International Journal of Science and Healthcare Research
Vol.7; Issue: 3; July-Sept. 2022
Website: ijshr.com
Original Research Article *ISSN: 2455-7587*

New Normal Analysis of Telemedicine-Based Healthcare Industry

Fitri Kinasih Husnul Khotimah[1], Idqan Fahmi[2], Sri Hartono[3]

[1,2]Business School, IPB University, Bogor, Indonesia.
[3]Magister Management, Mercu Buana University, Jakarta, Indonesia.

Corresponding Author: Fitri Kinasih Husnul Khotimah

DOI: https://doi.org/10.52403/ijshr.20220714

ABSTRACT

Telemedicine can be an alternative solution in overcoming the limitations of infrastructure and health human resources which are the cause of limited access to health services for the community. Telemedicine users increased during the Covid-19 pandemic, but only 10% of Indonesia's population. This study aims to analyze the new normal of telemedicine-based healthcare industry. The research was conducted from January to March 2022 through an online survey involving 192 respondents domiciled in Greater Jakarta and Greater Bandung. The sampling technique used is voluntary sampling. Data processing and analysis techniques use industrial foresight analysis. The results showed that the existence of telemedicine is currently considered to have met the expectations of 86.46 percent of respondents and 91.67 percent of users intending to continue using telemedicine technology after the Covid-19 pandemic. New normal of the healthcare industry leads to the development of integrated telemedicine in terms of services, applications, as well as data and information.

Keywords: *Covid-19, Foresight industry, Healthcare, New normal, Telemedicine*

INTRODUCTION

The Covid-19 pandemic has disrupted various industrial sectors, including the healthcare industry, which is at the forefront of dealing with the pandemic. The condition of the healthcare industry in Indonesia is still facing various problems, both in terms of infrastructure, health resources, supply chains, and fragmented health data (Ministry of Health, 2021). The healthcare industry has a supply chain that is unique and different from the supply chain of the industry in general. This happens because supply chains related to the healthcare industry must be able to ensure high service standards, maintain stakeholder satisfaction and maintain patient safety at the same time (Lestari, 2013). The health supply chain that is not well integrated causes health services to be unable to respond quickly to the risks (Ministry of Health, 2021). The surveillance information system that is not real time and integrated causes the ability to detect and respond to health emergencies not to be responsive in dealing with health crises (Ministry of Health, 2021). In addition, reliable sources of health education are still not widely accessed.

In carrying out health services, WHO states the importance of healthcare providers to prioritize the principle of continuum of care which is to continuously monitor patient health (De Graft Johnson et al., 2006). Continuous patient observation can be carried out if there is complete and standardized recording of medical record data, but the existing condition in Indonesia is that health data is still fragmented and spread across many varied systems (Ministry of Health, 2021). The healthcare industry also has large medical record data because each patient has a different case that needs to be continuously monitored for treatment progress, thus requiring high

computing resources and efficient algorithms (Tuli et al., 2020). Patients and healthcare practitioners are faced with the challenge of securely accessing, managing, integrating, and sharing medical records (Attaran, 2020). Medical record data is very sensitive and dangerous data if there is a data leak so that system reliability, risk management, and integrity from service providers are needed (Tuli et al., 2019; Tuli et al., 2020).

Telemedicine can be an alternative solution in overcoming the limitations of infrastructure and human resources in Health, supply chains, and fragmented data. Telemedicine refers to the use of information and communication technology (ICT) embedded in software programs with systems high-speed telecommunications for the delivery, management, and monitoring of health services (Bokolo, 2021). Virtual health services in the form of video calls, emails, or phone calls with patients, can significantly increase access to health services (Elbeddini and Yeats, 2020). Accuracy of disease diagnosis, making automatic prescriptions according to the code of ethics, optimizing SLA (Service Level Agreement), and reducing the time to get optimal treatment results are challenges for the healthcare industry to integrate its service system into telemedicine applications that make it easier for patients to access health services (Tuli et al., 2020).

The application of telemedicine after the COVID-19 pandemic is timely and provides great potential for the development of the health service industry. This can be seen from interest in telemedicine searches through the trend of visits to telemedicine applications during the Covid-19 pandemic has increased by up to 600% (CNN Indonesia, 2020). The use of telemedicine provided by the Indonesian government has also increased significantly to reach 300,000 users (Kompas.com, 2020). Meanwhile, Halodoc's vice president of marketing said that more than 20 million people used the Halodoc platform during the second quarter of 2020, in general, Halodoc service users in Indonesia increased 10 times (Katadata, 2020). The data illustrates that there is an increase in the use of telemedicine in Indonesia, but only about 10% of the total Indonesian population of 270.20 million people (BPS, 2021).

