Journal of Artificial Intelligence and Engineering Applications

Website: https://ioinformatic.org/

15th February 2026. Vol. 5. No. 2; e-ISSN: 2808-4519

Web Based Public Complaint Service System

Mei Ismi Nuryati[1], Hidayatur Rakhmawati[2*], Mita Aulia M[3], Raihan Rizqi[4], Alun Suyufi[5], Yuyun Kurniasih[6]

[1,2,3,4,5,6] *Universitas Muhammadiyah Brebes*

hidayatur@umbs.ac.id[2*], raihanrizqirahmatulloh@gmail.com[3], alunsuyufi@gmail.com[4], mytha8245@gmail.com[5] yuyunkurniasih206@gmail.com[6]

Abstract

This research is motivated by the suboptimal quality of public services and the management of public complaints, which are still conventional (manual recording, verbal, or text messages) in many villages in Indonesia, including the Purwodadi Village Hall. Based on observations, the Purwodadi Village Hall does not yet have an integrated system to accommodate, manage, and monitor complaints in a structured manner. This results in complaint data often not being optimally documented and difficult to use as evaluation material. Starting from these problems, this study aims to design and implement a Web-Based Public Complaint Service System at the Purwodadi Village Hall. The development of this system uses the Waterfall Method, which is part of the Software Development Life Cycle (SDLC), including the stages of needs analysis, system design, coding, testing, and maintenance.

Keywords: *Public Service, Village hall, Public, Website, Waterfall*

1. Introduction.

Information Technology is a field of technology that is used to manage data through various activities, such as processing, obtaining, organizing, storing, and manipulating data with various methods.[1] One of the prominent innovations is the implementation of a public complaint platform, which allows citizens to convey complaints, aspirations, and suggestions in an easier, faster, and more efficient way. Therefore, information technology is a means of exchanging information that is still used and continues to develop, one form of technology is the existence of a website.[2]

A website is a collection of pages on a domain on the internet created for a specific purpose and interconnected and widely accessible through the front page using a website URL. The method applied in developing this website is the waterfall method, which is part of the Software Development Life Cycle (SDLC). This method includes several stages, including needs analysis, system design, coding, testing, and maintenance.[3]

The public service system is part of the bureaucratic reform agenda aimed at improving public services. However, to date, the quality of services provided has not been optimal.[4]

Public complaints can be understood as a form of conveying complaints about dissatisfaction or discrepancies experienced by residents in the environment where they live. In practice, the public often experiences confusion regarding the authorized party to receive these reports..[5]

In practice, public complaints management in many villages in Indonesia is still carried out conventionally, such as through manual recording, verbal submissions, or the use of text messages. The Purwodadi Village Hall is one agency facing similar challenges in managing public complaints. Based on observations and interviews with village officials, it was discovered that there is currently no integrated system capable of collecting, managing, and monitoring public complaints in a structured manner. As a result, complaint data is often not optimally documented, not distributed to the authorities, and difficult to use as evaluation material for improving the quality of public services.

Based on these issues, this study aims to design and implement a web-based public complaints service system at the Purwodadi Village Hall using the Waterfall software development method. The system is expected to facilitate the public in submitting complaints online, while also supporting the village in managing, monitoring, and following up on reports more systematically. Therefore, this research is expected to make a real contribution to improving the quality of public services at the village level and serve as a reference for the development of similar systems in other region.

2. Theoritical Bacis

2.1. System

A system is defined as a collection of interrelated elements designed to achieve a goal. These elements include people, machines, procedures, documents, data, or other components arranged in an organized manner. Through this system, the public can gain easy and timely access to information available on the internet.[6]

2.2. Public Complaint.

Public complaints can be understood as expressions of public dissatisfaction with the quality of services received. In many cases, these complaints develop into public demands. This phenomenon is often perceived negatively because it is considered to disrupt the stability and image of an organization, including within the bureaucracy.[7]

2.3. Website

A website can be understood as a collection of pages that present information in various forms, such as text, static or moving images, animation, audio, video, or a combination of these media. The information presented can be static or dynamic, arranged in an integrated manner and connected to each other through a network of links (hyperlinks), and accessed using special software known as a browser.[8]

2.4. MySQL

MySQL is a highly popular relational database management system (RDBMS). This software is one of the most widely used open-source databases globally. MySQL is developed, distributed, and officially supported by MySQL AB, which is currently under the auspices of Oracle Corporation.[9]

2.5. Service

Service is any action or activity that can be offered by one party to another party which is basically intangible and does not result in any ownership.[10]

2.6. Village Hall

The village hall is a village-owned building where village residents gather to hold deliberations [11]

3. Research Methodes.

3.1. Data Collection Methods

Implementing skills in the field of information technology, for software design, especially focused on designing a web-based public complaint system, which is adapted to the needs of the Purwodadi Village Hall.

