



E-ISSN : 2988-585X (Online)

Journal of Elektronik Sistem Informasi (JESII)

Volume 3 No 2 December 2025

DOI : 10.31848/jesii.xxxx.xxxx

Digital Information System Utilization Using the People Process Technology Framework

Eka Wulansari¹, Ahsani Takwim²

¹Department of Information System, STMIK LIKMI Bandung

²Department of Informatics, Universitas Teknologi Bandung

Article Info

Article history:

Received Oct 13, 25

Revised Nov 28, 25

Accepted Dec 25, 25

Keywords:

Digital Information System
Digital Utilization
People Process Technology
Descriptive Analysis
Digital Infrastructure

ABSTRACT

This study examines the utilization of digital information systems in Indonesia from a national perspective using a descriptive quantitative approach and national digital indicators interpreted through the People-Process-Technology framework. The findings indicate that digital information systems in Indonesia demonstrate strong utilization in terms of user participation and technology adoption, particularly through mobile-based access. These results confirm that digital technologies have become an essential part of daily activities and function as mainstream infrastructures at the national level. However, the analysis also reveals that infrastructure readiness and supporting processes have developed at a slower pace compared to user adoption and technological access. This imbalance may limit the effectiveness and consistency of digital information system utilization, despite high levels of access. From a People-Process-Technology perspective, the people and technology dimensions appear relatively strong, while the process dimension represents the primary constraint. Overall, the study concludes that effective utilization of digital information systems requires balanced development across people, process, and technology dimensions to fully maximize the benefits of widespread digital adoption in Indonesia.

Corresponding Author:

Eka Wulansari

Information System Department, STMIK LIKMI Bandung

Jl. Ir. H. Juanda No.96, Lebakgede, Kecamatan Coblong, Kota Bandung, Jawa Barat 40132

Email: wulanreska28@gmail.com

1. INTRODUCTION

Information systems have become a fundamental component in supporting organizational activities and societal interactions in the digital era. The increasing reliance on digital platforms for communication, information processing, and service delivery demonstrates that information systems function as critical infrastructures rather than merely supporting tools [1]. Through the integration of data, processes, and technology, information systems enable organizations and governments to operate more efficiently and to respond to environmental changes in a timely manner. At a broader level, the utilization of information systems reflects a country's readiness to adopt digital transformation and to leverage technology for sustainable economic and social development [2]. Digital transformation is not limited to the adoption of new technologies, but also involves changes in organizational structures,

processes, and human capabilities. In this context, information systems serve as enablers that connect technological innovation with organizational and societal value creation. Digital transformation is increasingly understood as a socio-technical phenomenon that involves the interaction of technology, organizational processes, and human capabilities rather than technology adoption alone [13].

The rapid growth of internet access and mobile technology has accelerated the diffusion of information systems across multiple sectors. Digital services such as online information access, electronic transactions, and digital communication platforms depend heavily on the availability and reliability of information systems [3]. As internet penetration increases, information systems become more deeply embedded in everyday activities, influencing how individuals interact, consume information, and access services. Indonesia presents a distinctive context for information systems analysis due to its large population and dynamic digital development. With a population exceeding 280 million people, Indonesia has significant potential as a large-scale user of digital information systems, making national-level analysis particularly relevant [4]. The scale of the population amplifies both the opportunities and challenges associated with information system utilization, particularly in terms of access, inclusivity, and system performance.

Global digital development reports indicate that internet adoption in Indonesia continues to increase, with mobile devices emerging as the primary medium for accessing digital services [5]. This mobile-centric pattern suggests that information systems in Indonesia are predominantly accessed through smartphones rather than traditional desktop environments. Consequently, mobile-based information systems play a central role in shaping digital interaction patterns and user experiences. Despite these positive developments, challenges related to digital infrastructure quality and connectivity disparities remain evident. Differences in network reliability, coverage, and service quality across regions may limit the effectiveness and consistency of information system utilization, even in countries with high levels of technology adoption [6]. These challenges highlight that access alone is insufficient; the quality of supporting infrastructure is equally important in determining system effectiveness.

