

CHALLENGES OF DIGITAL TRANSFORMATION OF HEALTHCARE INDUSTRY IN INDONESIA**Benedict Sulaiman, Adang Bachtiar**

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Abstract

Digital transformation in healthcare is needed to continuously enhance healthcare services in Indonesia, but all the changes happened especially after the Covid-19 pandemic has made many healthcare facilities to face difficulties on prioritizing development and their operational services. The Government thru the Ministry of Health have already defined the direction of where the transformation is expected to be, but to fulfill that expectation will still be a huge challenge for all healthcare facilities, both government and private. This research is intended to bring perspective on the situation and challenges for private healthcare facilities on facing digital transformation. The research method is conducted using cross sectional survey and literature study to several private hospitals. From the results it can be seen that there are various levels of readiness between the hospitals in order to face these challenges, which in some cases still supported by skepticism of the stakeholders on the need for digital transformation. But, at the end it can be concluded that digital transformation is needed and eventually it will come, therefore all hospitals must be ready to face the transformation and changes. All of this are happening for the good of healthcare in Indonesia

Keywords: Healthcare Digital Transformation; Hospital Information System; Electronic Medical Record; Technology Disruption; Data Integration; Information Technology

INTRODUCTION

Before the Covid-19 pandemic, the development of information technology (IT) in hospitals was not too significant. IT is only used to support the process of health services and is difficult to innovate due to several things such as strict government regulations, the priority of developing hospitals that prioritize medical services, limited funds and limited IT human resources in the world of health (He, Zhang, & Li, 2021; Layne & Lee, 2001). The process in hospitals that is also long and tends to be 'outdated' is also one of the factors in the lack of innovation and system development, especially for integration with other hospital stakeholders such as insurance, BPJS, vendors, banking and others.

However, during Covid-19 and now, IT development is very rapid and needed, causing a lot of 'disruption' in hospitals which causes hospitals to transform in the IT and digital fields in particular. Clarke, (2020) The government also formed a DTO (Digital Transformation Office) at the Ministry of Health to form, provide the direction and purpose of health transformation to be addressed, namely increasing digital capabilities in hospitals (Clarke,

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2020). Starting from Peduli Lindungi which evolved into SATU SEHAT inevitably the hospital must improve and develop (Dunleavy, Margetts, Bastow, & Tinkler, 2006; Vial, 2021).

Starting primarily is the adoption of RME (Electronic Medical Record) or what we have known as EMR (Electronic Medical Record), which must be owned and used by every Health Service Facility (Fasyankes) to then be able to report the results of services every day to SATU SEHAT, but besides that many other things need to be prepared and developed, such as the ability to integrate between systems or commonly known as EMR interoperability with The government is still immature so that it can cause integration difficulties. This makes it a challenge for all hospitals in Indonesia (Widiyanto, Sulistyati, & Zahroh, 2023).

The security aspect is also one of the most important factors that cannot be forgotten and must be prioritized. The Government has established Law No. 27 of 2022 concerning Personal Data Protection as the basis for protecting personal data, including medical record data included in specific personal data stated in Article 4 (Fahmi, Pasaribu, Theodora, & Wangdi, 2022). However, it is feared that the lack of time and speed of the transformation process must be carried out will cause the potential for data leakage to be higher. But will health facilities be able to face and secure data to ensure that the law can be fulfilled and medical data is maintained? Currently there is no specific safety standard that is a reference for health institutions, there are only general and international standards which if used as a reference for application for health facilities will cause challenges and even their own burdens that are difficult to meet (BIOTEKNOLOGI, 2016).

