, A., 2021; Szaniawska-Schiavo, G., 2021; Kelly, J., 2022; Naughton, 2022). Meta, as a tech giant, frequently marks up its products and services in a utopian imagination of the future, community-based narratives, and the promises of technological solution for social change (Turner, 2006, p.2). Moreover, the participants view themselves as the market audiences, and they are aware of it. This awareness makes them question the potential impacts the metaverse will have for them as the prospective end users.

Potential consequences of the metaverse surely exist, whether positive or negative. On one hand, in the keynote video, Meta does not describe negative impacts of the metaverse. This is also something that is missing from the keynote video. However, Meta explained its anticipation of the consequences by highly focusing on the regulation and rules. Meta acknowledges that invention requires new rules as the effect of technological convergence. Therefore, there is a need to control it. Besides, Meta also sees the positive impacts that the metaverse can yield, especially easing the practical functions in everyday life, which highly relies on the immersive user experience. Furthermore, the interplay between actants is significantly found in this engineer-user relationship. From the perspective of actor-network theory, there are three agencies taking play. First, the prospective end users have an agency to control what they are doing in the metaverse. They can do everything as freely as they want. Second, Meta has an agency to control over the metaverse platform. The company can limit and expand metaverse's features which eventually also influences the agency of the prospective end users. Third, Meta is also playing catching up with the policymakers and regulators. This push and pull relationship between Meta and regulators seek for the power of dominance, who owns power over who. This is the modification of state of affairs which makes a difference in the actor-network theory (Latour, 2005, p.71). In that case, agency can be interpreted as an

effect. Whereas this agency owns more control over the technology to constitute its affordances (Gibson, 1967). Therefore, each actant has specific actions and limitations over something else (Couldry and Hepp, 2017, p.89).

On the other hand, the participants pointed out the problems on the regulation. As Hepp (2020, p.29) stated “state actors and the ambivalent role they play as regulators and supporters of new technologies.” In Indonesia, such regulations have not been made yet. Therefore, they concluded that Indonesia is not ready yet to receive the metaverse fully in the everyday life although Meta has been developing the metaverse to be as embodied as possible. Although the metaverse offers immersion, the participant believes that such idea of using the metaverse for practical functions such as working, and socializing cannot replace the feeling of meeting each other face-to-face. Indonesian tech workers believed that the metaverse is made for enjoyment only such as entertainment and gaming. Moreover, the participants also mentioned numerous impacts that will potentially affect them as the prospective end users. Although they believed that while such kind of features provide new opportunities and experiences, the already existing technology is already enough to accommodate human needs. In fact, they thought that if some more advanced technologies are to be invented, more regulations need to be made, making it more complicated to live in hybrid ways. In contrast, some participants also expected that the invention of the metaverse should not be taken for granted. They see potential benefits of the metaverse for education and working purposes. Specifically, immersive long-distance teaching and presenting a product design’s prototype. Those areas require more power to influence the changes on them. Participants believed that the metaverse can be used for improving quality and equal education and governmental related issues. In that case, it articulates the idea that digitization impact.

Although the idea of postdigital life offered by Meta’s metaverse brings efficiency towards human life, the participants concerned about its potential impacts to their privacy and security. Meta has a considerable global power, which makes “many individuals, organizations, and communities are already dependent on the services and facilities [Meta] provides to operate productively in a deeply mediatized world” (Hepp, 2020, p.29). However, the participants believed that potential impacts can be generated if a company takes over their everyday life. They were afraid of their data being used inappropriately by the company. They even mentioned the examples of previous occurrence of Facebook in breaching its user’s private data.

From this, the technological convergence of multiple devices and technology does not only enable new affordances to provide new user experience. Moreover, technological convergence of the metaverse enables Meta to build its own ecosystem which benefits its corporate strategy. Meta ecosystem of metaverse also confirms Jenkin's (2008, p.2-3) argument that the convergence influences changes in technological, industrial, and social structure given its capacity in which resulting in reinforcement of Meta's rebranding and visions. As a result, Meta is attempting to become a platform leader in which the company "requires a compelling vision of the future as well as the ability to create a vibrant ecosystem by evangelizing a business model that works both for the platform-leader wannabe and potential partners" (Gawer and Cusumano, 2015, p.75). Hence, the metaverse is constituted by inventing new supporting technologies to create a more advanced and competitive Meta ecosystem, in addition to integrating Meta's products and services, benefitting the company in product development and growth strategies (Strader, 2011, p.137).

Immersion is the defining quality of Meta's metaverse. Hence, Meta exploits the immersive features of its platform to persuade the prospective end users to thrive in this platform, as it is the one the key forms of engagement in transmedia text (Evans, 2011, p.178). Meta encourages the prospective end users to inhabit in the metaverse world and live sustainably. By living in the online platform, Meta envisions the prospective end users to switch their physical life into the virtual one using the virtual reality devices. They can also switch back from virtual world to real life by using the augmented reality. In that case, Meta provides the affordances to give the prospective end users power to do their everyday practices. In fact, its creative economy through digital platform is also one of the tokens in which persuade the prospective end users to invest their time and money for the metaverse. If this embodied internet is realized in the future, everything will be digitized, pushing the postdigital life in the future.

Overall, the key findings show that the engineer-user relationship between Meta and Indonesian tech workers are related to its commodification and agency. Meta and Indonesians see the progression as two different determinisms. Moreover, Meta as a company prefer not to view themselves as powerful, but rather point to how their tools and services empower the public" (Moore, 2016, p.22). In that case, Meta hides its truth as technological determinism company which drives its mission based on economic determinism vision. It proves that sociotechnical imaginaries can also be commodified (Mager and Katzenbach, 2021, p.232-233). Moreover, Meta's metaverse also opens for new opportunities for them to gain profits and makes sustainable living for its prospective end users. Meta encourages its prospective end

users to join the creative digital economy in the metaverse by being one of the creators in the metaverse. Additionally, it also supports the argument of McCracken (1998, p.89) which says that “[c]orporations will allow the public to participate in the construction and representation of its creations or they will, eventually, compromise the commercial value of their properties.” As the prospective end users, the Indonesian tech workers criticized and concerned about their safety, therefore, they were questioning about the purposes of Meta building something. They also traced back the past issues that Meta as a company has encountered such as scandal and violations. Therefore, their views of metaverse are different.

4.3.2 Cross-Nations

Meta exerts the idea of the metaverse as if humans are living in the postdigital era right now, where everything is intricately embodied with digital technologies. In that case, Meta wants the metaverse to be widely accessible and connect everyone in many parts of the world, reaching its global market. Haupt (2021, p.251) further explained that Facebook, prior to becoming Meta, has already initiated an equally universal human need for connectedness as a part of its company’s vision. However, the reality is not aligned with its vision. Meta seems to forget that there are some geopolitical areas in the world that do not possess such equal access to technology due to numerous factors.

