Jurnal Sistem Informasi dan Teknik Informatika
Vol. 3, No. 1, February 2025, pp. 13~18
E-ISSN: 3031-2698 (ONLINE)

Village Resource Profile for Speed-up Information Delivery

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Article Info

Article history:

Received Jan 18th, 2025
Revised Feb 10th, 2025
Accepted Feb 10th, 2025

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Abstract

In many rural areas of Indonesia, accessing accurate and timely information about village resources remains a significant challenge due to scattered data records, limited digital infrastructure, and slow manual processes. To address these issues, this study proposes a Village Resource Profile for Speeding Up Information Delivery, a system designed to centralize and streamline village data management. By integrating digital tools, this system facilitates efficient resource allocation, enhances development planning, and supports better decision-making for local governments, businesses, and residents.The study builds upon previous research in smart villages, rural governance, and geotourism management, emphasizing the role of ICT and data-driven strategies in rural development. The proposed system consists of multiple modules, including data collection, information processing, and service distribution, ensuring that essential information—such as population demographics, economic activities, and public services—is readily available.By leveraging real-time updates and AI-driven insights, the system improves access to critical information, enhances disaster preparedness, and promotes equitable public service distribution. This initiative aligns with Indonesia's Smart Village program, fostering digital transformation at the grassroots level.

Keywords: *Village Resource Profile, Smart Village, Rural Development*

Abstrak

Di banyak daerah pedesaan di Indonesia, mengakses informasi yang akurat dan tepat waktu tentang sumber daya desa masih menjadi tantangan yang signifikan karena catatan data yang tersebar, infrastruktur digital yang terbatas, dan proses manual yang lambat. Untuk mengatasi masalah ini, studi ini mengusulkan Profil Sumber Daya Desa untuk Mempercepat Pengiriman Informasi, sebuah sistem yang dirancang untuk memusatkan dan menyederhanakan pengelolaan data desa. Dengan mengintegrasikan perangkat digital, sistem ini memfasilitasi alokasi sumber daya yang efisien, meningkatkan perencanaan pembangunan, dan mendukung pengambilan keputusan yang lebih baik bagi pemerintah daerah, bisnis, dan penduduk. Studi ini dibangun berdasarkan penelitian sebelumnya di desa pintar, tata kelola pedesaan, dan manajemen geowisata, yang menekankan peran TIK dan strategi berbasis data dalam pembangunan pedesaan. Sistem yang diusulkan terdiri dari beberapa modul, termasuk pengumpulan data, pemrosesan informasi, dan distribusi layanan, yang memastikan bahwa informasi penting—seperti demografi populasi, kegiatan ekonomi, dan layanan publik—tersedia dengan mudah. Inisiatif ini sejalan dengan program Desa Cerdas Indonesia yang mendorong transformasi digital di tingkat akar rumput.

Kata kunci: Village Resource Profile, Smart Village, Rural Development

1. INTRODUCTION

In many rural areas of Indonesia, accessing timely and accurate information about village resources remains a challenge. Limited digital infrastructure, scattered data records, and slow manual processes often hinder decision-making for both local governments and communities. A well-structured Village Resource Profile serves as a crucial solution to address these issues by providing a centralized and easily accessible database of village assets, including agricultural resources, population demographics, and public facilities. By streamlining information delivery, villages can improve resource allocation, enhance development planning, and respond more efficiently to emerging needs. With Indonesia's vast archipelago and diverse rural landscapes, each village has unique strengths and challenges that require data-driven management [1, 2, 3]. The implementation of a Village Resource Profile enables local authorities, businesses, and residents to gain valuable insights into the available resources and socio-economic conditions of their communities. This system can also bridge the gap between rural and urban areas by facilitating better communication, attracting potential investors, and supporting government programs aimed at rural development. When supported by digital tools and mobile technology, the speed of information flow can be significantly improved, making rural governance more responsive and transparent.

