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Development of a Data Portal System for Governance in Berau

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Abstract— The development of a Data Portal System for Berau Governance addresses the need for an integrated platform to effectively manage and disseminate government data. This system aims to enhance transparency, accountability, and public access to diverse datasets in alignment with the One Data Indonesia initiative. The portal consolidates various data categories, including news, announcements, agendas, publications, downloads, infographics, and visualizations, into a single platform, streamlining data access for both government agencies and the public. The system was developed using the Rapid Application Development (RAD) methodology, enabling iterative prototyping and quick adjustments based on feedback from key stakeholders. This approach ensured the system could meet the dynamic requirements of the government while remaining adaptable to future needs. The Laravel framework was chosen for its flexibility, scalability, and security features, allowing the system to provide a responsive, user-friendly experience while maintaining high levels of data integrity.The Data Portal System significantly improves the local government's ability to manage and share information, fostering greater civic engagement and enhancing public trust in governance processes. Furthermore, the system facilitates more efficient public service delivery by making key data accessible in a structured and intuitive format. Regular assessments and updates are recommended to ensure the system continues to align with evolving user needs and governmental policies, further advancing data governance in Berau Regency.

Keywords— Data portal, Governance, Transparency, One Data Indonesia, Rad, Laravel, Public Services

I. INTRODUCTION

In Data is a crucial component in policy formulation and development planning in a country. On a global level, the existence of data has become a fundamental aspect that various parties, particularly governments, are increasingly striving to ensure its availability, especially in the context of implementing open government (Maizunati, 2019). The availability of accurate, up-to-date, and integrated data is key to achieving good governance and sustainable regional development. In his speech at the annual session of the People's Consultative Assembly (MPR) and the joint session of the House of Representatives (DPR) and Regional Representative Council (DPD) on August 16, 2021, President Joko Widodo emphasized the importance of using data, knowledge, and the latest technology in government decision-making. He stated, "In making decisions, the government must continue to refer to data, as well as to the latest science and technology." This quote underscores the importance of data in policymaking and development planning, aligning with both global and national commitments to transparency and efficiency in governance.

In this digital era, the demand for easy and open access to data is growing. This is consistent with both global and national commitments to open data and the One Data Indonesia initiative. Open data promotes government transparency and accountability, while One Data Indonesia integrates data from various regional agencies to produce accurate, up-to-date, and consolidated information. In 2011, Indonesia, together with several other countries such as the United States, Brazil, Mexico, the United Kingdom, Norway, South Africa, and the Philippines, initiated the formation of the Open Government Partnership (OGP). This program is an initiative for governments to commit to improving transparency, developing communities, combating corruption, and applying new technologies to strengthen good governance (Indrajit, 2018). In Indonesia, these efforts are encapsulated by the One Data Indonesia initiative, introduced through Presidential Regulation No. 39 of 2019. This initiative aims to standardize data management across government institutions, ensuring data accuracy, timeliness, and accessibility for public use. The move toward open data governance reflects global trends, as governments recognize the importance of digital transformation in improving transparency and trust between citizens and their governments (Mahmud et al., 2022).

Despite the ambitious goals of One Data Indonesia, many regions across Indonesia continue to face challenges in managing and disseminating government data effectively. In Berau Regency, for example, fragmented

data systems have made it difficult for the local government to provide public access to critical information. This has led to inefficiencies in governance, as decision-making processes are often hampered by inconsistent or outdated data (Mulyanto et al., 2022). The lack of centralized data systems has also reduced the transparency of government operations, as citizens struggle to access relevant information in a timely manner. This issue is not unique to Berau; various studies have highlighted the need for integrated data systems that centralize data management and ensure seamless public access (Saputra, 2022).