On one hand, Indonesian tech workers pointed out several factors that the country is struggling to provide such digital equality. The participants mentioned that low digital literacy is one among many factors hindering the penetration of metaverse in Indonesia. Purbo (2002) stated that educating people to acquire digital skills through Smart Village program to connect villages in Indonesia to the internet has been proven insufficient. The participant spoke the truth that introducing the metaverse to the citizens will be hard as if the citizens are still struggling to get around with digital revolution due to the lack of internet infrastructure in the country (Jurriëns and Tapsell, 2017, p.8-9). With a discrepancy in digital technology, the progress of mediatization is not even reached yet, let alone deep mediatization. Therefore, the infrastructure inequality leads to the lack of digital literacy in Indonesia, hindering Meta’s vision to “Consider everyone” and connect “global community” (Haupt, 2021, p.251). Interestingly, this statement was said by participants who have been living in Java Island where the internet and digital technologies are highly concentrated in. In other words, even in the most advanced area in Indonesia, unequal access of digital technologies can still be found, let alone the other areas outside Java Island. Evidently, infrastructure development is not the main

problem here. In fact, socio-economic factors can be the major issue of the digital divide in the country.

In the socio-economic issues, factors underlying the challenge to implement the metaverse in Indonesia include the unaffordable price and wide economic gap, the reasons why integrating the metaverse to the life of Indonesia citizens will take more effort and longer time. Jurriëns and Tapsell (2017, p.12) argued that although digitization has made significant collections of knowledge more affordable and accessible, the participants explained that Indonesia still struggles to reducing the large numbers of digital underclass, a marginalized population who have little to no access to internet (Helsper, 2011). One participant said that the metaverse will be “*a privilege for those who can access*” (Iris, 25, a female system implementor in a hospital who lives in Jombang). This even makes the gap between classes open wider.

On the other hand, instead of waiting for reaching an equal access to basic digital technology such as internet, the company intends to advance its technology as if the progression of technology cannot afford to wait any longer. What has driven Meta to have such vision can be traced back as the company has to be more competitive than other corporations. Meta is a company situated in a high-tech hub in Silicon Valley in the United States of America, an area where internet access is already ubiquitous. As Haupt (2021, p.246) stated, Meta is highly engrained to the Silicon Valley culture and ideology. Therefore, Meta’s foundation lays on technological deterministic beliefs (Turner, 2006). The previous statement confirms that Meta keeps pushing technological advancement amidst digital divide in the world, to be specific in Indonesia. Although Meta has made a vision to empower “global connectivity,” “global community,” (Haupt, 2021, 245) and “Consider everyone,” the truth is that the company is more focused on achieving access to its global market. In turn, the participants were aware of this marketing promises. In fact, they criticized some aspects of the metaverse such as its regulations regarding data privacy, specifically which regulations and norms that should be followed if the metaverse applies globally. Yet, Meta does not provide information about this in the keynote video.

To sum up, this phenomenon defines the clear difference of mediatization, deep mediatization, and postdigital lifestyle in the contexts of the two countries. The different sociotechnical imaginaries of metaverse between the two nations are situated in the discourses of understanding digital technology in the contexts of each social, political, cultural, and geographical phenomenon. Here, the key problem of space takes place. Although Meta’s

imaginaries are corporate imaginaries, it cannot be ignored that Meta has embedded Silicon Valley's ideology and value of digital utopianism (Turner, 2006). From the keynote video, Meta performs its imaginaries seamlessly as a technological deterministic company. Meanwhile, the Indonesian tech workers viewed it more as an economic deterministic company. While previous statements greatly define the key problem of difference sociotechnical imaginaries, the key problem of identity also takes place simultaneously. While Meta envisions the metaverse as an innovativeness and digital utopianism, Indonesian tech workers believed that the country now needs to focus more on ensuring the equal access to digital technology to fulfil the country's digital revolution agenda.

The discourse around digital technology in Silicon Valley has impacted the formulation of vision in Meta. The readiness of Meta to enter the phase of deep mediatization, has made it advanced to push into postdigital lifestyle. Meanwhile, the discourses around digital technology in Indonesia are still focusing on the struggles to fully achieve digital revolution debate. Therefore, the participants spoke out about the urgency to prioritize digital revolution first, rather than starting to live in a postdigital lifestyle. In fact, the attempt to infiltrate the metaverse in Indonesia has made the irony to the country's digital revolution agenda, intriguing the participants to make hilarious scenarios if the metaverse Indonesians are starting to inhabit to the metaverse world. The key problem of time from sociotechnical imaginaries relates to this context. Time is crucial at this moment; each perspective has its own path to progress to an advancement of technology.

CONCLUSION

This thesis has managed to identify the sociotechnical imaginaries of the metaverse from the perspectives of Meta and Indonesian tech workers. Meta envisions the metaverse as an immersive Meta ecosystem, a platform to provide digital freedom, and a new experience of living in a hybrid way. Meanwhile, the Indonesian tech workers perceive the metaverse as a marketing gimmick, a risk that worsen a digital divide, and the contention of living in the real vs. virtual world. In terms of the cross-nation relationship, the findings also show that Meta's vision is bound to Silicon Valley's ideology. In contrast, Indonesian tech workers still urge to prioritize the national digital revolution agenda. Likewise, in terms of the engineer-user relationship, the results also demonstrate the interplay of the topography of agency between the two perspectives in envisioning their sociotechnical imaginaries of the metaverse.

5.1 How does Meta envision metaverse for an immersive digital platform in the keynote video?

Throughout the keynote video, Mark Zuckerberg explained deliberately that Meta has been working on inventing an immersive metaverse world. However, immersion is not the only thing that Meta wants to create for the future platform. Meta wants the metaverse to be a place where global community can connect to each other vividly, express themselves freely, and benefit for a sustainable life. The previous statement is an imagined community Meta wants to build for the prospective end users. Meta materializes this corporate imaginary (Haupt, 2021, p.238) by creating a metaverse world and transfigures it as a civic imagination that the prospective end users sought for in the future. For the prospective end users to thrive in this manipulated, Meta envisions that they will live alongside with an embodied metaverse. Correspondingly, Meta is pushing forward to live and thrive into a postdigital life (Cramer, 2015).

Overall, key findings above illuminate Meta's sociotechnical imaginaries of the metaverse. In terms of difference, the metaverse is built based on Meta's ecosystem, where Meta can monitor and control its prospective end users. This metaverse concept can also be different compared to different metaverse companies. In addition, the conception and development of metaverse are potentially to be different from one location to others for different places have different rules and norms. Therefore, at the same time, the previous statement confirms the overlapping key problems of difference and space. The question about space in sociotechnical imaginaries of the metaverse from Meta's perspective can also be gained from the concept of global

community embedded in Meta's vision. Meta envisions that its metaverse can be used for people globally, creating a mass community where they can gather and achieve their civic imagination in the digital world. In that sense, the space is not merely physical, but it is also digital. Accordingly, Meta is shifting its vision to focus on building community through the metaverse. This shifted vision, then, contributes to the rebranding of Meta from previously known as Facebook. The previous statement echoes to the problem of identity in sociotechnical imaginaries. Likewise, Haupt (2021, p.246) also mentioned that Meta's imaginary is tied up to the culture and ideology in the Silicon Valley, enforcing competitiveness and innovativeness in technology. Thus, Meta holds the value of technological determinism to envision its metaverse project.

5.2 How do Indonesian tech workers envision Meta's metaverse for an immersive digital platform based on Indonesia and end user contexts?

During the interview, the general impression of Meta's rebranding and its metaverse project is perceived as gimmick from the eyes of the Indonesian tech workers. They believe the metaverse project is only a marketing strategy so that Meta can gain profits and control over its prospective end users. The mediatization of the metaverse in Indonesian was also thought to be impossible in the near future due to the unequal proper infrastructure and socio-economic conditions of the citizens, widening up the digital divide between places and classes in the country. However, the prospective end users also believe that the metaverse can bring efficiency and effectiveness for daily routines, especially for education, work, and governmental related administration. At the same time, they also believe that the metaverse can disrupt the social connection, spiritual experience, and mental state. In addition, the participants also questioned the rules and regulations that should be followed if they want to use the metaverse, which is not stated in the keynote video.

