



DIGITAL HEALTH POLICY IMPLEMENTATION IN THE TRANSFORMATION OF DECENTRALIZED UNIVERSAL HEALTH COVERAGE: AN ANALYSIS OF SERVICE QUALITY, STAKEHOLDER COMMUNICATION, AND POLICY INTEGRATION IN MEDAN CITY

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ABSTRACT

Digital health policy is a crucial instrument for strengthening the implementation of Universal Health Coverage (UHC) in the era of decentralization. This study aims to analyze the implementation of digital health policy in the transformation of decentralized UHC in Medan City, focusing on three main dimensions: digital service quality, the effectiveness of policy communication to stakeholders, and system integration between public and private healthcare facilities. Using a mixed-methods approach, the study involved 161 healthcare service users across 21 districts of Medan City. The results show that 67.1% of respondents only began using Mobile JKN in 2024–2025, while 23.6% had not used the application at all. In terms of digital service quality, the reliability and responsiveness dimensions remained at a moderate level, with 55–59% of respondents rating them as 'fair'. Policy communication was not yet effective: 25.5% of respondents did not understand the digitalization policy and 18% had never received related information. Regarding integration, 47.2% stated that digitalization had not reduced bureaucratic procedures. Nevertheless, 66.4% of respondents were optimistic about the development of digital health technology to support UHC Premium. This study recommends strengthening community-based policy communication, improving the stability of digital systems, and developing inclusive digital literacy programs...

Keywords: *Digital Health Policy; UHC; Stakeholder Communication; Service Quality; Decentralization*

1. INTRODUCTION

The digital transformation of the health system has become a strategic agenda in Indonesia's health development during the second decade of the twenty-first century.

Within the framework of Universal Health Coverage (UHC), the Indonesian government has accelerated the adoption of health information technology through various regulations, including Presidential Regulation No. 82 of 2023 on the Acceleration of Digital Transformation and the Ministry of Health's 2021–2024 Digital Health Transformation Roadmap. These policies position digitalization as a key pillar for expanding access, improving efficiency, and enhancing the quality of healthcare services for all segments of society.

Medan City, as the third-largest city in Indonesia, has achieved UHC status, with National Health Insurance (JKN) membership exceeding 95% of the total population (BPJS Kesehatan, 2023). Furthermore, the Medan City Government has developed the concept of UHC Premium, which goes beyond national JKN standards, including the Health Insurance for Non-Wage-Earning Residents (JKMB) as a social safety net. Within this UHC Premium framework, the digital transformation of healthcare services has become a critical dimension determining the success of high-quality service delivery.

The implementation of digital health policy within a decentralized system faces various challenges. Law No. 23 of 2014 on Regional Government grants substantial autonomy to local governments in managing primary healthcare services. On the one hand, this creates opportunities for local innovation; on the other hand, it may generate disparities in digital capacity across regions and fragmentation of information systems (Mahendradhata et al., 2017).

In this context, the quality of digital policy implementation becomes a decisive factor in the success of Medan City's UHC Premium. Three critical dimensions need to be examined: first, the quality of digital services received by the public; second, the effectiveness of policy communication in disseminating health technologies to stakeholders; and third, the extent to which information systems have been integrated across healthcare facilities and insurance institutions. These three dimensions are interrelated and determine the success of digital-based UHC transformation at the operational level.

Research on digital policy implementation in healthcare has shown that successful digital transformation is determined not only by the availability of technological infrastructure but also by social factors such as digital literacy, user trust, and the effectiveness of institutional communication (Boonstra & Broekhuis, 2010; Kruk et al., 2018). Research on JKN digitalization in regions that have developed UHC programs beyond national standards remains limited, making Medan City a relevant case for investigation.

This study aims to: (1) analyze patterns of use and public perceptions of digital healthcare service quality in Medan City; (2) evaluate the effectiveness of communication regarding health digitalization policies; (3) examine the level of information-system integration across healthcare facilities; and (4) identify the challenges and opportunities associated with digital technology implementation in supporting Medan City's UHC Premium.

2. RESEARCH METHOD



This study employed a mixed-methods approach with a descriptive-evaluative design to analyze patterns of digital health policy implementation in the transformation of decentralized UHC in Medan City (Creswell, 2014).