In a study by (Saputra, 2022), the management of the Semarang Satu Data (Semarsatata) platform was analyzed, with the research highlighting significant delays in data submission from regional apparatuses. These delays, caused by manual data entry processes and insufficient web services, hinder the integration of government data and prevent regular public access to updated information. This example illustrates a common challenge faced by many local governments in Indonesia: the difficulty of maintaining efficient and transparent data management systems. To overcome these challenges, there is a clear need for more automated systems and better regulatory frameworks to support data integration efforts at the regional level.

To address these issues, the Data Portal System for Berau Governance was developed as a comprehensive solution to centralize data management and improve public access to government data. The system consolidates a variety of data types, including news, announcements, agendas, publications, downloads, infographics, and visualizations, into a single platform. This approach aligns with recommendations from studies such as (Mulyanto et al., 2022), which emphasize the importance of integrating multiple data sources to provide a cohesive and transparent public service. By creating a unified platform, the Data Portal System for Berau Governance enables the local government to provide more consistent and reliable information to the public, improving both governance outcomes and citizen trust.

Research has shown that open data portals play a crucial role in enhancing government transparency and accountability. According to (Kurniawan & Kusuma, 2021), data portals can significantly improve public service delivery by facilitating easier access to government information and enabling citizens to monitor government activities more effectively. The Data Portal System for Berau is designed with these principles in mind, providing a user-friendly interface that allows citizens to access government data quickly and efficiently. By making government data more accessible, the system encourages greater civic participation, as citizens can use the information to hold public officials accountable and engage more actively in governance processes.

The development of the Data Portal System for Berau Governance was guided by the Rapid Application Development (RAD) methodology, a software development framework that emphasizes rapid prototyping and iterative feedback. This methodology was chosen due to its ability to accommodate changes quickly and efficiently, ensuring that the system could be developed in a manner that met the evolving needs of both government officials and the public. (A.S. & Shalahuddin, 2016) note that the RAD approach is particularly effective for projects that require flexibility and quick adjustments, as it allows developers to integrate user feedback into the system at various stages of the development process.

Furthermore, the system was built using the Laravel framework, a widely adopted PHP framework known for its scalability, flexibility, and security features.(Junirianto et al., 2020) argue that Laravel's Model-View-Controller (MVC) architecture makes it an ideal choice for web-based systems that require maintainability and the ability to handle multiple types of data. The use of Laravel also supports the integration of API services and data visualization tools, allowing the system to provide interactive features such as infographics and visual data representations. These features are critical for making government data more comprehensible and accessible to a broader audience.

The development of the Data Portal System for Berau Governance represents a significant step forward in aligning local governance practices with national policies on transparency and open data. By providing a centralized platform for data management, the system addresses the challenges of fragmented data systems and improves public access to critical government information. This paper explores the development process of the Data Portal System, its features and functionalities, and its potential impact on governance and public service delivery in Berau Regency. The successful implementation of such a system can serve as a model for other regions seeking to improve their data governance and transparency practices.

II. Literature Review

A. Study of Literature

Some of the literature used as guides and references in this paper include:

1. The paper titled "Implementasi Data Sektoral Terbuka Dalam Mendukung Smart Governance di Kota Magelang," investigated the implementation of open sectoral data in supporting smart governance in Magelang City. The paper highlights how open data initiatives can drive better governance by ensuring that data is readily available to support policy-making and public services. However, the paper also pointed out the need for improvement in data integration and user engagement to fully realize the benefits of open data portals in local governance (Maizunati, 2019).
2. The paper titled "Website Open Data Dinas Komunikasi Dan Informatika Kota Batam," developed a website-based open data platform for the Department of Communication and Information Technology in Batam. This paper demonstrated how a well-designed platform could simplify access to government data, making it more usable for research, development, and public services. The paper emphasizes the importance of building user-friendly

interfaces and the role of features like data visualization in improving data accessibility and decision-making processes (Chandra Kirana & Ananda Putri, 2020).