In addition, the current telemedicine-based health service industry in Indonesia is still dominated by startup companies such as Halodoc, Alodokter, Klikdokter, Good doctor, Aidohealth, and so on. This is a challenge to build the trust of users who have the perception that they trust telemedicine services from hospitals more than those provided by startups, as the results of research by Inventure Indonesia and Alvara which say that 71% of respondents trust telemedicine provided by hospitals more than startup companies. In addition, 95.4% of respondents also stated that hospitals must provide telemedicine services (Katadata, 2020).

On the other hand, hospitals and other conventional healthcare units have not been able to widely adopt telemedicine services (Ministry of Health, 2020). This is because BPJS Kesehatan as the Indonesian public health insurance has not been able to cover the financing of telemedicine services, even though the number of BPJS health participants continues to increase every year. In 2016 there were 171.94 million participants, increasing to 187.98 in 2017, again increasing to 208.05 million in 2018, and continuing to increase to 224.15 million participants in 2019 (Katadata, 2020).

In terms of government policy, regulations governing telemedicine services are still limited within the scope of the COVID-19 pandemic emergency as regulated in Medical Council Regulation Number 74 of 2020 concerning Clinical Authority and Medical Practice through Telemedicine during the Covid-19 Pandemic in Indonesia and the Decree of the Minister of Health. Number HK.01.07/Menkes/4829/2021 regarding guidelines for health services through telemedicine during the Covid-19 pandemic. The regulation of the minister of health that discusses telemedicine as stated

in the Regulation of the Minister of Health Number 20 of 2019 is limited to the implementation of telemedicine services between healthcare facilities. The regulation does not regulate telemedicine services that can be used directly by patients.

Based on the opportunities and challenges that have been described in applying telemedicine, is telemedicine the future of the healthcare industry? This study aims to formulate the new normal of the telemedicine-based health service industry. New normal of the healthcare industry is formulated based on the results of industry foresight analysis which analyzes the trends related to changes in regulations, technology, socio-culture, demography and lifestyle.

METHODS

The research was conducted from January to March 2022 through an online survey involving 192 respondents domiciled in Greater Jakarta and Greater Bandung. The sampling technique used voluntary sampling. The data used is primary data from the survey results. Data processing and analysis techniques use industrial foresight analysis. Industry foresight analysis aims to see the trends in healthcare industry for formulating new normal of the telemedicine-based healthcare industry. Industry foresight is the ability to think systematically about the future in an industry based on trends in technological, regulatory, socioeconomic, demographic, lifestyle changes, and other macro factors that influence it. The industry foresight matrix is listed in Table 1.

Table1. Foresight industry analysis matrix

Dimension	Trend change	Foresight
Technology		(Foresight formulation is a combination of the changing trends of the five variables, comprehensively)
Regulation		
Socio-economic		
Demographics		
Lifestyle		

RESULT AND DISCUSSION

Telemedicine users have used the internet for more than 5 years, but 93.23% have only used telemedicine in the last two years. The current existence of telemedicine is considered to have met the expectations of 86.46 percent of respondents and 91.67 percent of users intend to continue using telemedicine technology after the Covid-19 pandemic. The future of the healthcare industry based on the results of industry foresight analysis that sees trends in technological, regulatory, geopolitical, demographic, and lifestyle changes that occur in the telemedicine-based healthcare industry can be seen in Table 2.

Based on the data in Table 2, the changing trend of digitizing the healthcare industry leads to the use of Information and Communication Technology (ICT) based on IoT and big data, artificial intelligence algorithms, Single Sign On, microservices, video calls and strengthening cybersecurity. The use of single sign on and microservices allows the integration of various health services in one application that is interconnected with other applications with just one login. The availability of interoperability allows for the integration of various telemedicine applications, both those provided by the government, start-ups, and hospitals. In addition, interoperability can also be utilized for the integration of telemedicine applications with other applications that require health data. IoT technology, big data, Artificial intelligence algorithms and video calls can be used for examinations and virtual treatment demonstrations with an integrated medical record system, making it easier for doctors to monitor and make decisions. In an effort to strengthen the reliability of information systems and maintain the confidentiality of information, strengthening cybersecurity can be a solution.