The study population comprised Medan City residents who used healthcare services through first-level health facilities (FKTP). A sample of 161 respondents was selected using cluster sampling, with the city's 21 districts serving as clusters. The inclusion criteria were: (a) residents of Medan City, (b) participants in JKN or Medan City UHC, (c) users of FKTP services within the previous six months, and (d) willingness to complete the questionnaire in full.

The research instrument was a structured questionnaire consisting of seven modules: (J1) use of digital health technology; (J2) communication and information regarding digital policy; (J3) digital service quality, including reliability, responsiveness, and usability; (J4) policy-business integration; (J5) the impact of decentralization; (J6) comparison before and after digitalization; and (J7) expectations for future development. Data were collected from June to September 2025 through two methods: distribution of structured questionnaires to respondents at FKTP locations and structured interviews to deepen the interpretation of the quantitative findings.

Data were analyzed using descriptive statistics, including frequency distributions, percentages, and cross-tabulations, with SPSS version 25. Instrument validity was assessed using Pearson correlation ($r > 0.3$), while reliability was assessed using Cronbach's Alpha ($\alpha > 0.7$)

3. RESULT AND ANALYSIS

Respondent Profile

Of the 161 respondents, most were women (73.3%). The age distribution was as follows: 36–45 years (23.6%), 56–65 years (17.4%), 46–55 years (18.6%), 26–35 years (16.1%), over 65 years (11.8%), and 18–25 years (12.4%). Educational attainment was dominated by senior high school or equivalent (65.8%). In terms of occupation, 44.1% were homemakers, 16.1% were self-employed or traders, and 11.8% were unemployed. Most respondents earned less than IDR 1,000,000 per month (55.9%), reflecting the profile of UHC users from lower-income groups. Service types included Community Health Centers under Medan City UHC coverage (54.7%), Community Health Centers under BPJS coverage (40.4%), and private clinics (5.0%).

Patterns of Digital Health Technology Use

Table 1 presents respondents' patterns of using Mobile JKN and other digital platforms.

Table 1. Patterns of Mobile JKN Use among Respondents (n=161)

Indicator	n	%
When Respondents Began Using Mobile JKN		
Started in 2024–2025	108	67.1
Started in 2022–2023	34	21.1

Started in 2021	6	3.7
Started in 2020	6	3.7
Since 2019 or earlier	7	4.3
Mobile JKN Features Used		
Online registration at healthcare facilities	62	38.5
Do not use Mobile JKN	38	23.6
Combination of other features	46	28.6
Checking JKN membership status	5	3.1
Online registration + status check	10	6.2
Other Digital Platforms for Healthcare Services		
Do not use other digital platforms	133	82.6
WhatsApp with healthcare professionals	9	5.6
Online consultation applications (Halodoc, etc.)	6	3.7
Healthcare facility website	3	1.9
Online queue system	3	1.9

Table 1 shows that the adoption of Mobile JKN is still relatively recent: 67.1% of respondents only began using it in 2024–2025. However, 23.6% had not used it at all, reflecting adoption barriers that need to be addressed. This finding is consistent with Boonstra and Broekhuis (2010), who identified financial, technical, and knowledge-related barriers as factors contributing to low adoption of digital systems in healthcare. In terms of feature use, online registration was dominant (38.5%), reflecting users' most immediate need for more efficient administrative processes. Notably, 82.6% of respondents did not use any other digital platform, indicating that Mobile JKN is the sole digital access point for the majority of users.

Communication of Health Digitalization Policy

Table 2 illustrates the effectiveness of communicating health digitalization policies to the public.

Table 2. Perceptions of Health Digitalization Policy Communication (n=161)

Indicator	n	%
Level of Understanding of Digitalization Policy		
Very poor understanding	6	3.7
Poor understanding	41	25.5
Fair understanding	73	45.3
Good understanding	32	19.9
Very good understanding	9	5.6
Sources of Digital Health Information (Top Five)		
Healthcare workers at health facilities	53	32.9
Never received information	29	18.0



Family/friends	15	9.3
Social media	8	5.0
Television/radio	8	5.0
Effectiveness of Government Communication		
Very ineffective	3	1.9
Ineffective	38	23.6
Fairly effective	73	45.3
Effective	33	20.5
Very effective	14	8.7
Main Communication Barriers		
No barriers	49	30.4
Insufficient outreach by staff	17	10.6
Language is too technical	13	8.1
No user training	12	7.5
Unclear information	7	4.3