From an information systems perspective, effective utilization cannot be fully understood by focusing solely on technological adoption. Existing studies emphasize the need for integrated analytical approaches that consider human readiness, organizational processes, and technological capability simultaneously [7]. Without such integration, analyses of digital development risk overlooking critical factors that influence how information systems are actually used in practice. Most existing studies on digital development in Indonesia tend to focus on technological growth or economic indicators, while fewer studies interpret national-level digital statistics through a comprehensive information systems framework. To address this gap, this study analyzes the utilization of digital information systems in Indonesia using global digital statistical data and interprets the findings through the People–Process–Technology (PPT) framework [8]. By applying this framework, the study aims to provide a holistic and structured understanding of information system utilization at the national level and to contribute to the information systems literature by offering insights into Indonesia’s digital readiness. However, previous studies on digital development in Indonesia have not explicitly examined digital information system utilization by simultaneously integrating people, process, and technology dimensions at the national level. In particular, prior research has not systematically interpreted national digital indicators using the People–Process–Technology framework to explain how these dimensions interact in shaping digital information system utilization.

The novelty of this study lies in its explicit interpretation of national-level digital indicators through an integrated People–Process–Technology framework to explain digital information system utilization in Indonesia. Unlike prior studies that primarily emphasize technological adoption or economic metrics, this study conceptualizes digital utilization as a socio-technical phenomenon by simultaneously examining human participation, supporting processes, and technological access at a national scale. This framework-based descriptive approach offers a structured and holistic perspective

on digital information system utilization that has not been explicitly articulated in previous national-level studies.

2. METHOD

2.1 Research Design

This research is designed to provide a clear description of how digital information systems are utilized in Indonesia at a national level. The study adopts a descriptive quantitative approach, as the main objective is to observe and interpret existing digital conditions rather than to explain causal mechanisms or predict future outcomes. By focusing on current digital indicators, the study seeks to capture the overall landscape of information system utilization in a realistic and measurable manner. In the context of information systems research, this approach is particularly suitable when the analysis emphasizes patterns of system usage, access, and readiness across a broad population. The descriptive quantitative design allows the researcher to translate large-scale digital statistics into meaningful insights related to information system utilization without introducing unnecessary methodological complexity. This approach has been widely recognized as appropriate for macro-level digital and information systems studies [9].

2.2 Data Source

The empirical basis of this study is derived from secondary data published in the Global Digital Report 2025 by We Are Social and Meltwater. This report was selected because it provides a comprehensive overview of digital conditions across countries using standardized indicators, making it suitable for national-level comparison and analysis [10]. The report aggregates data from various authoritative sources, including national statistical offices, international institutions, and global digital platforms. As a result, the data offer a consolidated and reliable representation of digital adoption, internet usage, and connectivity conditions in Indonesia. The use of such secondary data enables the study to focus on analytical interpretation rather than data collection, which aligns with the descriptive purpose of the research [11].

2.3 Research Variables and Indicators

To examine digital information system utilization in Indonesia, this study employs four key indicators that reflect different aspects of digital engagement and infrastructural support. These indicators were selected based on their relevance to national digital conditions and their frequent use in digital and information systems analysis. Population size is used to provide contextual understanding of the potential scale of information system users. Internet usage rate reflects the extent to which the population actively interacts with digital systems. Mobile-based internet access highlights dominant modes of interaction with information systems, particularly in environments where smartphones are the primary access devices. Finally, the digital connectivity index represents the quality and availability of infrastructure that supports effective system utilization. Together, these indicators allow the study to describe digital information system utilization in a balanced manner, capturing human potential, technological access, and infrastructural readiness. Similar indicator-based approaches have been commonly applied in studies examining digital readiness and information system diffusion at the macro level [12].