The government through the Ministry of Health has established 6 pillars of health transformation where the 6th pillar is Health Technology Transformation (Dhawan, Rao, Ambekar, Pusp, & Ray, 2017; Handayani, 2023). Health Technology Transformation has a role in utilizing information technology and bio-technology around health (Tjandrawinata, 2016). Thus, it will make the world of health in Indonesia more adaptable and make good use of the development of digital technology, so that the digitalization process around health can grow more. The establishment of this pillar is a challenge for health facilities that have been far behind in technology and now have to catch up very quickly (Nurfitria, Rania, & Rahmadiani, 2022). The difference in the focus and objectives of the RS strategy with the government's plan is not easy. There are still many hospitals that have not adopted EMR, and within 2 years (since the information of SATU SEHAT was submitted) they will have to use EMR and be ready for integration with SATU SEHAT.

The inadequate readiness of hospital infrastructure also adds to this problem. Coupled with the readiness of hospital human resources both from medical, non-medical and IT personnel themselves (Nurfitria et al., 2022; Sunindijo, Lestari, & Wijaya, 2020). Changing a process from manual to EMR is not an easy change management challenge, especially many senior health workers who are not used to using EMR. Differences in class and size of hospitals will also determine and affect the ability of hospitals to determine strategies to adapt digitally (Safi, Thiessen, & Schmailzl, 2018). It is not impossible that RS must change the prioritization of development and projects to focus on this transformation process, thus

massive disruption will occur. Apart from the cost and investment factors that must be allocated for IT development, this may change priorities from previous planning.

These things are a problem to be able to see the readiness of hospitals in transforming to support their operational processes. Through this paper, it is expected to provide an overview and answers to questions about the health industry in Indonesia in welcoming the digital transformation of health, such as how the readiness of hospitals to meet the demands of the government and the digital ecosystem that is running today. How hospitals can balance their general hospital strategy and IT strategy with the government's digital transformation. Get predictions for the success of digital transformation of the Health industry in Infonesia.

RESEACRH METHOD

The author identifies the main factors that play a role in influencing the health transformation process, namely the availability of electronic medical records in hospitals, IT human resources, IT investment and funding in hospitals. Then the author conducted a literature study conducted on these factors and then became the basis for the formation of a descriptive survey questionnaire with a quantitative approach that will be disseminated to several selected hospitals, especially at the hospital management level (Tarsito, 2014).

The questionnaire was distributed in February-April 2024 to hospital management in the Greater Jakarta area (Jakarta, Bogor, Depok, Tangerang and Bekasi). Obtained 40 respondents with the composition of class B (14 hospitals), class C (18 hospitals) and class D (8 hospitals) The analysis of the questionnaire results will prove and answer the questions that have been submitted previously (Noor, 2020). The collected data were analyzed using descriptive statistics to describe the frequency and percentage distribution of each variable studied. Data analysis is performed using Microsoft Excel software to facilitate data processing and ensure accurate results.

RESULTS AND DISCUSSION

The survey results show that the majority of hospitals in the Jabodetabek area rate themselves quite highly in terms of health digital transformation. Based on the Likert scale of 1-10, 70% of respondents ranked themselves below 7-10 and 30% of respondents rated themselves below 6. This assessment distribution shows a disparity in the level of digital transformation in Jabodetabek hospitals. This signals the need for further interventions to ensure that all hospitals can achieve optimal levels of digital transformation.

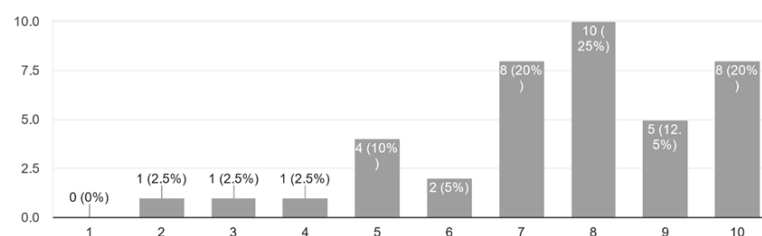


Figure 1.

Respondents' Self-Assessment of Health Digital Transformation that has been carried out.

