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Management of Village Innovation Data Entry through the Village Community Innovation Information System (SINOMADES) Application in Bekasi Regency

Pengelolaan Entri Data Inovasi Desa Melalui Aplikasi Sistem Informasi Inovasi Masyarakat Desa (SINOMADES) di Kabupaten Bekasi

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ABSTRACT

This research aims to manage village innovation data entry through the Village Community Innovation Information System (SINOMADES) application in Bekasi Regency. Innovation data management was previously done manually by entering data using Excel, so reporting is less efficient and real-time monitoring becomes difficult. Using waterfall software development methods, this application is designed to provide a more efficient and standardized solution. SINOMADES' main features include innovation registration, Intellectual Property Rights (IPR) management, user testimonials, and integration with social media. SINOMADES helps innovators to document, promote, and protect their innovations, as well as strengthen collaboration between innovators with governments and the private sector. The results show that the application improves the effectiveness of innovation data management with more structured data collection, faster reporting, and real-time monitoring of innovations. So that by managing village innovation data entry through the implementation of the village community innovation information system (sinomades) in Bekasi district, it can accelerate the transformation of Bekasi Regency into a more competitive innovation center at the national and international levels.

Keywords: Innovation Data Management; Village Community Innovation Information System (SINOMADES); Intellectual Property Rights (IPR); Waterfall Method

ABSTRAK

Penelitian ini bertujuan untuk mengelola entri data inovasi desa melalui aplikasi Sistem Informasi Inovasi Masyarakat Desa (SINOMADES) di Kabupaten Bekasi. Pengelolaan data inovasi sebelumnya dilakukan secara manual dengan mengentri data yang menggunakan excel, sehingga pelaporan nya kurang efisien dan sulitnya pemantauan real-time. Dengan menggunakan metode pengembangan perangkat lunak waterfall, aplikasi ini dirancang untuk memberikan solusi yang lebih efisien dan terstandarisasi. Fitur utama SINOMADES meliputi pendaftaran inovasi, pengelolaan Hak Kekayaan

Intelektual (HAKI), testimoni pengguna, dan integrasi dengan media sosial. SINOMADES membantu inovator untuk mendokumentasikan, mempromosikan, dan melindungi inovasi mereka, serta memperkuat kolaborasi antar inovator dengan pemerintah dan sektor swasta. Hasil penelitian menunjukkan bahwa aplikasi ini meningkatkan efektivitas pengelolaan data inovasi dengan pengumpulan data yang lebih terstruktur, pelaporan yang lebih cepat, dan pemantauan inovasi secara real-time. Sehingga dengan ada Pengelolaan entri data inovasi desa melalui aplikasi sistem informasi inovasi Masyarakat desa (sinomades) di kabupaten Bekasi nya dapat mempercepat transformasi Kabupaten Bekasi menjadi pusat inovasi yang lebih kompetitif di tingkat nasional maupun internasional.

Kata kunci: *Pengelolaan Data Inovasi; Sistem Informasi Inovasi Masyarakat Desa (SINOMADES); Hak Kekayaan Intelektual (HAKI); Metode Waterfall*

INTRODUCTION

Information technology is increasingly important in the management of village development. The Government of Indonesia launched initiatives, including the Village Innovation Program, to encourage innovation that is expected to improve the welfare of the community and the local economy. However, the management of village innovation data faces challenges, such as unstandardized data collection, inefficient reporting, and difficulties in real-time monitoring and evaluation. Innovation supports economic growth and sustainable development, creates added value, and improves the quality of life. The ability to innovate is an important asset for regions in facing global competition (Kurniawan et al., 2024).

The Regional Development Agency (Bappeda) of Bekasi Regency is an institution responsible for regional planning, research, and development. Bappeda plays an important role in formulating development policies, analyzing community needs, and identifying the potentials and challenges faced by the region. Through various programs and activities, Bappeda aims to improve the welfare of the community and encourage sustainable economic growth in Bekasi Regency. In addition, Bappeda also functions as a liaison between local governments, communities, and the private sector in the implementation of development.

This problem focuses on the fact that the Bekasi Regency Planning, Research, and Development Agency (Bappeda) is still carrying out a manual data management process. This method causes a number of constraints, such as data inaccuracies, delays in information processing, and difficulties in accessing data relevant for planning and decision-making. With so many innovations that need to be managed, this manual approach severely limits Bappeda's ability to respond to the needs of the community and advance regional development. Therefore, it is necessary to transform towards a digital system, such as the Village Community Innovation Information System (SINOMADES) application, to increase the effectiveness and efficiency of innovation data management in Bekasi Regency.

Based on a similar research conducted by Yanti Yusman, Nurafina Siregar, Randi Rian Putra, Sri Nadriati with the title "Website-Based Village Apparatus Information System (SINPERDES) with Waterfall Method in the Implementation of Village Development". These applications play an important role in development by connecting communities and governments, planning, implementing, and monitoring projects, and ensuring community participation and efficient budget management (Yusman et al., 2023). Comparison with a journal entitled "Web-Based Population Data Collection Information System Design in Tanjung Tawang Village, Muara Pinang District" conducted by, Kessy Reyta Dikana, Marissa Utami, Surya Ade Saputera. This system can store population data, Entry and Exit of Residents, Birth and Death and letter data (business license, temporary ID card cover letter, cover letter for making Skck, certificate of incapacity). By using the Waterfall method (Dikana et al., 2022).

The title proposed for this study is "Management of Village Innovation Data Entry through the Implementation of the Village Community Innovation Information System (Sinomades) in Bekasi Regency". This system is expected to change the data entry process, can help manage data entry, and improve the management of village innovation data in Bekasi Regency.

PROBLEM STATEMENT

Based on the problems that have been explained in the background description above, the problem formulation is obtained, namely:

1. How do I change the data entry process from manual to digital?
2. How to help manage village innovation data entry through the implementation of the village community innovation information system (sinomades) in Bekasi Regency?
3. To what extent is the SINOMADES application able to increase the effectiveness of village innovation data management in Bekasi Regency?

LITERATURE REVIEWS

Information Systems

A system according to the meaning of the word is a unity or collection of elements or components or subsystems that interact with each other to achieve a certain goal. Where each element or component has its own function and way of working but remains in one function or work unit. The functions and interactions of each component element will not clash or contradict each other, as they are all interdependent and necessary to achieve a specific goal. The opinion in the book on information system processing (Oemar Hamalik, 1993), defines a system as a whole or totality consisting of parts or sub-sub-systems or components that interact with each other and with the whole to achieve a predetermined goal. According to the book Information Systems Management (Onong Uchjana Effendy, 1989) states that the model of a system is input, process, and output, this is certainly a system that can have several inputs and outputs.