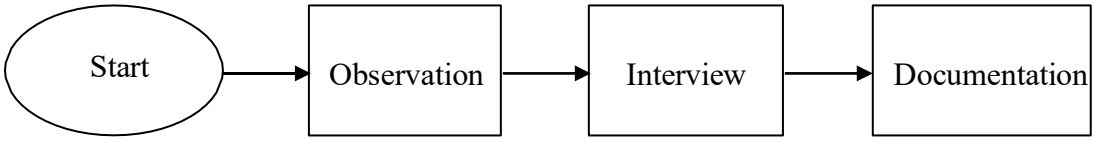

Fig. 1 : *Research proces flowchart*

1. Observation

   Observation is a data collection method carried out through direct observation of research subjects and the situation or environment related to the phenomenon being studied.[12]
2. Interview

   An interview is a face-to-face communication technique used between researchers and respondents to gather information relevant to the research focus. It can be structured, semi-structured, or unstructured, depending on the level of pre-planned questions. Through this method, researchers have the opportunity to explore in depth the respondents' views, experiences, and perspectives on the issues being studied.[13]

3. Documentation

Documentation is a series of activities carried out to collect and provide various documents based on valid evidence, obtained through a recording process from various sources. Furthermore, documentation can also be understood as a systematic effort to record and group information into written form, photographs or images, and videos.[14]

4. Literature Study

According to Creswell, John W. (2014:40), a literature study is a form of written summary that includes various library sources, such as journal articles, books, and other relevant documents. This study aims to explain certain concepts or theories while also presenting information about past and present conditions, which are then systematically arranged based on the topics and types of documents needed.[15]

3.2. System Development Method

Waterfall is a model that takes a systematic approach to software development. The Waterfall method has five stages. Requirements Analysis, Design, Implementation and Unit Testing, Integration and System Testing, Operational and Maintenance.

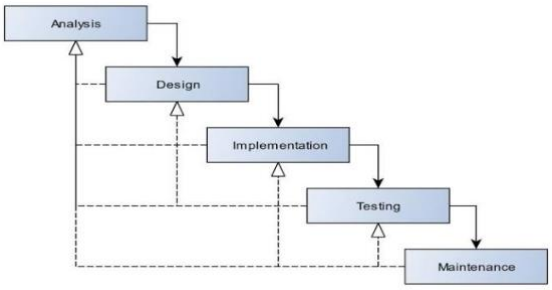

Fig. 2 : *Waterfall Methodes*

a. Requirement Analysis

Needs analysis is carried out to identify the various requirements required in the system design and implementation process. After the analysis process is complete, the data obtained is then collected systematically.[16]

b. Design

The second stage is Design, which is the process of designing the system's appearance and workflow. At this stage, various main components are developed, such as the user login and registration page, the complaints page, user data management, and features for responding to complaints.[17]

c. Implementation

At the implementation stage, the processes carried out include developing and building systems by utilizing programming languages. Dart programming combined with the Flutter framework.[18]

d. Testing

The testing phase is carried out to evaluate all features contained in the system using black box testing and usability testing methods. Black box testing aims to assess the software's function based on how it works, specifically in ensuring that the process of receiving input data and output results has run as expected.[19]

e. Maintenance

The final stage in the Waterfall method is system maintenance. This maintenance is the final stage where maintenance is carried out on the system that has been built to prevent problems in the future. [20]

4. Result and discussion

4.1. Usecase System Design

Use Case Diagrams serve to represent various system usage scenarios based on user needs and requirements. These diagrams illustrate how users interact with the system under certain conditions or situations. Furthermore, Use Case Diagrams help developers understand user needs more clearly and serve as a tool for verifying the system's suitability to established requirements.[21]

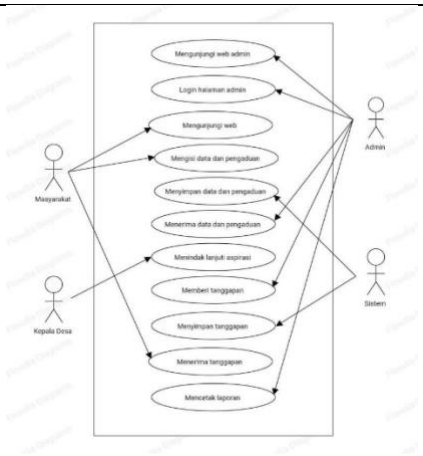

Fig. 3 : *Usecaase System image*

4.2. Implementation Of The Public Complaints Website

a. Page Dashboard

This page is the main page that will appear when people visit website.

