

Evaluation of the Quality of Use of the Makaverse News Application Regarding the Digital Divide in Makassar City, Indonesia

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ABSTRACT

Background: The Makaverse News application was developed by the Makassar City Government as part of the Electronic-Based Government System (SPBE) to provide fast, accurate, and inclusive information. However, the effectiveness of this application in overcoming the digital divide has not been widely studied. **Purpose:** This study aims to evaluate the quality of the use of the Makaverse News application in overcoming the digital divide in Makassar City. This application was developed by the Makassar City Government as part of the implementation of the Electronic-Based Government System (SPBE), with the hope of being able to become a fast, accurate, and inclusive information provider. **Method:** This study uses a descriptive qualitative approach with Digital Divide Theory 3.0 by Ragnedda (2013) as the basis of the analysis, which includes three main dimensions: access gap, usage gap, and quality of use outcomes. The data was obtained through in-depth interviews with informants from the Makassar City Communication and Information Office and the application user community, then analyzed using NVivo 12 Plus software. **Results:** The results of the study show that the quality of using the Makaverse News application is still influenced by socio-demographic factors such as education level, income, age, type of residence, gender and duration of use. Uneven infrastructure and lack of digital education have also exacerbated the access and usage gap, even though the app already provides inclusive features such as data-saving mode, user-friendly interface, and content personalization. **Conclusion:** Based on these findings, it is recommended that the government not only focus on application development, but also on expanding access to infrastructure and increasing the digital literacy capacity of the people of Makassar City as a whole.



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I. INTRODUCTION

1.1 Background

Government policies play a crucial role in encouraging increased utilization of technological services by society. The use of technology facilities provided by the government constitutes a critical element in ensuring the success of public service delivery (Heeks, 2022; Luan et al., 2023). The implementation of an electronic-based government system (Sistem Pemerintahan Berbasis Elektronik/SPBE) aims to ensure equitable, efficient, and transparent public services across regions, although significant challenges remain in terms of implementation and utilization (Acilar & Sæbø, 2023; Lythreath et al., 2022). Governments are required to continuously update technological facilities and innovations to support the provision of high-quality public services (Nurrahman & Rahman, 2021; Wahyudi et al., 2024). These facilities and innovations are expected to assist governmental processes in responding to the evolving needs of society by leveraging advanced technologies to improve service efficiency (Indrayani, 2023; Oktavianoor, 2020). One of the primary objectives of enhancing technological service facilities is to reduce the digital divide among communities that lack adequate technical support or resources to understand and implement technology effectively (Ikhbaluddin, 2020; Indrayani, 2020). Without sufficient support, communities tend to face difficulties in maximizing the benefits of technology utilization (Dijk, 2017; van Dijk, 2006). One thing that can help the government in making public services more efficient today is the metaverse, it has potential to enhance existing digital public services of e-government (Lnenicka et al., 2024). Metaverse also has the potential to become a new medium for local governments in providing services and communicating with citizens (Senadheera et al., 2024).

In response to policy directives, the Makassar City Government has begun developing the metaverse concept, which is envisioned as the creation of real-life experiences within virtual spaces through the utilization of advanced technologies. Makaverse is a form of implementing the use of metaverse technology in public services in Makassar City (Hutagalung & Sulistio, 2024). This initiative represents an implementation of e-Government policies aimed at optimizing digital technologies in public service delivery, thereby preventing the public from being easily influenced by actors possessing superior technological capabilities. The residents of Makassar City possess a relatively strong foundation in digital culture; however, they remain vulnerable in aspects of digital security, digital ethics, and digital skills. This condition has resulted in widespread difficulties among citizens in distinguishing between accurate and misleading information, as well as a tendency to disseminate information hastily without verification, inadvertently contributing to the creation and spread of misinformation. In response to this issue, the Makassar City Government has undertaken innovative measures to address these challenges. As part of its implementation strategy, the Makassar City Government launched a reliable mobile-based news application accessible to the public. *Makaverse News* is a mobile news platform designed for Makassar City that provides up-to-date information from various sources, enabling users to remain connected with developments and significant events across the city. The application was developed to meet the growing demand for fast, accurate, and easily accessible news platforms, particularly in the contemporary digital era. Designed based on strong journalistic principles, the platform allows users to access the latest news from credible sources while maintaining information quality and integrity. Public communication reports from the Makassar City Communication and Information Office (Diskominfo) indicate that users tend to prefer interactive features that enable discussion of the news they consume.

Accordingly, the *Makaverse News* application was developed to enhance user experience in accessing reliable information by offering various features, including notifications, comment sections, and multimedia content. The primary objective of the application is to serve as a trustworthy and comprehensive information source that fulfills the public's need for accurate and timely news. The application is equipped with advanced

features that facilitate users in discovering relevant information, receiving daily news updates, searching articles by category, and accessing public complaint and community opinion features. Currently, the *Makaverse News* application is available for download via Google Play Store and the Apple App Store. According to information published on the official *Makaverse News* website, the number of downloads and active users continues to increase. At present, the platform hosts approximately 1,100 news articles, along with 97 public complaints and 100 user-submitted opinions, indicating a positive growth trend (Makassar City Communication and Information Office, 2025). This development is largely attributed to effective marketing strategies, including collaborations with influencers, social media campaigns, and the provision of exclusive content. Furthermore, increased audience reach through various devices, such as smartphones and tablets, has contributed significantly to expanding the platform's user base. Makaverse provides 24/7 public services through the Makaverse application with QR Codes containing population, health, and financial data in hundreds of tourist alleys, equipped with CCTV, WiFi, avatars, and 3D designs to support security monitoring (Hutagalung & Sulistio, 2024).

