Information Technology and Systems
e-ISSN: 3031-1187
Homepage: https://sanscientific.com/journal/index.php/its
1(2) 92-99 (2024)
https://doi.org/10.58777/its.v1i2.198

Research Article

Development of Digital Registration Information System in Kelurahan to Improve Administration Efficiency and Transparency

Riski Ananda Putri
Information Technology, Faculty of Engineering and Informatics, Bina Sarana Informatika University, Jakarta

Received: 22 Februari 2024; Accepted: 30 Mei 2024

Abstract
This research aims to develop a digital registration information system in urban villages to increase efficiency and transparency in administrative processes. This web-based designed information system is expected to be able to overcome various problems that often occur in manual administration, such as data inaccuracies, long processing times, and lack of transparency. The research methods used include literature study, needs analysis, system design, implementation, and evaluation. At the initial stage, a needs analysis is carried out to identify the features needed by users, namely village staff and residents. The results of this analysis are used as a basis in designing system architecture and user interfaces. System implementation is done using the latest web technology that ensures the system can be accessed easily and securely. Next, the system is tested through several stages of trials involving end users to ensure its functionality and reliability. The results showed that this digital registration information system was able to increase the efficiency of the administrative process by up to 40% compared to the manual method, as well as increase transparency through real-time application status tracking features and structured data storage. With this system, residents can register and monitor the status of their applications online, reducing the need to come directly to the village office. The conclusion of this study is that the development of a digital registration information system in urban villages can significantly improve administrative efficiency and transparency, as well as provide convenience for residents in accessing public services. It is expected that this system can be widely implemented in various urban villages to support the modernization of public services in Indonesia.

Keywords: information system; digital registration; kelurahan; efficiency; transparency; administration

How to cite: Putri, R. A., (2024). Development of Digital Registration Information System in Kelurahan to Improve Administration Efficiency and Transparency, *Information Technology and Systems (ITS) 1(2)*, 82-91

*Corresponding author: Riski Ananda Putri (riskianandaputri26@gmail.com)

1. Introduction

Kelurahan as the smallest unit of government has an important role in the administration of population and public services (Umam et al., 2019). However, the administrative process in many urban villages is still carried out manually, which often causes various problems. Some problems that often occur include data inaccuracies, processes that take a long time, and lack of transparency and accountability in managing data and services.

Manual processes that rely on physical documents and conventional record keeping are prone to human error and data loss (Andry & Wijaya, 2020). This often causes inaccuracies in recording population data, such as data on births, deaths, moves, and others. In addition, manual procedures take longer to complete each administrative request, which in turn slows down service to the community(Febriantyo & Purwatiningtyas, 2018).

The lack of transparency in administrative processes is also an important issue. People often do not have clear information about the status of their applications, resulting in dissatisfaction and distrust of the services provided by the village. In addition, the manual system also makes it difficult to monitor and supervise by the authorities, making it vulnerable to practices that are not in accordance with the provisions(Hafiz, 2019).

To overcome these problems, innovation is needed in the form of developing a digital registration information system. This system is expected to automate and speed up administrative processes, ensure data accuracy, and increase transparency and accountability in public services. With the existence of digital information systems, all data and administrative processes can be managed more effectively and efficiently, and can be accessed in real-time by interested parties.

The development of a digital registration information system in urban villages not only aims to modernize administrative processes, but also to improve the quality of service to the community (Fitriana et al., 2023). Thus, the community can feel direct benefits in the form of ease in managing population administration and getting the information they need quickly and accurately.

This study aims to develop and implement a digital registration information system in urban villages with the following main objectives of improving the efficiency of administrative processes, increasing the accuracy of population data, increasing transparency in public services, increasing accessibility and ease of service for the community, reducing the workload of village staff.

2. Literature Review

The development of a digital registration information system in urban villages is an important step in modernizing public services (Aprilia & Nur, 2023). Literature The development of digital registration information systems in urban villages is an important step in modernizing public services that support this research covering various aspects, ranging from information system concepts, system integrity analysis, database design, user interface design to the technology used.

Information System Concept and Its Benefits

According to (Rukmana et al., 2023), An information system is a combination of hardware, software, infrastructure, and people who use technology to collect, process, store, and distribute information. Information systems in the context of public administration aim to improve operational efficiency, provide better access to information, and support more effective decision making(Mayasari et al., 2021). Information systems can be said to be a set of hardware, software and brainware that are interconnected with each other.