Innovation

Innovation is the process of forming and implementing a new idea, method, or product that aims to create a significant increase in efficiency, effectiveness, or quality of output in service delivery. These innovations are not only limited to the introduction of new technologies but also include changes in the way public organizations or institutions operate to improve transparency, accessibility, and community satisfaction. The application of innovation often involves transformation from conventional or traditional systems to more modern systems, such as the use of information and communication technology (ICT). Successful innovation is an innovation that is able to provide real benefits to the community and can adapt to the dynamics of needs and challenges faced in the field.

Website

A website is a collection of web pages that present a variety of information, such as text, images, and audio, from a single domain. These pages are interconnected with each other. Typically, web pages that connect to other web pages are called hyperlinks, while text that connects one text to another is known as hypertext.

Basic Data

A database is a collection of information that is systematically stored in a computer, so that it can be accessed and analyzed using computer programs to obtain information. The software used to manage and execute queries on a database is called a database management system (DBMS). The basic concept of a database is a collection of records or pieces of information.

Igniter Code

CodeIgniter is an open source application in the form of a PHP framework that is used to create dynamic websites with MVC (Model, View, Controller) patterns. CodeIgniter makes it easy for web developers to build web applications quickly from scratch. In addition to making the web more dynamic, it also helps developers create lightweight and fast web applications. CodeIgniter comes with very complete documentation, including code implementation examples, which is one of the strong reasons many people choose it.

Diagram flow

A flowchart is a graphical representation of the steps and sequence of a program's procedures. Flowcharts help analysts and programmers to break down problems into smaller segments and help in analyzing other alternatives in operations.

Diagram Use Cases

Use Cases are a modelling technique in software engineering that is used to describe the functionality of a system from the user's point of view. Use Cases describe the interaction between users (actors) and systems to achieve a specific goal. Use Cases are generally depicted in the form of diagrams showing the actors, use cases, and relationships between the two. These diagrams provide a visual view of the system's functionality and interaction with actors, which helps in the analysis and design of the software system.

Class Diagram

A Class Diagram is a modelling tool in UML that is used to describe the structure of systems in terms of defining classes and the relationships between them. This diagram focuses on the representation of the class along with the attributes and methods that each class has.

Activity Diagram

Activity Diagrams are modelling tools in UML that are used to describe workflows or activities, systems, or business processes. This diagram focuses on the activities performed by the components of the system or system, not the interactions between actors and systems.

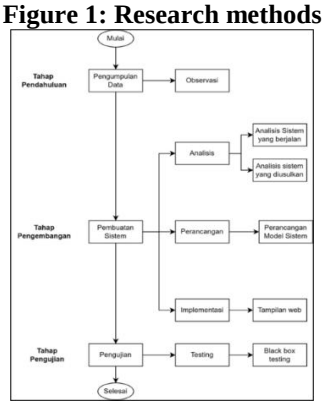
Waterfall Method

The Waterfall Model is a classic software development method that follows a linear and sequential approach. This method consists of five to seven phases that each have a specific task and objective. These phases describe the software lifecycle until the final product is delivered. Each phase must be completed before moving on to the next, with the results from the previous phase being the basis for the next phase.

METHODOLOGY

This research was conducted in the period from March 31 to April 30, 2024. On May 4, 2024, preparations were carried out which included the determination of villages that will be the subject of research, licensing, and the preparation of research instruments such as questionnaires and interview guides. Data collection was carried out from May 13 to May 21, 2024, where surveys, interviews, and observations were carried out directly in selected villages in Bekasi Regency. Furthermore, on May 28, 2024, the data that has been collected will be analyzed to evaluate the effectiveness, efficiency, accuracy, and transparency of village innovation data management through the SINOMADES application. Finally, on June 1, 2024, a final research report was prepared which included a discussion of results, conclusions, and recommendations for the further development of the SINOMADES application. The method used includes three main parts, namely the initial stage, the development stage and the testing stage. The research method was applied with the research stages shown in Figure 1.

Figure 1: Research methods

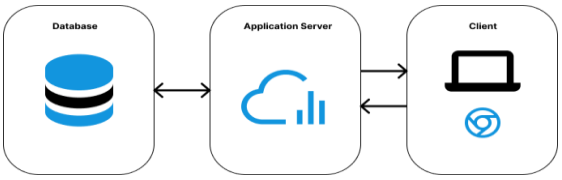


FINDINGS AND DISCUSSION

Architectural Design

Architectural design is the structure and components of a system that are designed to achieve both functional and non-functional goals of an application. In the context of SINOMADES' information system, architectural design is a framework that describes how the various elements of the system interact and work together to provide effective services for the management of village innovation data. This architectural design involves several key components that explain how data is processed, stored, and accessed by users illustrated in Figure 2.

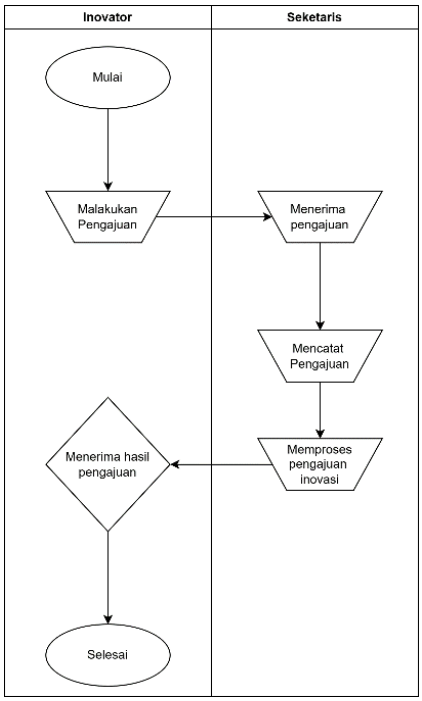
Figure 2: System architecture



Running a System Requirements Analysis

The current system faces various weaknesses and shortcomings that affect the effectiveness of village innovation data management. One of the main problems is the inefficient data update process, where innovators cannot update their information independently and have to rely on third parties or admins, causing information to often expire. In addition, the process of verifying data updated by innovators is less structured, which increases the risk of errors or inaccurate information. The system also lacks an organized data synchronization mechanism, so the data displayed does not always reflect the latest information as shown in Figure 3.