2.4 Analytical Framework

People + Process + Technology = Data-Driven Strategy

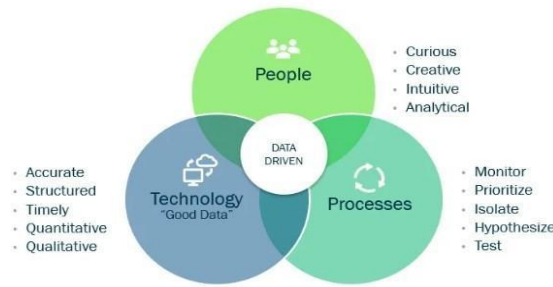


Figure 1. People, Process, Technology: The Framework for Workforce Management

To ensure that the analysis remains grounded in information systems theory, the selected indicators are interpreted using the People–Process–Technology (PPT) framework. Rather than functioning as a rigid model, the framework is used as a guiding structure to organize and interpret the data in a meaningful way. Within this framework, population size and internet usage are associated with the people dimension, mobile-based access represents the technology dimension, and digital connectivity reflects the process dimension. This structure allows the analysis to move beyond descriptive statistics and toward an integrated understanding of how different socio-technical elements interact to shape information system utilization. The PPT framework has been widely used in information systems studies to support such holistic interpretations [13].

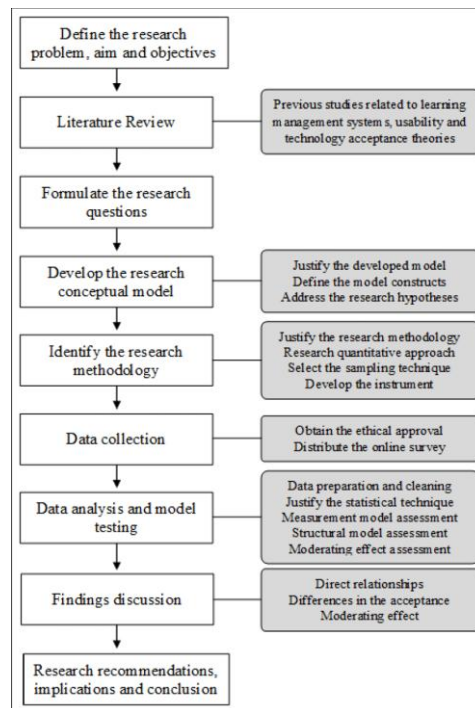


Figure 2. People, Process, Technology: The Framework for Workforce Management

The data analysis process involves organizing relevant statistical values related to Indonesia into tables and graphical representations to facilitate interpretation. The analysis focuses on identifying general patterns and tendencies within the data rather than performing inferential statistical testing. This approach allows the study to highlight meaningful relationships between indicators while maintaining clarity and transparency in the analytical process. Descriptive analysis is particularly

appropriate for studies that aim to provide an overview of digital system utilization without imposing assumptions about causality. In information systems research, this technique has been widely applied to examine trends in technology adoption and system usage at national and sectoral levels [14].

2.5 Research Limitations

Several limitations should be acknowledged in this study. First, the reliance on secondary data restricts the ability to explore deeper behavioral or organizational factors that may influence information system utilization. Second, the use of national-level indicators may conceal regional disparities in digital access and infrastructure across Indonesia. These limitations are inherent in macro-level descriptive studies and suggest opportunities for future research to incorporate more granular data or complementary qualitative approaches [15].

3. RESULT AND DISCUSSION

3.1 Descriptive Findings from National Digital Indicators

The descriptive analysis of national-level digital indicators reveals that Indonesia has entered a phase of widespread digital information system utilization. Internet access is no longer limited to specific user groups but has become a common element of daily life. This condition indicates that digital information systems have achieved a critical mass of users, allowing them to function as mainstream platforms for information exchange and service interaction.

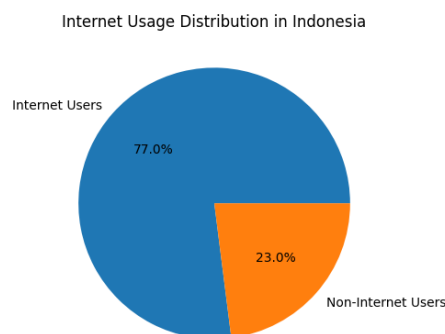


Figure 3. Internet usage distribution in Indonesia based on national digital indicators (Global Digital Report 2025).

Figure 3 illustrates the distribution of internet usage in Indonesia based on national digital indicators from the Global Digital Report 2025. The figure shows that internet usage has reached a substantial proportion of the population, indicating that digital information systems have become widely embedded in daily activities. This widespread usage reflects a strong people dimension, where a large number of individuals actively engage with digital platforms for communication, information access, and service interaction. However, the figure also implies that high usage levels do not automatically ensure effective or uniform utilization, as aggregate data do not capture variations in usage quality, digital skills, or access conditions. Therefore, Figure 3 provides an important descriptive foundation for understanding digital information system utilization, which must be further interpreted through the People–Process–Technology framework.