By embracing a modern approach to village resource profiling, Indonesia can foster sustainable development at the grassroots level. This initiative aligns with the government's ongoing digital transformation efforts, such as the Smart Village program, which seeks to integrate technology into rural administration [4, 5]. Additionally, a well-maintained resource profile enhances disaster preparedness [6, 7], supports agricultural sustainability, and promotes equitable distribution of public services. With faster and more reliable access to critical information, villages can make better-informed decisions, ultimately improving the welfare of local communities and accelerating rural progress.

2. LITERATURE REVIEW

Efficient information delivery is crucial for accelerating rural development, ensuring that decision-makers, communities, and stakeholders can respond swiftly to emerging challenges and opportunities. A Village Resource Profile provides a structured approach to organizing key data on infrastructure, economic activities, governance, and local resources, helping to streamline communication and improve policy implementation. Studies on smart villages, rural road improvements, governance systems, geotourism management, and social interventions in Indonesia emphasize the role of ICT, community participation, and strategic planning in enhancing rural resilience and sustainability [8, 9, 10]. By integrating these insights, a well-structured Village Resource Profile can serve as a powerful tool for speeding up information flow, improving resource allocation, and fostering data-driven decision-making, ultimately strengthening rural development efforts. (See Table 1).

Table 1 – Relevent Publication

Study	Contribution	Location
Smart village concept in Indonesia: ICT as determining factor [11]	This study highlights the crucial role of ICT in Indonesia's smart village development while emphasizing that successful implementation also depends on community participation and leadership, offering valuable insights for future policymaking and research.	The study covers Indonesia as a whole, analyzing 1,424 smart villages spread across 32 provinces on all islands in the country.
Effect of rural road improvement on the main source of income changes: Evidence from brackishwater villages in Indonesia [12]	This study reveals that rural road improvements have influenced shifts in the economic foundations of brackishwater villages in Indonesia, with some maintaining aquaculture	The study focuses on brackishwater villages in Indonesia, specifically in districts known for brackishwater aquaculture. However, the exact districts are not specified in the abstract.

	dominance, others diversifying, and a portion transitioning into the sector.	
Do internal control and information systems drive sustainable rural development in Indonesia? [13]	This study highlights how strong internal control and effective information system implementation enhance village accountability, transparency, and resource management, ultimately driving sustainable rural development in Indonesia.	The study focuses on a specific geographic area in Indonesia.
Creative strategies of local resources in managing geotourism in the Ijen Geopark Bondowoso, East Java, Indonesia [14]	This study highlights how creative strategies leveraging local resources and community collaboration in the Ijen Geopark, Bondowoso, strengthen sustainable geotourism management by aligning with the VRIN framework.	The study is located in the Ijen Geopark development area in Bondowoso, East Java, Indonesia, specifically in the Ijen District.
Modeling environmental interactions and collaborative interventions for childhood stunting: A case from Indonesia [15]	This study emphasizes that tackling childhood stunting in Indonesia requires strong cross-sector collaboration, where social capital—through networks, norms, and trust—plays a crucial role in enhancing intervention effectiveness.	The study is conducted in Indonesia

3. DISCUSSION

Figure 1 show the visual diagram representing the "village resource profile for speed-up information Ddlivery" system.