Electronic Medical Record (RME) Standards and Interoperability

One of the factors of hospital readiness and maturity in undergoing digital transformation is the availability of RME (Electronic Medical Record). Based on the Digital Maturity Report of Hospitals in Indonesia in 2023 (Ministry of Health, 2024)(Ministry of Health, 2024) the survey results of the Indonesian Hospital Association show that 772 hospitals have adopted RME. There are 15% of hospitals that have fully implemented EMR, 39% have only partially implemented EMR, and the rest have not implemented EMR. Meanwhile, from the survey conducted by the author, it was found that 90% (36 RS) have adopted RME and only 10% (4 RS) have not done RME. This can be because the respondents come from Jabodetabek which is more mature and developed. This can also be caused by a push from the Ministry of Health by the end of December 2023 which requires the process of adopting RME and integrating SATU SEHAT to be completed by December 2024.

The survey results also show that there are 75% of hospitals that have been completed integrated in SATU SEHAT, 17.5% of hospitals are in process and only 10% have not done so by April 2024. One of the difficulty factors encountered in the field is the difference between Hospital Management Information Systems and EMRs applied. In an effort to harmonize data and information systems, the government has taken appropriate steps since 2022 by issuing KMK 01.07/Menkes/1423/2022 concerning Guidelines for Variables and Metadata in the implementation of Electronic Medical Records (Kementerian Kesehatan Republik Indonesia, 2022)(Kementerian Kesehatan Republik Indonesia, 2022)

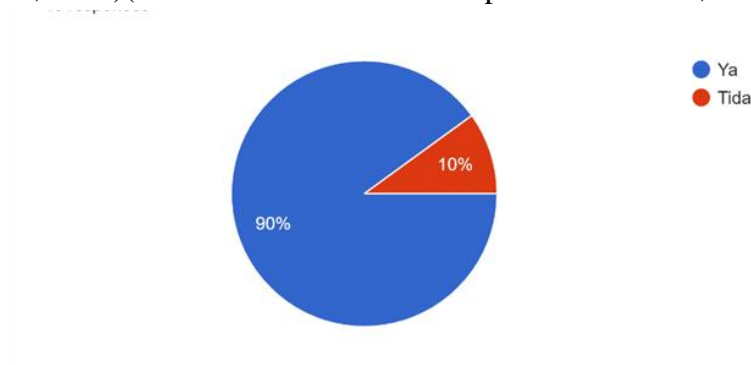


Figure 2.
Proportion of Number of Hospitals that have used electronic medical records

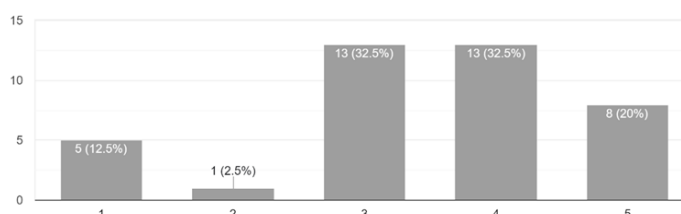


Figure 3.
Percentage of RME adoption in hospitals

IT Human Resources

The adequacy factor of the number of IT human resources per hospital is one of the things that is quite important in assessing hospital readiness. From the survey, it was found that the number of IT workers was still insufficient. Class C and D hospital groups on average only have 1-2 IT workers. There are 25% (10 hospitals) of respondents have 2 IT human resources, 7.5% (3 hospitals) have 1 IT human resource, and there are several class C hospitals that have also increased the number of IT human resources to 3 (2.5%). As for the class B hospital group, the majority already have 3-5 IT human resources (50%) and there are even hospitals that have up to 8 human resources (2.5%).

A different approach is taken by several class B hospitals that are known to have more than 1 hospital, where IT HR has been centralized and uses the concept of shared services, so that IT HR can support several hospitals at once. This is very good for the efficiency and standardization of IT HR. In the Digital Maturity Report, the assessment carried out is not on the number of IT human resources, but on the presence / absence of IT human resources who manage SIMRS, but the author assesses based on experience, the number and role of IT HR is very significant and can be assisted by third parties as IT service providers. The number of IT human resources is also closely related to the focus of development and also the risk aspects of SIMRS. With a sufficient and qualified number of IT human resources, hospitals will be able to develop and also improve supported by other parties including SIMRS providers.