Based on the Global Digital Report 2025, Indonesia demonstrates a high level of internet adoption, with the majority of users relying on mobile devices to access digital services. This widespread connectivity indicates that digital information systems have become embedded in everyday activities and function as mainstream infrastructures at the national level. From the People–Process–Technology

perspective, these national digital indicators reflect a strong people dimension characterized by broad user participation and widespread engagement with digital platforms. However, the aggregated nature of national-level data also suggests that high access and participation do not necessarily translate into effective or consistent system utilization across different contexts. Therefore, the descriptive findings in this subsection provide an essential foundation for further interpretation using the PPT framework to clarify how people, process, and technology dimensions interact in shaping digital information system utilization in Indonesia.

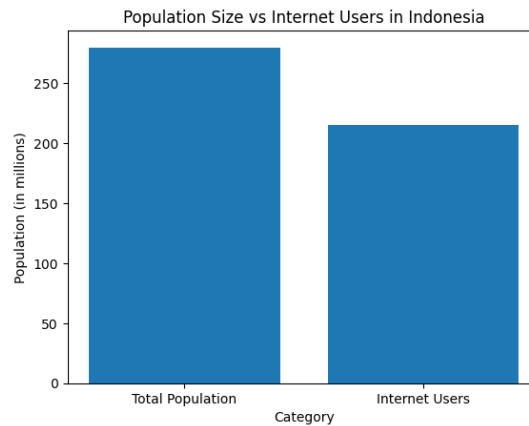


Figure 4. Comparative Analysis of People Process Technology Dimensions

3.2 Data Analysis Technique

However, the analysis also shows that high adoption levels do not necessarily imply uniform or optimal utilization. The descriptive indicators point to variations in access quality and usage patterns, suggesting that digital system utilization in Indonesia is shaped by multiple interacting factors rather than by access alone. These findings emphasize the need for a framework-based interpretation to understand underlying dynamics.

3.3 People Dimension: Readiness, Participation, and Usage Characteristics

From the people dimension, the findings indicate strong user participation at the national level. The large population size combined with a high internet usage rate reflects broad acceptance of digital information systems. This suggests that, in general, users are willing to adopt digital platforms for communication, information access, and everyday transactions.

Nevertheless, the findings also imply that user readiness cannot be understood solely through participation rates. While access is widespread, the descriptive data do not capture differences in digital skills, frequency of use, or purpose of system interaction. This gap highlights a potential disparity between access and effective use. As a result, the people dimension should be interpreted as indicating strong potential rather than uniformly high capability in information system utilization.

3.4 Technology Dimension: Mobile-Centric System Utilization

The technology-related findings show a clear dominance of mobile-based internet access. Smartphones have become the primary gateway through which users interact with digital information systems. This mobile-centric pattern reflects the accessibility and affordability of mobile technology in Indonesia and explains the rapid diffusion of digital services.

From an information systems perspective, this finding carries important implications. Mobile-centric utilization places specific demands on system design, including responsiveness, usability, and performance under variable network conditions. While mobile access increases reach, it may also constrain the complexity of tasks that users can perform comfortably. Therefore, the technology dimension reflects both an enabler and a limiting factor in digital information system utilization.

3.5 Process Dimension: Infrastructure, Connectivity, and System Support

The process dimension is reflected in indicators related to digital connectivity and infrastructure readiness. The findings indicate gradual improvements in connectivity, suggesting ongoing investment and development in digital infrastructure. This trend supports the expansion of digital information systems across the country.

However, the results also reveal that infrastructural development has not progressed at the same pace as user adoption and mobile technology diffusion. Variations in network quality and reliability may affect the consistency of system performance and user experience. From the PPT perspective, this imbalance suggests that supporting processes—such as infrastructure management, policy coordination, and service governance—represent the most critical constraint on effective system utilization.