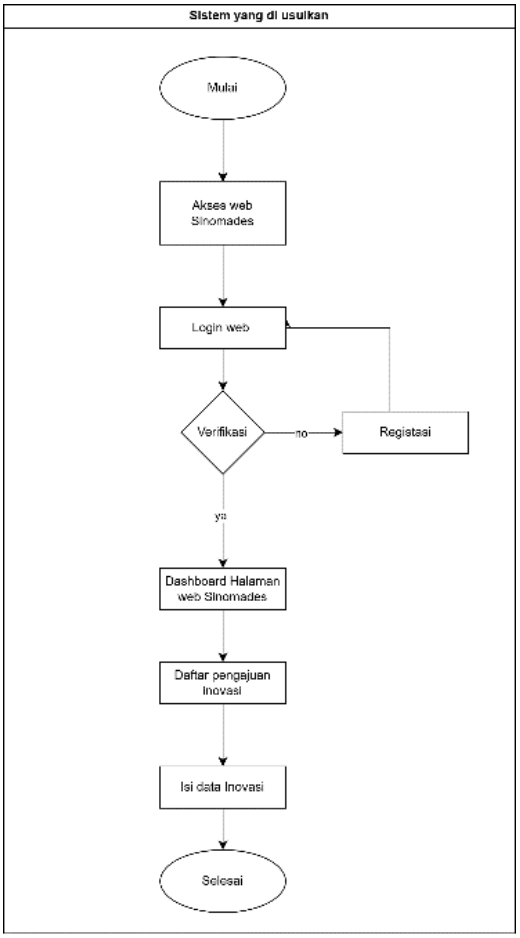
Figure 3: Running System Requirements



New System Needs Analysis

After observing the various weaknesses and shortcomings in the current system, the authors conduct an analysis to identify the need for a new and more effective system. This proposed system is designed to help innovators update data independently through the features provided by the app. In this way, innovators can instantly update information related to their innovations without having to rely on third parties, improving the efficiency and accuracy of the data as shown in Figure 4.

Figure 4: New System Requirements



System Planning

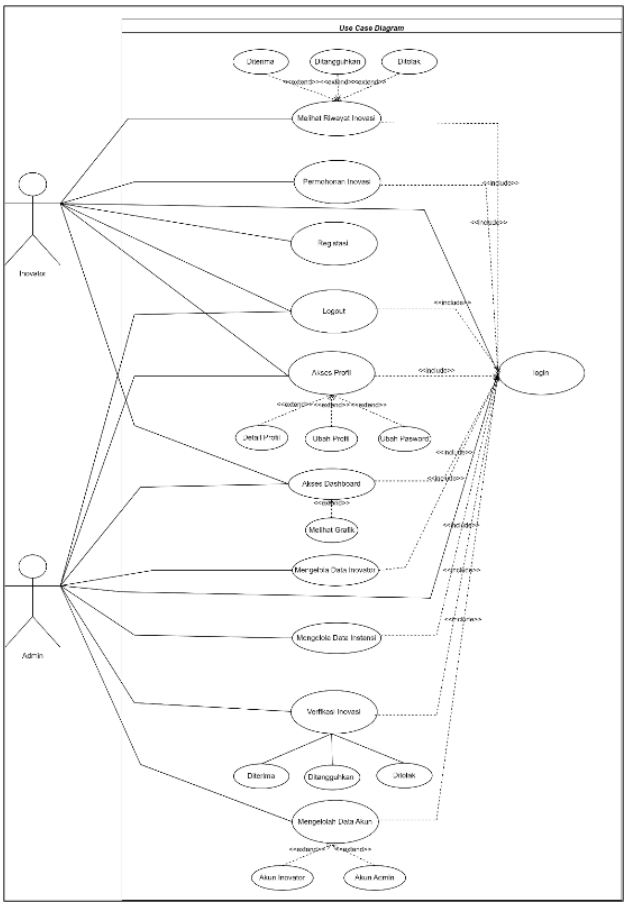
Table 1: System Planning Module

No.	Search	Function
1	*Register* an Innovator	for Innovators who do not yet have an account at SINOMADES to be able to create an account and start looking or innovating
2	*Log in*	used by all stakeholders to log in to the system with an account that already has
3	Edit *Profile*	used to change usernames, profile photos, and other personal data
4	Change Password	used to replace old passwords with new passwords
5	*List of Innovations*	used to register innovations in the village
6	*Graphics*	Used to present many innovations in a village in the form of graphics

Use Case Diagram

The Use Case diagram is used to illustrate the main functionality of the system from the perspective of the user (actor). This diagram illustrates how users (actors) interact with the system through various use cases. The Case Diagram of the use of the implementation of the village community innovation information system (SINOMADES) is as follows:

Figure 5: Use Case Diagram



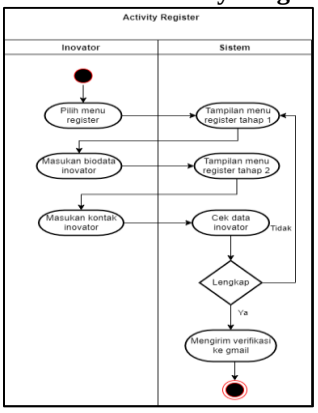
Activity Diagram

The diagram of the implementation of the village community innovation information system (SINOMADES) is as follows:

Activity Diagram Innovator

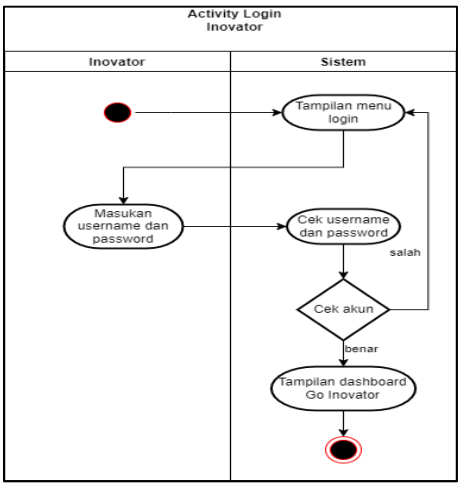
a. Register. The Activity Diagram register is shown in Figure 6.

Figure 6: List of Activity Diagrams



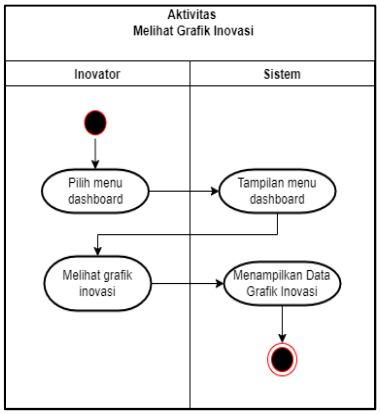
b. Log in. The Login Activity diagram is shown in Figure 7.

Figure 7: Login Activity Diagram



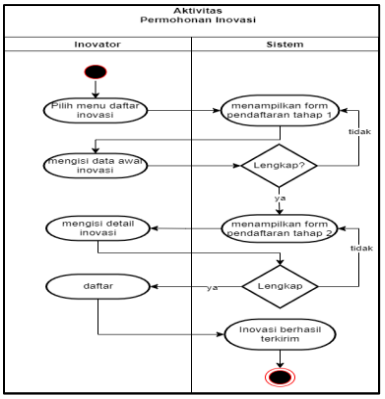
c. View the Innovation Graph. Activity Diagram View the innovation graph in Figure 8.

