Big Data-Based Public Service Strategy at Subang Regency Hospital, West Java

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Abstract
In the digital era, data has become a valuable asset in supporting the effectiveness of the public sector, including healthcare services. Subang District General Hospital (RSUD Subang) still faces several challenges such as long queues, delays in pharmacy services, and patient complaints regarding service quality. This study aims to analyze public service strategies based on Big Data at RSUD Subang using a quantitative approach with SWOT analysis. Data were collected through surveys, observations, and interviews with hospital staff, patients, and relevant stakeholders. The findings reveal that the utilization of Big Data can accelerate patient data processing, improve medical information accuracy, and facilitate strategic decision-making. The proposed strategies include real-time queue management, electronic medical records, and enhanced transpaarency in hospital services. This study is expected to contribute to the creation of more responsive, efficient, and patient-centered hospital public services.

Keywords: Public Service, Hospital, Big Data, SWOT, RSUD Subang

1. Introduction

The Hospitals are public service institutions that play a strategic role in improving public health. However, many hospitals in Indonesia still rely on manual data processing systems, resulting in delayed services, long queues, and inaccurate patient data. This situation also occurs at the Subang Regency General Hospital.

Several cases that have tarnished the image of the Subang Regional General Hospital, such as delays in emergency patient care, corruption in ambulance procurement, and patient complaints regarding poor queue management, highlight the need for technology-based service reform. Big Data presents a potential solution that can improve the efficiency, transparency, and accountability of hospital public services. One research journal states that the use of big data can improve the quality of healthcare services. The Impact of Big Data on Healthcare (2019) states that the use of big data can improve the quality of healthcare services by reducing medical errors, increasing patient satisfaction, and improving treatment outcomes (source: Journal of Medical Systems).

Several articles discuss how big data can improve the quality of healthcare services. One article, "Big Data in Healthcare: A Game-Changer for Patient Care" (2018), states that the use of big data can improve the quality of healthcare services by identifying factors that influence treatment outcomes, predicting patient needs, and increasing the efficiency of resource use. (Source: Healthcare IT News).

To determine the aspects of hospital readiness in implementing big data, several aspects are required, namely: Human resources (HR), availability of workers who have knowledge and expertise in health information systems, data analysis skills, and improving workforce skills.

Policies and procedures are very important for appropriate data security, data usage and accurate health data processing. Technology infrastructure that is able to provide servers, storage, networks, appropriate data analysis software, and integrated health information. Must be supported by an organizational culture that supports innovation and more effective change. Teams and departments need to adapt to technological changes by analyzing readiness, conducting coordination gap analysis, conducting a SWOT (Strength, Weakness, Opportunity, Threat) analysis to identify the hospital's strengths and weaknesses, and analyzing the costs and benefits of implementing big data.

By understanding these aspects, hospitals can determine their readiness to implement big data and effectively develop appropriate plans. Furthermore, we must understand the factors influencing big data implementation in hospitals, such as strategic management and a clear big data implementation plan; external factors that can support big data implementation, such as consultants or vendors; the availability of a market ready to accept products or services generated from big data; and acceptance from healthcare workers. Healthcare workers must be prepared to accept the changes brought about by big data by conducting training and education to ensure healthcare workers are ready to use big data.

2. Research Method

The research was conducted at Subang Regency General Hospital from February to August 2025, with data collected through questionnaires, interviews, observations, and documentation. The questionnaires were distributed to 100 respondents, consisting of 50 men aged 25–65 and 50 women aged 17–65, to measure their understanding, perceptions, and expectations regarding the benefits, challenges, and security of personal health data in big data analysis, particularly in relation to service improvement. Interviews were conducted with the head of medical records and relevant staff directly involved in public services to obtain contextual information, experiences, and perceptions of big data-based public services. In addition, observations were carried out on the registration and service flow, focusing on patient procedures from taking a queue number to entering the polyclinic, including interactions between officers and patients, system efficiency, and potential obstacles. Documentation techniques were also applied in the form of photographs and audiovisual recordings during the interviews.

