Mantik Journal, 10 (1) (2026), ISSN 2685-4236 (Online)

Published by:Institute of Computer Science (IOCS)

Jurnal Mantik

Journal homepage: www.iocscience.org/ejournal/index.php/mantik

Analysis And Planning of An Integrated Service Information System At The Home Autis Center Medan

Gabriel Ardi Hutagalung[1], Ari Syaiful Rahman Arifin[2]
[1,2] Professional Engineer Program, Faculty of Enggineering, Universitas Negeri Padang, Indonesia

A R T I C L E I N F O

Article history:

Received May 08 , 2026
Revised May 14 , 2026
Accepted May 25, 2026

Keywords:

Information System Planning,
Autism Therapy Center.

ABSTRACT

This study aims to analyze the requirements and design a web-based integrated service information system for Home Autis Center Medan, a therapy institution that provides intervention services for children with Autism Spectrum Disorder (ASD). The analysis was conducted on the existing manual system, which resulted in data duplication, recording errors, and inaccurate service scheduling. Based on the findings, a system design was developed, including system architecture, database structure, process workflows, and user interface design. The proposed system planning encompasses features for student data management, learning goals management, therapy activity recording, and real-time web-based child development reporting. The result of this study is a blueprint or system design ready for implementation, which is expected to improve administrative efficiency, reduce recording errors, accelerate the reporting process, and support the implementation of good service governance at Home Autis Center Medan.

Corresponding Author:

Gabriel Ardi Hutagalung
Professional Engineer Program, Faculty of Enggineering, Universitas Negeri Padang, Indonesia
Prof. Dr. Hamka Street, Air Tawar Padang, Padang City, West Sumatra, 25131, Indonesia
Email: gabrielardi@student.unp.ac.id

1. INTRODUCTION

In recent years, attention toward therapy services for children with special needs, particularly children with Autism Spectrum Disorder (ASD), has significantly increased. Therapy institutions such as Home Autis Center Medan play an important role in supporting the growth and development of children with special needs through integrated therapeutic services. However, in daily operations, many therapy institutions still manage administrative processes, patient data records, therapy schedules, and progress reports manually or through separate, unintegrated applications(Karanja et al., 2016).

The lack of system integration causes several problems, including data duplication, recording errors, inaccurate service schedules, and difficulties in evaluating therapy progress. Furthermore, unsystematic information management makes it challenging for management to implement efficient and accountable service governance (Hayati et al., 2021).

Home Autis Center Medan, as one of the active therapy institutions in Medan City, faces similar challenges. The need for an integrated information system supported by proper service governance has become increasingly important in order to improve

service quality, staff work efficiency, and the satisfaction of parents or guardians of the children receiving therapy (Afrizal Amrustian, 2024).

The digitization of administrative processes contributes significantly to improving the quality of therapeutic services for children with special needs by enhancing efficiency, accuracy, accessibility, and coordination among therapists, administrators, and parents. Through a centralized digital system, therapy institutions can minimize data duplication, reduce recording errors, improve therapy scheduling accuracy, and facilitate systematic monitoring of children's developmental progress. In addition, digital systems enable faster access to patient information, more effective reporting processes, and improved transparency in service delivery. These improvements support better decision-making by management and allow therapists to focus more on therapeutic activities rather than administrative tasks. As a result, digitization not only improves operational performance but also contributes to more effective, accountable, and child-centered therapy services.

Along with the advancement of information technology, the implementation of a web-based information system can serve as an effective solution to support patient data management, therapy scheduling, therapist staff management, and systematic, centralized reporting of children's developmental evaluations. In addition, the system can assist management in handling financial data, service reporting, and data-driven decision-making processes (Mukhtar et al., 2020).

Based on these conditions, this research was conducted to analyze and design an Integrated Service Information System for Home Autis Center Medan (Saputra & Ikasari, 2023). The objective is to create a digital solution capable of improving administrative efficiency, data accuracy, transparency, and accountability in delivering holistic and sustainable therapy services for children with special needs(Rahmaddion & Arribe, 2023).

2. RESEARCH METHOD

This research employed a Research and Development (R&D) approach focusing on system analysis and planning for a web-based Integrated Service Information System at Home Autis Center Medan (Wiguna & Mahdiana, 2023). The study adopted the Waterfall model as the system development framework because it provides a systematic and structured process for analyzing requirements and designing information systems. However, this research was limited to the analysis and planning stages and did not include full system implementation or maintenance activities (Nursyanti Reni, 2019).