3. The paper titled "Implementasi Open Government Data oleh Pemerintah Kota Bandung," examined the challenges in implementing open government data in Bandung City. Significant obstacles were identified, including limited public awareness of open data and a lack of coordination between government agencies. The paper suggests that successful open data initiatives require not only technical solutions but also increased public engagement and institutional support to overcome barriers to data transparency (Yudan & Arief Virgy, 2021).
4. The paper "Pembangunan Portal Open Data untuk Mendukung Open Government dan Smart City (Studi Kasus: Pemerintah Daerah Kota Gorontalo)," focused on the development of an open data portal for the city of Gorontalo, aimed at promoting transparency and supporting smart city initiatives. The paper demonstrated how open data portals could facilitate public access to government services, while also pointing out the need for better integration with existing data systems to ensure seamless access. Regular data updates and comprehensive datasets are highlighted as key elements to improve the overall effectiveness of the portal (Mulyanto et al., 2022).
5. The paper titled "Implementasi Kebijakan Satu Data Bojonegoro Dalam Mendukung Keterbukaan Informasi Publik di Kabupaten Bojonegoro Provinsi Jawa Timur," analyzed the implementation of the One Data policy in Bojonegoro to support public information transparency. Several challenges were identified, including poor internal communication within government institutions and inadequate public awareness of available data. Despite these challenges, the paper underscored the potential of data portals to enhance transparency if properly managed, with a focus on improving communication and public participation in the data-sharing process (Primadhayanti, 2022).
6. The paper titled "Pengelolaan Website Semarang Satu Data (Semarsatata) Sebagai Wujud Keterbukaan Informasi Publik Di Dinas Komunikasi Informatika Statistik Dan Persandian Kota Semarang Provinsi Jawa Tengah," the management of the Semarang Satu Data (Semarsatata) website at the Department of Communication, Informatics, Statistics, and Encryption in Semarang was analyzed. The focus was on the integration of data from regional apparatuses. The study found that slow data submission from regional apparatuses and a lack of periodic data publications hindered data integration. Additionally, technical issues such as limited web services and manual data entry processes contributed to the delays. The study recommended increasing the number of web services, automating data entry processes, and imposing penalties on departments that delay data submissions (Saputra, 2022).
7. The paper titled "Service Quality of Satu Data in Banten Province, Indonesia," analyzed the quality of public services provided through Satu Data in Banten Province. The study focused on electronic public services provided by the government, assessing aspects such as efficiency, fulfillment, system availability, and privacy. It found that while the provincial government had regulations to leverage Big Data for governance, the implementation was still suboptimal. Access to public data through the Satu Data website was not easy, and bureaucratic barriers further complicated the process. The study emphasized the need for better use of Big Data to improve public service transparency and decision-making in various sectors (Mahmud et al., 2022).

B. Theoretical Basis

The development of a data portal system involves integrating various theories and concepts that provide a foundation for creating an effective, user-friendly system. Several key theories are relevant to the development of the Data Portal System for Berau Governance:

1. Information System
   An information system consists of two words: "system" and "information." A system refers to a combination of several subsystems working together to achieve a common goal, while information refers to something that is easily understood by the recipient (Rusdiana & Irfan, 2014). According to Hartono (2005), as cited in (Endah & Maria, 2013), information is data that has been processed into a more useful and meaningful form for its recipient. An information system is a system within an organization that meets the needs of daily transaction processing, supports operations, managerial functions, and strategic activities. Information systems help organizations achieve their goals by providing the right information to the right people at the right time (Sutabri, 2005).
2. One Data Indonesia
   One Data is an initiative or program implemented by the government at city, district, and national levels, aimed at integrating, managing, and providing accurate, up-to-date data that is widely accessible to the public. This program is designed to support public information transparency, facilitate data-driven decision-making, and enhance government efficiency and effectiveness through the use of information technology. The implementation of One Data involves various aspects such as data collection, transformation, storage, analysis, and publication through portals that can be accessed by the general public, government agencies, and other stakeholders (Manshur, 2021).
3. Unified Modeling Language (UML)
   UML (Unified Modeling Language) is a standard language widely used in the industrial world to define requirements, perform analysis and design, and represent architectures in object-oriented programming (Salahuddin, 2013). UML does not specify methods for system development; it is simply

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a notation that has now been widely accepted as a standard for object modeling (Whitten et al., 2004).