1.2 Problem Statement

Although technological facilities have been provided, challenges in their adoption and utilization frequently persist. Despite the application being accessible via mobile devices, there remains the possibility that some individuals do not have access to advanced devices. Disparities in access and user capabilities may hinder the effective use of the *Makaverse News* application. Therefore, it is essential to continuously implement educational programs and provide technical support to overcome these barriers. The digital divide is often associated with disparities in access and skill levels within society. Increasingly complex technologies can pose significant challenges for individuals with limited experience. Advanced systems and devices typically require specific technical knowledge and skills; consequently, a lack of understanding of how these technologies function may result in ineffective use or even adverse outcomes. Overall, insufficient understanding of information technology utilization can constrain the potential benefits offered by technology and negatively affect the performance and well-being of both society and government. Addressing this issue requires collaborative efforts from multiple stakeholders, including enhanced education and training, strengthened technical support, and increased awareness of the importance of technology in everyday life and the business environment. Key challenges in deploying such networks include limited infrastructure in the developing world, issues with data privacy, and high energy consumption in developed countries (Ngemba et al., 2025). Not all types of services are suitable for providing in the metaverse because the government itself is not fully prepared, the complexity of its management is high, the metaverse has a high potential for waste, and it is highly dependent on digital literacy, technological access, and public readiness (Lnenicka et al., 2024). Despite the promise of innovative government services, there has been no metaverse study that can guarantee the principle of government transparency (Senadheera et al., 2024). Overall, the use of metaverses and digital government applications is still hampered by gaps in access and digital literacy, limited infrastructure, management complexity, privacy and transparency risks, and low government and public preparedness.

1.3 Previous Studies

Previous studies that are related or similar to the subject examined in this research can be utilized as references to support the present study. Through comparative analysis, such studies provide inspiration for introducing elements of novelty and refinement in the current research. A study entitled "*The Use of Mobile Banking in Denpasar, Bali: A Digital Divide Perspective*" by Budiutama and Giri (2024) found that the stages of the digital divide consist of four latent variables: motivation, physical and material access, mobile banking skills, and usage. These four variables exhibit significant and positive relationships, indicating the absence of a digital divide in the use of mobile banking in Denpasar City. Similarly, a study entitled "*Analysis of the Influence of the Digital Divide on Mobile Banking Usage in DKI Jakarta*" by Hanifah and Giri (2022) revealed that the four variables—motivation, physical and material access, mobile banking skills, and usage have a positive and significant effect on mobile banking usage in DKI Jakarta. Among these variables, mobile banking skills were identified as the strongest predictor influencing usage in the context of mobile banking adoption. Furthermore, the study "*Analysis of the Digital Divide in Mobile Banking Usage in Purwokerto City*" by Sagita

and Giri (2023) found that the same four variables motivation, physical and material access, mobile banking skills, and usage—significantly influence mobile banking usage and indicate the absence of a digital divide. However, the study also identified non-significant moderating variables, including age moderation in the relationship between motivation and physical and material access, as well as gender and education moderation in the relationship between mobile banking skills and usage. In a different context, the study “*Efforts to Reduce the Digital Divide in the Implementation of Smart Villages*” by Susanti et al. (2023) found that reducing the digital divide in Smart Village implementation requires strengthening community digital literacy. This can be achieved through information and communication technology (ICT) training programs for rural communities, mentoring and guidance on healthy and responsible internet usage, and the development of Village Information Systems by village governments. Additionally, the study “*Alleviating the Digital Divide in the Implementation of E-Government in Sumbawa Regency*” by Dimas and Fahlevvi (2024) revealed that, based on the digital divide dimensions proposed by Molnár, rural communities tend to experience an access divide due to unequal network distribution. Moreover, communities face a usage divide resulting from limited ownership of electronic devices, as well as a skills divide caused by insufficient ability to operate electronic devices, which prevents them from maximizing the benefits of technology use. These findings highlight the crucial role of government in alleviating the digital divide to ensure the effective implementation of e-Government initiatives. Overall, the aforementioned studies serve as theoretical references to strengthen the analytical framework of this research and to identify a research gap related to the evaluation of the quality of *Makaverse News* application usage in addressing the digital divide in Makassar City.

1.4 State of the Art

The identification of research gaps by the authors creates opportunities to uncover aspects of novelty that distinguish this study from previous research. The primary focus of this study lies in the *Makaverse News* application and the digital divide in Makassar City. This study differs from previous research conducted by Budiutama and Giri (2024), Hanifah and Giri (2022), and Sagita and Giri (2023) in terms of both research location and methodological approach. Specifically, this research is conducted in Makassar City and employs a qualitative approach, whereas the aforementioned studies were carried out in different locations and utilized quantitative methods.

1.5 Purpose

This study aims to examine the influence of the quality of *Makaverse News* application usage and the efforts undertaken to address the digital divide on the quality of *Makaverse News* application usage in Makassar City, Indonesia.