Overall, key findings above explain the Indonesian tech workers' sociotechnical imaginaries of the metaverse. In terms of difference, the participants imagined the metaverse relatively differently to what Meta imagines. The participants viewed the metaverse as a marketing strategy tool only. It brings economical values and uphold the attitude of economic determinism that technological determinism. Moreover, the metaverse is envisioned to open wider the digital divide in the country, instead of digital freedom. Besides, the metaverse is envisioned to be having different rules depending on its locations use. Indonesian tech workers once questioned about this, relating this concern with the key problems of difference and space together. For different locations require different norms. Moreover, in terms of space and time,

the way the metaverse is imagined in Indonesia is envisioned to take longer than what Meta imagines. Given the socioeconomic and infrastructural factors, these imaginations exist. Lastly, in relation to identity, the pioneer communities such as YouTuber, social media influencer, gamer, and tech enthusiasts are thought to be the key influencer to promote the implementation of metaverse in Indonesia.

5.3 How are the sociotechnical imaginaries of the metaverse compared between Meta and Indonesian tech workers in terms of cross-nations and engineer-user relationship?

As formulated from the research aims and objectives, some key findings of the comparison between Meta and Indonesian tech workers in terms of cross-nations and engineer-user relationship are found, which are the major contribution of this thesis.

5.3.1 Engineer-User

In terms of engineer-user relationship, Meta clearly has power to generate the idea of metaverse and materialize it. As a company, Meta asserts its dominance over the global market and advances the concepts of metaverse to make it more outstanding compared to its competitors. In doing so, Meta incorporates the multisensory devices so that the prospective end users can feel more immersed in the metaverse platform. This integration, then, has received many critics from many tech experts and enthusiasts as gimmick (Meyers, A., 2021; Szaniawska-Schiavo, G., 2021; Kelly, J., 2022; Naughton, 2022). Moreover, the participants view themselves as the market audiences, and they are aware of it. This awareness makes them question the potential impacts the metaverse will have for them as the prospective end users.

Potential consequences of the metaverse surely exist, whether positive or negative. On one hand, in the keynote video, Meta does not describe negative impacts of the metaverse. This is also something that is missing from the keynote video. However, Meta explained its anticipation of the consequences by highly focusing on the regulation and rules. Meta acknowledges that invention requires new rules as the effect of technological convergence. Therefore, there is a need to control it. Besides, Meta also sees the positive impacts that the metaverse can yield, especially easing the practical functions in everyday life, which highly relies on the immersive user experience. However, the participants believed that while such kind of features provide new opportunities and experiences, the already existing technology is already enough to accommodate human needs. In fact, they thought that if some more advanced technologies are to be invented, more regulations need to be made, making it more complicated

to live in hybrid ways. In contrast, some participants also expected that the invention of the metaverse should not be taken for granted.

Furthermore, this engineer-user relationship is where the interplay between actors takes place. Three different agencies are at work, if analyzed according to actor-network theory. To begin with, prospective end users have agency over their actions in the metaverse. They have complete freedom to do whatever they choose. Meta, on the other hand, has agency over the metaverse platform. The firm has the ability to limit and expand metaverse capabilities, so influencing the agency of potential end users. Finally, Meta is trying to catch up with legislators and regulators. This constrain between Meta and the regulators is aimed at determining who has dominance over whom. In the actor-network theory, this is the change in state of affairs that makes a difference. (Latour, 2005, p.71). In this scenario, agency can be viewed as an effect. This agency, on the other hand, has more influence over the technology that makes up its affordances (Gibson, 1967). As a result, each actor has distinct actions and restraints in relation to anything else (Couldry and Hepp, 2017, p.89).

On the other hand, the participants pointed out the problems on the regulation. As Hepp (2020, p.29) stated “state actors and the ambivalent role they play as regulators and supporters of new technologies.” In Indonesia, such regulations have not been made yet. Therefore, they concluded that Indonesia is not ready yet to receive the metaverse fully in the everyday life although Meta has been developing the metaverse to be as embodied as possible. Although the idea of postdigital life offered by Meta’s metaverse brings efficiency towards human life, the participants concerned about its potential impacts to their privacy and security. Meta has a considerable global power, which makes “many individuals, organizations, and communities are already dependent on the services and facilities [Meta] provides to operate productively in a deeply mediatized world” (Hepp, 2020, p.29). However, the participants believed that potential impacts can be generated if a company takes over their everyday life. They were afraid of their data being used inappropriately by the company. They even mentioned the examples of previous occurrence of Facebook in breaching its user’s private data.

Overall, the key findings show that the engineer-user relationship between Meta and Indonesian tech workers are related to its commodification and agency. Meta and Indonesians see the progression as two different determinisms. Moreover, Meta as a company prefer not to view themselves as powerful, but rather point to how their tools and services empower the public” (Moore, 2016, p.22). In that case, Meta hides its truth as technological determinism

company which drives its mission based on economic determinism vision. It proves that sociotechnical imaginaries can also be commodified (Mager and Katzenbach, 2021, p.232-233). Moreover, Meta's metaverse also opens for new opportunities for them to gain profits and makes sustainable living for its prospective end users. Meta encourages its prospective end users to join the creative digital economy in the metaverse by being one of the creators in the metaverse. Additionally, it also supports the argument of McCracken (1998, p.89) which says that "[c]orporations will allow the public to participate in the construction and representation of its creations or they will, eventually, compromise the commercial value of their properties." As the prospective end users, the Indonesian tech workers criticized and concerned about their safety, therefore, they were questioning about the purposes of Meta building something. They also traced back the past issues that Meta as a company has encountered such as scandal and violations. Therefore, their views of metaverse are different.

5.3.2 Cross-Nations

On one hand, Meta exerts the idea of the metaverse as if humans are living in the postdigital era right now, where everything is intricately embodied with digital technologies. In that case, Meta wants the metaverse to be widely accessible and connect everyone in many parts of the world, reaching its global market. However, Meta seems to forget that there are some geopolitical areas in the world that do not possess such equal access to technology due to numerous factors such as low digital literacy skills, infrastructural inequality, and economic gap. Thus, if the metaverse is mainstreamed in Indonesia, the participants believed it will open wider the digital divide in the country, rather than achieving digital freedom.

As Haupt (2021, p.246) stated, Meta is highly engrained to the Silicon Valley culture and ideology, an area where internet access is already ubiquitous.. Therefore, Meta's foundation lays on technological deterministic beliefs (Turner, 2006). Although Meta has made a vision to empower "global connectivity," "global community," (Haupt, 2021, 245) and "Consider everyone," the truth is that the company is more focused on achieving access to its global market. In turn, the participants were aware of this marketing promises. In fact, they criticized some aspects of the metaverse such as its regulations regarding data privacy, specifically which regulations and norms that should be followed if the metaverse applies globally. Yet, Meta does not provide information about this in the keynote video.