4. Laravel
   Laravel is a PHP framework that emphasizes simplicity and flexibility in its design. Released under the MIT license, its source code is available on GitHub. Like other PHP frameworks, it is built on the MVC (Model-View-Controller) concept (Junirianto et al., 2020).
5. Rapid Application Development (RAD)
   The Rapid Application Development (RAD) method is a software development approach that emphasizes short, iterative, and adaptive development cycles. RAD was developed as a response to traditional development methodologies that were considered too slow and rigid. The main principles of RAD include rapid prototyping, iterative development, timeboxing, and intensive user involvement throughout the development process(Beynon-Davies et al., 2019).
6. User Acceptance Testing (UAT)
   User Acceptance Testing (UAT) is a key method used to evaluate whether a system meets the needs and expectations of its users. It focuses on functional testing, typically performed by end users, to ensure that the system works as required. UAT was employed in the testing phase of the Berau Data Portal, using methods black box testing to ensure that the portal was user-friendly and met the public's needs for accessing government data (Wahyudi & Alameka, 2023).

III. RESEARCH METHOD

A. Research Procedure

The development of this information system utilized the RAD (Rapid Application Development) method in the system development process. The RAD method is an incremental software development process model, particularly suited for projects with short development timelines (A.S. & Shalahuddin, 2016). The implementation of the Rapid Application Development (RAD) model for this system can be seen in Figure 1.

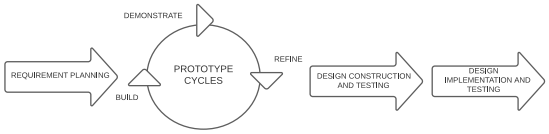

Figure 1 Stages of Rapid Application Development (RAD)

The process consists of four key phases:

1. Requirement Planning
   In this phase, system requirements were gathered through consultations with stakeholders and analysis of regulations like the One Data Indonesia policy. The objective was to define system functionalities that would enhance data transparency and accessibility for Berau's local governance.
2. Prototype Cycles
   The system was developed iteratively, where prototypes were built, demonstrated, and refined based on user feedback. Each prototype was tested for usability and functionality, ensuring alignment with the project goals.
3. Design Construction and Testing
   The final system was constructed using Laravel, a flexible PHP framework that supports the MVC architecture. Comprehensive testing, including User Acceptance Testing (UAT), was conducted to verify system functionality, usability, and performance.
4. Design Implementation and Testing
   After successful testing, the system was deployed and integrated with the local government's infrastructure. Final adjustments were made to ensure stability, and staff training was conducted for ongoing management.

B. Analysis System

The Class Diagram in Figure 2 represents the structure of a system, where the main classes include User, News, Announcements, Agenda, Downloads, Visualizations, and Infographics. The User class acts as the central point, with each content class linked to the user through the users_id attribute. Each content class has attributes such as id, title, content, and others, depending on the type of content, as well as basic operations like create(), update(), and delete() for data manipulation. The relationship between the User class and other content classes indicates that users have control over creating and managing content, which can take the form of articles, announcements, event agendas, downloadable files, data visualizations, and infographics, each with specific attributes and methods for interacting with the data.