Figure 8: Innovation Graph Activity Diagram



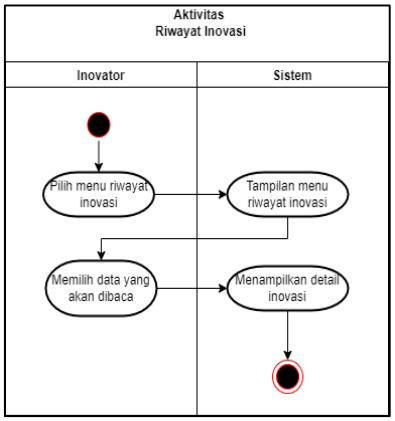
d. Innovation Application. Innovation Application Activity Diagram in Figure 9.

Figure 9: Innovation Application Activity Diagram



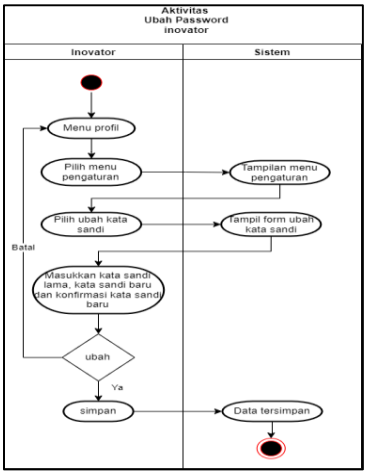
e. History of Innovation. The Innovation History Activity Diagram is shown in Figure 10.

Figure 10: Innovation History Activity Diagram



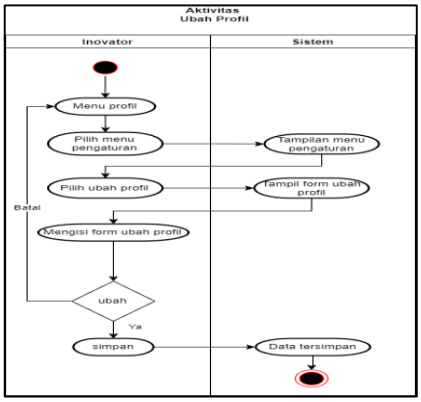
f. Change your password. The Activity Diagram Password is shown in Figure 11.

Figure 11: Password Change Activity Diagram



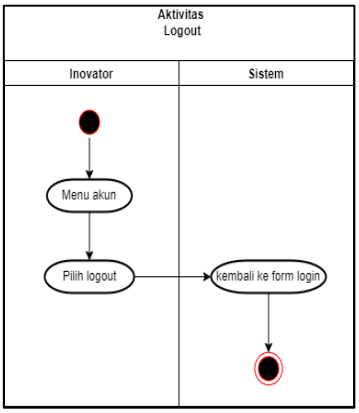
g. Change your profile. The Profile Change Activity Diagram is shown in Figure 12.

Figure 12: Activity Chart Change Profile



h. Log out. The Logout Activity diagram is shown in Figure 13.

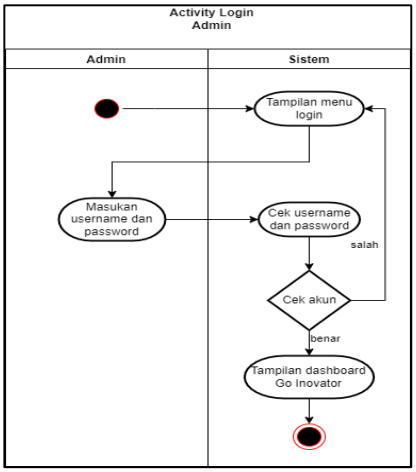
Figure 13: Activity Logout Diagram



Activity Diagram Admin

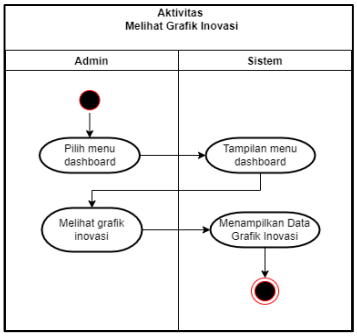
a. Log in. The Login Activity diagram is shown in Figure 14.

Figure 14: Admin Login Activity Diagram



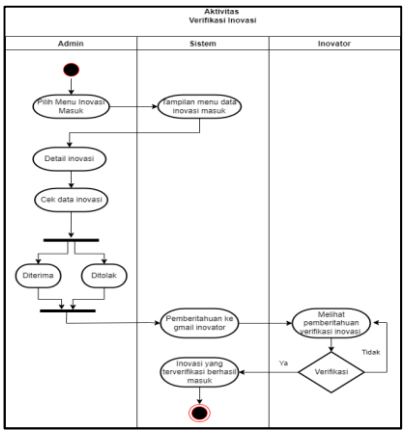
b. See the Innovation Graph. The Activity Chart Viewing the Innovation Graph is shown in Figure 15.

Figure 15: Activity Diagram Viewing Innovation Graph



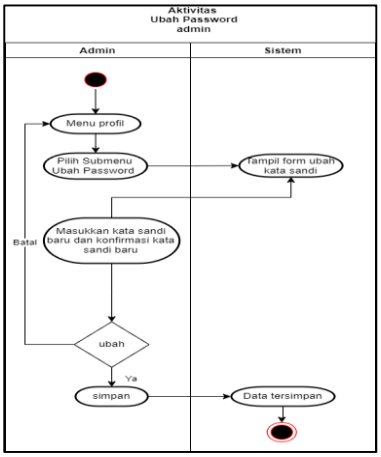
c. Innovation Verification. The Innovation Verification Activity Diagram is shown in Figure 16.

Figure 16: Innovation Verification Activity Diagram



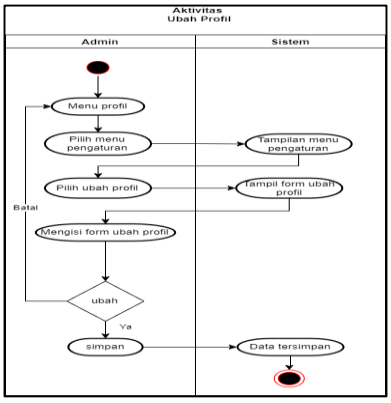
d. Change your password. The Change Password Activity diagram is shown in Figure 17.

Figure 17: Password Change Activity Diagram



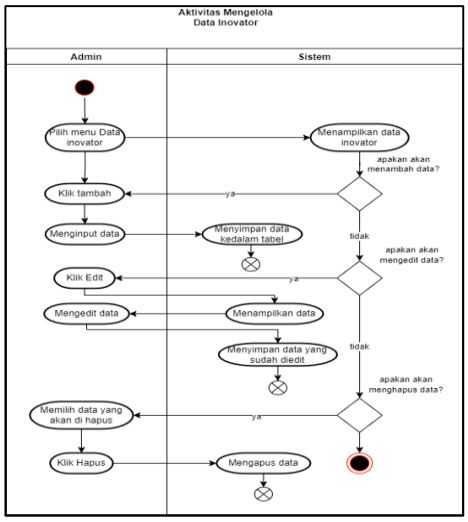
e. Change your profile. The Profile Change Activity Diagram is shown in Figure 18.