To sum up, this phenomenon defines the clear difference of mediatization, deep mediatization, and postdigital lifestyle in the contexts of the two countries. The different sociotechnical

imaginaries of metaverse between the two nations are situated in the discourses of understanding digital technology in the contexts of each social, political, cultural, and geographical phenomenon. Here, the key problem of space takes place. Although Meta's imaginaries are corporate imaginaries, it cannot be ignored that Meta has embedded Silicon Valley's ideology and value of digital utopianism (Turner, 2006). From the keynote video, Meta performs its imaginaries seamlessly as a technological deterministic company. Meanwhile, the Indonesian tech workers viewed it more as an economic deterministic company. While previous statements greatly define the key problem of difference sociotechnical imaginaries, the key problem of identity also takes place simultaneously. The readiness of Meta to enter the phase of deep mediatization, has made it advanced to push into postdigital lifestyle. Meanwhile, the discourses around digital technology in Indonesia are still focusing on the struggles to fully achieve digital revolution debate. Therefore, the participants spoke out about the urgency to prioritize digital revolution first, rather than starting to live in a postdigital lifestyle. The key problem of time from sociotechnical imaginaries relates to this context. Time is crucial at this moment; each perspective has its own path to progress to an advancement of technology.

5.4 Reflection and Recommendation

Under science and technology study, research on sociotechnical imaginaries are relatively broad. It can be used to analyze a wide range of field related to technology and science. For media and communication studies, research on sociotechnical imaginaries is highly relevant. Researching imaginaries digital technologies that are mediatized and permeated into human life contributes significantly to policymaking, audience engagement, and marketing strategies. This thesis has demonstrated that the study on sociotechnical imaginaries of the metaverse deliver the contestation and commodification of digital technologies within the international perspective.

Overall, this thesis serves as a steppingstone for future research on doing sociotechnical imaginaries of digital technologies. Meta's metaverse is still being developed. Therefore, there is still chances that the visions of Meta will evolve (Haupt, 2021). This is the gap that the future research can fill. Moreover, this thesis focuses on only the keynote video as the main source of analysis. There are absolutely other reliable resources from the company's website that can be further analyzed by future research. In formulating the method, this thesis also focuses on particular consideration for the sampling criteria. Therefore, future research can widen the sampling criteria and make it empirical to specific participants such as educators or older

people. It is suggested that future research will take a look at comparing sociotechnical imaginaries from different perspective, preferably in other Southeast Asian countries where only a small number of research on this field were studied. Other researchers can also take a look at the imaginaries from different frames of key concepts, which can give even more enriching insights to the study of sociotechnical imaginaries.

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APPENDICES

Appendix 1: Consent Form

This thesis seeks to explore how the metaverse is envisioned in the eyes of Meta and Indonesian tech workers. In an effort to do this, a number of group interviews with some tech workers will be conducted. Each group interview will last between 30-60 minutes. The data will be used within the confinement of my MA Thesis in the master's program of Media and Communication Studies at Lund University.

The interview will be recorded and transcribed. Additionally, the names of the participants will be anonymized for privacy matters. The participants are free to say as much or as little as they want. They can decide not to answer questions or stop the interview any time they want.

If you agree to participate in this study, please fill in the form below:

Full Name :
Gender :
Year of Birth :
Address :
Occupation :

If there is anything to convey regarding this interview, please contact:
Hamzah Dzikri Fadliansyah (ha1587fa-s@student.lu.se)

Appendix 2: Interview Guide

Opening:

1. When and how did you find out about Meta and the metaverse?
2. Have you ever discussed it with others?
If so, what were they all about?

Theme 1: Perception of Meta and metaverse

1. What is your view on the rebranding from Facebook to Meta?
2. What do you think about Meta's metaverse project?

Theme 2: Adapting to the metaverse

1. Do you have expectations of the metaverse?
What's that?
2. Do you want to use metaverse in the future?
Why or why not? For what purpose?

Theme 3: The context of the metaverse in Indonesia

1. Do you think metaverse will be useful or not in Indonesia?
2. What are the challenges and opportunities to realize the metaverse in Indonesia?
What sector or goal?
3. Who is influential in realizing the metaverse in Indonesia?

Theme 4: Potential end users of the metaverse in Indonesia

1. Who do you think will be the target consumers of the metaverse in Indonesia?
2. How could the metaverse potentially affect you?
At work
In communicating with your family
In socializing with peers

Closing:

1. Do you have anything to add?

Appendix 3: List of Interviewees

No.	Name (Pseudonym)	Sex	Occupation	Birth Year	Address	Group of Interview	Date of Interview
1.	Hajah	Female	IT Researcher	1997	Jember	Pilot	March 25, 2022
2.	Firdaus	Male	Programmer	1998	Jember		
3.	Cahyo	Male	Programmer	1997	Jember		
4.	Iris	Female	System Implementor	1997	Jombang	Group 1	March 27, 2022
5.	Yahya	Male	Software Engineer – Backend	1996	Sidoarjo		
6.	Ashraf	Male	Software Engineer - Full Stack	1997	Mojokerto		
7.	Alexander	Male	Game Developer	1996	Surabaya	Group 2	April 1, 2022
8.	Zayn	Male	Digital Marketer	1995	Surabaya		
9.	Manolo	Male	Multimedia Officer	1996	Surabaya		
10.	Mahatma	Male	IT Researcher	1998	Malang	Group 3	April 2, 2022
11.	Ryan	Male	IT Researcher	1998	Jakarta		
12.	Najwa	Female	IT Researcher	1997	Malang		

Appendix 4: Translated Interview Transcript Sample

Date : April 1, 2022
Interviewees : Alexander, Manolo, and Zayn
Group : 3
Location : Zoom

Hamzah: The first question. When and how did you find out about Meta and Metaverse? Please.

Alexander: Er... the first time I know about Meta, maybe uh... because now a lot of people use Instagram, especially since Instagram was acquired by Facebook, right? So, like, what is it, in terms of branding, if Facebook becomes Meta, many people immediately know. Most people are Instagram users. Then again, the Metaverse is more crowded because the crypto currency will be used in the metaverse world. That is it.

Manolo: Okay, for me, it is more like knowing Meta because of the news. News that Facebook has changed its name. Then, I understood about metaverse when, yes, I saw a lot of YouTube, like gamer Youtubers. You know, they have already started to talk about Metaverse. So, that is where I know about metaverse, then, I started googling it. Before that, I did not know what that was.

Zayn: Yes, I do. I knew about Meta since Facebook changed its name. Yes, it changed the name to Meta Company. That may be known in 2021, if I am not mistaken, right?

Hamzah: Yep.

Zayn: Then, about the Metaverse, it is the same in 2021 from my coworkers, introducing Bitcoin and Crypto, if I am not mistaken, it was like that. Before that, I did not... did not really know the metaverse. That is all, really.

Hamzah: Okay, thank you. The next question, have you ever talked about Meta or metaverse with others? If so, what is it all about?

Alexander: Uh if we talk about it, it is more like, what is the impact—uh, not the impact, essentially. It is like, is it true that in our daily lives, we can live like in the Metaverse? Can the metaverse really replace our real world? Then, like, that is also one of the things, like, uh... game development too. Moreover, we are basically majoring in game technology, so it is just fun discussing about it for a while. So, uh... what, metaverse will make the game world more exciting, or something. The discussion tends to be in that direction.

Hamzah: Okay. Other responses?