II. METHOD

This study employs a descriptive qualitative approach to data collection. The data are derived from verbal descriptions rather than numerical measurements as a basis for justification. Accordingly, the purpose of qualitative research is to provide a comprehensive and in-depth understanding of the phenomena under investigation by utilizing all available data sources (Simangunsong, 2016). The study adopts the Digital Divide 3.0 theory proposed by Ragnedda and Muschert (2013) as its primary analytical framework. This theory is applied within the context of the Makassar City Communication and Informatics Office to examine the impact of the digital divide on the quality of government application usage, with several aspects considered as indicators of achievement. The framework comprises three dimensions: access divide, usage divide, and quality of usage outcomes. Primary data were obtained from the Makassar City Communication and Informatics Office, while secondary data were collected through observations and documentation of archival records from previous studies conducted within the Makassar City government environment. Research informants were selected using purposive sampling and included the Acting Head of the Makassar City Communication and Informatics Office, the Head of the Informatics Application Division, the Head of the Public Relations, Informatics, and Public Communication Division, the *Makaverse News* service operator, and ten community members who are users of the *Makaverse News* application. Data collection techniques consisted of in-depth interviews and direct observation. Data analysis was conducted using the Miles and Huberman (2014) model,

which involves data reduction, data display, and conclusion drawing. This process was further supported by the use of NVivo software to facilitate data reduction, data visualization, and the drawing of conclusions. The study was conducted in January 2025 at the Makassar City Communication and Informatics Office, in accordance with the Academic Calendar of the Institute of Public Administration (Institut Pemerintahan Dalam Negeri) for the 2024/2025 Academic Year.

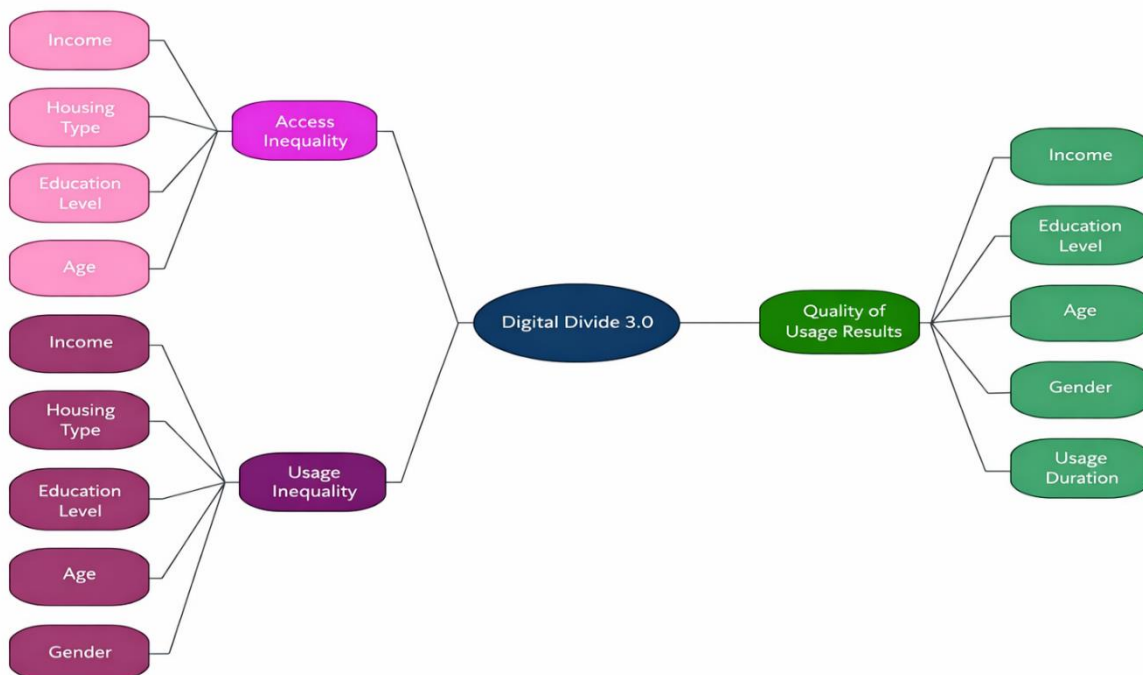
III. RESULTS AND DISCUSSION

3.1 The Quality of Makaverse News in Relation to the Digital Divide

In the increasingly advanced digital era, the Makassar City Communication and Informatics Office provides rapid and accurate access to information as a fundamental necessity for the residents of Makassar City. The development of the *Makaverse News* application plays a significant role in ensuring the transparent and reliable distribution of information, with the primary objective of delivering official, accurate, and easily accessible news to the wider public. To support equitable information dissemination, the Makassar City Government not only provides news access through a mobile application available for download on Android and iOS devices but also offers an official government website that presents comprehensive and up-to-date news accessible to the general public.

The authors conducted interviews based on predefined dimensions and determining indicators aligned with the operational research framework, which refers to the Digital Divide 3.0 theory proposed by Ragnedda and Muschert (2013). This theory conceptualizes the evolution of the digital divide through three dimensions: access divide, usage divide, and quality of usage outcomes, all of which are examined in this study. The collected data were processed and analyzed using NVivo 12 Plus. NVivo is a qualitative data analysis software designed to manage data from various sources, including textual, visual, and audio materials, enabling systematic and efficient analysis through computer-assisted techniques.

Figure 1.
 Mind Map Digital Divide 3.0



Source: Research Data by NVivo Plus (2025)

One of the features of NVivo 12 Plus utilized in this study is the Word Frequency Query. This feature functions by visually displaying words or text patterns within the dataset. Its primary purpose is to assist the researchers in presenting word frequencies that are informative and relevant to the analysis. Based on the results generated using this feature, the researchers identified the most frequently used terms across the entire coded dataset, enabling the extraction of dominant themes reflected in the collected data.

Figure 2.