From the regulatory dimension, the current state of regulations governing the healthcare industry as a whole is still limited. The trend of regulatory changes is predicted to lead to regulations that cover all health services, pay attention to health codes of ethics, integrate between health facilities, develop one health data policy, pay attention to cost

affordability and regulate telemedicine connectivity with various health insurances including BPJS health. In the regulation of digitizing the healthcare industry, it is also advisable to provide space for testing innovations and new business models that are monitored by regulators.

Table 2. Analysis of industry foresight in the healthcare industry

Dimension	Trend change	Foresight
Technology	a. Based on IoT and Big Data b. Utilizing Artificial Intelligence algorithm c. Utilizing Single Sign On (SSO) d. Microservices e. Availability of Interoperability f. Cybersecurity g. Vital medicine demonstration h. Checking via video call	Integrated Telemedicine-based Health service industry, both in terms of services, applications, as well as data and information
Regulation	a. Regulation covers all health services b. Integrated between Health facilities c. Pay attention to the Health code of ethics d. There is a policy of one Health data e. Affordable cost f. Connect with various health insurances, including BPJS	
Socio-cultural	a. Society 5.0 b. Indonesia's socio-cultural diversity	
Demographics	a. Various income levels b. Higher education levels affect understanding and ways of thinking in the use of telemedicine c. Ages 18-40 years tend to adapt more quickly to telemedicine d. Telemedicine users are dominated by permanent workers who have limited time to come directly to health facilities	
Lifestyles	a. Life is more practical, fast, and efficient b. People are becoming more aware of health c. less effort d. After the Covid-19 pandemic, tend to reduce physical contact e. Telemedicine will become a necessity and future lifestyle f. Homecare g. Telemedicine is used for the diagnosis of minor ailments	

In the socio-cultural dimension, the industrial revolution 4.0 is moving towards the era of society 5.0 which brings an evolutionary step in the development of internet networks and online-based services. The evolution of the internet is also a driving factor for more advanced innovation in the global market, which manifests itself in many things from consumer behavior to the novelty of developing sustainable business models such as the sharing economy, digital payments, the increase in e-commerce platforms, the decline in conventional media, to the increase in media. Digital media and various platforms created to solve problems that people face in everyday life. This is a trend of changing socio-cultural dimensions which is predicted to bring opportunities for the development of the telemedicine-based health service industry. In Indonesia, the era of society 5.0 is faced with the diversity of Indonesian culture.

From the demographic dimension, the potential users of telemedicine are generations Y and Z (aged 18-40 years) who tend to adapt more quickly to technology. The demographic condition of the Indonesian population has a variety of income levels, education levels, and has a variety of jobs. To adapt telemedicine, capital resources are needed in the form of smartphones, laptops or computers to be able to access telemedicine. In addition, to understand the services that exist in telemedicine, it is also necessary for individuals who have a high level of education so that they can optimize every feature that exists in telemedicine services. Telemedicine also has the potential to be used by individuals who have permanent jobs and have limited time to come directly to health facilities.

From the lifestyle dimension, the trend of change is towards a life that is more practical, faster, more efficient and less

effort. After the Covid-19 pandemic, people are increasingly aware of their health and tend to reduce physical contact. Telemedicine will become a necessity and a lifestyle in the future. This allows telemedicine to be used in the diagnosis of minor illnesses and homecare so that it can be an alternative to primary healthcare substitution. On the other hand, the COVID-19 pandemic that has encouraged people to get used to telemedicine cannot 100% replace all conventional health services. However, it has the opportunity to develop the healthcare industry to be wider by integrating its various supporting services.

Based on the trends in technological, regulatory, socio-cultural, demographic, and lifestyle changes, it can be concluded that new normal in the healthcare industry leads to the development of integrated telemedicine in terms of services, applications, as well as data and information.

CONCLUSION

Based on the results of the research and discussion that has been submitted, it can be concluded that the use of telemedicine has increased after the Covid-19 pandemic. New normal in the healthcare industry leads to the development of integrated telemedicine in terms of services, applications, as well as data and information. Service integration allows the availability of comprehensive and integrated health services with other supporting services such as electronic medical record services (e-health record), electronic referrals (e-referrals), electronic prescriptions (e-prescription), e-pharmacy, e-laboratory, insurance, fintech, and so on. Application integration in a Super Apps that integrates government telemedicine services with various telemedicine services from startup companies and hospitals as well as various other supporting services by utilizing microservices and Single Sign On (SSO) technology makes it easier for users to access electronic-based health services in one application. Meanwhile, the integration of data and information through the use of big data technology, blockchain, and the availability of interoperability allows the creation of One Health Data which assists in the decision-making process from the side of doctors, patients, government and other parties who need health data as a consideration for policy making.