2.1 Research Method

The stages conducted in this research are described as follows:

a. Requirements Analysis

The first stage involved identifying and analyzing the system requirements through direct observation, structured interviews, and documentation studies conducted at Home Autis Center Medan. Observations were performed to understand the existing operational workflow, including student registration, therapy scheduling, therapy activity recording, administrative processes, and reporting mechanisms (Suprapti et al., 2022). Interviews were conducted with institution managers, administrative staff, and therapists to identify operational constraints, information needs, and problems encountered in the current manual system. Documentation studies were also carried out on registration forms, therapy records, schedules, and administrative reports(Edo, Oktaviani, et al., 2024).

The outcome of this stage was the identification of functional and non-functional requirements. Functional requirements included student data management, therapy scheduling, therapy progress recording, learning goals management, and reporting

features. Non-functional requirements included data security, usability, system reliability, and accessibility(Edo, Wahyu, et al., 2024).

b. System Planning and Design

The second stage focused on planning and designing the proposed integrated information system based on the results of the requirements analysis. The planning process included: (a) Database design through Entity Relationship Diagrams (ERD), table normalization, and database schema planning to ensure efficient and secure data management (Azuddin et al., 2025). (b) System architecture planning, including application structure, module organization, and feature integration within the web-based platform. (c) User Interface and User Experience (UI/UX) design for system pages such as login interfaces, dashboards, student management pages, therapy schedules, progress reports, and administrative modules. The interface was designed to be responsive and user-friendly across desktop and mobile devices.

The result of this stage was a comprehensive blueprint or prototype design of the integrated service information system that can be used as a reference for future implementation and development (Ma'arif et al., 2019).

2.2 Research Subjects

The research subjects consisted of stakeholders directly involved in the operational activities of Home Autis Center Medan, including institution managers, administrative staff, and therapists. These subjects were selected because they are the primary users and decision-makers related to the proposed system. Institution managers provided information regarding organizational governance and service management, while administrative staff and therapists contributed operational and technical requirements related to daily service activities (Salahuddin et al., 2023).

2.3 Research Design

This study was designed as a system analysis and planning research aimed at producing a web-based integrated service information system blueprint for Home Autis Center Medan (Khusna Nur Hidayati et al., 2025). The research emphasized identifying existing problems, analyzing user needs, and designing an integrated system solution capable of improving administrative efficiency, data accuracy, reporting effectiveness, and service governance. The final output of this research was a detailed system planning document and design prototype ready to be implemented in future development stages (Mumtahana, 2022).

3. RESULTS AND DISCUSSIONS

The following flowchart illustrates the overall workflow of the Integrated Service Information System at Home Autis Center Medan. The process begins with user authentication through the login system for administrators and therapists, followed by student data management, therapy session scheduling, recording of therapy activities and child development progress, and learning goals management. The workflow concludes with the generation of progress reports that can be accessed by parents or guardians through a unique access code (Roy et al., 2024). The information system contributes significantly to data-driven decision making at Home Autis Center Medan by providing accurate, centralized, and real-time data that can support managerial and operational decisions more effectively. Through the integrated system, management can access comprehensive information related to student data, therapy schedules, therapist performance, child development progress, financial records, and service reports in a structured manner. This availability of organized data enables management to analyze

service performance, identify operational problems, and determine appropriate strategies for improving service quality.

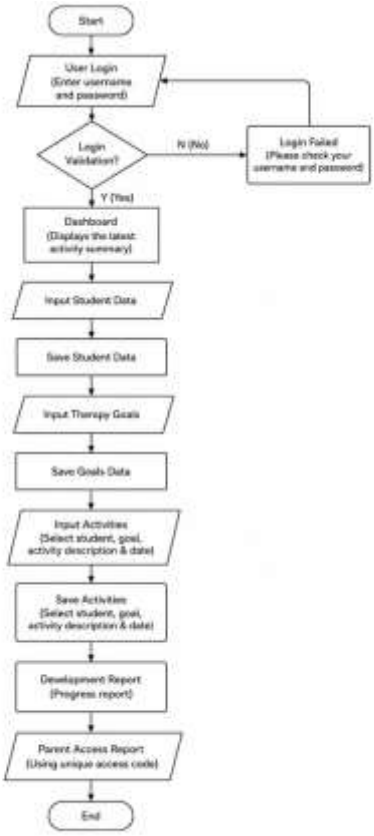

Figure 1. Flowchart System

The flowchart above illustrates three main user roles within the system: (1) Administrators, who have full access to all data management, scheduling, and reporting features; (2) Therapists, who are responsible for recording student activities and development progress as well as managing therapy goals; and (3) Parents or guardians, who can access their child's development reports through a unique access code without needing to log into the system. Each process includes input validation to ensure that the entered data is accurate and consistent.