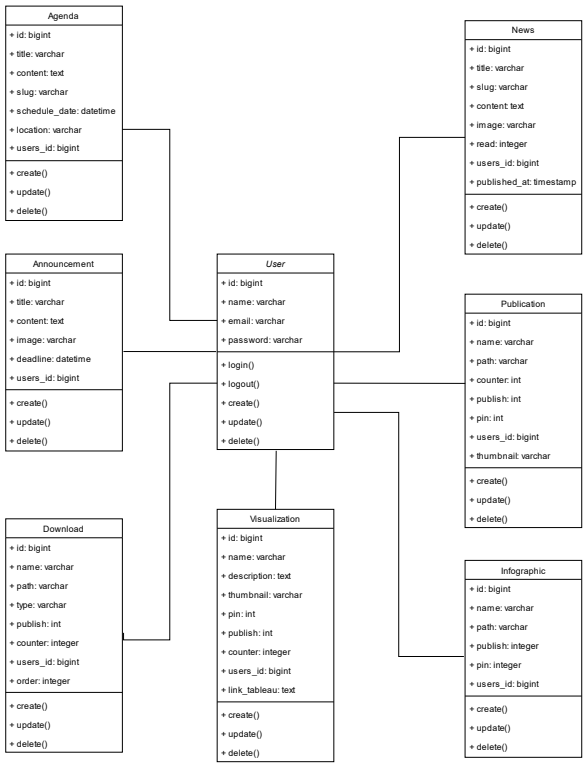

Figure 2 Class Diagram

Firmansyah, H., Junirianto, E., & Maria, E. (2024). Development of a Data Portal System for Governance in Berau. TEPIAN, 5(4). https://doi.org/10.51967/tepian.v5i4.3143

IV. RESULT AND DISCUSSION

A. *Implementation*

The results of the implementation of the Data Portal System for Berau Governance are as follows:

1. Homepage

Figures 3 show the appearance of the homepage. The homepage provides general information about the application and displays some news and infographics from the Berau Regency government.

Figure 3 Homepage

2. Login Page

Figure 4 shows the login page. This page is intended for logging into the content management system by entering an email, password, and captcha. If successful, the user will enter the dashboard.

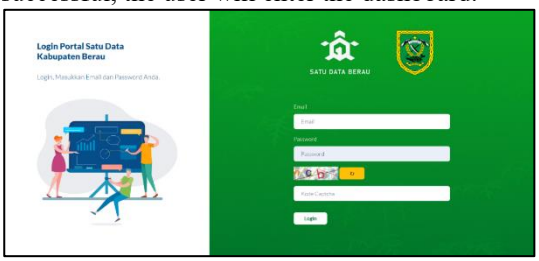

Figure 4 Login Page

3. Dashboard Page

Figure 5 shows the dashboard page. The dashboard is the first page displayed when users successfully log in. This page shows the number of users, downloads, news, and agendas. It also displays a list of the latest news and upcoming agendas.

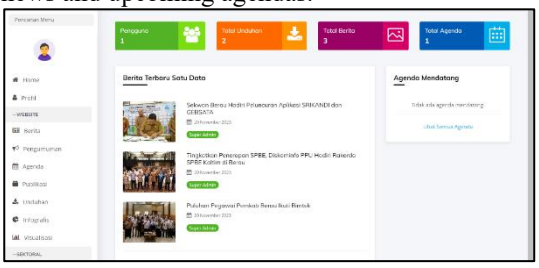

Figure 5 Dashboard Page

4. News Data

Figure 6 shows the news data page. News data includes reports on current events or other important information relevant to the One Data topic. News can involve text, images, or videos to effectively convey information to the public. In general, the news data page is used to manage news data, where actions to add, edit, and delete news are available.

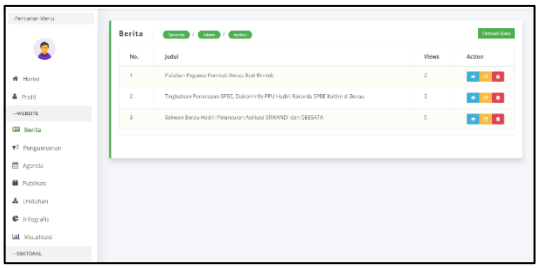

Figure 6 News Data Page

5. Announcement Data

Figure 7 shows the announcement data page. The announcement data page provides facilities to manage announcements for users. These announcements may cover various topics, such as government policies, upcoming events, or other important information that needs to be conveyed to the public or relevant parties.

