DOI: https://doi.org/10.70656/ijcse.v3i01.917

Developing a Web-Based Content and Service Management Information System for Super App at DISKOMINFOTIK Bengkulu

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Abstract*—The digital transformation of public services in Bengkulu Province encourages the development of Super Apps as a medium for integrating information and digital services. In its implementation, content management and application configuration require a support system that is structured, centralized, and easy to maintain. This research aims to design and build a web-based information system that supports the management of admin dashboards and public landing pages on Super Apps DISKOMINFOTIK Bengkulu Province. The development method used is Agile with a modular frontend approach that separates the user interface, state management, service, and internal API gateways. Research data was obtained through observations, interviews, and documentation studies on the needs of the 11 main modules of the system as well as SOPs for content management by 2026. The results of the study show that the developed system successfully implements the admin dashboard and public landing page that is integrated with the backend through APIs. The admin dashboard supports the management of digital content and services, while the public landing page displays information dynamically based on the data managed through the dashboard. This system contributes to improving the efficiency of information management, data consistency, and ease of integration of digital services in the Bengkulu Province DISKOMINFOTIK environment.

Keywords- Content Management System, Admin Dashboard, API Integration, Information System, Super Apps.

I. INTRODUCTION

The digital transformation of public services has encouraged government institutions to develop Super Apps as integrated platforms for delivering information and digital services. In this context, DISKOMINFOTIK Bengkulu Province has developed Super Apps to support public access to information and services through a single platform. Previous studies have shown that content management systems can improve the efficiency of information publishing, while dashboard-based systems support more structured monitoring and data management [1], [3], [4]. In addition, API-based integration and modular system architecture have been widely recognized as important approaches for improving maintainability, consistency, and interoperability in modern information systems [5].

However, based on observations during the Work Practice, content and service management in the Super Apps environment had not yet been fully supported by a centralized and well-integrated system. Administrators still needed to manage multiple information and service components through separate processes, which increased update time, made verification more difficult, and raised the risk of inconsistencies between internal data and publicly displayed information. Operationally, this condition affected the timeliness of publication, reduced administrative efficiency, and complicated system maintenance when new modules or service updates were required. These issues indicate the need for a more structured platform that can integrate content management, service management, public information delivery, and system communication in a single web-based environment.

Therefore, this study aims to design and develop a web-based Content and Service Management Information System integrated with the Super Apps of DISKOMINFOTIK Bengkulu Province. The proposed system consists of an admin dashboard for managing content and services, as well as a public landing page for delivering information to users. By applying a modular frontend architecture and API-based integration, this study is expected to support more structured information management, improve data consistency, and strengthen the implementation of digital public services.

A. Dashboard in Information Systems

Dashboards in information systems are interfaces designed to help users centrally manage and monitor data. In this study, the admin dashboard functions as a content and service management center in Super Apps. Through the dashboard, admins can authenticate, access data management modules, view information summaries, and update content that will be displayed in public applications.

The advantage of dashboards lies in their ability to present data management processes in one integrated work environment. Grouping modules by function, such as home page configuration, news, tourism, complaints, and emergency calls, helps admins manage information more efficiently than separate manual processes. This is in line with previous research which stated that dashboards in information systems are able to increase the effectiveness of data management, accelerate access to information, and support the monitoring process in a more structured manner [4].

B. API Integration in Information Systems

API integration is an important component of this system because the data on the admin dashboard is not managed directly by the user interface, but is passed through the service layer and internal gateway before connecting to the backend. This approach helps maintain consistency of data communication between the frontend and backend and makes endpoint management easier [3].

In implementation, the frontend follows a modular pattern with UI flows leading to hooks, services, internal gateways, and API backends. This structure makes the application easier to maintain and makes it easier to develop new modules later on. In addition, several features such as authentication and vehicle tax information services utilize internal route handlers so that the communication process with the backend remains controlled from the server side. This is in line with previous research that explains that the RESTful API is used as a means of communication between the backend and frontend in web-based CMS development, as well as supporting the integration of digital services in a more integrated system architecture [3], [5].

C. Content Management System (CMS) Concept

A Content Management System (CMS) is a system that allows admins to manage digital content through an easy-to-use interface without having to interact directly with program code or databases. In this study, the CMS concept was applied to the management of banners, dynamic headers, categories, news, news categories, and some tourism data [1], [4].