The database design for the Home Autis Center Medan information system was developed using the Entity Relationship Diagram (ERD) approach and visualized in the form of table relationships using Figma (Mercy, 2022). The database was designed to accommodate all functional requirements of the system, including user data, student data, therapy schedules, therapy goals, activity records, and child development reports (Dika Pratama et al., 2022).

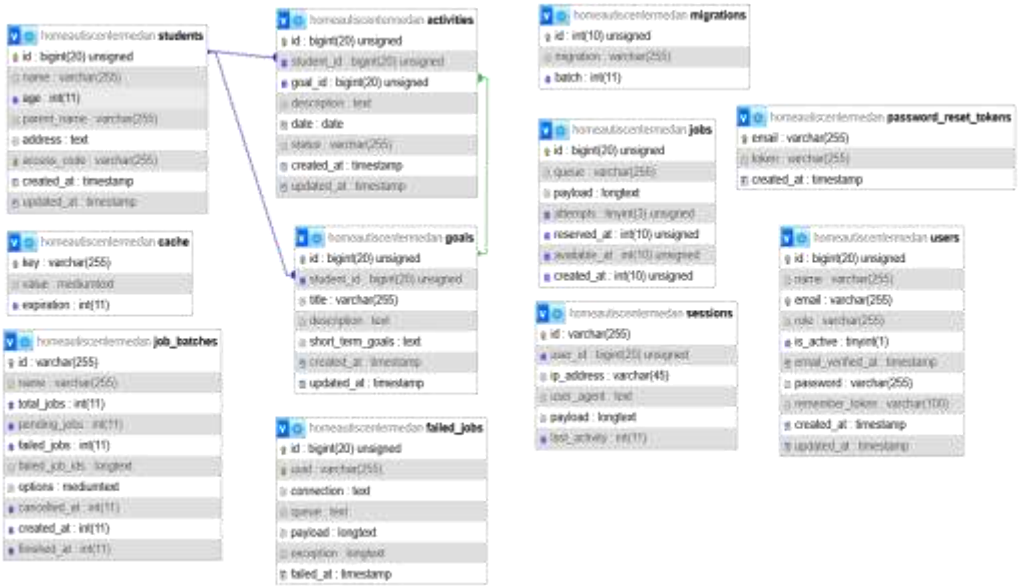

Figure 2. Table Design Plan

The UI design reflects a clean, modern, and user-friendly interface for all system users, including administrators, therapists, and parents or guardians (Rawat & Purnama, 2021). The interface was designed responsively while considering ease of navigation across system features (Hadi et al., 2022).