3. Results and Discussions

Based on observations and a SWOT analysis, Subang Regency General Hospital has begun implementing a Big Data system through the adoption of Electronic Medical Records (EMR), in accordance with the Indonesian Minister of Health Regulation Number 24 of 2022, which mandates the use of electronic medical records in all hospitals. The EMR system at Subang Hospital is integrated with the Ministry of Health's Satu Sehat platform, enabling patient data to be accessed across healthcare facilities. This integration supports continuity of care, simplifies referral processes, reduces duplication of examinations, accelerates diagnostic procedures, and provides a foundation for data-driven clinical decision-making. However, several operational

challenges remain, including the persistence of partially manual registration and pharmacy processes, limited internal IT personnel, and the need for employee adaptation to digital systems.

The SWOT analysis indicates that the hospital's main strengths lie in its experienced medical personnel, existing basic IT infrastructure, and its strategic position as a primary referral hospital. Opportunities are reinforced by strong regulatory support, rapid digitalization trends in healthcare, and potential collaborations with universities, IT vendors, and government institutions. Conversely, weaknesses include dependence on external IT vendors, long service queues, and limited digital literacy among some staff, while threats involve data security risks, employee resistance, and competition from private hospitals with more advanced digital systems. Based on these findings, several strategies were formulated, including optimizing system integration (SO), strengthening staff capacity through training and collaboration (WO), enhancing data security mechanisms (ST), and developing standardized digital service procedures to minimize resistance and improve adaptation (WT).

From a service perspective, the implementation of EMR integrated with Satu Sehat has improved registration efficiency and reduced waiting times. Pharmacy services can also be optimized through automated inventory and prescription integration, enabling faster medication dispensing. Furthermore, integrated data supports evidence-based management and policy planning through the analysis of disease patterns, service utilization, and referral effectiveness. Despite challenges related to IT human resources, data security, and organizational change, the continued development of Big Data systems positions Subang Regency General Hospital to evolve into a digital, data-driven referral hospital in West Java, enhancing service quality, patient satisfaction, and institutional competitiveness in the long term.

4. Conclusion

The implementation of a Big Data–based public service strategy at Subang Regency General Hospital demonstrates strong potential to improve service efficiency, accelerate administrative and pharmaceutical processes, and enhance patient satisfaction. Systematic and integrated data utilization supports evidence-based decision-making and strengthens the hospital's image as a modern, adaptive, and responsive public healthcare institution. These findings indicate that Big Data functions not only as a technological tool but also as a strategic component in improving institutional performance and service quality.

To ensure sustainable and optimal implementation, it is recommended that the hospital develop a phased Big Data implementation roadmap supported by local government policy, provide continuous digital competency training for employees, and strengthen regulations on patient data security and privacy. Regular monitoring and evaluation should be conducted to assess system effectiveness and guide continuous improvement, while collaboration with universities and technology consultants is essential to support innovation and standardization. These recommendations are consistent with the findings of Deanyta Ratnasari Permana et al. (2024), which emphasize that integrated data management can accelerate service responses, reduce costs,

and increase public satisfaction, although challenges related to infrastructure, data security, and human resource readiness must still be carefully addressed.

References

Jayasri, N. P., & Aruna, R. (2022). Big data analytics in healthcare through data mining and classification techniques. *ICT Express, 8*(2), 250–257. https://doi.org/10.1016/j.icte.2021.09.002

Khanna, D., Jindal, N., Singh, H., & Rana, P. S. (2023). Applications and challenges in big data in healthcare: A strategic review. *Current Medical Imaging Reviews, 19*(1), 27–36. https://doi.org/10.2174/1573405618666220411105247

Pastorino, R., De Vito, C., Migliara, G., Glocker, K., Binenbaum, I., Ricciardi, W., & Boccia, S. (2019). Benefits and challenges of big data in healthcare: An overview of European initiatives. *European Journal of Public Health, 29*(3), 23–27. https://doi.org/10.1093/eurpub/ckz168

Sugiyono. (2020). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.

Undang-Undang Republik Indonesia Nomor 44 Tahun 2009 tentang Rumah Sakit.

Wibowati, R. (2020). Dimensions of public service quality. *Journal of Public Administration, 14*(2), 115–123.

Nainggolan, H. (2023). *Big data in various sectors*. Repository Universitas Satyagama Jakarta. https://repository.ustj.ac.id/63/1/Big%20Data%20ISBN%20978-623-09-1904-6%20PDF.pdf