Fig. 4 : *Page dashboard*

b. Report Page

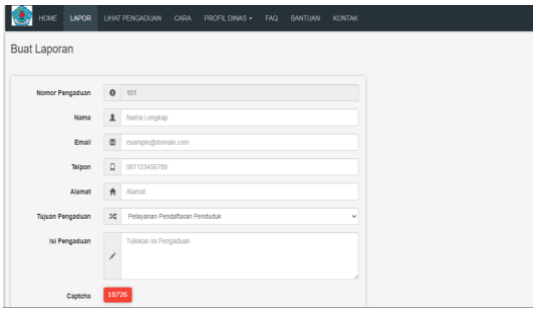

Fig. 5 : *Report Page*

c. View Complaint Page

This page is a page that the public uses when they have made a complaint to see the response given by the village hall by entering the complaint number that was previously obtained when making the complaint.

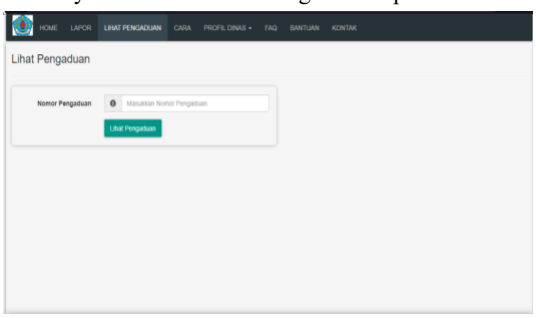

Fig. 6 : *View Complaint Page*

d. Complaint Page

This page contains steps on how to report for people who are still confused about making complaints.website This.

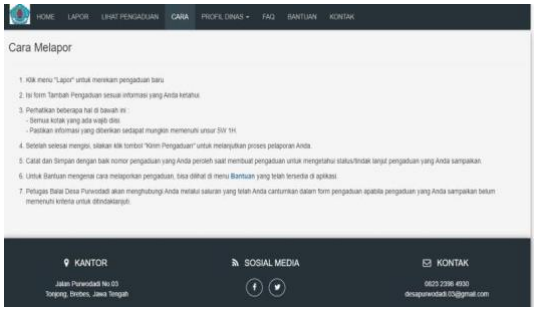

Fig. 7 : *Complaint Page*

e. Services Profile Page

This page consists of the service profile, vision and mission, organizational/management structure, and service motto/information.

Fig. 8 : *Services Profile Page*

f. FAQ Page (questions and answers about the application)

This page contains questions and answers about the existence ofwebsitethis public complaint.

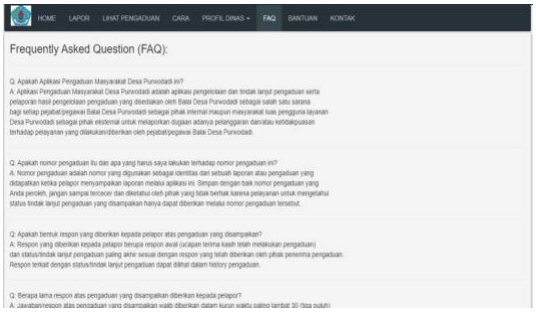

Fig. 9 : *FAQ Page*

g. Help Page

This page is a guide for people who are still confused about making complaints to the Purwodadi Village Hal.

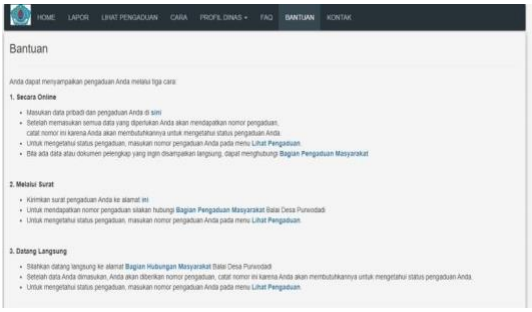

Fig. 10 :*Help Page*

h. Contact Page

This page contains contacts or numbers that can be contacted if there are things you want to ask.