However, the system built in this study does not only function as a pure CMS, but develops into a content and service management system. This is shown by the existence of a public complaint module, emergency telephone, admin profile, and vehicle tax information service on the public side. Therefore, the term content management information system and web-based services are more appropriately used to describe the results of the implementation of this research [4], [5].

II. RESEARCH METHOD

A. Systems Development Approach

This study employed an Agile system development approach because it supports iterative development and allows adjustments to be made throughout the implementation process. In this study, the Agile process was organized into several stages, namely requirement analysis, sprint planning, system design, development, testing, review, and evaluation. Through this approach, system development could be carried out incrementally based on the priority of features and the needs identified during the Work Practice activities.

At the requirement analysis stage, data were collected through direct observation, interviews with related personnel at DISKOMINFOTIK Bengkulu Province, and documentation studies on system needs and content management SOPs. The requirements were then organized into user stories and a development backlog. The scope of the system covered 11 main modules, namely admin authentication, admin dashboard, public landing page, application configuration, news, news categories, tourism, complaints, emergency contacts, admin profile, and vehicle tax services. These modules were prioritized and implemented gradually in development sprints based on their functional importance and integration needs.

Each sprint focused on a set of related modules and included implementation, interface validation, API integration checking, and functional testing. The testing stage was conducted to ensure that each implemented module worked according to its intended function and could communicate properly with the backend system. At the review and evaluation stage, the implementation results were compared with the identified requirements, including the functionality of the 11 modules, the consistency of data displayed on the public landing page, and the overall integration between the admin dashboard and backend APIs.

B. Systems Architecture Design

The system implementation was carried out using Next.js, React, TypeScript, Tailwind CSS, NextAuth, TanStack Query, Zustand, and Axios. On the frontend side, the system follows a modular architecture pattern that separates the interface components, state management, services, and internal API gateways.

A modular approach was chosen to maintain the separation of responsibilities of each layer so that the development and maintenance of the system became easier [5], [7]. In this architecture, interface components function to display pages to users, hooks are used to manage interactions and states, services handle communication with endpoint contracts, while internal gateway APIs are used to regulate communication between the frontend and backend in a more controlled manner.

Table 1. Features of Content Management and Service Management Information Systems

Features	Description	Features	Description
Login Admin	User authentication process to access the dashboard	Tourism Management	Manage travel categories, destinations, and reviews
Dashboard Admin	Data management and system module main page	Complaint Management	View, filter, and view the details of community complaints
Public Landing Page	Showing the public general information about Super Apps	Emergency Contact Management	Manage the emergency contact list
Banner Management	Manage banners displayed on public pages	Admin Profile	View the profile data of the currently logged in admin
Dynamic Header Management	Manage dynamic headers that appear on the main page	API Integration	Connect the frontend to the backend through service and internal gateways

Category Management	Manage common categories on the configuration system	Vehicl Tax Services	Provides vehicle tax information search from public pages
News Management	Manage news and publication of informational content	Admin Access Control	Restrict dashboard access based on admin and super admin roles
News Category Management	Manage news classification		

Table 1 shows that the developed system not only supports the management of informational content, but also supports the management of several digital services that are integrated with Super Apps.

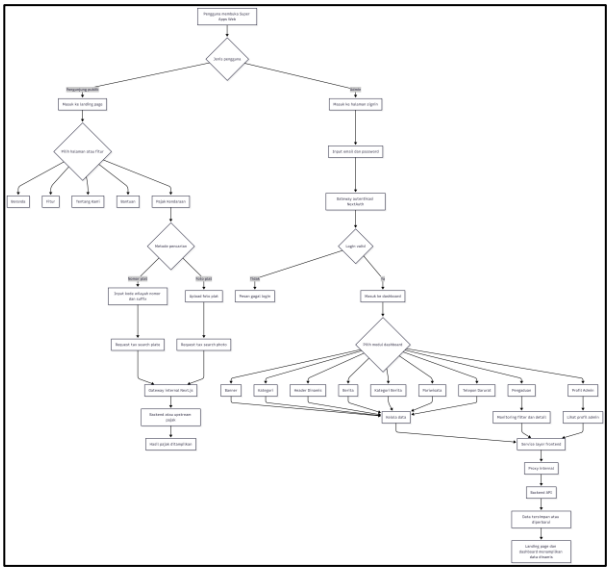


Fig. 1. Content and Service Management Information System Flowchart

The image is used to describe the process flow of the system developed in this study. Figure 1 shows a web-based Content and Service Management Information System flowchart showing the sequence of processes, pipeline branching, and interactions between users and systems.