Figure 3. Activity Form Design

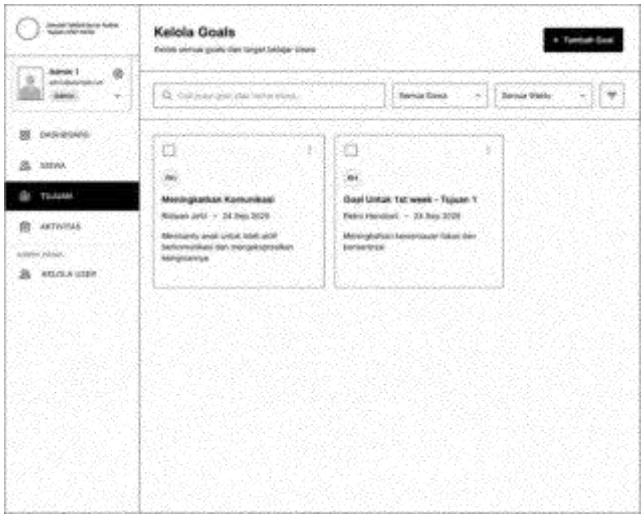

Figure 4. Goal Design Form

Figure 5 Siswa Design Form

Figure 6. Dashboard Design Form

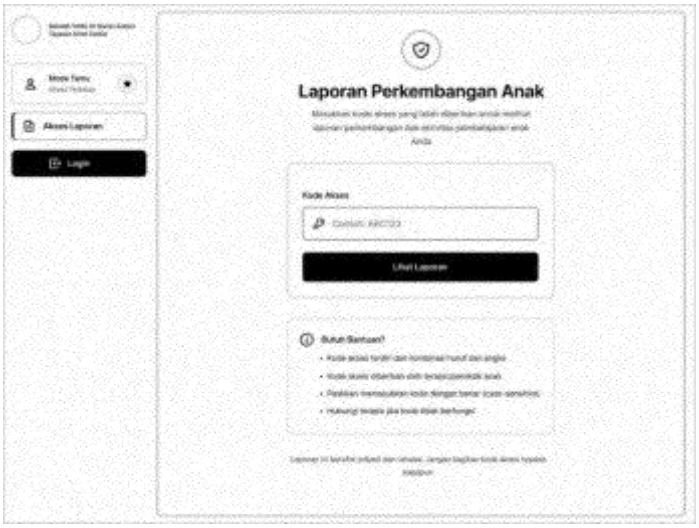

Figure 7. Report Design Form

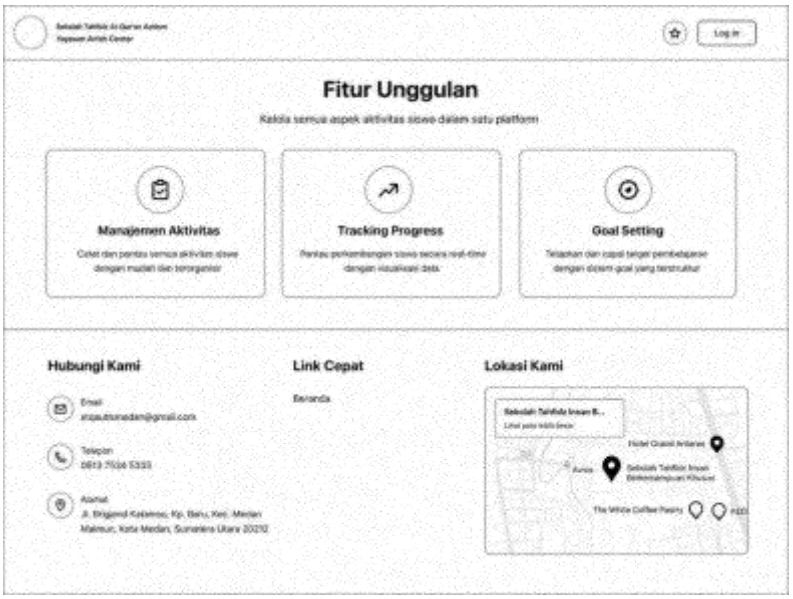

Figure 8. Footer Design Form

Each page was designed by considering ease of navigation, information readability, and user convenience. The Dashboard page displays a real-time summary of important data. The Student Management page facilitates searching, adding, and managing student data. The Goals and Activities pages were designed to help therapists record and monitor each student's progress in a structured manner. This design serves as a visual reference for the future system implementation process (Mia Amelia et al., 2024).

4. CONCLUSION

Based on the results of this research, it can be concluded that the requirements analysis and planning of a web-based Integrated Service Information System for Home Autis Center Medan have been successfully completed in accordance with the institution's

operational needs (Ardhiyani & Mulyono, 2018). The analysis results indicate that the existing manual system still faces several problems, including data duplication, recording errors, and delays in reporting processes. Based on these findings, a comprehensive system plan was developed, including system workflow flowcharts, database design through table relationships, and user interface (UI) design. The proposed system design includes several important features such as student management, learning goals management, therapy activity recording, and real-time child development reporting. This planning is expected to serve as a blueprint for future system implementation that can improve administrative efficiency, data accuracy, and information accessibility for therapists, administrators, and parents or guardians. Furthermore, the system planning also incorporates principles of good service governance through a structured, integrated, and well-documented system design that is easy to operate. The system contributes to the implementation of good service governance by improving transparency, accountability, efficiency, and coordination in managing therapeutic services. Through an integrated digital platform, all administrative and therapeutic activities can be systematically recorded and monitored in real time, reducing the risk of data loss, duplication, and human error. The system also enables management to generate accurate reports quickly, support data-driven decision-making, and evaluate therapist performance more effectively. In addition, the availability of centralized information improves communication and collaboration among therapists, administrators, and parents or guardians. By ensuring that data and service processes are organized, accessible, and well-documented, the system supports more professional, reliable, and accountable service management within the institution.. Therefore, the results of this analysis and planning are expected to provide a strong foundation for implementing an integrated service information system capable of significantly improving the quality of services and operational management at Home Autis Center Medan. The next steps for future research are focused on usability testing, system effectiveness evaluation, and system implementation in real operational environments. Usability testing is important to measure how easily therapists, administrators, and parents or guardians can use the system features efficiently and comfortably. This stage may include user satisfaction analysis, interface evaluation, accessibility testing, and user experience assessment to ensure that the system meets the needs of all stakeholders. Furthermore, effectiveness testing can be conducted by comparing administrative performance before and after system implementation, such as improvements in data accuracy, reporting speed, scheduling efficiency, and service coordination. Future studies may also evaluate system security, scalability, and integration with other digital health or educational platforms to support broader service development.