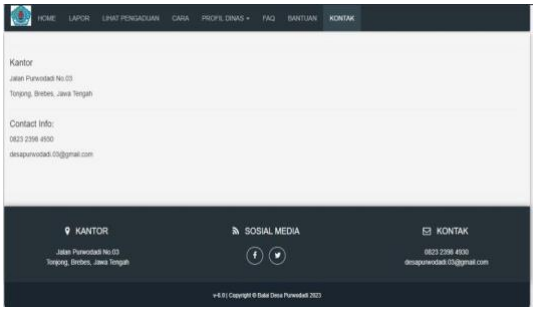

Fig. 11 : *Contact Page*

i. Admin Page Login

Before entering websit epublic complaints, the admin will dologinfirst like entering username And password.

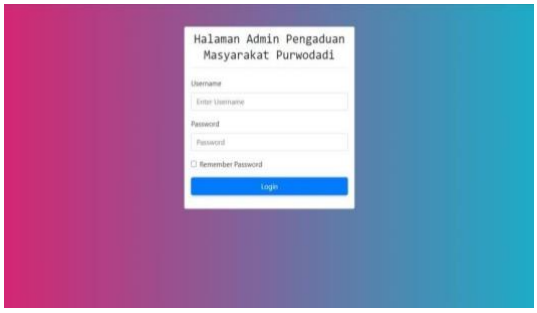

Fig. 12 :. *Admin Page Login*

j. Admin Page Dashboard

After doing login admin will enter the pagedashboard. This page displays the number of incoming reports, including how many have been responded to and how many have not been responded to.

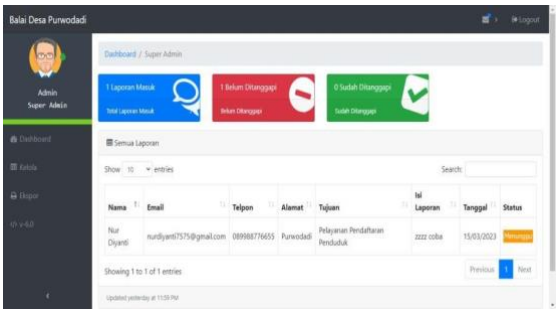

Fig. 13: *Admin Page Dashboard*

k. Report Management Admin Page

This page contains the management of incoming reports by responding to the matter, being able to view the report details, and being able to delete the report.

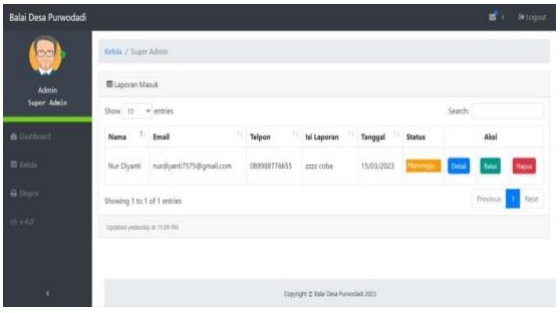

Fig. 14 : *Report Management Admin Page*

l. Admin Page Print Complaint

The following page is the page for printing the report. You can choose the options provided, whether the report will be printed directly.print or download it in PDF version orexcel.

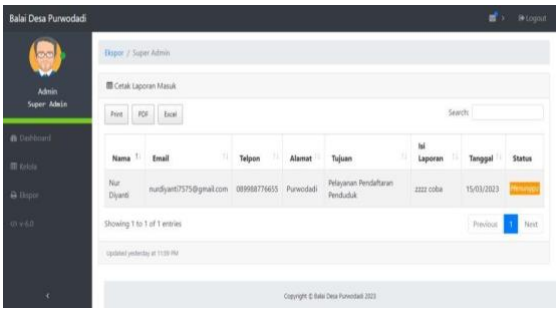

Fig. 15 : *Admint Page Print Complaint*

4.3. Testing.

Black box testing is an important method in the software testing process that aims to ensure that all system functions are running as they should. This method is included in the dynamic testing category because it is carried out by running the system directly. In its application, the tester is not required to have an understanding of programming or the internal structure of the software. Black box testing is carried out without access to the source code or system architecture, so the tester only interacts through the interface by providing input and evaluating the resulting output, without knowing the internal processes that convert the input into output.[22].