III. Result And Discussions

This study developed a web-based Content and Service Management Information System to support information and service management in the Super Apps of DISKOMINFOTIK Bengkulu Province. The implementation results show that the system successfully integrated the admin dashboard and public landing page through APIs. A total of 11 main modules were implemented, including admin authentication, dashboard management, application configuration, news, news categories, tourism, complaints, emergency contacts, admin profile, and vehicle tax services. The system also improved content update efficiency, maintained data consistency between the dashboard and the public page, and supported more structured administrative work. In addition, functional testing showed that the implemented modules were able to run according to their intended functions and support the delivery of information and digital services more effectively.

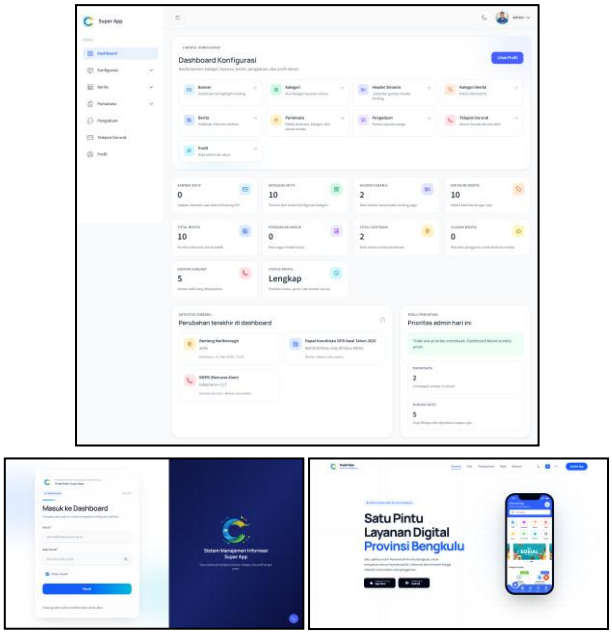


Fig. 2. Figure 2: (a) Admin dashboard view, (b) landing page view, (c) login view

Figure 2 shows the results of the implementation of the system interface consisting of an admin dashboard, a public landing page, and a login page. The admin dashboard view in Figure 2(a) shows the main page of system module management. The landing page view in Figure 2(b) shows the public page used to convey Super Apps app information to the public. Meanwhile, Figure 2(c) shows the login page used as the admin login to access the dashboard.

A. Admin Dashboard Implemntation

The admin dashboard is developed as a hub for managing content and services in the system. Through this dashboard, admins can access various main modules, such as configuration, news, news categories, tourism, complaints, emergency calls, and admin profiles. The existence of an admin dashboard makes the data management process more structured and centralized, making it easier for admins to input, edit, and publish information. The admin dashboard successfully supported the management of 11 integrated modules, allowing administrators to update content and service data through a single interface.

B. Landing Page Implementation

The landing page functions as a medium for conveying information to the public. The information displayed on this page is dynamic because it is integrated with the admin dashboard through the API. Thus, any data changes made by admins can be directly displayed on the landing page without the need for manual changes to the public view. The public landing page consistently displayed updated information retrieved from the backend through APIs, reducing the need for manual changes on the public interface.

C. System Results Analysis

The results of the implementation show that the system is able to meet the main needs that have been identified at the analysis stage. The admin dashboard successfully provides a

data management center that is more structured than manual processes. Public landing pages are able to present information more consistently because the data is sourced from the same backend and accessed through an organized integration pattern [3], [8].

The implementation of service layers and internal gateways also provides benefits in maintaining the neatness of the frontend architecture. Endpoints are not called directly from the interface component, but rather through a predefined structure. Thus, the system not only supports content management, but also supports the management of digital services in a more structured manner. This is in line with previous research that states that information management systems can improve efficiency and transparency in data management [1], [9], [10].

Overall, the implementation results show that the system successfully meets the research objectives, which are to provide a more structured, centralized, and easy-to-maintain digital content and service management facility. The existence of an admin dashboard and public landing page integrated through APIs supports data consistency, information management efficiency, and the expansion of system functions from just a CMS to a web-based content and service management system [11]-[15]. From the evaluation results, the implemented modules functioned properly, API communication worked consistently, and the system provided practical benefits for administrators in managing content and digital services.