Manolo: For me, on the other day, eh, at work. I work in a church, and in the church, too, so there was a talk about doing prayers in the metaverse started to exist. Something like the discourse "In the future, we can pray in the metaverse" like that. So, if... if that is the point, there are a lot of questions. Can it be called worshipping, or something else? Well, that is what I was discussing there, really. So, we have discussed it a little bit.

Hamzah: Okay. Anything else to add?

Zayn: Oh, yes. For me, about the metaverse, like Alexander and Manolo, we already knew virtual reality, right?

Alexander: Yes.

Zayn: But I did not know if virtual reality was metaverse or something. Then, for now, because my scope is not in the IT technology industry, I am more inclined to the construction industry. So, I rarely discuss metaverse issues. It is rare to talk about things like that.

Hamzah: Okay. We can continue to the next question. What is your view on the rebranding from Facebook to Meta now?

Alexander: The rebranding, at the beginning, actually received a lot of rejections. Surely a lot of rejection, really. Especially, when I was in the lab, there were also many strange things. Why it suddenly changed the name that was already known to Facebook. Even though Mark wants to create a new product, the branding is already known as Facebook. Yes, if the name is already Facebook, just let it be as Facebook. But maybe later there will be another part. Like Google, Google has many other services, but it is still called Google, do not replace it with something else. So, it is kind of weird, really. There are also cases where many people do not know, "Oh, you know Meta, what is Meta?" to be like, "it is Facebook. Oh, Facebook." So, it still takes time for people to know.

Manolo: Yes, it is weird. Meta is for me, as far as I know, if in games, Meta is the most effective tactic available. Yes, especially if there is something new in Meta.

Hamzah: Okay, thank you. Anything else to add?

Zayn: Yes. For me, from my own point of view, there is no significant impact. For example, from the Indonesian people themselves, especially for myself, it does not have any impact for a change from Facebook to Meta. Nothing, no change at all. Yes, it is the same. Facebook is Facebook, still the same. Instagram is Instagram, still the same. Yes, the name may change to Meta company, but it remains the same. It is like Facebook and Instagram, that is all. No impact at all for us.

Hamzah: Okay, interesting answer. What do you think about the Metaverse project created by Meta?

Alexander: Actually, the project itself is interesting. Maybe later in the future it can be developed into, like, several applications. For example, it is implemented to more things. However, the problem now is that many people themselves do not know yet what VR is, what virtual reality is. So, marketing the Metaverse itself is a problem. Metaverse is being invented, right? Metaverse is like, what is it, an extension of VR itself where VR is invented to build a community. Well, if people do not know the tools themselves, wanting to build their community is like a big challenge, really. It might take a long time.

Hamzah: Another response? Is there any?

Zayn: Oh yeah, okay.... in my opinion, Alexander is right. In terms of the Indonesian market, it must take quite a long time. If, for example, it is evenly distributed among all Indonesian people, maybe for now, those who can use it come from certain groups. Maybe from the upper classes who have the money to use such a system. For those of us, such as middle-income people or those in the lower-income classes, it will not be possible. Maybe you can not use the software yet.

Manolo: Agree, agree. The equipment is expensive.

Zayn: How many million? The price of one motorbike.

Manolo: Five million Rupiahs is the cheapest. Five million Rupiahs is the cheapest.

Zayn: The price of one motorbike.

Manolo: For Zayn, it is better to use for getting married.

***Hamzah:** Okay, then, next question, do you have any expectations for the metaverse? If so, what are those expectations?*

Alexander: Expectations, huh? As for going to the metaverse, maybe if a community is built, there must also be something called regulation. If only the community was launched without a regulation, it would be, it is a big problem. There must be rules as well as in the virtual world, like the other day there was a problem, right? When there was someone who was in the metaverse world, was sexually harassed in verbal and visual way, and physically. But the physical harassment was virtual. How are they going to sue? Moreover, the account itself is anonymous. Anonymous, no one knows who was harassing. Well, if it is like a system with no regulations, no one to regulate it, it will be chaotic, that is for sure.

Hamzah: Okay, interesting. Any other additions?

Manolo: In terms of expectations, from me, I think it is still too far. In Indonesia too, yes, maybe about the internet connection. So, it is like what Zayn said earlier, maybe, maybe in the next two or three years metaverse in Indonesia will only be reach by, of course, only 10% of people will use it.

Zayn: Not yet.

Alexander: Yes, not yet. Not yet.

Manolo: Because yes, that was not clear.

Zayn: Maybe 10%.

Manolo: Not until 10%, at least, maybe.

Zayn: Yes.

Manolo: 10% of Indonesia's population.

Zayn: In Indonesia, you do not know how the government will respond to this one metaverse technological advance, right? If you look at it from now on, there are many, well, many artists

who have created their own Metaverse, you know. For example, like the other day, who was that, did Anang make, what, coins. What is a “six-six,” huh? “Six coin” or something.

Alexander: “Asix-Asix”.

Zayn: Lesti, with other, made Leslar coin, it is really absurd. There are no regulations from the agency. Maybe those who buy the coins from them are their fans. Well, when the fans themselves buy it, there must be no nominal value, there is no value for something from the goods. For example, if the money is there, there are rules that are addressed together. If, for example, the value of the Leslar coin is only for their own fans, it cannot be traded between one person and another, that is how it is. There are no regulations from institutions from Indonesia, it is not clear yet. So, we also cannot enjoy the existence of the metaverse. Well, we hope, really, there is one rule that can back up the progress of the metaverse itself. That is all.

Hamzah: Okay, interesting. Any other feedback? Addition?

Alexander: I guess, it is actually the same as VR itself. If we look again, VR is, VR itself has been recognized since a long time ago, it is just that not many people use it. Maybe someone knows, but they do not want to use it because between what they expected, that is a “wow” thing, it turns out that what can be given in VR is limited and the price is not worth it, you know. So, is metaverse like that too? Like they gave a “wow” projection of the metaverse, but it turns out that it is below people's expectations and the price is high. Yes, surely people are reluctant. Especially if you are a developing country like Indonesia.

Zayn: In a developing country like ours, indeed.

Alexander: Yes.

Zayn: VR was at its most advanced was when it was when there was Pokémon.

Alexander: That's AR.

Zayn: AR, huh? Augmented Reality, huh? True, true, true.

***Hamzah:** Okay. We can move on to the next question. Do you want to use Metaverse in the future? Why? And if so, what sector would you like to use it in? What is the goal for?*

Alexander: Er... maybe yes, in terms of equipment itself, if the tools themselves are affordable, easy to use. Er... for regulation, the regulations are also regulated. Actually, it is more about the application itself, really. If indeed the metaverse could be made like a virtual 3D, it is not a small thing like, now, it is more like uh... the environment, the environment is too small. So, for example, it can be bigger like we represent in the real world, it can be like we go to work, it can be lots of interactions too. Yes, maybe it can be interesting. Rather than just, just playing games, communities, talking, that is all.

Manolo: Yes, maybe if I am a multimedia worker, whether I want to or not, I have to jump in. that is what I should do to work in a multimedia sector. I have to keep up with the times, actually. But for, in the future, for what purpose the metaverse is made, I still have no picture. Because yes, it is, too far at the moment. That is all.

Zayn: As for myself, actually, I thought about it from the start before I knew there was a metaverse. When I was working, I offered the management that ship repair process can be seen remotely. It is pretty much the same as the metaverse system, made it in 3D. We actually have planned it, only in 2021 it turns out that the term is called metaverse. I the scope of a businesses, as I work in a construction industry, I want to try it later. From the metaverse technology, then, it can be applied, implemented in industrial sectors such as the construction industry, livestock industry, or even in terms of agriculture. So, it is a shame if such a good technology like this cannot be practically implemented at all. It is such a waste. So, maybe, it will be realized later in the future. Two or three years from now, maybe it will be implemented.