Figure 18: Activity Chart Change Profile



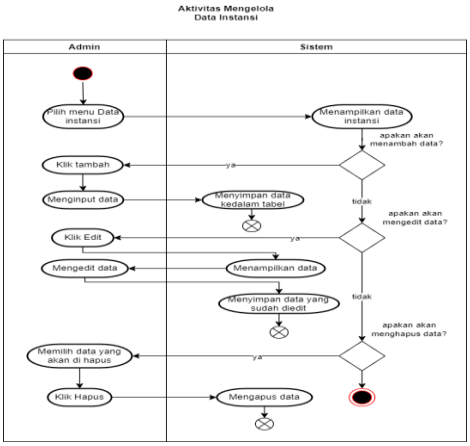
f. Managing Innovator Data. The Innovator Data Management Activity Diagram is shown in Figure 19.

Figure 19: Activity Diagram of Managing Innovator Data



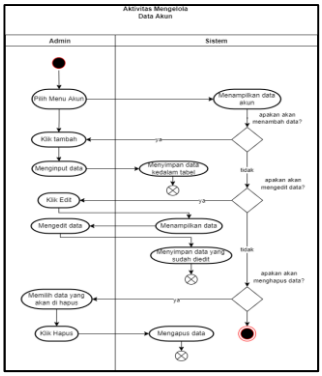
g. Manage your agency's data. The Activity Diagram of Managing Agency Data is shown in Figure 20.

Figure 20: Activity Diagram of Managing Agency Data



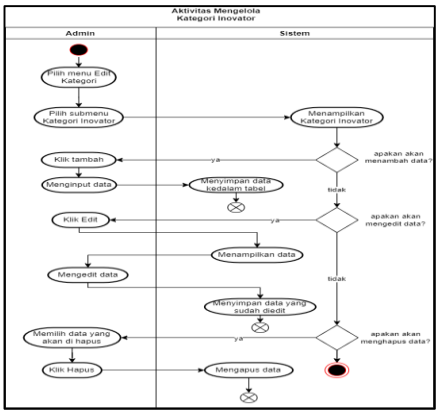
h. Manage Account Data. The Activity Diagram of Managing Account Data is shown in Figure 21.

Figure 21: Activity Diagram of Managing Account Data



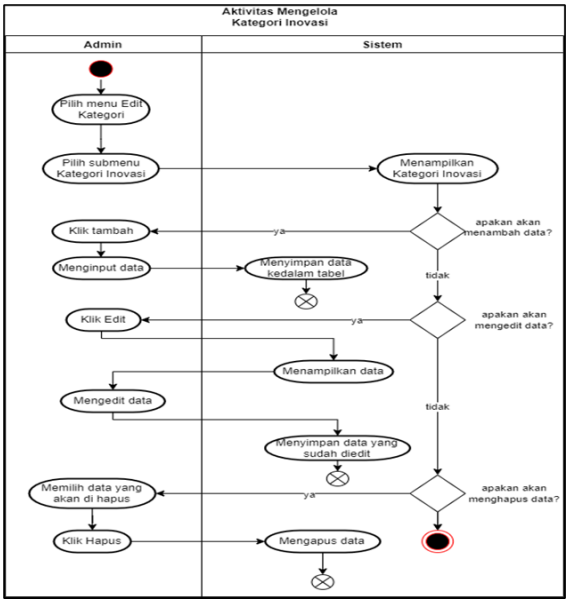
i. Manage the Innovator category. The Activity Diagram of Managing Innovator Categories is shown in Figure 22.

Figure 22: Activity Diagram Managing Innovator Categories



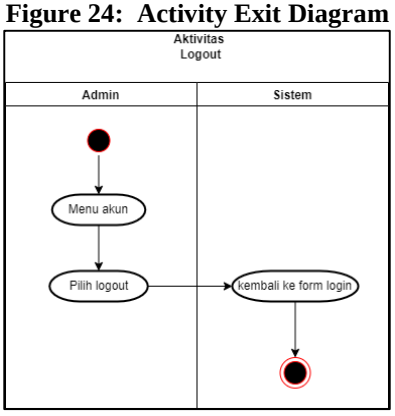
j. Manage innovation categories. The Activity Diagram of Managing Innovator Categories is shown in Figure 23.

Figure 23: Activity Diagram Managing Innovation Categories



k. Log out. The Logout Activity Diagram is shown in Figure 24.

Figure 24: Activity Exit Diagram

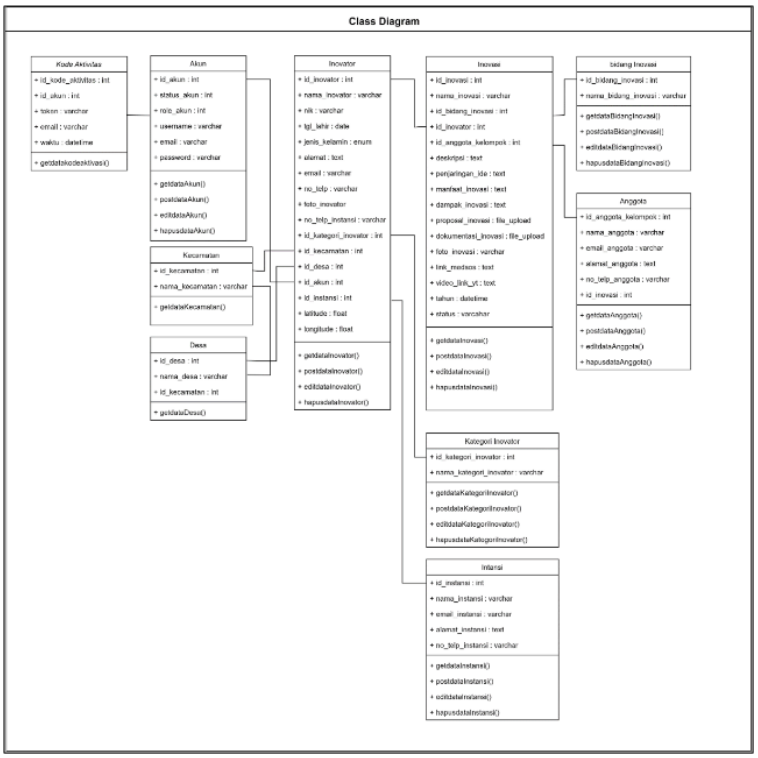


Class Diagram

These diagrams help in understanding how data and functions in the system are organized as well as how classes interact with each other. The class diagram for the implementation of the village

community innovation information system (SINOMADES) is as follows: The class diagram is constructed as shown in Figure 25.