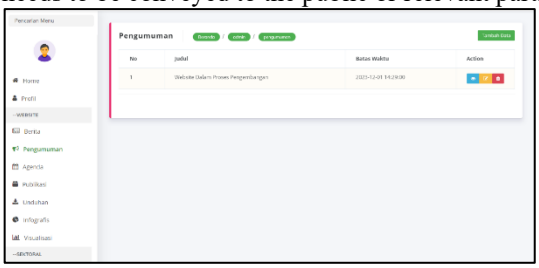

Figure 7 Announcement Data Page

6. Agenda Data

Figure 8 shows the agenda data page. The agenda data page allows management of information related to the schedule of upcoming events or activities. These may include various types of activities, such as meetings, seminars, or conferences. In this page, admins can add, edit, and delete agenda data.

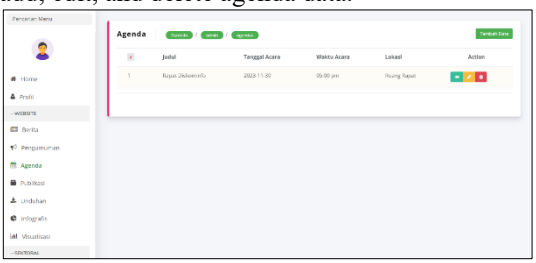

Figure 8 Agenda Data Page

7. Publication Data

Figure 9 shows the publication data page. The publication data page provides a place to manage and present publications that can be viewed and downloaded by users. The publications presented on the Berau Data Portal System may include information such as financial reports, government policies, project documentation, or other reference materials. This allows users or interested parties easy access to explore and download various publications relevant to Berau or the surrounding region.

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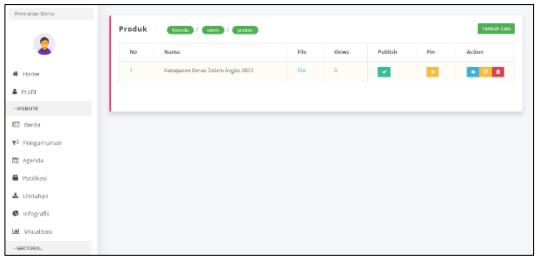

Figure 9 Publication Data Page

8. Download Data

Figure 10 shows the download data page. The download data page provides a place to manage and present various files that can be downloaded by users. These downloadable files may include important documents, applications, guides, or other data that can help the public or stakeholders gain access and information they need.

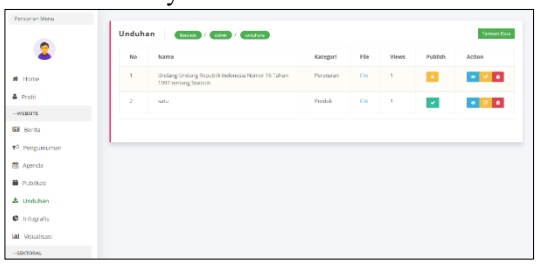

Figure 10 Download Data Page

9. Infographic Data

Figure 11 shows the infographic data page. The infographic data page provides a place to manage and present various infographics that can be viewed by users. Infographics are visual representations of information or data in the form of graphics, tables, diagrams, or other illustrations designed to convey a message or concept in a way that is easier to understand and more engaging for readers.