IT Investment and Funds

In terms of investment or funds allocated, the survey found that 82.5% of respondents have allocated special funding to carry out digital transformation. But unfortunately when asked about how much it is, 37.5% (15 RS) did not want to answer the amount of funds allocated. 20% allocates IT funding between Rp 1,000,000,000-1,500,000,000, 12.5% (5 RS) allocates Rp 1,500,000,000-2,000,000,000, 10% (4 RS) allocates Rp 5,000,000,000-10,000,000,000 and 10% (4 RS) above Rp 10,000,000,000.

Budget is important and cannot be separated from hospital operations. The budget for digital transformation is not cheap. The aspects of technology that must be protected as well as the operational costs of technology such as the internet, device maintenance and device modernization will also consume funds that may have originally been allocated to other priorities in hospitals.

In the question of what important factors need to be considered in carrying out health digital transformation, it was found that the security factor is the most important at 72.5% or 29 respondents, and 62.5% (29 respondents) ranked integration with third parties as a factor that needs attention. The government itself asks all SIMRS providers to have high and easy interoperability. Especially now that there has been a lot of cooperation and integration carried out between SIMRS with companies and health service providers such as BPJS and other insurance. Followed by the factor of ease for patients in accessing the system by 42.5% (17 respondents). All of these factors require a lot of investment and affect how hospitals prioritize budget management that is right, correct and efficient. Hospital management is faced with the dilemma of prioritizing IT investment or prioritizing investment in medical

services such as equipment or other resources. But in this case, the fulfillment of IT is very important and unavoidable because all directions of the goal lead to technology and SATU SEHAT initiatives from the government that must be met. This process is not easy and must be ensured security so that data leakage does not occur.

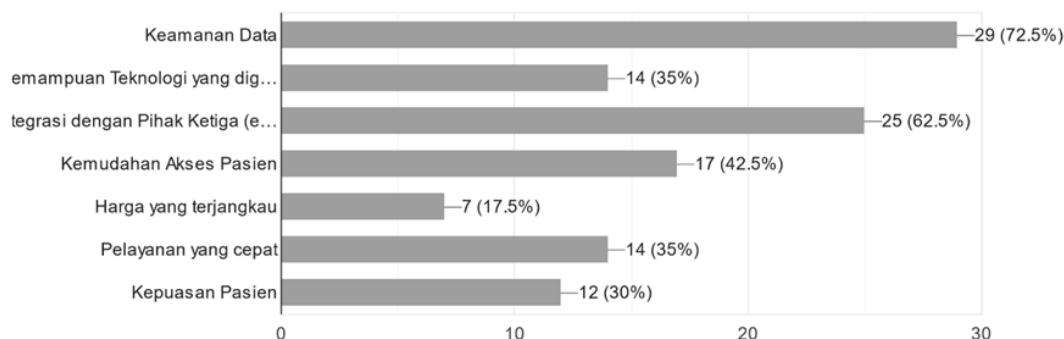


Figure 4.
Influencing Factors in Health Digital Transformation

Digital Maturity Index

Since October 2022 after the COVID-19 pandemic, the Ministry of Health, in collaboration with hospital associations such as PERSI, has held a Self-Assessment Digital Maturity Index. Digital maturity assessment consists of 7 components of technical and non-technical aspects, namely (Indonesia, 2017):

1. Hospital strategic
2. Capability Technology Hospital
3. Interopability
4. Governance and Management
5. Patient-centered Health Services
6. Skills, Behaviours and Digital Literacy
7. Data Analysis

The assessment of these aspects aims to identify priority challenges and recommendations to answer the needs of digital transformation in Indonesia. In the future, individually, hospitals can see which aspects are the weakest and can plan and strengthen digital capacity according to the results of the assessment independently. The Ministry of Health expects all hospitals to adapt to the use of digital technology as well as compliance with regulations in Indonesia (Kementerian Kesehatan, 2024).