D. System Evaluation and Challenges

Although the system has been running well, there are some challenges in its implementation. First, the success of the system relies heavily on the availability of network connections and the stability of the API backend. Second, some modules still need further adjustments in the event of a change in the data contract from the backend. Third, certain services such as vehicle tax information still rely on integration with upstream services outside of the admin dashboard.

In addition, the term real-time in this system is more accurately understood as dynamic data updates through APIs rather than websocket-based real-time or continuous data streaming. Therefore, the use of dynamic and integrated terms is more appropriate to describe the implementation of this system academically.

IV. CONCLUSION

The main problem in this study is the lack of integrated content management in the Super Apps of DISKOMINFOTIK Bengkulu Province so that the information publication process becomes less efficient and unstructured. Therefore, this research produced a web-based Content and Service Management Information System consisting of an admin dashboard and a public landing page as a solution to support centralized, integrated, and real-time information management.

Overall, the system developed is able to meet the research objectives, which are to provide an admin dashboard for content management and landing pages as a medium for delivering information to the public. This system also improves efficiency, consistency, and speed in the information publication process and supports the digital transformation of public services in Bengkulu Province.

However, the system still has some limitations such as dependence on network connections as well as the integration process with the backend that still requires further development. Therefore, further research can be carried out by improving system performance, adding monitoring features, and expanding integration with other services in Super Apps.

ACKNOWLEDGMENTS

The author would like to thank the Bengkulu Provincial DISKOMINFOTIK for providing opportunities and support during the implementation of Practical Work activities. Gratitude was also conveyed to all parties who have assisted in the process of data collection, system development, and preparation of this research.

REFERENCES

[1] C. Bernadeth, A. Pamukti, and G. Triyono, "The Implementation of Web-Based E-Commerce Using CMS," SERASI Journal, 2021.

[2] I. K. Adyanda, R. Efendi, and D. Winarti, "Design and Build a CMS Website," Journal Innovative, 2023.

[3] A. Azharudin et al., "Web-Based CMS Application Design," Karimah Tauhid, 2023.

[4] A. A. Jabar, R. F. Wijaya, and S. Wahyuni, "Business Intelligence Data Visualization Dashboard to Support Business Decision Making at PT BMPT," Djtechno: Journal of Information Technology, 2025.

[5] DISKOMINFOTIK Bengkulu, "Master Plan Super Apps," 2026.

[6] A. P. Halim et al., "CMS Implementation in School Websites," Elektrode Journal, 2025.

[7] E. Satryawati, F. T. Julfia, W. Ariani, and M. R. Ramadhan, "Implementation of the Use of Microsoft Power BI Application in Viewing the Statistics of State Debt in the World," Joined Journal (Journal of Informatics Education), 2024.

[8] Rianto, I., Pratasik, S., Maru, M. G., & Pardanus, R. H. W. 2023. Development of Information System Dashboard at Manado State University. CogITo Smart Journal.

[9] Fathurrohim, R. A., et al. 2025. Development of a Content Management System (CMS) as an Official Publication Media. JITET.

[10] Mahendra, I., & Nugroho, D. W. 2018. Agile Development Methods in Information Systems Development. J-TOS Journal / Nusa Mandiri repository.

[11] Analysis of Agile Methods in the Development of Website-Based Information Systems: Systematic Literature Review. Techno.Com / Dinus publications.

[12] Husna, H., et al. 2025. Digital-based public services through service transformation. Journal of Public Service / ULM. Husna, H., et al. 2025. Digital-based public services through service transformation. Journal of Public Service / ULM.

[13] Ramadhon, R. N., et al. 2023. *Web-Based CMS* Application Design at Djuanda University. Karimah Tauhid.

[14] Utomo, P., Setiawan, & Prayitno, F. W. 2016. Designing an Information System Dashboard for Agile Project Management Using JIRA – A Case Study at PT. FLASHiZ Indonesia. SISFOTEK.

[15] Sunday, S. Z., & Assegaff, S. 2022. Design and Build an Executive Information System for Production Monitoring

Dashboard at PT. Nusantara VI Plantation. Journal of Information Systems Management.