Table 1. Testing table

No	User Role	Menu Features The one tested	Test steps	Output expected	Status (√/x)
1.	Admin	Dashboard page	Enter to page dashboard	Successfully logged in page	√
2.	Admin	Report page	Enter the report page	Successfully done regarding Which reported	√
3.	Admin	View complaint page	Enter the view page complaint	Succeed enter number complaint	√
4.	Admin	Complaints page	Enter the method page complaint	Successfully done complaint	√
5.	Admin	official profile page	Enter profile page Service	Successfully entered official profile	√
6.	Admin	FAQ Page	Go to the FAQ page	Successfully done Q&A about application	√
7.	Admin	Help page	Enter to page Help	Success make complaint	√
8.	Admin	Contact page	Enter to page Contact	Succeed contactccontact	√
9.	Admin	admin login page	Enter the admin page login	Login successfully	√
10.	Admin	Page admin dashboard	Enter the admin page dashboard	Successful login dashboard	√
11.	Admin	Page admin report management	Enter the admin page report management	Successfully sent report	√
12.	Admin	Print admin page complaint	Enter the admin page print complaint	Succeed print report	√

5. Conclusion

Based on the analysis of the research conducted, it can be concluded that the Purwodadi Village Hall was chosen as a research subject to realize the Tri Dharma of Higher Education. The knowledge gained on campus serves as the basis for formulating concepts to be implemented in the community, particularly in Purwodadi Village. This research aims to introduce the public to technological advances to support the smooth functioning of officers at the Purwodadi Village Hall and the community as a whole.

Suggestion

Based on the analysis of the software that has been developed, the recommendation that can be taken from the testing process of the Web-Based Public Service System at Purwodadi Village Hall is that this system continues to be improved and utilized optimally to meet user needs.

References

[1] Wawan Wardiana, "Perkembangan Teknologi Informasi di Indonesia | kumparan.com," *Academia.Edu*, pp. 1–7, 2002.
[2] P. Parisca, K. Khairul, and Z. Syahputra, "Platform Layanan Pengaduan Masyarakat Berbasis Web Pada Kantor Desa Helvetia," *J. Minfo Polgan*, vol. 14, no. 2, pp. 1550–1557, 2025, doi: 10.33395/jmp.v14i2.15065.
[3] D. F. Kuncoro, U. Juniarti, J. Syahputra, B. R. Sumantri, Bambang Bambang, and R. Suryani, "Rancang Bangun Sistem Pengaduan Masyarakat Berbasis Web Dengan Metode Waterfall," *J. Sist. Inf. dan Teknol. Perad.*, vol. 3, no. 2, pp. 14–19, 2022, [Online]. Available: http://journal.peradaban.ac.id/index.php/jsitp/article/view/1259
[4] A. Ikhwan and D. A. P. Lubis, "Perancangan Sistem Informasi Laporan Pengaduan Masyarakat Berbasis WEB pada Dinas ESDM SUMUT," *Hello World J. Ilmu Komput.*, vol. 2, no. 1, pp. 1–13, 2023, doi: 10.56211/helloworld.v2i1.193.