Hamzah: *Since we discussed the context in Indonesia now, next, we will focus on the context of the metaverse in Indonesia. Do you think Metaverse will be useful or useless in Indonesia?*

Alexander: Er... if you say it is useful or not, then it goes back to aspects like economics, the factor of how technology adapts to what we need. Because it is not, even though it is said that humans have to adapt to technology, but in reality in the developing world, in developing countries, especially Indonesia, most of the technology are made as efficient as possible according to its users and how it can penetrate the market. If possible, it can be penetrated, maybe it will be useful for society. But, if, for example, the technology is too advanced, too “wow” but inefficient or not easy for other people to use, then it definitely cannot be useful.

Hamzah: Another response?

Manolo: In Indonesia, I think, I am honestly pessimistic here, do not you think? Because now we tend to focus more on, what is that, the life during this covid. Also, the current economy in which the world oil is rising. I guess, to deal with taxes, taxes are increased 11% for moving the capital city. Like, there are still many, still have not thought about going there yet, I guess.

Hamzah: Okay.

Zayn: If it is useful or not, it is definitely useful. But, but for certain factors, such as from certain people. Like those who are working in the entertainment sector. For industrial sector, only certain industries in which metaverse can be useful, that is how it is. Not everyone can implement the use of the metaverse technology. The most inclined now is definitely in the world of entertainment, which the metaverse will be used the most. For us, we cannot use it now, for now.

Hamzah: Okay. Any other additions?

Alexander: Maybe if, for example, in a developed country like Japan, uh, what we know is that there is something like a virtual concert. Like uh, Miku, so it is a virtual concert where people can use something like metaverse to watch. Maybe, it is very useful if it has become their culture, it has become a technology that has been facilitated by their own country, supported by their own country. So, it all depends back to the country, to the facility, and how it is delivered.

Hamzah: *What are the challenges and opportunities to realize the Metaverse in Indonesia, in your opinion? Like what sector or what kind of goal?*

Alexander: Eh... if that is possible, most likely it is in the digital sector or in marketing. Or in a sector that involves media as well as the sector of the creative industry, that is for sure. It will involve something like that. Yes, the challenge is how to introduce the new technology so that people will want to use it. At the very least, if, for example, a person or the industries that will use the metaverse, they can use it and know how to use it. Well, the challenge is how to introduce the technology itself, instead of making a good system is introduced first.

Manolo: Er... the challenge is to introduce to the public how important this Metaverse is, what it is used for in daily life as well. Most of the time, if I look around, it means that most of the metaverse is just for entertainment, right? Just a place for entertainment

Zayn: Stylish.

Manolo: Yupss, just for trendsetters. Therefore, it will be difficult in Indonesia because of internet quality factor, internet inequity.

Hamzah: Okay, any other additions?

Zayn: In my opinion, maybe it is from the economic factor first. What needs to be changed first is when the economy has gone up like Singapore. Singapore does not have any natural resources at all, but their per capita is high. Yes, because their per capita is high, they can definitely buy the technology, for example metaverse. So, if there is a problem in Indonesia to use metaverse, to encourage metaverse, it still cannot be maximized when the economy is still small. The tools themselves are expensive, to buy the tools they have to think about it first when they want to use it, want to buy it. It is such a waste. So, it's better to maximize the economy first, increase it first, then introduce the technology. Well, that is what I think.

Hamzah: Hm, interesting. Any other additions? Earlier I was interested in Alexander's answer, especially regarding the sector, such as creative industries. Er... could you please explain further, about how does the metaverse work in the fields that you mentioned earlier?

Alexander: Actually, the creative industry itself is broad too, right? So, it is like there is a game, there is an application or even now tourism itself is entered into the creative industry or included. In Indonesia, it is called as Bekraf. Well, that is where the metaverse can actually be used, how about introducing tourist attractions, how to introduce our culture, how, eh, especially in the game world. Of course, to play the game, how is the game community more interesting, more immersive, right? Now, VR is still, there are limits although a technology like HTC Vive exists.

Zayn: Education, it can also be useful for education.

Alexander: Yes, education too. Even though we now have an HTC Vive, which, uh, can give us some space to move, we are still like, uh, moving limitedly, the interactions as well. So, the challenge is also in the interaction.

Hamzah: Okay, then we can move on to the next question. Who do you think has the influence to realize the metaverse in Indonesia?

Alexander: The influence to realize the Metaverse in Indonesia. Maybe now it is more about the game community itself, right? Because in VR, where the metaverse became the basis at

first, like it was known in the game world itself rather than in other industrial worlds. Well, the first one is how the gaming community was able to introduce the metaverse itself, it was hyped before, uh, he plunged into the general public. Because surely people who are in the gaming field or who like to play games will definitely know more, easier to get to know, easier to adapt, and will definitely get a lot, like, feedback or opinions about the system itself. That is, then it deserves to be applied to other sectors.

Manolo: I am more of believing that celebgram and Youtubers who are famous. But right now the market is young people, right? So, I think this Metaverse must be for young. It's impossible for those who are 40 and above to use it. For example, the other day, I saw someone from a YouTube channel, eh... Edozhell, Edozhell. That YouTuber is literally, he is explicitly said that we can do prayers in the metaverse. I think it is from a famous Youtuber and celebgram.

Hamzah: Okay, any other additions?

Zayn: As for myself, it is from the decision maker. Who is the decision maker, huh? In my opinion, it is a related institution. Yes, for example, the government. When the government accommodates a community that has an ideology to implement the metaverse, surely that community will be more advanced. The government will provide a support of funds. So, when an institution or the government push a technology where it wants, "let us use this, use this, use this," so surely, they will make a lot of events. Events in terms of introducing the metaverse technology, then definitely they will give the funds to communities to introduce them to the public, the citizens. It means that the mainly from decision makers, government institutions.

***Hamzah:** Okay, any other additions? Okay, if not, we can move on to the next question which is still related to the previous question. Who do you think will be the target consumers of Metaverse in Indonesia?*

Alexander: The target consumers are young people, right now. The youths may be in their 17 to 30s. But, uh, it could be that the age range will change because maybe if it is not affordable, it cannot be bought or it cannot be used for people from the lower classes or people who still depend on their parents for money. Indeed, the technology is expensive. Yes, of course, the age-range will be reduced. But if it is from the field itself, maybe, yes, that is what I mentioned earlier, in the game. That is metaverse will be quickly found in gaming sooner than in any other industry.

Hamzah: Okay. I want to follow up a little about. The age range is from 17 to 30 years. According to you, why are they the target consumers of metaverse compared to other age group?

Alexander: In terms of age, people who prefer to know new technology are usually teenagers. Maybe 15 can enter, but 17 are usually people who are already financially sufficient, although not much. And until 30, usually people who are up to the age of 30 still have an interest. 30s does not mean 30 at 30, but 30 can be 35 or so. But if people are in their 40 and over, usually the new technology is not suitable for them. So, the important thing is merely using the metaverse. And do not even know the real key to utilize the technology.