Word Cloud of Frequently Occurring Terms in the Research Data Sources



Source: Research Data by NVivo Plus (2025)

The frequently occurring words identified during field data collection are visualized in the word cloud. The larger the size of a word in the visualization, the more frequently it appears in the dataset. The terms “Application,” “News,” and “Makaverse” emerge as the most prominent words across all research data sources and appear to be used with relatively similar frequency. Specifically, the term “Application” accounts for 4.18% of total word usage, followed by “News” at 3.80%, and “Makaverse” at 3.52% of the overall dataset.

To further understand the contextual use of terms across all data sources, the Text Search Query feature was employed to provide a clearer and more in-depth interpretation. In this study, the authors focus on the term “Application” as a key concept used to encapsulate the overarching themes identified within the collected data.

Through the Word Tree feature, the analysis reveals that amid rapid technological advancement, disparities in information access remain a significant challenge faced by society. One effective approach to addressing this challenge is the utilization of digital applications and contemporary news platforms such as *Makaverse News*. Digitally based applications facilitate easier and faster access to information for communities across diverse geographical locations, age groups, educational backgrounds, income levels, and gender differences.

As a contemporary news platform and application, *Makaverse News* also plays a crucial role in reducing knowledge gaps. By providing a wide range of news across various sectors—including technology, economics, and social issues—*Makaverse News* not only disseminates information broadly but also enhances public awareness of critical issues affecting daily life. Through this application, citizens gain more equitable access to relevant news that may previously have been accessible only to certain segments of society.

Accordingly, digital news applications and platforms such as *Makaverse News* function not merely as information delivery tools but also as connectors that bridge diverse segments of society, narrow informational

disparities, and create opportunities for more equitable access to information in the digital era. To gain a deeper understanding of the digital divide factors experienced by the community, this study refers to the Digital Divide 3.0 framework proposed by Ragnedda and Muschert (2013), which emphasizes three key dimensions: access divide, usage divide, and the quality of usage outcomes. Each of these dimensions, along with their respective indicators, plays a critical role in the analytical discussion presented in this study.

a. Access Divide

Based on the results of interviews related to access divide factors in the use of the *Makaverse News* application, the collected data were processed using NVivo 12 Plus and categorized under access divide concept codes through the Word Frequency Query feature. The results are presented as follows:

Figure 3.
Word Frequency Query for the Access Divide Concept

Word	Length	Count	Weighted Percentage (%)
Application	8	73	3.84
News	6	72	3.79
Metaverse	9	56	2.94
Access	5	30	1.58
Information	9	29	1.52
Digital	7	24	1.26
Media	5	24	1.26
Usage	10	23	1.21
Social	6	23	1.21
Accessing	9	21	1.10
Towards	8	21	1.10

Source: Research Data by NVivo Plus (2025)

Type of Settlement. The type of settlement reflects differences between urban and remote or peripheral areas. In urban areas, access to technology and internet infrastructure tends to be more developed, enabling residents to more easily access the *Makaverse News* application. In contrast, in suburban or peripheral areas, although internet connectivity has continued to improve, certain locations still experience limited access and inadequate infrastructure, which affects the use of digital-based applications. These infrastructural disparities contribute to unequal application usage, including *Makaverse News*.

Level of Education. Educational attainment constitutes a critical indicator of access to digital technology. Individuals with higher levels of education tend to be more familiar with and proficient in using digital applications and technologies, including news applications such as *Makaverse News*. Conversely, individuals with lower educational attainment may experience difficulties in understanding how to use the application or may even be unaware of its existence. Lower levels of education are also often associated with limited digital literacy, thereby exacerbating access-related disparities.

Age Group. Age groups play an important role in determining levels of digital skills and comfort in using technology. Younger generations, particularly those of productive age who are more familiar with digital devices, are more likely to access applications such as *Makaverse News*. In contrast, older age groups, especially those who did not grow up in the digital era, may feel less comfortable or lack the necessary knowledge to operate applications or devices required for accessing online news. This condition contributes to disparities in application usage, whereby older individuals tend to experience more limited access.

Income Level. Income level has a substantial impact on individuals' ability to access technology. Individuals with higher income levels are more likely to own advanced devices and have stable internet access,

b. Usage Divide

Figure 4.

[illegible]

Based on the interview findings, this indicator emerged most frequently and was identified as a key factor contributing to the usage divide in the use of the Makaverse News application. The indicators within this dimension do not differ substantially from those in the previous dimension; however, a notable distinction lies in the gender indicator. This indicator suggests that one factor potentially contributing to the usage divide relates to differences in application usage between women and men, particularly in terms of news consumption preferences.

Male users tend to show greater interest in news related to politics and economic issues, whereas female users are more inclined toward news that highlights social life and lifestyle topics. In certain areas, women are less likely to follow news developments due to cultural and traditional factors. In response to these disparities, Makaverse News is designed as a digital application that offers news personalization features, allowing content to be tailored to the individual interests of users. This feature is expected to reduce the usage divide by accommodating diverse news consumption preferences across different segments of society.