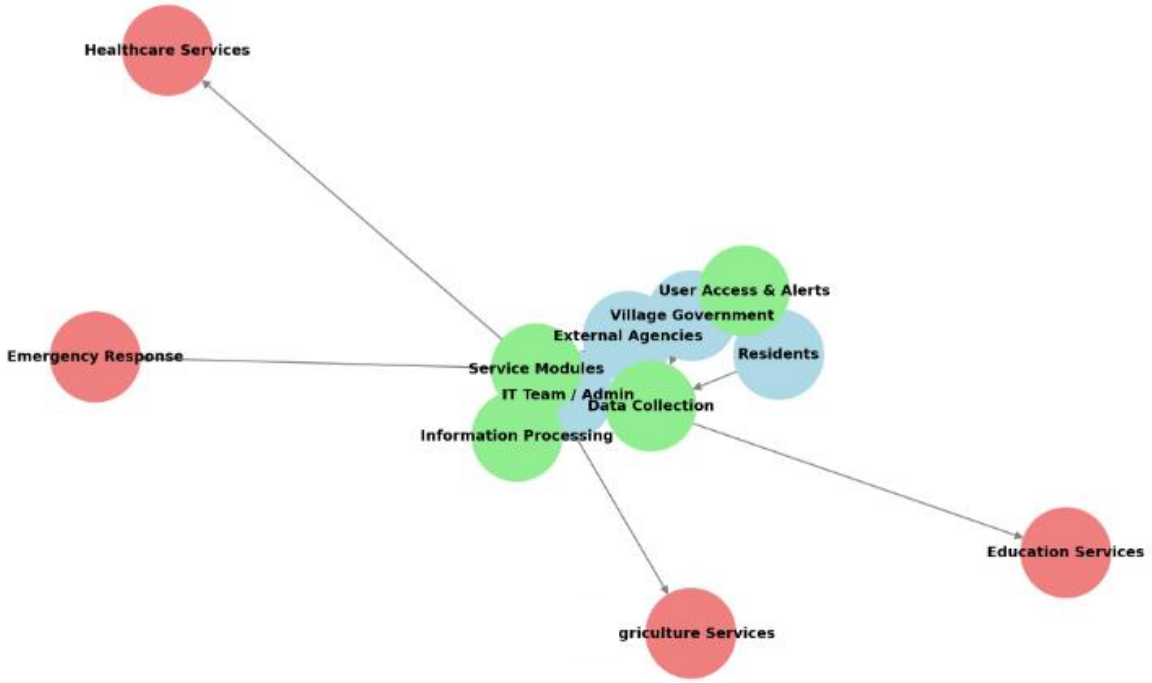

Figure 1 – The Visual Diagram

The Village Resource Profile for Speed-up Information Delivery system is designed to streamline data collection, processing, and service distribution within a village. At its core, various stakeholders—including the Village Government, Residents, External Agencies, and IT Administrators—play crucial roles in updating and managing information. The Data Collection Module gathers essential details about the village, such as population demographics, land use, economic activities, and infrastructure status. This data is continuously updated by government officials and residents, ensuring that the system remains accurate and reflective of real-time conditions. External agencies, such as healthcare and disaster response units, also contribute by sharing regional reports and requirements. Once the data is collected, it moves into the Information Processing Module, where advanced analytics, AI-driven insights, and categorization take place. This module ensures that raw data is transformed into actionable information, helping stakeholders identify trends, predict needs, and allocate resources effectively. The processed information is then distributed to different Service Modules, each focusing on key areas such as Healthcare, Agriculture, Education, and Emergency Response. For example, if the system detects an increase in health-related issues in a particular region, it can trigger alerts for medical teams to take necessary actions. Similarly, agricultural data can be analyzed to provide farmers with insights on soil conditions, weather patterns, and crop management strategies.

The final layer of the system is the User Access & Alerts Module, which ensures that the right information reaches the right people at the right time. Residents receive notifications through mobile applications, while government officials and external agencies access detailed reports for decision-making. This real-time communication allows for faster response times, better resource allocation, and improved service delivery across all sectors. By integrating modern technology into village management, this system fosters a more informed, efficient, and resilient community, enabling local governance to address needs proactively rather than reactively. Figure 2 show the class diagram for the system.