Devices Used to Access Digital Information Systems in Indonesia

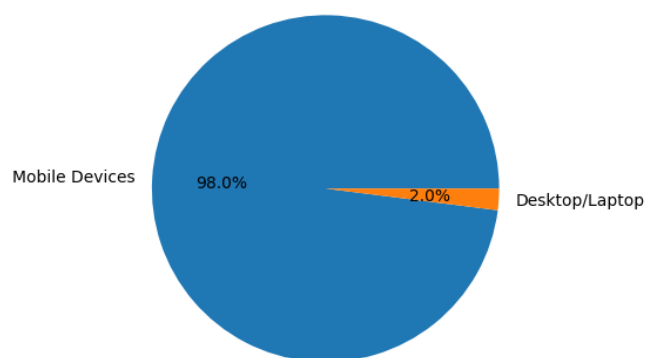


Figure 5. Internet usage distribution in Indonesia based on national digital indicators.

3.6 Interaction among People, Process, and Technology Dimensions

When analyzed collectively, the findings reveal an important interaction pattern among the three PPT dimensions. Strong user participation (people) and widespread mobile access (technology) create favorable conditions for digital information system utilization. However, limitations in infrastructural processes reduce the extent to which these conditions can be fully leveraged.

This interaction explains why high adoption rates do not always translate into high system effectiveness. The findings suggest that improvements in one dimension alone are insufficient; instead, balanced development across people, process, and technology is required. This interpretation aligns with the conceptual framework illustrated in Figure 1, where system effectiveness emerges from the interaction among all three components. Prior information systems research also emphasizes that effective system utilization depends on balanced interactions among people, process, and technology dimensions within a socio-technical context [15].

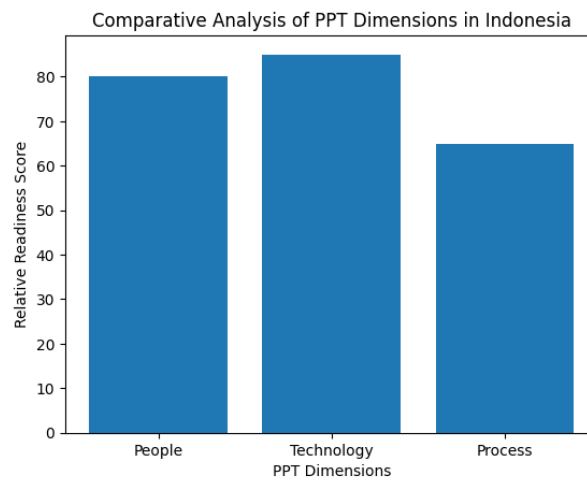


Figure 6. Comparative Analysis PPT Dimens

3.7 Discussion in Relation to the Research Process Flow

In accordance with the research process flowchart, the findings represent the outcome of systematic data analysis and conceptual interpretation. Rather than testing hypotheses or measuring causal effects, the discussion focuses on understanding how national-level digital indicators reflect underlying information system conditions.

The integration of descriptive findings with the PPT framework enables a structured discussion that moves beyond surface-level statistics. This approach demonstrates that national digital readiness is a multidimensional phenomenon shaped by human participation, technological access, and infrastructural processes. The findings thus complete the analytical phase of the research process and provide a foundation for drawing meaningful conclusions and recommendations.

3.8 Summary of Key Findings

The key findings of this study can be summarized as follows:

- 1) Digital information systems are widely utilized in Indonesia, supported by high levels of internet access.
- 2) User participation is strong, but variations in readiness and usage depth remain unobserved in aggregate data.
- 3) Mobile technology dominates system access, shaping interaction patterns and system requirements.
- 4) Infrastructure and supporting processes represent the primary constraint on effective system utilization.
- 5) Balanced development across people, process, and technology dimensions is essential for maximizing the benefits of digital information systems.

4. CONCLUSION

This study finds that digital information system utilization in Indonesia is characterized by widespread user participation and high levels of internet access, particularly through mobile-based platforms. The analysis of national digital indicators using the People–Process–Technology framework

indicates that the people dimension is relatively strong, reflecting broad engagement with digital services at the national level. However, the findings also reveal that supporting processes and infrastructure development have not progressed at the same pace as user adoption and technological access. This imbalance may limit the effectiveness and consistency of digital information system utilization across different contexts. Overall, the study highlights that national digital readiness is shaped not only by access and participation, but by the balanced interaction of people, process, and technology dimensions.