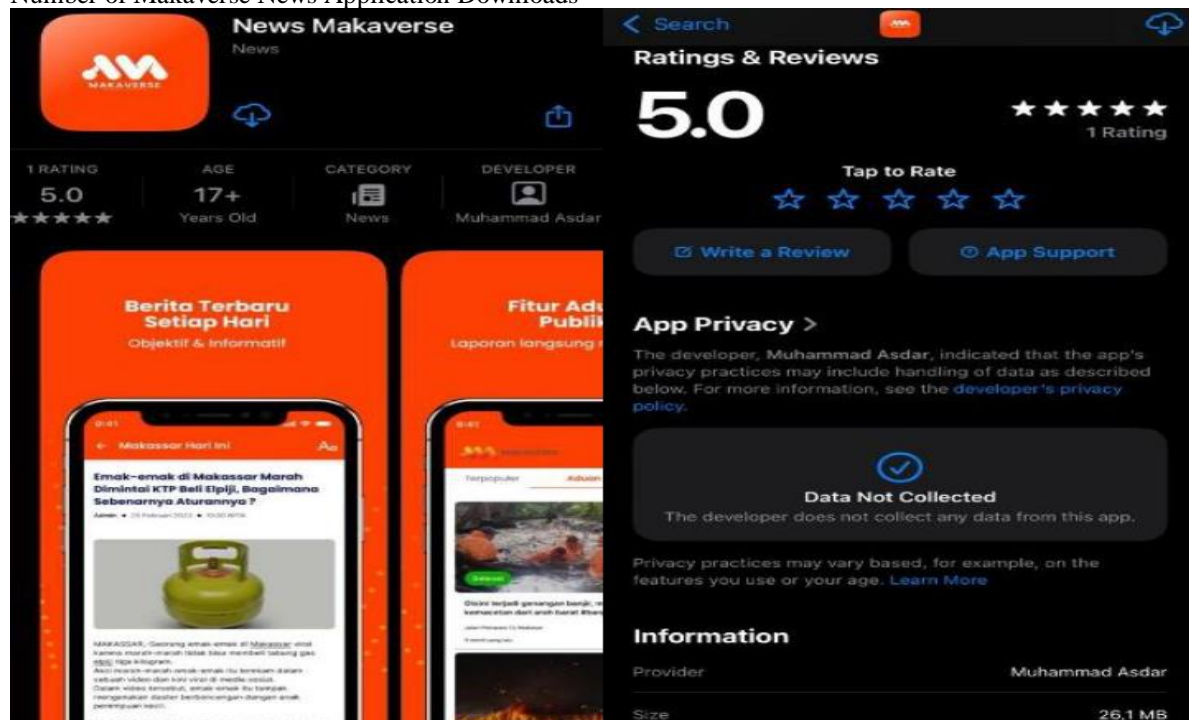
The hierarchy chart illustrates that one of the key indicators influencing disparities in the quality of application usage outcomes is the duration of use. This finding suggests that the degree of inequality in the use of the Makaverse News application is closely related to usage consistency. Individuals who have used the application for a longer period tend to be more familiar with its features and are better able to locate the news content they require. These users are also more capable of distinguishing valid news from content that merely serves as clickbait.

This condition has a positive impact on users' ability to absorb and interpret news information, enabling them to process more accurate and reliable content that has been officially provided and verified by the government. Such outcomes contribute to efforts to reduce the digital divide in Makassar City by enhancing information literacy and trust in official digital news platforms.

Overall, based on the analysis of interview transcript data conducted with the support of NVivo 12 Plus software, it can be concluded that the observed disparities stem from unequal access to information and communication technologies, resulting in inequalities in technology utilization and, consequently, the persistence of the digital divide. One effective strategy for addressing the digital divide is the utilization of applications such as Makaverse News, which are designed to be accessible to diverse segments of society and to promote more equitable access to credible information.

Figure 7.

Number of Makaverse News Application Downloads



Source: Makaverse News Application Download Data on iOS Devices, 2025

The data indicate that the number of users who have downloaded the Makaverse News application remains relatively low, with only a single user review recorded, although the rating provided is positive. These findings further reinforce the existence of unequal access and disparities in technology utilization, as reflected by the limited number of users engaging with the Makaverse News application.

However, not all users derive equal benefits from the Makaverse News application. Individuals with higher levels of digital literacy tend to be more capable of identifying relevant and credible information. In contrast, users with limited technological proficiency often experience difficulties in distinguishing valid

information from less credible news. Additionally, the interactive features available within the application have not been fully utilized by all users due to limited understanding of these functionalities.

Previous studies addressing the digital divide have demonstrated variations in the influence of application quality on digital inequality across different research locations. In many of these prior studies, application usage did not present significant barriers. However, in the context of this study conducted in Makassar City, challenges related to the digital divide persist and are influenced by factors associated with the Digital Divide 3.0 framework proposed by Ragnedda and Muschert (2013). The quality of Makaverse News application usage has the potential to positively impact society if it can be fully utilized; nevertheless, constraints arising from specific factors continue to exist at the time of this study. These issues remain a focal point for ongoing assessment and improvement efforts aimed at reducing the level of digital inequality.

Accordingly, the strategies required to address these challenges are consistent with those identified in previous studies, emphasizing the importance of continued evaluation, capacity building, and inclusive digital policies to mitigate the digital divide.

3.2 Efforts to Address the Digital Divide in Relation to the Quality of Makaverse News Application Usage

The Makassar City Government has demonstrated a strong commitment to realizing inclusive and digitally based governance, one of which is reflected in the development of the Makaverse News application. This application is designed as an information platform that delivers news, public policies, and government services in a fast, accurate, and reliable manner. Its primary objective is to strengthen public access to information and to reduce the digital divide, which remains a challenge in several areas of Makassar City, particularly in regions with limited internet access and low levels of digital literacy.