Zayn: In my opinion, from that, yes, from social media activists, yes. When people use social media more intensely, they will know better, they will know more about the metaverse

technology. Yes, for example in terms of range of age, for now, the children are already, already good at getting to know the metaverse technology for playing digital games. They are really good at it. It is possible that they will know more about the Metaverse, there is nothing wrong with that, you know. There is nothing wrong with elementary school children know about the metaverse. In addition, to make money from, to make money in the digital field is now quite easy than in the past when we were little. For now, elementary school children can use Metaverse, no problem. Well, they also want to use it, they want to make money from it, they can use the metaverse too, of course they can. But, yes, from social media activists especially, for now.

Hamzah: The target consumers, right? Okay. Any other additions?

Manolo: Agree, agree. Yes, the target consumers are the entertainers. That is all, I think.

Hamzah: Okay, any other additions? If not, we can move on to the next question. This is the last question actually. How does the Metaverse potentially affect you? Maybe in terms of work, communicating with family, or socializing with peers?

Alexander: About the potential effects, it is more about the future. So, I cannot conclude about the effect either. However, conceptually, the metaverse itself has an influence on what I'm working on right now. So, what I'm working on now is called Telexistence. Telexistence is a robot. Well, in the metaverse world, they want to replace the real world with a virtual world, but what about the world that I have built that wants to combine the two, the physical interaction and also virtual interaction. So, how about those two things too, because we also need them. And that would be, whether it could be a world of its own or it would be another small part of the world of the metaverse. So, it is more of a concept, I think.

Zayn: Yes, in my opinion, Metaverse in my opinion, yes. Sorry, sorry. What was the question? I forgot.

Hamzah: How does the Metaverse potentially affect you? In the field of work, communication with family or friends.

Zayn: I am leaning towards the world of my work. Because I am now leaning more towards the reconstruction industry. How can Metaverse be more useful in my field? For example, in monitoring the work, you can use Metaverse, it does not have to be a client, I have to step in, have to go to the field, to check the work we are doing, but we can see it in the metaverse world. It will work in my job. As for my businesses, I want to know how the development of my business can develop well which I can monitor in the Metaverse world. I am more inclined to the world of animal husbandry, actually. I am more into the world of animal husbandry now. I really want to know, I do not have to go to the field, do not have to go into cages, how much growth has my animal grown in this month, in this year. How is that I want to implement that in the metaverse. I see into the world of my work industry and my business industry. Like that. As for the habit between each other, er, now, for now there is not any, there is no impact, there is not yet. From that point of view I do not know that. There is no impact to the family yet, I think.

Manolo: In terms of impact, maybe it is a bit, I don't know, I just feel weird if it comes to, if it is like a business. Like, maybe business can still have an impact, yes. But if it is family or more,

it is more social, right? My job is also more social, in the church. If you do not meet in person with others, it feels so weird. It is like, like there is a saying in which so close yet so far and so far yet so close. It seems that in the Metaverse it will tend to be more like that. That is from me.

Hamzah: *Okay. Do you have something to say, which may not have been covered by the previous questions, related to Meta or metaverse? Is there anything you want to add?*

Alexander: Er, what is it? Actually, maybe uh, about this, what needed to be asked is, does people really know what the purpose of the Metaverse itself is? The problem is that not everyone knows what the purpose of the Metaverse is, and it is like, um, actually the concept of the metaverse is also not explained clear enough. What their goals are, what they want to do in the metaverse? It is like showing a world that is metaverse is “wow” but does not know the direction where to. It is more like that.

Hamzah: According to you, what is the goal?

Alexander: The goal itself is actually more like community-based in the Metaverse. So, maybe it is more like community-based, like, uh, what is that, like payments. Also, immersion, immersion is what they emphasize. Immersion is the same as community based. So, if those two fail, the Metaverse will fail.

Hamzah: Okay, thank you, Alexander. Anything else to add? Maybe Zayn or Manolo? Which may not have been covered from the previous questions.

Zayn: Yes. I want to validate, I want to ask, I am confused. Now, in Indonesia, how is that the terms of metaverse? Because it is still very ambiguous, it is still a big question mark, you know. What is the purpose of Metaverse for the Indonesian market, for what legislation, from what requirements, from what law, that has not been directed yet at all. So, when we want to use a metaverse, what should we do? Who should we apply to? For example, let us say, uh... we want to create a company which has to implement the utilization of metaverse, right? From Indonesia itself, there is no operational standard yet. We can trade Metaverse like how? Right? There is no operational standard yet. That is all.

Alexander: Well, yes, it is. Nothing. Still no clear direction. It is just a concept, everything is still a concept. The concept of trying a prototype.

Zayn: From the institute. If, for example, we compare our country and the United States. We cannot compare the technology that was sourced from there and tried here. It is definitely going to take time. It is the government agency, the first government that has to change the concept, when it already has the laws, then we can implement it. We cannot "oh yeah, I want to be like this, want to do this in metaverse" but the government does not give approval, they do not approve, do not cover it, you know. Yes, it is confusing.

Hamzah: Interesting. Any other additions?

Alexander: That is all

Hamzah: Okay, thank you all for participating in my research. I am sorry if in the interview I made a lot of mistakes. Thank you very much. I will stop the recording first.