Figure 25: Class Diagram



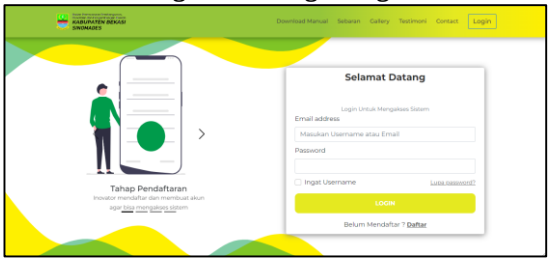
Implementation of Interface Results

Interface result implementation is the stage where the design of the interface that has been designed is implemented into the system being developed. This process involves translating visual and functional designs into executable code on hardware and software used by the end user. At this stage, special attention is paid to the aesthetic aspects, usability, and functionality of the interface to ensure that users can interact with the system efficiently and effectively. The following are the results of the implementation of the Village Community Innovation Information System Application Interface (SINOMADES):

Login Page

The login page is the starting page where the user enters a username and password to access the system. This page provides an entry form for a username and password, as well as a button to log in to the system. In addition, this page also provides the option to reset the password if the user forgets the password. The design of the Login page can be seen in Figure 26.

Figure 26: Login Page

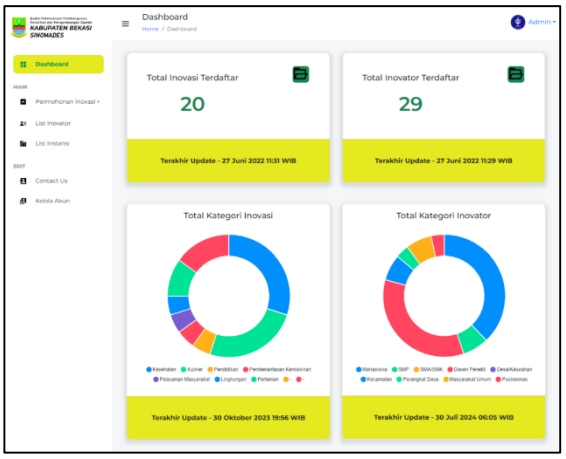


Dashboard Page

The dashboard page is the main page that appears after the user successfully logs in. On this page, users can see a summary of registered innovation data, recent notifications, usage statistics, and

quick access to various system features. The dashboard is designed to provide an informative and easy-to-understand overview of the current status and activity in the system. The design of the Dashboard page can be seen in Figure 27.

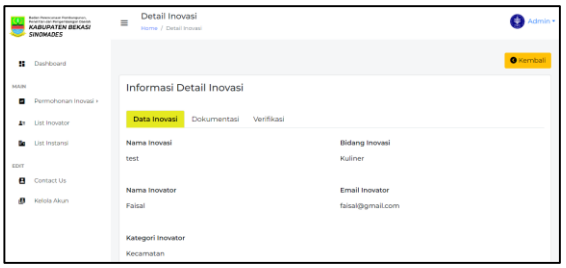
Figure 27: Dashboard Pages



Registered Innovation Detail Page

The listed innovation detail page displays complete information about the listed innovation. The information displayed includes the name of the innovation, category of the innovation, name of the innovator, description of the innovation, IP status, technical details, and contact of the innovator. This page can also display documents or images related to innovations and make it easy for users to download information in PDF or Excel format. The design of the Registered Innovation Detail Page can be seen in Figure 28.

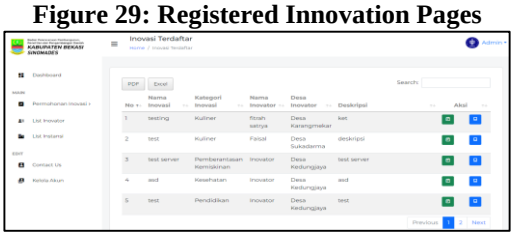
Figure 28: Details of Registered Innovation Pages



Registered Innovation Page

The registered innovations page displays a list of all the innovations that are already registered in the system. The list comes with search and filter features to make it easier for users to find specific innovations based on categories, statuses, or keywords. Each entry on the list includes basic information about the innovation name, innovation category, innovator name, and description. The design of the Registered Innovation Page can be seen in Figure 29.

Figure 29: Registered Innovation Pages

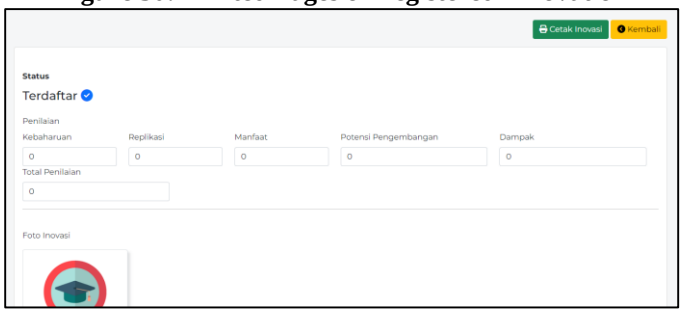


Registered Innovation Print Page

The registered innovation print page makes it easy for users to print a list of innovations registered in the system. Users can choose a print format, such as PDF or Excel, and specify printing

parameters such as date range or innovation category. This feature makes it easy for users to have a physical or digital copy of the innovation data they need. The design of the Registered Innovation Print Page can be seen in Figure 30.

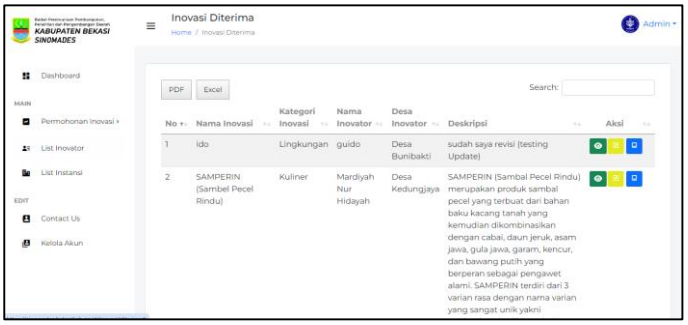
Figure 30: Printed Pages of Registered Innovation



Innovation Page Accepted

The Accepted innovations page displays a list of innovations that have been accepted and recognized by the system. This page provides search and filter features to make it easier for users to find certain innovations that have been accepted. Each entry in the list includes basic information such as the name of the innovation, the category of the innovation, the name of the innovator, and the description. The design of the Accepted Innovation Page can be seen in Figure 31.