Table 2 reveals that 29.2% of respondents still had a low level of understanding of digitalization policies (3.7% understood very little and 25.5% did not understand). Only 25.5% understood or strongly understood the policy. This gap is critical because policy understanding is a prerequisite for the effective use of digital services (Reich et al., 2016). Healthcare workers at service facilities were the main source of information (32.9%), indicating that face-to-face communication remains the most effective channel. Of particular concern, 18.0% of respondents had never received any information, placing this group at risk of becoming an excluded population in the digital transformation process. Regarding communication effectiveness, 25.5% rated government communication as ineffective. The main barriers included insufficient outreach by staff (10.6%), overly technical language (8.1%), and the absence of user training (7.5%).

Digital Service Quality

Assessments of the three dimensions of digital service quality are presented in Table 3.

Table 3. Assessment of Digital Healthcare Service Quality (n=161)

Indicator	Disagree (%)	Fair (%)	Agree (%)	Strongly Agree (%)
A. Reliability				
Application operates without errors	11.2	55.9	24.2	8.7
Information is accurate and reliable	2.5	55.9	28.6	13.0
Registration system works as promised	3.1	55.3	28.0	13.7
B. Responsiveness				

Complaints submitted through the application are addressed quickly	4.3	55.9	28.0	11.8
Information is updated in real time	4.3	59.0	26.7	9.9
C. Usability				
Application is easy to understand and use	2.5	52.2	32.9	12.4
Menus and features are clearly organized	2.5	53.4	31.7	12.4
Online registration process is easy to complete	2.5	50.9	33.5	13.0

Table 3 shows a consistent pattern: across all dimensions of digital service quality, the response 'Fair' dominated, ranging from 50% to 59%. This indicates that most users perceive digital service quality to be at a moderate level. On the reliability dimension, only approximately 32.9% positively confirmed that the application operated without errors, while 11.2% disagreed, reflecting real experiences of technical failure. This finding is relevant to Boonstra and Broekhuis (2010), who identified technical system failures as a major barrier to the adoption of electronic medical records. Usability was rated relatively better than reliability and responsiveness, but responses were still dominated by the 'Fair' category, indicating substantial room for improvement in the application interface.

Policy-Business Integration and the Impact of Decentralization

Table 4 presents public perceptions of digital-system integration and the impact of decentralization.

Table 4. Policy-Business Integration and the Impact of Digital Health Decentralization (n=161)

Indicator	Dominant Response	%
Digital System Integration		
Digital technology improves coordination between public and private healthcare facilities	Improved	58.4
Integration of Community Health Center–Hospital–BPJS information systems	Moderately Integrated	57.1
Digitalization reduces bureaucratic procedures	No Reduction	47.2
Transparency of cost information through digital systems	Transparent	44.1
Impact of Decentralization		
Coordination between the Medan City Government and healthcare facilities in digital implementation	Fairly Good	56.5
Differences in digital implementation quality across districts	Do Not Know	50.3
Alignment of digital implementation with local needs	Moderately Aligned	54.0
Autonomy of the Medan City Government to develop digital health innovations	Agree	50.9



Table 4 reveals an interesting contradiction: 58.4% of respondents acknowledged that digital technology had improved coordination between public and private healthcare facilities, yet 47.2% stated that digitalization had not reduced bureaucratic procedures. This indicates that integration remains partial: technical coordination has begun to improve, but simplification of administrative processes as directly experienced by end users has not yet been achieved. The fact that 50.3% of respondents answered 'do not know' regarding differences in implementation quality across districts suggests low public awareness of service disparities. Research by Mahendradhata et al. (2017) shows that fragmented implementation across regions is common within Indonesia's decentralized system. A positive finding is that 50.9% of respondents agreed that the Medan City Government has sufficient autonomy to develop digital health innovations, which can serve as important capital for promoting local breakthroughs within the UHC Premium framework.

Impact of Digitalization and Development Expectations

A comparison of conditions before and after digitalization shows positive perceptions: 61.5% of respondents considered access to healthcare services easier, and 26.7% considered it much easier. However, in terms of time efficiency, 59.6% rated it as 'fair', indicating that easier access does not automatically translate into perceived time efficiency.