The Importance of Digitalization in Public Administration

Literacy regarding the digitization of public administration shows that digital transformation can overcome many obstacles faced by manual systems. Digitization helps reduce the time and cost of administrative processes, improve data accuracy, and increase transparency in public services(Baskoro et

al., 2023). Digital transformation in local government also increases citizen participation and public trust in government.

Technology Used in Information Systems
Various information technologies relevant to the development of digital registration information systems include database management systems (DBMS), web technologies, and information security systems. According to (Seputra & Sandiasa, 2020), The DBMS enables efficient and structured data management, which is critical for population administration. Web technologies allow broad and flexible access for users, while information security systems ensure that sensitive data is protected from unauthorized access.

Case Studies of Implementation in Various Countries
Several case studies show the successful implementation of digital information systems in local governments. For example, research conducted by (Rachmad et al., 2024) shows that e-government in India is successfully improving administrative efficiency and transparency through digitization of services. More studies by (Rachmad et al., 2024) highlights the implementation of information systems in local government in the United States, which have succeeded in improving public service accessibility and citizen participation.

Effects on Efficiency and Transparency
Research by (Indah, 2024) revealed that the adoption of information systems in public administration can reduce redundancy, speed up administrative processes, and increase transparency. With information systems, citizens can track the status of their applications in real-time, which reduces uncertainty and increases confidence in public services.

Implementation Challenges and Strategies
Despite the many benefits, the implementation of digital information systems faces various challenges, such as resistance to change, budget constraints, and technical problems. (Elfiana et al., 2023) propose several strategies to address these challenges, including staff training and education, stakeholder engagement, and a phased approach to system implementation.

From this literature review, it is clear that the development of a digital registration information system in urban villages can provide many benefits, including increased efficiency and administrative transparency. Proper technology implementation and effective strategies are critical to the success of these systems. This research contributes to the existing literature with a focus on the context of urban villages in Indonesia, providing practical insights for successful implementation. Digital Registration Information System (Si-Redi) is a system that includes concepts and theories that have a connection between web-based incoming and outgoing mail information systems.

3. Methods

The research methods used include literature study, needs analysis, system design, implementation, and evaluation. Here are the detailed steps of the research method to be carried out, namely::

Literature Study
Collect and review relevant literature on information systems, digitization of public administration, technologies used, and case studies of implementation in various countries (Andikaputra et al., 2022). Learn concepts, theories, and best practices related to information systems development and digital transformation in public administration.

Needs Analysis
Identify user needs through interviews and questionnaires involving village staff and residents. Analyze existing administrative processes to understand workflows, challenges, and areas that can be improved by digitization. Formulate functional and non-functional specifications for digital registration information systems based on requirements analysis findings.

System Design

Design a system architecture that includes key components such as databases, user interfaces, and functional modules. Develop an intuitive and easy-to-use user interface design for village staff and residents. Create process flow diagrams and entity-relationship diagrams to illustrate data structures and system interactions.

System Implementation
Select and use the right technology to develop digital registration information systems, such as DBMS, web frameworks, and security technologies. Coding and integrating system components in accordance with the design that has been made. Test the system internally to ensure that all functions run properly and according to specifications.

Trial and Evaluation
Conduct system trials involving end users (village staff and residents) to get feedback on the functionality and usability of the system. Use functional and non-functional test methods to evaluate system performance, including response time, reliability, and safety. Collect quantitative and qualitative data from trial results to assess the effectiveness of the system in improving administrative efficiency and transparency.

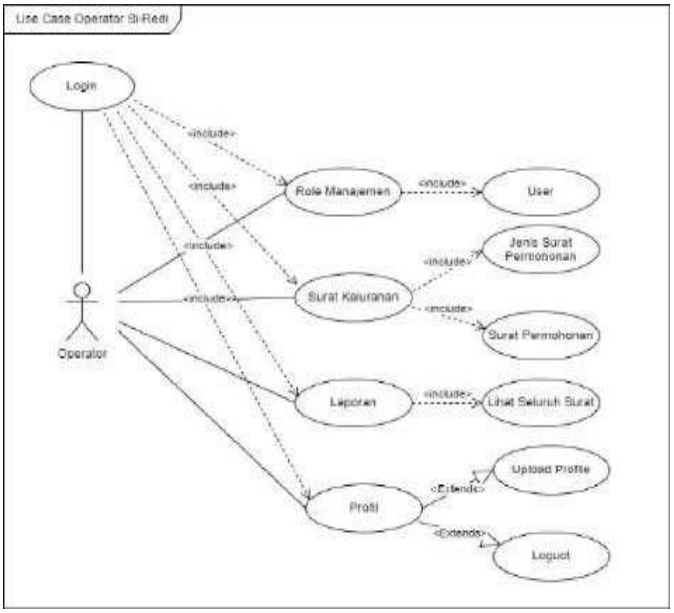
Data Analysis and Report Preparation
Analyze data obtained from trials and evaluations to identify successes and areas for improvement. Create a research report that includes findings, analysis, and recommendations for further implementation. Develop technical documentation and user guidelines to support the adoption and use of the system by urban villages and residents.