Strengthening digital infrastructure represents a strategic measure undertaken by the Makassar City Government as a fundamental prerequisite for advancing digital transformation. This effort has been implemented through the acceleration of internet network development in areas that have not yet been optimally connected. Several initiatives have been carried out, including the establishment of a War Room as an urban monitoring center and the development of a Multi Utilities Tunnel to support underground cable networks. These initiatives form part of a systemic governmental approach to improving the quality of telecommunications infrastructure. With more adequate infrastructure in place, it is expected that communities will be able to access the Makaverse News application and other digital platforms more efficiently and equitably, thereby significantly reducing disparities between the city center and peripheral areas.

Nevertheless, infrastructure improvement alone is insufficient to ensure sustainable digital inclusion. Therefore, the Makassar City Government has also placed considerable emphasis on digital literacy development. Programs such as “Kominfo Goes to School,” which targets students, as well as ICT literacy activities implemented by the Human Resources Development and Research Agency of the Ministry of Communication and Informatics (BBPSDMP Kominfo) through Internet Gallery initiatives, serve as important instruments for educating the public on the responsible and productive use of information technology. This education encompasses fundamental skills such as operating digital devices, understanding online content, and accessing information from credible sources, including the Makaverse News application.

Furthermore, the Makaverse News application functions not only as a one-way information delivery tool from the government to the public but also as an interactive medium that enables community participation in urban development through reporting features, feedback mechanisms, and digital access to public services. In this context, Makaverse News serves as a communication bridge between the government and citizens, reducing reliance on traditional media while accelerating the dissemination of policy information and governmental programs.

From a technical perspective, the application’s interface is designed to be user-friendly, with careful consideration given to accessibility aspects. Features such as a simple design, language options, and display customization tools including adjustable font sizes and night mode facilitate use by diverse user groups, including older adults and individuals with visual limitations. In addition, the application is developed to be compatible with low-specification devices and to support data-saving modes, reflecting an adaptive response to technological constraints still faced by certain segments of the population.

Innovation and feature updates are conducted regularly to maintain relevance and enhance user experience quality. The Makaverse News development team actively undertakes technical improvements, including bug fixes, functional feature enhancements, and content personalization based on user preferences, as indicated by factors such as interests, age groups, and gender. Consequently, the application is not only informative but also adaptive and responsive to users' individual needs.

Overall, the development and utilization of the Makaverse News application reflect a holistic approach to addressing the digital divide in Makassar City. The application constitutes an integral component of the local government's digital transformation strategy, which combines infrastructure development, digital literacy education, and inclusive technological innovation. Although various challenges persist such as limited public understanding of application utilization and technical constraints in certain areas the efforts undertaken thus far indicate a positive trajectory toward more equitable access to information in the digital era.

3.3 Discussion of the Main Findings of the Study

The main findings of this study indicate that although the Makaverse News application has been designed to deliver information in a fast, accurate, and reliable manner, its impact on reducing the digital divide in Makassar City remains insignificant. This condition is primarily attributed to the low level of public awareness and utilization of the application, as only a small proportion of the community is familiar with and actively uses Makaverse News. Furthermore, the quality of application usage is constrained by various external factors, including uneven technological infrastructure, limited digital access capabilities among users, and insufficient digital literacy education.

These findings suggest that the development of digital applications alone is insufficient to comprehensively address the digital divide. More holistic and integrated efforts are required, encompassing improvements in infrastructure accessibility, enhancement of public understanding, and strengthening of digital skills to ensure that the digital divide can be sustainably minimized. Therefore, further initiatives are necessary to ensure that the benefits of the Makaverse News application can be equitably experienced by all segments of society. The digital divide has also had a significant impact on education, implications related to the role of public relations as a bridge to overcome the digital divide (Muñoz & Valencia, 2025). The digital divide in Nigeria, particularly in the media dimension, has significant implications for access to information, political participation, social inclusion, and education (Vitalis et al., 2025). The implications related to the role of public relations as a bridge to overcome the digital divide (Hidayat et al., 2024). Similar with research by Raihan et al. that demonstrated four major dimensions of the digital divide among various vulnerable groups, including digital literacy, affordability, equity-deserving group-sensitive content and availability or access to infrastructure (Raihan et al., 2025).

As part of the Makassar City Government's commitment to addressing the digital divide, various measures have been implemented, particularly in improving access to public information. These efforts include the development of technological infrastructure and the implementation of digital literacy programs aimed at enhancing public understanding and skills in the optimal use of information technology. Such initiatives are expected to improve the quality of Makaverse News application usage while supporting equitable access to information in the digital era. The findings of this study are consistent with those reported by Dimas and Fahlevvi (2024) and Susanti et al. (2023), who emphasize that reducing the digital divide requires strengthening community digital literacy through ICT training programs, internet-related mentoring and guidance, and the development of accessible information systems. The access divide, in this context, is caused by uneven network distribution, limited ownership of electronic devices, and insufficient digital skills among the population. The results of this study differ from those of Sagita and Giri (2023), Hanifah and Giri (2022), and Budiutama and Giri (2024), who found that variables such as motivation, physical and material access, user skills, and usage intensity have significant and positive interrelationships in the adoption of mobile banking applications. These differences may be attributed to variations in research methods, study locations with distinct socio-cultural characteristics, and differences in research objectsnamely, Makaverse News as a public information platform versus mobile banking applications, which are financial and transactional in nature.