Appendix 5: NVivo Coding Process

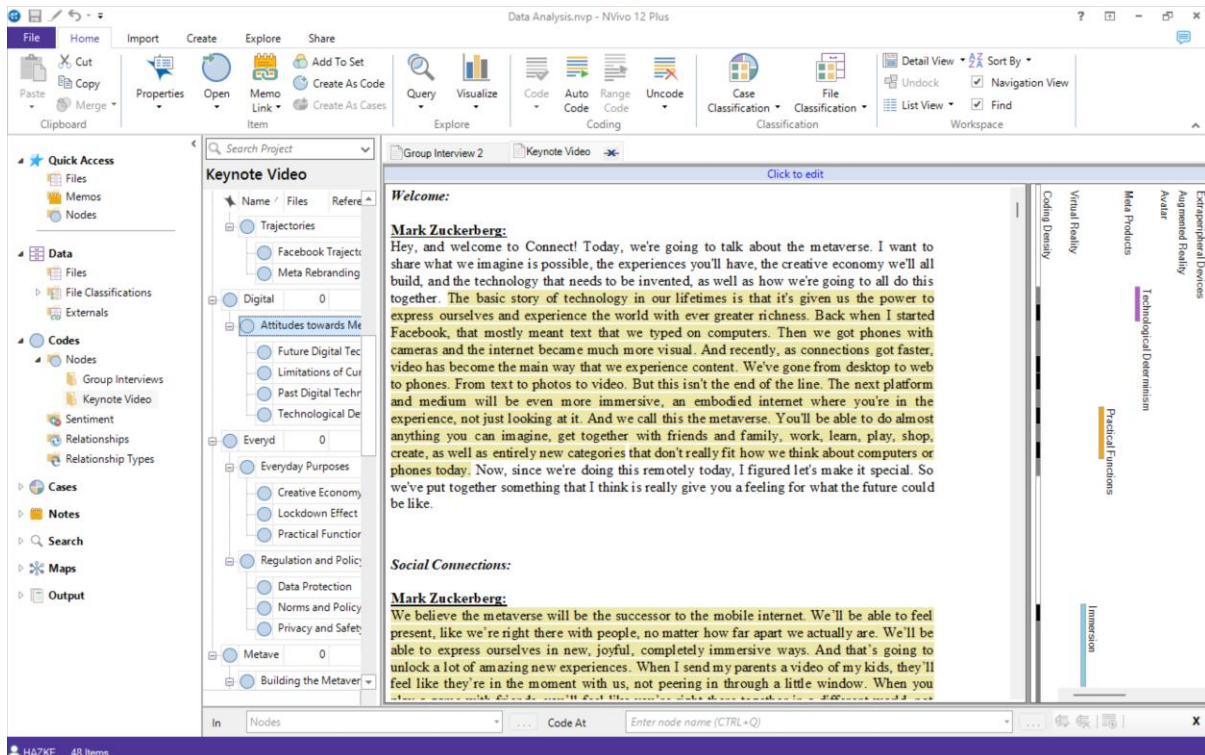


Figure 1. Coding Process of Keynote Video

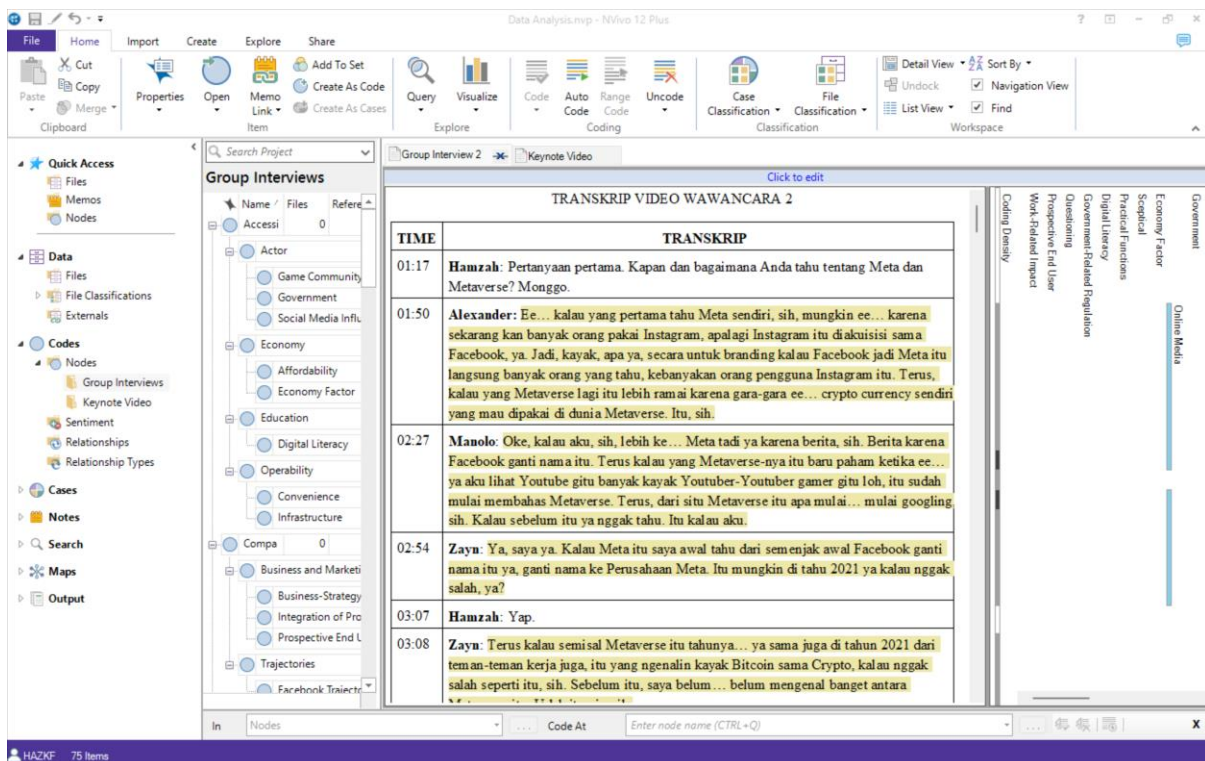


Figure 2. Coding Process of Group Interview (Sample of Group Interview 2)

Appendix 6: Coding Scheme for Keynote Video

No.	Aspects (Analytical Code)	Theme (Thematic Code)	Category (Descriptive Code)	Subcategory
1.	Technological	Digital Technology	Attitudes towards Digital Technology	<ul style="list-style-type: none"> • Past Digital Technology • Limitation of Current Digital Technology • Future of Digital Technology • Technological Determinism
		Metaverse Technology	User Experience	<ul style="list-style-type: none"> • Avatar • Customization • Immersive • Interactive
			Devices and Technology of the Metaverse	<ul style="list-style-type: none"> • Extraperipheral Devices • Augmented Reality • Virtual Reality
			Building the Metaverse	<ul style="list-style-type: none"> • Inventing Supporting Technologies • Feedback from users
2.	Phenomenological	Everyday Life and Regulation	Everyday Purposes	<ul style="list-style-type: none"> • Practical Functions • Lockdown Effect • Creative Economy
			Commerce, Regulation, and Policy	<ul style="list-style-type: none"> • Norms in the Metaverse • Ownership • Policy • Privacy and Safety • Commerce Policy
		Company-Related Information	Products	<ul style="list-style-type: none"> • Past Products • Integration of Products
			Trajectories	<ul style="list-style-type: none"> • Meta Rebranding • Facebook Trajectories
			Finance and Partnership	<ul style="list-style-type: none"> • Investment and Expenditure • Partnership with Individuals Artists and Creators • Partnership with Stakeholders

Appendix 7: Coding Scheme for Group Interviews

No.	Aspects (Analytical Code)	Theme (Thematic Code)	Category (Descriptive Code)	Subcategory
1.	Technological	Understanding about Metaverse Technology	User Experience	<ul style="list-style-type: none"> Avatar Customization Immersivity Interactivity
			Devices and Technology of the Metaverse	<ul style="list-style-type: none"> Extraperipheral Devices Augmented Reality Virtual Reality
		Expectation towards Metaverse Technology	Features in Metaverse	<ul style="list-style-type: none"> Blockchain Crypto Bitcoin NFT Algorithms and Advertising
			Comparison to Other Metaverse Brands	<ul style="list-style-type: none"> Microsoft Google Other Gaming Brands
2.	Phenomenological	Everyday Life and Regulation	Everyday Purposes	<ul style="list-style-type: none"> Practical Functions Lockdown Effect Creative Economy
			Regulation and Policy	<ul style="list-style-type: none"> Norms and Policy in the Metaverse Data Protection Privacy and Safety
		Company-Related Information	Business and Marketing	<ul style="list-style-type: none"> Integration of Products Business Strategy-Purposes
			Trajectories	<ul style="list-style-type: none"> Meta Rebranding Facebook Trajectories
		Discourse Surrounding Metaverse	Circulation	<ul style="list-style-type: none"> Online Media People Talk Endorsed by Influencer
			Perspective	<ul style="list-style-type: none"> Jokes Skeptical Optimisitical
		Impact and Expectation towards Metaverse	Impact	<ul style="list-style-type: none"> Work-Related Impact Social-Related Impact Psychological-Related Politic-Related Impact
			Expectation	<ul style="list-style-type: none"> Education-Related Expectation Governmental-Related Expectation
		Accessibility	Economy	<ul style="list-style-type: none"> Unaffordable Price Economy Discrepancy
			Geographical	<ul style="list-style-type: none"> Infrastructure Discrepancy
			Education	<ul style="list-style-type: none"> Low Digital Literacy