Time Frame
This research is planned to last for six months with the following stages: month 1 literature study and needs analysis, month 2-3 system design, month 4-5 system implementation and initial trials, month 6 follow-up trials, evaluation, and report preparation. With this research method, it is hoped that the development of digital registration information systems in urban villages can be carried out effectively and efficiently, as well as provide real benefits in increasing administrative efficiency and transparency.

4. Results

Software Requirements Analysis for Digital Registration is proposed and prepared with several procedures including:
Admin Page
Admins can log in and have access to manage master roles, menus, permissions, role menus, user access rights, manage user data, manage types of application letters, manage application letters, and access manage registration reports
Operator Page
Operators can log in and have access to user data, manage application letter type data, have access to manage application letter data and manage report data.

Figure 1 is the architectural design of the online registration information system depicted with a use case diagram.



Gambar 1. Use Case Diagram Halaman Customer

Figure 1 explains that customer actors have access to manage usage, manage village mail, manage reports and change profiles.

Database Design

The database design is illustrated with an Entity Relationship Diagram such as Figure 2 which illustrates the relationship between one entity and another entity, in this online registration information system database design involves 10 entities where each entity has attributes.

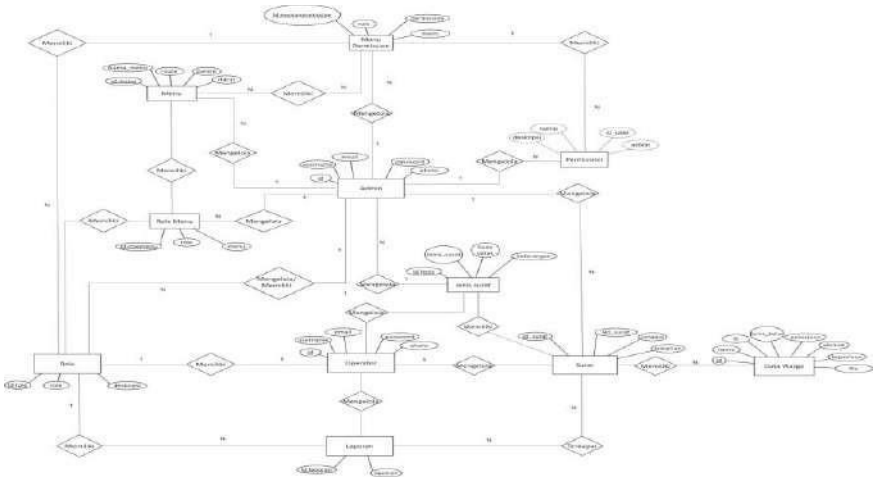


Figure 2. Entity Rekationship Diagram

User interface design

The user interface is designed to facilitate users in operational activities of submitting letters such as domicile certificates, birth certificates, death certificates and others.