4.1 Research Contributions

This study contributes to the field of information systems in three main ways. First, it demonstrates how national-level digital indicators can be systematically interpreted using the People–Process–Technology framework. Second, it provides a holistic perspective on digital information system utilization in Indonesia by integrating human, technological, and process-related dimensions. Third, it offers a methodological illustration of applying descriptive quantitative analysis within a socio-technical framework for national-level information systems research.

4.2 Limitations and Future Research Directions

While this study provides valuable insights, several limitations should be acknowledged. The reliance on secondary data restricts the ability to capture behavioral and organizational factors in detail, and national-level indicators may obscure regional disparities in digital infrastructure and system utilization. Future research may address these limitations by incorporating regional-level analysis, using mixed-method approaches, or integrating primary qualitative data. Such studies could provide deeper insights into variations in digital information system utilization and further validate the findings of this research.

ACKNOWLEDGEMENTS

The author would like to express sincere gratitude to all parties who contributed to the completion of this study. Special appreciation is extended to the academic supervisors and lecturers of the Master's Program in Information Systems for their valuable guidance, insights, and constructive feedback throughout the research process.

The author also acknowledges the availability of publicly accessible digital data, particularly the Global Digital Report 2025, which served as a primary data source for this study. The insights derived from this open-source dataset made it possible to conduct a comprehensive analysis of digital information system utilization in Indonesia. Finally, the author is grateful to colleagues and peers for their discussions and support, which contributed to the refinement of the analysis and interpretation presented in this paper.

REFERENCES

- [1] DataReportal, Digital 2025: Indonesia, Global Digital Report 2025. We Are Social & Meltwater, 2025. [Online]. Available: <https://datareportal.com/reports/digital-2025-indonesia>
- [2] J. M. Stanton, K. R. Stam, P. Mastrangelo, and J. Jolton, "Analysis of end user security behaviors," *Computers & Security*, vol. 24, no. 2, pp. 124–133, 2005.
- [3] H. J. Watson and B. H. Wixom, "The current state of business intelligence," *Computer*, vol. 40, no. 9, pp. 96–99, 2007.
- [4] W. J. Orlikowski and C. S. Iacono, "Research commentary: Desperately seeking the 'IT' in IT research," *Information Systems Research*, vol. 12, no. 2, pp. 121–134, 2001.
- [5] L. M. Applegate, R. D. Austin, and F. W. McFarlan, *Corporate Information Strategy and Management*, 8th ed. New York, NY, USA: McGraw-Hill, 2017.
- [6] M. D. Myers, *Qualitative Research in Business and Management*. London, UK: Sage Publications, 2019.
- [7] T. DeLone and E. McLean, "The DeLone and McLean model of information systems success: A ten-year update," *Journal of Management Information Systems*, vol. 19, no. 4, pp. 9–30, 2003.
- [8] A. Hevner, S. March, J. Park, and S. Ram, "Design science in information systems research," *MIS Quarterly*, vol. 28, no. 1, pp. 75–

105, 2004.

- [9] R. Kling, "Social informatics: Understanding the social aspects of information and communication technologies," *Information Society*, vol. 16, no. 3, pp. 217–234, 2000.
- [10] Prosci, "The People, Process, Technology (PPT) Framework," Prosci Research Brief, 2023. [Online]. Available: <https://www.prosci.com/blog/people-process-technology>
- [11] World Bank, *World Development Report 2021: Data for Better Lives*. Washington, DC, USA: World Bank Publications, 2021.
- [12] OECD, *Digital Transformation in Indonesia*, OECD Digital Economy Papers, Paris, France, 2022.
- [13] L. Galliers and D. E. Leidner, *Strategic Information Management: Challenges and Strategies in Managing Information Systems*, 4th ed. London, UK: Routledge, 2014.
- [14] International Telecommunication Union, *Measuring Digital Development: Facts and Figures 2023*. Geneva, Switzerland: ITU, 2023.
- [15] E. Mumford, "The story of socio-technical design: Reflections on its successes, failures and potential," *Information Systems Journal*, vol. 16, no. 4, pp. 317–342, 2006.