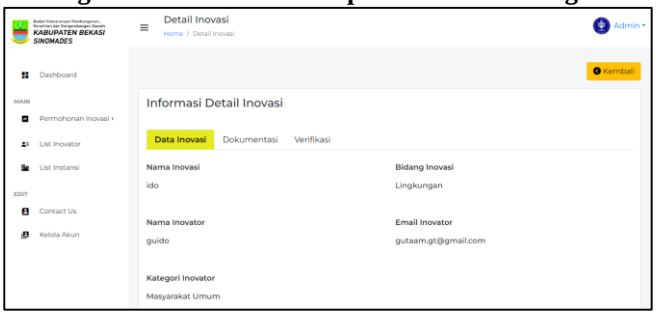
Figure 31: Innovation Page Accepted



Innovation Detail Page Accepted

The details page of accepted innovations displays complete information about the innovations that have been accepted. Users can view the innovation name, innovation category, innovator name, innovation description, IP status, technical details, and innovator contacts. This page can also display documents or images related to innovations and make it easy for users to download information in PDF/Excel format. The Printed Page Detail Design of the Accepted Innovation can be seen in Figure 32.

Figure 32: Details of Accepted Innovation Pages

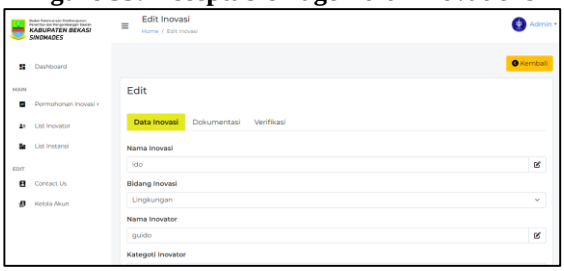


Edit Accepted Page Innovation

The edit accepted innovation page makes it easy for users to edit the details of the accepted innovations. Users can update information such as innovation name, innovation category, innovator

name, innovation description, IP status, technical details, and innovator contacts. Once the changes are saved, the innovation information will be updated in the system and can be viewed by other users who have access. Acceptable Innovation Edit Page Print Design can be seen in Figure 33.

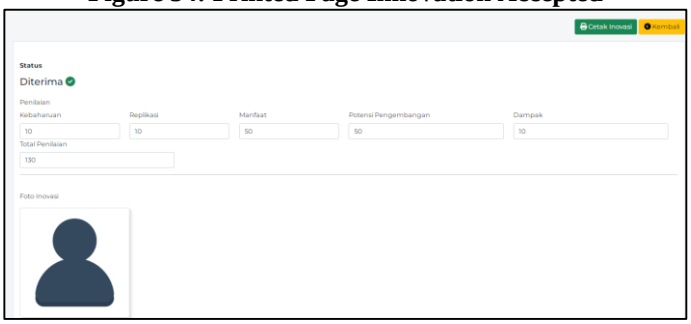
Figure 33: Acceptable Page Edit Innovations



Page Print Innovation Accepted

The accepted innovation print page makes it easy for users to print a list of accepted innovations in PDF or Excel format. This feature makes it easy for users to document or report innovations that have been accepted and recognized by the system. The Accepted Innovation Print Page Design can be seen in Figure 34.

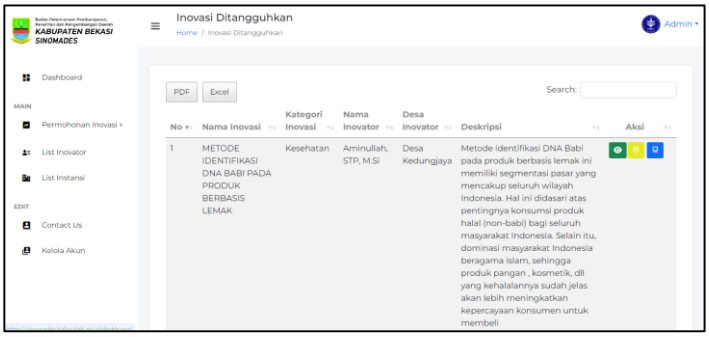
Figure 34: Printed Page Innovation Accepted



Innovation Page Suspended

The suspended innovation page displays a list of innovations whose status is temporarily suspended. Users can use the search and filter features to find specific innovations that are in a suspended state. Each entry in the list includes basic information such as the name of the innovation, the category of the innovation, the name of the innovator, the village of the innovator and the description. The design of the Deferred Innovation Page can be seen in Figure 35.

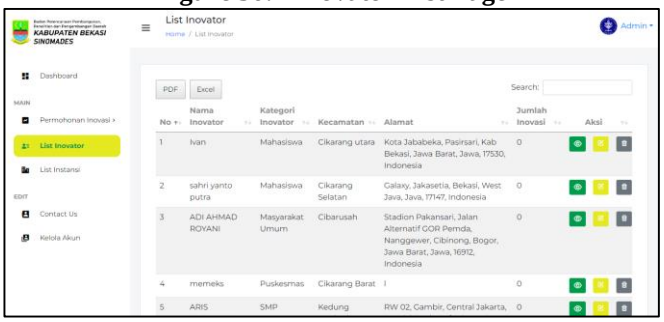
Figure 35: Innovation Page Suspended



Innovator List Page

The list of innovators page displays a list of innovators registered in the system. Users can use the search and filter feature to find specific innovators by name, innovation category, or location. Each entry on the list includes basic information such as the innovator's name, innovator category, district, address, number of registered innovations, and contacts. The design of the Innovator List Page can be seen in Figure 36.

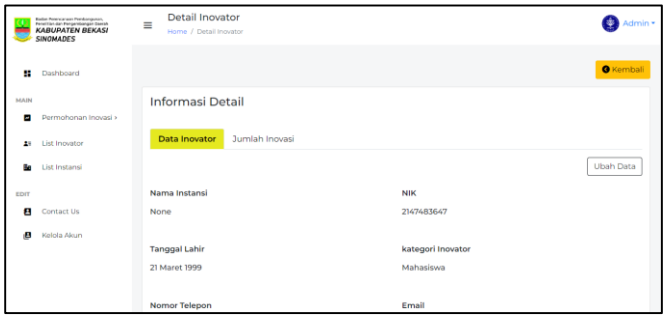
Figure 36: Innovator List Page



Innovator Detail Page

The innovator details page displays complete information about the innovator. Users can see the innovator's name, innovator category, sub-district, address, number of registered innovations, and contacts. This page can also display documents or images related to innovations and make it easy for users to download information in PDF format. The design of the Innovator Detail Page can be seen in Figure 37.

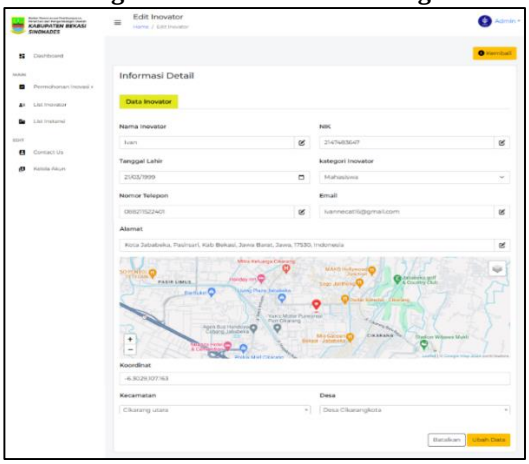
Figure 37: Innovator Detail Page



Innovator Edit Page

The innovator edit page makes it easy for users to edit the innovator's details. Users can update information such as innovator name, innovator category, district, address, number of registered innovations, and contacts. Once the changes are saved, the innovator's information will be updated in the system and can be viewed by other users who have access. The design of the Innovator's Edit Page can be seen in Figure 38.