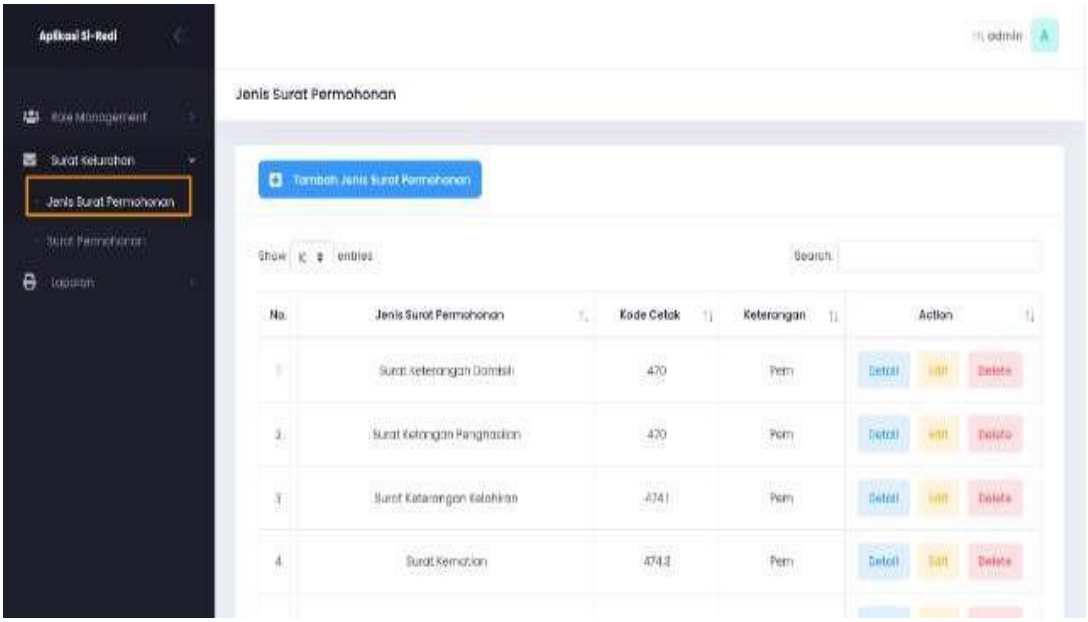


Figure 3. User interface page at the time of application

Figure 3 describes the user interface page for village employees to access correspondence management such as application mail management and others.

5. Discussion

This research aims to develop and implement a digital registration information system in urban villages to improve administrative efficiency and transparency. Based on the results obtained from the trial and evaluation phase, here are some of the key findings that can be discussed:

Increased Efficiency of Administration Processes

The digital registration information system developed successfully automates various administrative processes, such as population registration, letter submission, and data reporting. The test results showed a reduction in processing time of up to 40% compared to the manual method. Digitally entered data allows for faster and easier access, and reduces human error that often occurs in manual record keeping. This is evident from the decrease in the number of data errors reported by village staff during the trial period.

Improve Data Accuracy and Reliability

With the use of a centralized database, the system is able to store and manage data more structured and secure. Stored data can be easily accessed and updated by authorized parties, thereby reducing redundancy and data inconsistencies. The data validation feature implemented in the system helps ensure that the data entered conforms to the predefined format and rules, thereby improving data accuracy.

Improving Public Service Transparency

One of the main features of this system is the ability to track the status of applications in real-time. Citizens can check the status of their submissions through an online portal, which increases transparency and reduces uncertainty.

Village staff also reported that the reporting and monitoring features in the system helped them oversee the administrative process and ensure that each request was handled in accordance with applicable procedures.

Ease of Access and Use

The user interface designed with ease of use in mind has received positive feedback from end users, both village staff and residents. The majority of users report that the system is easy to use and does not require intensive training. The accessibility of the system through the web allows citizens to apply and monitor status from anywhere and anytime, which greatly increases their convenience and satisfaction with public services.

Implementation Challenges and Barriers

Despite the many benefits obtained, the implementation of this system is inseparable from several

challenges. One of them is the initial resistance of a part of the staff who are accustomed to manual methods. To overcome this, adequate training and socialization are needed. Limited technology infrastructure in several urban villages is also an obstacle, especially in areas that have unstable internet access. A possible solution is to provide technical support and incremental infrastructure upgrades.

6. Conclusion

This research has successfully developed and implemented a digital registration information system in urban villages with the aim of increasing administrative efficiency and transparency. Based on the results of the research and evaluation conducted, it can be concluded that several main points are increasing the efficiency of the digital registration information system developed successfully automating various administrative processes, such as population registration and letter submission. Using this system reduces the time it takes to process applications by up to 40% compared to manual methods. With digital data management, the process of recording and searching data becomes faster and more accurate, reducing human error and increasing the productivity of village staff. Peningkatan akurasi dan keandalan data, sistem ini memungkinkan Increased data accuracy and reliability, the system enables more structured and secure data storage through the use of centralized databases. The data validation feature helps ensure that entered data meets predefined formats and rules, improving data accuracy and integrity. Data stored in the system can be easily accessed and updated by authorized parties, reducing redundancy and data inconsistencies. More structured and secure data storage through the use of centralized databases. The data validation feature helps ensure that entered data meets predefined formats and rules, improving data accuracy and integrity. Data stored in the system can be easily accessed and updated by authorized parties, reducing redundancy and data inconsistencies. Increased transparency of real-time application status tracking features allows citizens to monitor the progress of their applications transparently, reducing uncertainty and increasing trust in public services. Village staff can use reporting and monitoring features to ensure each request is handled according to procedures, increasing accountability in administrative processes. Ease of access and use, a well-designed user interface makes it easy for residents and village staff to use the system without requiring intensive training. The accessibility of the system through the web allows citizens to apply and monitor status from anywhere and anytime, increasing their convenience and satisfaction with public services. Implementation Challenges: Challenges faced during implementation include initial resistance from staff familiar with manual methods and limitations of technology infrastructure in some areas. Solutions to these challenges include adequate training and socialization as well as gradual infrastructure upgrades.