The development of a web-based system also has important implications for the digital transformation of therapy services for children with special needs. The implementation of digital technology can encourage therapy institutions to move from manual and fragmented administrative practices toward integrated, data-driven, and technology-oriented service management. This transformation improves operational efficiency, transparency, accountability, and accessibility of information for therapists, management, and parents. In addition, digital systems can strengthen collaboration among stakeholders, support continuous monitoring of children's development, and enable more responsive and personalized therapeutic services. In the long term, the adoption of web-based systems can contribute to the modernization of therapy institutions and improve the overall quality and sustainability of services for children with special needs.

REFERENCES

Afrizal Amrustian, M. (2024). System of stunting information centre development using waterfall method. *Jurnal Mandiri IT*, *12*(3), 161–168. www.ejournal.isha.or.id/index.php/Mandiri

Ardhiyani, R. P., & Mulyono, H. (2018). ANALISIS DAN PERANCANGAN SISTEM INFORMASI PARIWISATA BERBASIS WEB SEBAGAI MEDIA PROMOSI PADA KABUPATEN TEBO. In *Jurnal Manajemen Sistem Informasi* (Vol. 3, Number 1).

Azuddin, M., Yusup, M., Setiyowati, H., Wibowo, S., Suwita, J., Basuki, S., & Astuti, E. D. (2025). Design and Implementation of a Relational Database for an Academic Information System. *International Transactions on Artificial Intelligence (ITALIC)*, *3*(2), 171–180. https://doi.org/10.33050/italic.v3i2.801

Dika Pratama, R., Samsugi, S., Persada Sembiring, J., Pagar Alam No, J. Z., Ratu, L., & Lampung, B. (2022). ALAT DETEKSI KETINGGIAN AIR MENGGUNAKAN SENSOR ULTRASONIK DENGAN DATABASE. *Jurnal Teknik Dan Sistem Komputer (JTIKOM*, *3*(1), 2022.

Edo, Wahyu, N., Istiqomah, A., & Salsabilah, A. E. (2024). Rancang Bangun Sistem Pemesanan Tiket Travel Berbasis Website Pada PT. RSIMA Pekanbaru. *Jurnal Ilmiah Informatika*, *12*.

Edo, Y. K., Oktaviani, & Yoppy Mirza Maulana. (2024). Analisis Kebutuhan Sistem Website Company Profile Pusat Penelitian dan Pengabdian kepada Masyarakat Universitas Dinamika. *Jurnal Ilmiah Informatika*, *12*.

Hadi, N., Hanafi, S., & Suherman, S. (2022). Pengembangan Media Pembelajaran Aplikasi Mading Digital Padlet untuk Meningkatkan Motivasi dan Budaya Literasi Siswa di Sekolah Dasar. *Jurnal Basicedu*, *6*(5), 8614–8625. https://doi.org/10.31004/basicedu.v6i5.3839

Hayati, U., Mulyani, S., & Sukarsa, D. (2021). *Information System's Implementation and its Impact on University Organization Performance in West Java*. https://doi.org/10.5281/zenodo.4556291

Karanja, E., Grant, D. M., Freeman, S., & Anyiwo, D. (2016). Entry Level Systems Analysts: What Does the Industry Want? In *Informing Science: the International Journal of an Emerging Transdiscipline* (Vol. 19). http://www.informingscience.org/Publications/3517

Khusna Nur Hidayati, Agung Slamet Prasetyo, & Priyastiwi. (2025). ANALISIS PENGELOLAAN LAPORAN KEUANGAN DANA BOSP MELALUI SISTEM INFORMASI PENGELOLAAN KEUANGAN SEKOLAH. *Jurnal Akuntansi Dan Bisnis (Akuntansi)*, *5*(1), 138–158.