However, the implementation of metaverse is quite difficult to implement, even many countries have failed, it failed not only because of technology, but mainly because of organizational failure and services that

are not aligned with user needs and experience (Zhu & Janssen, 2025). Technology anxiety moderates meta-government failure's impact on satisfaction. The metaverse has potential for digital public services, but is limited by architectural complexity and the incompatibility of many types of services, so that only certain services, especially those that empower citizens, are worth developing (Lnenicka et al., 2024). Similarly, researchers found that cyber risks and resistance to change also pose obstacles for society (Al-Adwan, 2024). Concerns about security, privacy, and data misuse reduce the intention to adopt renewable technologies (Hapsari, & Pambayun, 2023). Overall, the findings of this study emphasize that the development of digital applications, including metaverse-based initiatives, cannot simply focus on the technological aspect, but must be accompanied by an integrated strategy that includes improving infrastructure access, digital literacy, and community capacity, so that the goals of equitable distribution of technology benefits and reducing the digital divide can be achieved sustainably.

IV. CONCLUSION

Based on the findings of this study, the author concludes that although the application was designed to deliver information in a fast and reliable manner, its impact on reducing the digital divide in Makassar City remains limited. The low level of public understanding and utilization of the application constitutes the primary barrier, which is further exacerbated by inadequate technological infrastructure and insufficient digital literacy. These external factors have resulted in suboptimal quality of application usage, preventing the objective of bridging the digital divide from being fully achieved. Therefore, the development of digital applications must be accompanied by integrated strategies, including improvements in access, education, and technological skills among the community. In this regard, the Makassar City Government has undertaken various initiatives, such as infrastructure development and digital literacy training programs, to ensure that the benefits of technology can be more evenly distributed across all segments of society.

This study is primarily focused on the use of the Makaverse News application and issues related to the digital divide. The research scope is limited to the institutional environment of the Makassar City Office of Communication and Informatics. Additionally, constraints related to time and financial resources have influenced the breadth and depth of the issues addressed in this study. The author acknowledges that the findings of this study represent an initial stage that serves as a foundation for more comprehensive future research. Accordingly, it is recommended that the Makassar City Government, through the Office of Communication and Informatics, develop and support a community-based Makassar Digital Literacy Program (Program Literasi Digital Komunitas Makassar – PDKM) integrated at the sub-district (kelurahan) level. This program should begin with an assessment of community digital literacy needs through surveys and interviews with target groups. Based on these findings, regular face-to-face training sessions can be designed and implemented at the kelurahan level in collaboration with neighborhood associations (RT/RW), schools, and community centers.

The program should also involve volunteers from among university students, teachers, and community leaders who are trained as Local Digital Ambassadors to serve as facilitators and liaisons between the program and residents. To reach areas with limited access, innovative strategies such as mobile digital units can be implemented, which also function as tools for direct observation of the effectiveness of field-based approaches. Further research is required to examine the relationship between the Makaverse News application and the level of digital divide in Makassar City more comprehensively.

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VI. REFERENCES

- Acilar, A., & Sæbø, Ø. (2023). Towards understanding the gender digital divide: A systematic literature review. *Global Knowledge, Memory and Communication*, 72(3), 233–249. <https://doi.org/10.1108/GKMC-09-2021-0147>
- Al-Adwan, A. S. (2024). The government metaverse: charting the coordinates of citizen acceptance. *Telematics and Informatics*, 88, 102109. <https://www.sciencedirect.com/science/article/abs/pii/S0736585324000133>
- Budiutama, I. K. A. S., & Giri, R. R. W. (2024). Penggunaan mobile banking di Denpasar, Bali: Perspektif digital divide. *Ekonomis: Journal of Economics and Business*, 8(1), 262–271. <https://doi.org/10.33087/ekonomis.v8i1.1328>
- Dijk, J. A. G. M. van. (2006). Digital divide research, achievements and shortcomings. *Poetics*, 34(4–5), 221–235. <https://doi.org/10.1016/j.poetic.2006.05.004>
- Dijk, J. A. G. M. van. (2017). Digital divide: Impact of access. In *The International Encyclopedia of Media Effects* (pp. 1–11). Wiley. <https://doi.org/10.1002/9781118783764.wbieme0043>
- Dimas, M., & Fahlevvi, M. R. (2024). Pengentasan digital divide dalam penerapan e-government di Kabupaten Sumbawa. *Jurnal Teknologi dan Komunikasi Pemerintahan*, 6(2), 194–215. <https://doi.org/10.33701/jtkp.v6i2.4504>
- Hanifah, D., & Giri, R. R. W. (2022). Analisis pengaruh digital divide terhadap penggunaan mobile banking di DKI Jakarta. *YUME: Journal of Management*, 5(1), 639–652. <https://doi.org/10.37531/yum.v6i1.3724>
- Hapsari, R. D., & Pambayun, K. G. (2023). Ancaman cybercrime di indonesia: Sebuah tinjauan pustaka sistematis. *Jurnal Konstituen*, 5(1), 1-17. <https://doi.org/10.33701/jk.v5i1.3208>
- Heeks, R. (2022). Digital inequality beyond the digital divide: Conceptualizing adverse digital incorporation in the Global South. *Information Technology for Development*, 28(4), 688–704. <https://doi.org/10.1080/02681102.2022.2068492>
- Hidayat, M. N. F., Baharun, H., Aisyah, E. N., Zaini, A. W., Sanjani, M. A. F., & Hasanah, R. (2024, October). Bridging the Digital Divide: The Role of Public Relations in Enhancing Digital Inclusivity. In *2024 10th International Conference on Education and Technology (ICET)* (pp. 59-66). IEEE. <https://ieeexplore.ieee.org/abstract/document/10778472>
- Hutagalung, S. S., & Sulistio, E. B. (2024). Transforming Public Service Delivery in Indonesia: Exploring the Potential and Challenges of the Metaverse. *Jurnal Borneo Administrator*, 20(3), 273-288. <https://jba.lan.go.id/article/view/1579/432>
- Ikhbaluddin. (2020). Strategi Pemerintah Kota Tasikmalaya dalam menerapkan teknologi informasi pemerintahan untuk meningkatkan tata kelola pemerintahan. *Jurnal Teknologi dan Komunikasi Pemerintahan*, 2(2), 41–57. <https://doi.org/10.33701/jtkp.v2i2.2316>
- Indrayani, E. (2020). *E-government: Konsep, implementasi, dan perkembangannya di Indonesia* (1st ed.). LPP Balai Insan Cendekia.
- Indrayani, E. (2023). *Integrasi sistem layanan digital: Transformasi digital untuk masa depan pelayanan publik di Indonesia*. CV Cendekia Press.
- Lnenicka, M., Rizun, N., Alexopoulos, C., & Janssen, M. (2024). Government in the metaverse: Requirements and suitability for providing digital public services. *Technological Forecasting and Social Change*, 203, 123346. <https://www.sciencedirect.com/science/article/abs/pii/S0040162524001422>
- Luan, B., Zou, H., & Huang, J. (2023). Digital divide and household energy poverty in China. *Energy Economics*, 119, 106543. <https://doi.org/10.1016/j.eneco.2023.106543>
- Lythreathis, S., Singh, S. K., & El-Kassar, A. N. (2022). The digital divide: A review and future research agenda. *Technological Forecasting and Social Change*, 175, 121359. <https://doi.org/10.1016/j.techfore.2021.121359>
- Miles, M. B., & Huberman, A. M. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Sage Publications.