The digital maturity self-assessment was attended by 3,075 hospitals in Indonesia (HASIBUAN, 2022). There are 1,552 hospitals conducting complete digital maturity assessments. However, only 1,549 (50.37%) met the criteria for digital maturity analysis (DMI level), and only 1,366 hospitals (44.42%) met the criteria for the assessment of electronic medical record adoption (RME) rate. The rest are not ready. The results of the DMI (Digital Maturity Index) level assessment show that the majority of hospitals are at DMI level 3 (39%) and DMI level 2 (28%). Hospitals in the Java-Bali area have a higher average level of digital maturity than other regions.

The independent digital maturity assessment shows several challenges. The complexity of digital maturity assessment instruments requires the involvement of staff from technical backgrounds in related and health units so as to have a correct understanding of the operational definition of each component measured. Technical constraints on the use of electronic surveys may have an impact on the completeness of filling, especially in areas with difficult geographical locations. The involvement of the health office is needed to facilitate communication and technical support in increasing the response rate and completeness of the hospital's digital maturity survey.

CONCLUSSION

This research succeeded in providing a comprehensive picture of the readiness of hospitals in the Jabodetabek area in facing the demands of health digital transformation launched by the government. The survey results show that the majority of hospitals rate themselves quite highly in digital transformation. This indicates a significant step that has been taken by hospitals in adopting digital technology. However, some respondents who rated themselves below 6 showed a significant gap in the implementation of digitalization in these hospitals.

Second, the study reveals how hospitals are trying to balance their general and IT strategies with government digital transformation initiatives. Challenges such as the limited number of IT human resources and the need for significant investment are major obstacles. However, some hospitals have implemented the concept of shared services to improve the efficiency and standardization of IT human resources.

Third, the benchmark for the success of the digital transformation of the health industry in Indonesia can be predicted from the results of an independent assessment of the level of digital maturity of hospitals. The digital maturity assessment shows that the majority of hospitals are at DMI levels 3 and 2, with hospitals in Java-Bali having higher digital maturity than other regions. Factors such as security, integration with third parties, and ease of access for patients were identified as keys to successful digital transformation. In the future, this assessment process must continue to be carried out continuously and the role of the Ministry of Health is not only to assess the level of digital maturity of hospitals, but also to provide assistance, direction to the journey of each hospital.

To ensure successful digital transformation in hospitals across Indonesia, several strategic steps need to be taken. First, upgrading technology infrastructure is a top priority, with further investment in a stable internet network and adequate hardware. In addition, strengthening IT human resources through training and certification should also be a focus, including special recruitment programs and collaboration with educational institutions to provide a ready-made workforce. Standardization of hospital management information systems (SIMRS) and electronic medical records (RME) needs to be strengthened to address interoperability issues, with the Ministry of Health implementing guidelines and regulations related to variables and metadata by the Ministry of Health (Kementerian Kesehatan, 2022)

Adequate funding and investment should be allocated by hospitals for digital transformation, covering operational costs and technology maintenance, as well as increased

transparency in IT fund management to ensure efficient and effective use of budgets. The focus on data security and privacy should also be increased to prevent leakage of patient information, through the implementation of strict security protocols and regular audits. Support from the government through policies, regulations, and incentives needs to continue to be provided to encourage hospitals in the digital transformation process, including technical and financial assistance programs for hospitals that are still left behind.

In addition, regular monitoring and evaluation through digital maturity assessments and regular audits is essential to monitor progress and identify areas that require improvement. Data from these assessments should be used to adjust existing strategies and policies. With these steps, it is expected that digital transformation in the Indonesian healthcare industry can run faster, more effectively, and more evenly, thereby improving the overall quality of healthcare.

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