Regarding expectations for future development, respondents proposed the following priorities: user outreach and training (19.9%), application stability and data security (9.9%), a more intuitive interface (8.1%), and online queue and doctor-schedule features (6.2%). These aspirations indicate that users expect a comprehensive digital health ecosystem rather than merely a registration platform. Despite the various challenges, optimism remained relatively high: 36.6% were very optimistic and 29.8% were optimistic about the development of digital technology to support UHC Premium. Thus, a total of 66.4% fell within the optimistic spectrum, representing valuable social capital for the success of Medan City's digital UHC transformation.

4. CONCLUSION

This study produced four main findings. First, Mobile JKN adoption is still in an early acceleration phase, with 67.1% of respondents only beginning to use it in 2024–2025 and 23.6% not using it at all. Second, digital service quality remains at a moderate level; the dominance of 'fair' responses (50–59%) across the dimensions of reliability, responsiveness, and usability indicates that JKN/UHC digital platforms have not yet reached a satisfactory standard. Third, communication of digitalization policies remains ineffective: 18% of respondents had never received information, 25.5% did not understand the policy, and 25.5% rated government communication as ineffective, while healthcare workers remained the most effective communication channel. Fourth, system integration remains partial: technical coordination has begun to improve, but bureaucratic simplification as experienced by end users has not yet been realized. Based on these findings, this study recommends: (1) community-based Mobile JKN outreach and training programs involving community health cadres as agents of change;

(2) improving the technical stability and responsiveness of JKN/UHC digital systems; (3) developing interactive tutorial features and elderly-friendly interfaces; (4) strengthening data integration among Community Health Centers, hospitals, and BPJS through a reliable health-data exchange platform; and (5) developing indicators to monitor disparities in digital implementation across districts as a basis for ensuring equitable service quality throughout Medan City.

References

- Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: Care, health, and cost. *Health Affairs*, 27(3), 759–769. <https://doi.org/10.1377/hlthaff.27.3.759>
- Berry, L. L., & Bendapudi, N. (2007). Health care: A fertile field for service research. *Journal of Service Research*, 10(2), 111–122. <https://doi.org/10.1177/1094670507306682>
- Boonstra, A., & Broekhuis, M. (2010). Barriers to the acceptance of electronic medical records by physicians from systematic review to taxonomy and interventions. *BMC Health Services Research*, 10, 231. <https://doi.org/10.1186/1472-6963-10-231>
- BPJS Kesehatan. (2023). BPJS Kesehatan financial report 2023. BPJS Kesehatan.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
- Doyle, C., Lennox, L., & Bell, D. (2013). A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open*, 3(1), e001570. <https://doi.org/10.1136/bmjopen-2012-001570>
- Ministry of Health of the Republic of Indonesia. (2021). *Digital health transformation roadmap 2021–2024*. Ministry of Health of the Republic of Indonesia.
- Kruk, M. E., Gage, A. D., Arsenault, C., Jordan, K., Leslie, H. H., Roder-DeWan, S., & Pate, M. (2018). High-quality health systems in the Sustainable Development Goals era: Time for a revolution. *The Lancet Global Health*, 6(11), e1196–e1252. [https://doi.org/10.1016/S2214-109X\(18\)30386-3](https://doi.org/10.1016/S2214-109X(18)30386-3)
- Kutzin, J. (2013). Health financing for universal coverage and health system performance: Concepts and implications for policy. *Bulletin of the World Health Organization*, 91(8), 602–611. <https://doi.org/10.2471/BLT.12.113985>
- Mahendradhata, Y., Trisnantoro, L., Listyadewi, S., Soewondo, P., Marthias, T., Harimurti, P., & Prawira, J. (2017). *World Health Organization on behalf of the Asia Pacific Observatory on Health Systems and Policies*.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12–40.
- Presidential Regulation No. 82 of 2023 on the Acceleration of Digital Transformation and Integration of National Digital Services.
- Reich, M. R., Harris, J., Ikegami, N., Maeda, A., Cashin, C., Araujo, E. C., & Evans, T. G. (2016). Moving towards universal health coverage: Lessons from 11 country studies. *The Lancet*, 387(10020), 811–816. [https://doi.org/10.1016/S0140-6736\(15\)60002-2](https://doi.org/10.1016/S0140-6736(15)60002-2)
- Law No. 23 of 2014 on Regional Government.
- WHO. (2019). *Primary health care on the road to universal health coverage: 2019 monitoring report*. World Health Organization.