- Muñoz, J. A. H., & Valencia, D. C. (2025). Trends and challenges of digital divide and digital inclusion: A bibliometric analysis. *Journal of Information Science*, 51(4), 813-830. <https://journals.sagepub.com/doi/abs/10.1177/01655515221148366>
- Ngemba, H. R., Jambari, D. I., & Ahmad, K., (2025). Metaverse Technology for Public Services in Smart Cities: Opportunities and Challenges. *International Conference on Smart Cities and Green ICT Systems, SMARTGREENS Proceedings*. <https://doi.org/10.5220/0013432400003953>
- Nurrahman, A., & Rahman, D. J. (2021). Efektivitas SICANTIK Cloud pada pelayanan publik perizinan berbasis e-government di Kabupaten Purwakarta. *Jurnal Teknologi dan Komunikasi Pemerintahan*, 3(2), 31–50. <https://doi.org/10.33701/jtkp.v3i2.2310>
- Oktavianoor, R. (2020). Digital gap caused by demographic condition among rural society. *Palimpsest: Jurnal Ilmu Informasi dan Perpustakaan*, 11(1), 9–19. <https://doi.org/10.20473/pjil.v11i1.21888>
- Ragnedda, M., & Muschert, G. W. (2013). *The digital divide: The Internet and social inequality in international perspective* (1st ed.). Routledge.
- Raihan, M. M., Subroto, S., Chowdhury, N., Koch, K., Ruttan, E., & Turin, T. C. (2025). Dimensions and barriers for digital (in) equity and digital divide: A systematic integrative review. *Digital Transformation and Society*, 4(2), 111-127. <https://doi.org/10.1108/DTS-04-2024-0054>
- Sagita, D. V., & Giri, R. R. W. (2023). Analisis digital divide terhadap penggunaan mobile banking di Kota Purwokerto. *Jurnal Mirai Management*, 8(1), 156–168. <https://doi.org/10.37531/mirai.v8i1.3728>
- Senadheera, S., Yigitcanlar, T., Desouza, K. C., Li, R. Y. M., Corchado, J., Mehmood, R., & Cheong, P. H. (2024). Metaverse as local government communication platform: A systematic review through the lens of publicness theory. *Cities*, 155, 105461. <https://www.sciencedirect.com/science/article/pii/S0264275124006759?via%3Dihub>
- Simangunsong, F. (2016). *Metodologi penelitian pemerintahan*. Alfabeta.
- Susanti, W. F., Jannatuzzahra, K., Kartika, A. D. P., & Mukaromah, S. (2023). Upaya dalam mengurangi kesenjangan digital pada penerapan smart village. *Prosiding Seminar Nasional Teknologi dan Sistem Informasi*, 3(1), 334–343. <https://doi.org/10.33005/sitasi.v3i1.336>
- Vitalis, P. O., Aondover, E. M., Ogunbola, O., Onyejelem, T. E., & Ridwan, M. (2025). Accessing Digital Divide and Implications in Nigeria: The Media Dimension. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, 8(1), 1-12. https://www.researchgate.net/publication/386905613_Accessing_Digital_Divide_and_Implications_in_Nigeria_The_Media_Dimension
- Wahyudi, R., Murdiyana, M., & Ikhbaluddin. (2024). Penilaian tata kelola teknologi informasi berbasis kinerja organisasi menggunakan COBIT 2019 dan balanced scorecard (Studi pada Dinas Komunikasi, Informatika, Persandian, dan Statistik Kabupaten Kolaka Timur). *Jurnal Teknologi dan Komunikasi Pemerintahan*, 6(2), 313–329. <https://doi.org/10.33701/jtkp.v6i2.4756>
- Zhu, Y., & Janssen, M. (2025). Why do metaverse government services fail? Understanding the influences of different failure types on citizens' satisfaction with meta-government services in China. *Telematics and Informatics*, 102281. <https://www.sciencedirect.com/science/article/abs/pii/S0736585325000437>