[5] E. Damayanti, W. Sanjaya, and F. T. Wulandari, "Sistem Pengaduan Masyarakat Berbasis Web menggunakan Metode Waterfall," *JITU J. Inform. Technol. Commun.*, vol. 7, no. 2, pp. 147–153, 2023, doi: 10.36596/jitu.v7i2.818.
[6] T. Wijayanti, F. Nugraha, and A. P. Utomo, "Rancang Bangun Sistem Manajemen Pengelolaan Pengaduan," *J. Comput. Inf. Syst. Ampera*, vol. 3, no. 1, pp. 56–65, 2022.
[7] M. Taufik Aufa and E. Rohaini, "Jurnal Informatika Dan Rekayasa Komputer (JAKAKOM) PERANCANGAN SISTEM INFORMASI PELAYANAN PENGADUAN MASYARAKAT KELURAHAN BAGAN PETE KOTA JAMBI BERBASIS WEBSITE," *J. Inform. Dan Rekayasa Komput.*, vol. 4, no. 1, pp. 937–945, 2024.
[8] S. N. Saragih, Khairullah, A. K. Hidayah, and M. Imanullah, "Perancangan Aplikasi Layanan Pengaduan Masyarakat Berbasis Web Menggunakan Metode Agile Development," *Pros. Semin. Nas. ...*, vol. 9, no. 6, pp. 649–656, 2025.
[9] K. et al 2023, "No Title 済無 No Title No Title No Title," vol. 32, no. 3, pp. 167–186, 2021.
[10] Nina Novitasari and Desy Agustina Cahyadi, "Peran Reservasi Dalam Meningkatkan Pelayanan Terhadap Tamu Di Hotel Novotel Lampung ," *J. Nusant. (Jurnal Ilm. Pariwisata dan Perhotelan)* , vol. 3, no. 1, pp. 31–37, 2020.
[11] L. A. Anela, "Pengaruh Sarana Prasarana Terhadap Kepuasan Masyarakat pada Kantor Balai Desa Songgom Kabupaten Brebes," p. 98, 2021.
[12] Ardiansyah, Risnita, and M. S. Jailani, "Metode Penelitian Kuantitatif, Kualitatif Dan R&D," *J. IHSAN J. Pendidik. Islam*, vol. 1, no. 2, pp. 1–9, 2023.
[13] D. S. Sembiring, M. D. Irawan, and Y. H. Siregar, "Pengembangan Aplikasi Mobile Sistem Informasi Pengaduan Masyarakat dengan Pendekatan Waterfall dan Pengujian Black Box," *J. Garuda Pengabdi. Kpd. Masy.*, vol. 2, no. 2, pp. 66–78, 2024, doi: 10.55537/gabdimas.v2i2.920.
[14] H. Hasan, S. Informasi, D. Vidio, and I. Pendahuluan, "Pengembangan sistem informasi dokumentasi terpusat pada stmik tidore mandiri," vol. 2, no. 1, pp. 23–29, 2022.
[15] B. A. Habsy, N. Mufidha, C. Shelomita, I. Rahayu, and M. I. Muckorobin, "Filsafat Dasar dalam Konseling Psikoanalisis : Studi Literatur," *Indones. J. Educ. Couns.*, vol. 7, no. 2, pp. 189–199, 2023, doi: 10.30653/001.202372.266.
[16] R. Destriana and H. Rusdianto, "Rancang Bangun Sistem Informasi Pelayanan Masyarakat Berbasis Web Di Desa Bojong," *JIKA (Jurnal Inform.*, vol. 6, no. 1, p. 105, 2022, doi: 10.31000/jika.v6i1.5468.
[17] N. M. I. Suryani, E. A. Wiby, A. N. A. Yahya, R. Amanda, and A. Setiawan, "Perancangan Sistem Informasi Pengaduan Masyarakat Kepada Dinas Sosial Berbasis Web Dengan Metode Waterfall," *J. Mhs. Sist. Inf.*, vol. 3, no. 2, pp. 315–325, 2025.
[18] A. B. Karim and M. Fachrie, "Perancangan Sistem Pengaduan Masyarakat Berbasis Mobile (Studi Kasus : Kabupaten Banjarnegara)," *J. Teknol. Dan Sist. Inf. Bisnis*, vol. 6, no. 1, pp. 65–75, 2024, doi: 10.47233/jteksis.v6i1.1101.
[19] S. Hasil, "Pengaduan masyarakat merupakan elemen yang penting dalam suatu instansi daerah karena bertujuan untuk melihat keberhasilan (Afriyani , Muhafidin , and Susanti 2022). Layanan pengaduan masyarakat terkait kondisi lingkungan merupakan salah satu bentuk par," vol. 7, no. 2, pp. 225–233, 2023.
[20] R. Mahendra, M. T. A. Zaen, H. Fahmi, and A. Lestari, "Implementasi Metode Waterfall Dalam Pengembangan E-Complaint Sebagai Sarana Pengaduan Masyarakat," *J. Inform. Teknol. dan Sains*, vol. 6, no. 2, pp. 322–329, 2024, doi: 10.51401/jinteks.v6i2.4210.
[21] M. E. Agustriwahyu Prasetya and A. Al Kaafi, "Perancangan Program Pengaduan Masyarakat Berbasis Website Di RW.001 Kelurahan Sunter Jaya Jakarta," *Simpatik J. Sist. Inf. dan Inform.*, vol. 3, no. 2, pp. 87–96, 2023, doi: 10.31294/simpatik.v3i2.2556.
[22] R. Parlika, T. A. Nisaa', S. M. Ningrum, and B. A. Haque, "Literature study of the disadvantages and advantages of black box testing [Studi literatur kekurangan dan kelebihan pengujian black box]," *Teknomatika*, vol. 10, no. 02, pp. 131–140, 2020.