Ma'arif, R. A., Saputra, T. I., Radityatama, M. D., Apriansyah, A., & Hayati, N. (2019). Perancangan Sistem Informasi Berbasis Website pada Perkampungan Budaya Betawi Setu Babakan. *Komputika : Jurnal Sistem Komputer*, *8*(2), 67–72. https://doi.org/10.34010/komputika.v8i2.1849

Mercy, I. A. (2022). Database Management System (DBMS): a strategy for emboldening accessibility and usage of information resources in public university libraries in Delta, Nigeria. In *Innovations*. www.journal-innovations.com

Mia Amelia, Mila Amalia, & Herlina Siregar. (2024). PEMBUATAN MAJALAH DINDING (MADING) SEBAGAI UPAYA PENINGKATAN LITERASI DAN KREATIVITAS PESERTA DIDIK DI SANGGAR KEGIATAN BELAJAR (SKB) KABUPATEN PANDEGLANG. *Jurnal Seaninstitute Abdimas*, *2*, 28–34.

Mukhtar, M., Sudarmi, S., Wahyudi, M., & Burmansah, B. (2020). The information system development based on knowledge management in higher education institution. *International Journal of Higher Education*, *9*(3), 98–108. https://doi.org/10.5430/ijhe.v9n3p98

Mumtahana, H. A. (2022). Optimization of Transaction Database Design with MySQL and MongoDB. *SinkrOn*, *7*(3), 883–890. https://doi.org/10.33395/sinkron.v7i3.11528

Nursyanti Reni, R. Y. R. A. S. P. (2019). PERANCANGAN APLIKASI BERBASIS WEB UNTUK MEMBANTU PENGUJIAN KUALITAS KAIN TEKSTIL OTOMOTIF. *Jurnal Sistem Informasi Dan Telematika*, *10*, 153–159.

Rahmaddion, A., & Arribe, E. (2023). PERANCANGAN SISTEM INFORMASI PENJUALAN RUMAH BERBASIS WEB PADA PT.AGUNG SELARAS GROUP PEKANBARU. *Jurnal Ilmiah Informatika*, *12*.

Rawat, B., & Purnama, S. (2021). MySQL Database Management System (DBMS) On FTP Site LAPAN Bandung. *International Journal of Cyber and IT Service Management (IJCITSM)*, *1*(2), 173–179. https://doi.org/10.34306/ijcitsm.v1i1.47

Roy, A., Maulida Al hamid, D., Ladese, S., Informatika, M., Negeri Fakfak, P., & Roy, A. (2024). Design and development of a website-based information system for receiving diplomas in the

information management department of the Fakfak State Polytechnic. *Jurnal Mandiri IT*, *12*(3), 169–174. www.ejournal.isha.or.id/index.php/Mandiri

Salahuddin, M., Iain, A.-A., Nurjati, S., Fakultas, C., Tarbiyah, I., Jurusan, K., Matematika, T., Syekh, I., & Fakultas, N. C. (2023). ITEJ Information Technology Engineering Journals Designing a Web-Based Information System for Scholarship Management: Supporting Access and Rapid Dissemination of Information Bachtiar Maulana. *ITEJ*, *8*, 14–33. https://syekhnurjati.ac.id/journal/index.php/itej

Saputra, A., & Ikasari, I. H. (2023). SYSTEMATIC LITERATUR REVIEW : ANALISIS SISTEM INFORMASI PENJUALAN. *JORAPI : Journal of Research and Publication Innovation*, *1*(3).

Suprapti, T., Hartati, T., Arie Wijaya, Y., & Lukman Rohmat, C. (2022). PENEGEMBANGAN APLIKASI BERBASIS WEB UNTUK PENINGKATAN LAYANAN USAHA LOUNDRY. *Jurnal Sistem Informasi Dan Teknologi Informasi)*, *4*(2), 73–82.

Wiguna, K., & Mahdiana, D. (2023). Analysis of Information Systems Development Methods: A Literature Review. *Jurnal Inovtek Polbeng*, *8*(2), 472–483.