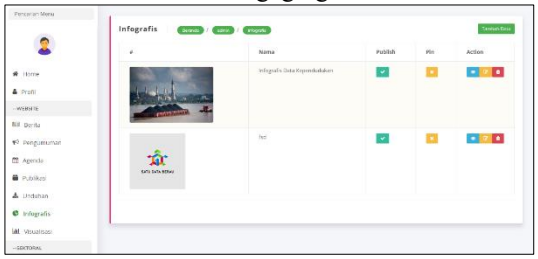

Figure 11 Infographic Data Page

10. Visualization Data

Figure 12 shows the visualization data page. The visualization data page provides a place to manage and present various visualized data that users can view. The data visualizations displayed on the website are sourced from Tableau. Tableau is a tool/platform for creating more interactive, readable, and analyzable data visualizations. Visualization involves converting data tables into forms such as graphs, diagrams, and other visual elements that clearly show changes and differences in the data.

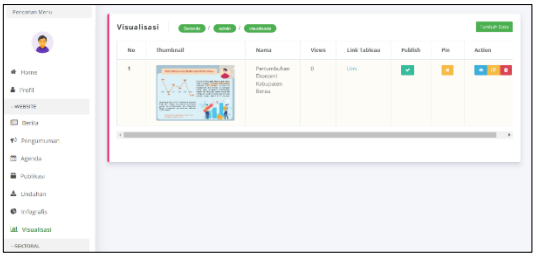

Figure 12 Visualization Data Page

11. User Data

Figure 13 shows the user data page. This page is used to manage users who have access to the system. This page helps maintain system security and provides effective control over who can access and interact with the data and other functionalities on the One Data Berau web portal.

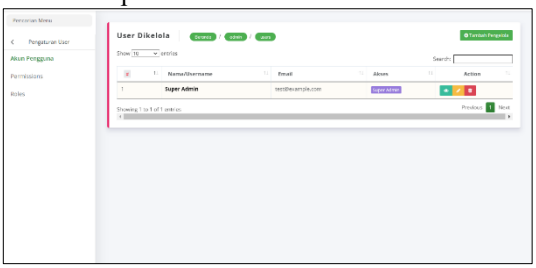

Figure 13 User Data Page

B. Testing

The testing of the Data Portal System for Berau Governance was conducted using the black box method. Table 1 presents the results of the black box test, demonstrating that the system operates according to its intended functions in every action performed.

Table 1 Black Box Testing

Input	Output	Test results
Login Access	Displays the login page and can access the admin page when the correct email, password, and captcha are entered	Succeed
Click Dashboard	Displays the Dashboard page	Succeed
Click News Data	Displays the News Data Page	Succeed
Click Announcement Data	Displays the Announcement Data Page	Succeed
Click Agenda Data	Displays the Agenda Data Page	Succeed
Click Publication Data	Displays the Publication Data Page	Succeed
Click Download Data	Displays the Download Data Page	Succeed
Click Infographic Data	Displays the Infographic Data Page	Succeed
Click Visualization Data	Displays the Visualization Data Page	Succeed
Click User Data	Displays the User Data Page	Succeed

The testing of the Data Portal System for Berau Governance was conducted using the black box method, and the results demonstrate that all system functions performed as intended. Each feature, including the login process and access to various system components such as the dashboard, news, announcements, agendas, publications, downloads, infographics, and visualizations, successfully executed its designated function. This indicates that the system's core features operate without errors and are ready for real-world use. The testing also confirms the system's user-friendliness and reliability, ensuring that both government administrators and public users can interact with the portal effectively. In conclusion, the black box testing validates the system's functionality, supporting its role in improving data management and public service delivery in Berau Regency.

V. CONCLUSION

The development of the Data Portal System for Berau Regency has been successfully completed and provides a solution for more effective and efficient data management, as well as easy access to information for the public, thereby improving the quality of public services in Berau Regency. This system development focuses on building data management features for various categories of information such as News, Announcements, Agenda, Publications, Downloads, Infographics, and Visualizations. Black box testing shows that all features in the system function properly and have been validated. The implementation of the Laravel framework has proven effective in the development of a responsive and user-friendly web-based information system. Periodic evaluations of the developed system are recommended to identify areas that need improvement or enhancement, and to ensure that the system continues to meet user needs and government policies related to information transparency.

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