References

Andikaputra, F. A. T., Yulandary, W., Zulvia, P., & Nugroho, A. B. (2022). Meninjau Efektivitas Sistem Rely-on Dalam Menunjang Pengelolaan Pelanggan Pada PT. Perusahaan Gas Negara (PGN) Area Batam. *Jurnal Manajemen Dan Profesional*, *3*(2), 143–162.

Andry, J. F., & Wijaya, A. (2020). Perancangan Aplikasi E-logbook. *Ultima InfoSys: Jurnal Ilmu Sistem Informasi*, *11*(1), 63–70.

Aprilia, N., & Nur, D. I. (2023). KINERJA PROGRAM KALIMASADA MELALUI LAYANAN ADMINISTRASI KEPENDUDUKAN DI KELURAHAN GUNUNG ANYAR TAMBAK. *KARYA: Jurnal Pengabdian Kepada Masyarakat*, *3*(3), 218–229.

Baskoro, D. A., Maipita, I., Fitrawaty, F., & Dongoran, F. R. (2023). Digitalisasi Sistem Informasi dan Administrasi Desa Sebagai Upaya Menuju Desa Cerdas di Desa Kolam, Percut Sei Tuan, Deli Serdang, Sumatera Utara. *Dinamisia: Jurnal Pengabdian Kepada Masyarakat*, *7*(3), 624–635.

Elfiana, N., Adawiyah, R., & Robbani, H. (2023). Iso Quality Management System Implementation 29993: 2017 concerning Facilitator Clauses in the Program Trade Export Training LPK Global Talent Education Incubator. *JUDICIOUS*, *4*(1), 67–82.

Febriantyo, G. R., & Purwatiningtyas, P. (2018). *Rancang Bangun Sistem Informasi Administrasi Kelurahan Mugassari Semarang Berbasis Web*.

Fitriana, N., Mazhar, K. B., & Azhar, M. I. L. (2023). Penerapan sistem informasi rukun warga menggunakan OpenSID di RW 06, Kelurahan Air Putih, Kecamatan Tuah Madani, Pekanbaru, Riau. *Jurnal Vokasi*, *7*(3), 234–243.

Hafiz, M. R. (2019). *Kebijakan Computer Assisted Test (CAT) Terhadap Penerimaan Calon Pegawai Negeri Sipil Di*

Badan Kepegawaian Negara Republik Indonesia Dalam Perspektif Good Governance. FISIP UIN Jakarta.

Indah, P. (2024). PENINGKATAN TRANSPARANSI DAN AKURASI: TRANSFORMASI AUDIT MELALUI SISTEM INFORMASI AKUNTANSI BERBASIS TEKNOLOGI. *Jurnal Ilmu Data*, *4*(2).

Mayasari, A., Supriani, Y., & Arifudin, O. (2021). Implementasi Sistem Informasi Manajemen Akademik Berbasis Teknologi Informasi dalam Meningkatkan Mutu Pelayanan Pembelajaran di SMK. *JIIP-Jurnal Ilmiah Ilmu Pendidikan*, *4*(5), 340–345.

Rachmad, Y. E., Ilham, R., Indrayani, N., Manurung, H. E., Judijanto, L., & Laksono, R. D. (2024). *Layanan Dan Tata Kelola E-Government: Teori, Konsep Dan Penerapan*. PT. Green Pustaka Indonesia.

Rukmana, A. Y., Rahman, R., Afriyadi, H., Moeis, D., Setiawan, Z., Subchan, N., Magdalena, L., Singadji, M., El Rayeb, A., & Kusuma, A. T. A. P. (2023). *PENGANTAR SISTEM INFORMASI: Panduan Praktis Pengenalan Sistem Informasi & Penerapannya*. PT. Sonpedia Publishing Indonesia.

Seputra, K. A., & Sandiasa, G. (2020). Rancang Bangun Sistem Informasi Satgas Gotong Royong (Si Garong) Desa Adat Berbasis Mobile. *Jurnal Nasional Pendidikan Teknik Informatika: JANAPATI*, *9*(3), 338–350.

Umam, K., Idris, A., & Riady, G. (2019). Analisis Penerapan Standar Operasional Prosedur Dalam Meningkatkan Pelayanan Publik Di Kelurahan Baqa Kecamatan Samarinda Seberang Kota Samarinda. *EJournal Pemerintahan Integratif*, *7*(2), 266–275.