REFERENCES

1. Attaran M. Blockchain technology in healthcare: Challenges and opportunities. *International Journal of Healthcare Management.* 2020. DOI: 10.1080/20479700.2020.1843887
2. Bokolo AJ. Application of telemedicine and eHealth technology for clinical services in response to the Covid-19 pandemic. *Health and Technology*. 2021. DOI: https://doi.org/10.1007/s12553-020-00516-4
3. [BPS] Central Bureau of Statistics. Portrait of the 2020 Jakarta Population Census: BPS. 2021
4. CNN Indonesia. Telemedical Application Visits Soared 600 Percent During Covid. CNN Indonesia. 2020 Aug 22. Available from https://www.cnnindonesia.com/technology/20200822125041-52-538097/kunjungan-application-telemedis-melonjak-600-persen-saat-covid
5. De Graft-Johnson J, Kerber K, Tinker A, Otchere S, Narauanan I, Shoo R. The continuum of care – reaching mothers and babies at the crucial time and place. *Opportunities for Africa's Newborn*. 2006; 23-36.
6. Elbeddini A, Yeats A. Pharmacist intervention amid the coronavirus disease 2019 (COVID-19) pandemic: from direct patient care to telemedicine. *Journal of Pharmaceutical Policy and Practice.* 2020;13(23): 1-4. DOI: https://doi.org/10.1186/s40545-020-00229-z
7. Katadata. What are the Opportunities for Telemedicine to Improve RI's Health Services? 2020. Available from https://katadata.co.id/muhammadridhoi/analysisdata/5fb4b30d9c3cd/cara-peluang-telemedicine-benahi-jasa-kesehatan-ri
8. Katadata. Unraveling the Challenges of Telemedical Development in Indonesia. 2020. Available fromhttps://katadata.co.id/saptopradityo/beri

ta/5f5091d69ae59/mengurai-tantangan-pengembangan-telemedis-di-indonesia
9. Katadata. Patients Prefer Hospital Telemedicine Services Than Start Up. 2020. Available from:https://katadata.co.id/ekarina/brand/5fa2d9897fb9b/patient-more-select-service-telemedicine-rumah-sakit-ketangan-startup
10. Kompas.com. During the Corona Virus Outbreak, Telemedicine Users Reached 300,000. Kompas.com. 2020 Apr 27. Available from https://nasional.kompas.com/read/2020/04/27/19033501/selama-wabah-virus-corona-user-telemedicine-reach-300000
11. [Ministry of Health] Ministry of Health. Implementation of Telemedicine in Indonesia. Material for exposure to the directorate general of health services. 2020.
12. [Ministry of Health] Ministry of Health. Indonesia Health Profile 2020. Jakarta: Ministry of Health of the Republic of Indonesia. 2021.
13. [Ministry of Health] Ministry of Health. Blueprint for Health Digital Transformation Strategy 2024. Jakarta: Indonesian Ministry of Health. 2021.
14. Lestari YD. Modeling the characteristics of interorganizational systems to support collaboration, integration, and supply chain innovation in the healthcare sector in Indonesia. 2013.
15. [Perkonsil] Medical Council Regulation Number 74 of 2020 concerning Clinical Authority and Medical Practice through Telemedicine during the Corona Virus Disease 2019 (Covid-19) Pandemic in Indonesia. 2020.
16. [Permen] Regulation of the Ministry of Health of the Republic of Indonesia Number 20 of 2019 concerning the Implementation of Telemedicine Services Between Health Service Facilities. 2019.
17. [RI] Republic of Indonesia. Indonesia's Law Number 36 of 2009 concerning Health.
18. [RI] Republic of Indonesia. Indonesia's Law Number 20 of 2019 concerning the Implementation of Telemedicine Services Between Health Service Facilities
19. Tuli S, Mahmud R, Tuli S, Buyya R. Fogbus: a blockchain-based lightweight framework for edge and fog computing. *Journal System Software*. 154(2019):22-36.
20. Deaf S. Deaf S. Wander G. Wander P. Gill SS. Dustdar S. Sakellariou R. Rana O. Next generation technologies for smarthealthcare: challenges. vision. model. trends and future directions. *Internet Technology Letters.* 2020. DOI:10.1002/itl2.145.

How to cite this article: Fitri Kinasih Husnul Khotimah, Idqan Fahmi, Sri Hartono. New normal analysis of telemedicine-based healthcare industry. *International Journal of Science & Healthcare Research.* 2022; 7(3): 86-91.
DOI: *https://doi.org/10.52403/ijshr.20220714*

******