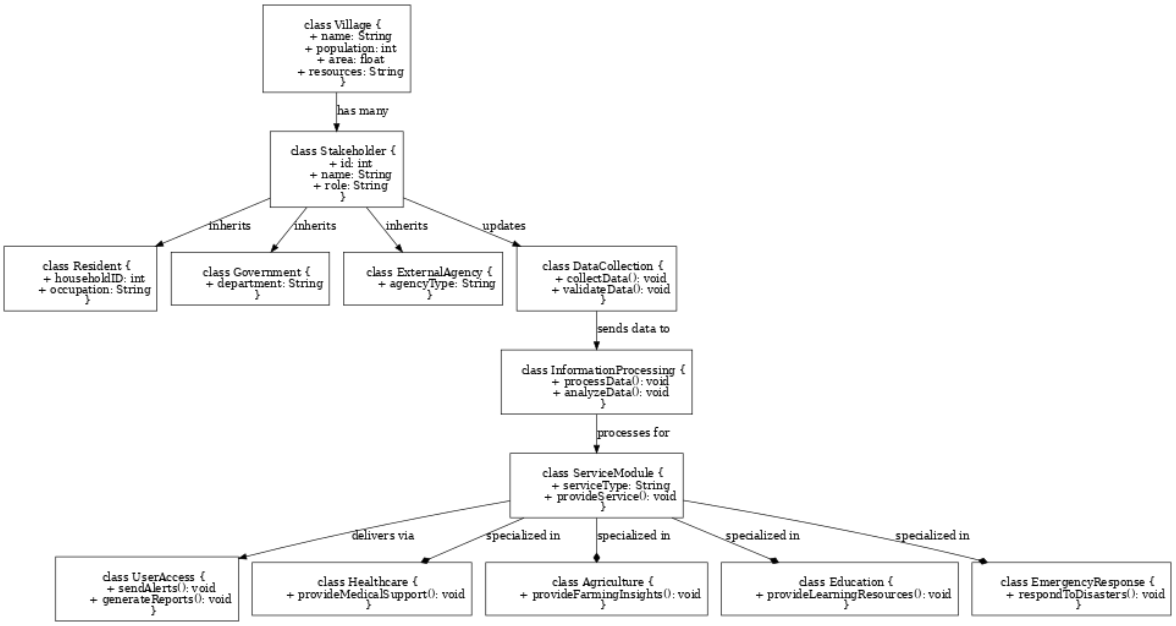

Figure 2 – Class Diagram

Table 2 show the detailed explanation of the UML Class Diagram in Figure 2.

Table 2 – The explanation of the class diagram

Class Name	Attributes	Methods	Description
Village	name: String population: int area: float resources: String	*N/A*	Represents the village with basic attributes like population, area, and resources.
Stakeholder	id: int name: String role: String	*N/A*	Abstract class representing various stakeholders.
Resident *(inherits Stakeholder)*	householdID: int occupation: String	*N/A*	Represents village residents with unique household IDs.
Government *(inherits Stakeholder)*	department: String	*N/A*	Represents government officials managing village services.
ExternalAgency *(inherits Stakeholder)*	agencyType: String	*N/A*	Represents external agencies like NGOs, health, and disaster response teams.
DataCollection	*N/A*	collectData(): void validateData(): void	Collects and verifies village data.
InformationProcessing	*N/A*	processData(): void analyzeData(): void	Processes and analyzes collected data.
ServiceModule	serviceType: String	provideService(): void	Parent class for different service types.
UserAccess	*N/A*	sendAlerts(): void generateReports(): void	Manages notifications and report generation.
Healthcare *(inherits ServiceModule)*	*N/A*	provideMedicalSupport(): void	Handles health-related services in the village.
Agriculture *(inherits*	*N/A*	provideFarmingInsight	Provides agricultural

ServiceModule)		s(): void	insights and support.
Education *(inherits ServiceModule)*	*N/A*	provideLearningResources(): void	Manages education-related services.
EmergencyResponse *(inherits ServiceModule)*	*N/A*	respondToDisasters(): void	Handles disaster management and emergency responses.

4. CONCLUSION

The Village Resource Profile for Speed-up Information Delivery represents a transformative approach to rural information management, leveraging digital tools to enhance governance, resource allocation, and service delivery. By integrating data collection, processing, and stakeholder engagement into a centralized system, villages can access real-time insights that improve decision-making across key sectors like healthcare, agriculture, education, and disaster response. This initiative not only bridges the gap between rural and urban areas but also strengthens local resilience, fosters economic opportunities, and ensures equitable distribution of resources. As Indonesia continues its digital transformation, the implementation of such a system aligns with national efforts to modernize rural administration, ultimately contributing to sustainable development and improved community welfare.

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