Figure 38: Innovator Edit Page

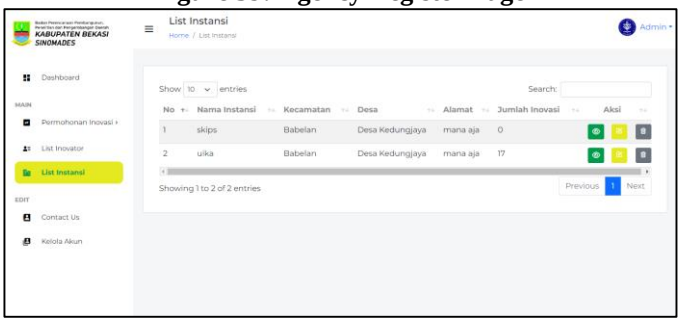


Instance List Page

The agency list page displays the list of agencies registered in the system. Users can use the search and filter features to find specific instances by name, innovation category, or location. Each entry

in the list includes basic information such as the name of the agency, sub-district, village, number of registered innovations, and contacts. The design of the Agency List Page can be seen in Figure 39.

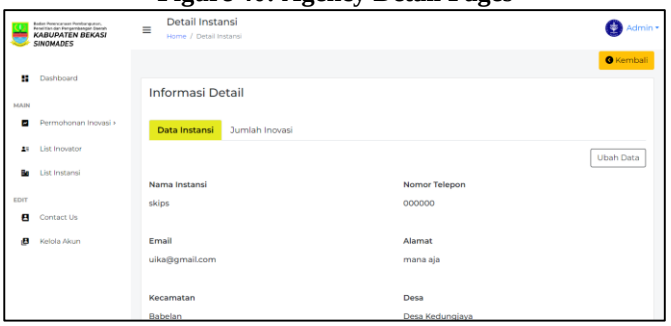
Figure 39: Agency Register Page



Agency Detail Page

The agency's details page displays complete information about the agency. Users can see the name of the institution, sub-district, village, number of registered innovations, and contacts. This page can also display documents or images related to innovations and make it easy for users to download information in PDF format. The design of the Agency Detail Page can be seen in Figure 40.

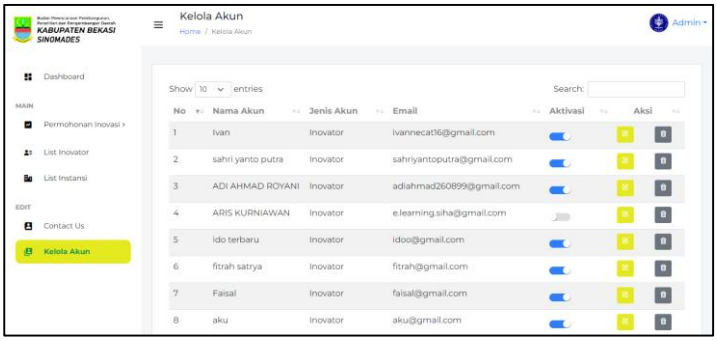
Figure 40: Agency Detail Pages



Manage Account Pages

The manage account page makes it easy for users to manage their account information. Users can change passwords, update personal data, and view activity history. Security features such as two-factor authentication can be added to increase account security. The design of the Account Management Page can be seen in Figure 41.

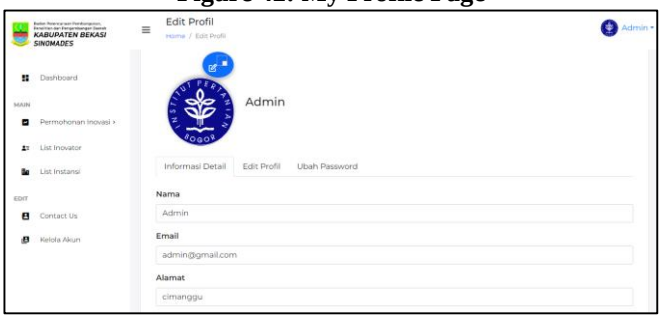
Figure 41: Manage Account Pages



Page: My Profile

My profile page displays users' profile information and makes it easy for them to edit and update their personal information. Users can update information such as name, email, address, and profile picture. The design of My Profile Page can be seen in Figure 42.

Figure 42: My Profile Page



System Testing

Black-box testing is used to test the functionality of a system without looking into the internal structure or program code. This test focuses on the system's inputs and outputs to ensure that the system functions as expected. The following is a test table for each page on the Village Community Innovation Information System (SINOMADES) application:

Table 2: Black Box Testing

No.	Page	Function Test	Results
1	Login Page	- Verify login with the correct username and password. - Verify login with the wrong username and password. - Verify forgot password feature	Successful
2	Dashboard Page	- Displays a summary of innovation data - Show the latest notifications	Successful
3	Registered Innovation Page	- -Show list of registered innovations - Search and filter functions	Successful
4	Registered Innovation Detail Page	- -Displays the details of the listed innovations - Verify the displayed data	Successful
5	Registered Innovation Print Page	- Print list of registered innovations in PDF/Excel format	Successful
6	Innovation Page Accepted	- View a list of accepted innovations - Search and filter functions	Successful
7	Innovation Detail Page Accepted	- Displays details of accepted innovations -Verify the displayed data	Successful
8	Edit Accepted Page Innovation	- Edit the details of received innovations - Save changes	Successful

No.	Page	Function Test	Results
9	Page Print Innovation Accepted	- Print a list of accepted innovations in PDF/Excel format	Successful
10	Innovation Page Suspended	- Displays a list of deferred innovations - Search and filter functions	Successful
11	Innovation Details Page Suspended	- Displays details of deferred innovations - Verify the displayed data	Successful
12	Innovation Edit Page Suspended	- Edit the details of suspended innovations - Save changes	Successful
13	Innovation Page Rejected	- Displays a list of rejected innovations - Search and filter functions	Successful
14	Innovation Detail Page Rejected	- Displays details of rejected innovations - Verify the displayed data	Successful
15	Print Page Innovation Rejected	- Print a list of rejected innovations in PDF/Excel format	Successful
16	Innovator List Page	- Show a list of innovators - Search and filter functions	Successful
17	Innovator Detail Page	- Show innovator details - Verify the displayed data	Successful
18	Innovator Edit Page	- Edit innovator details - Save changes	Successful
19	Instance List Page	- Displays a list of instances - Search and filter functions	Successful
20	Agency Detail Page	- View instance details - Verify the displayed data	Successful
21	Edit Instances Page	- Edit instance details - Save changes	Successful
22	Contact Us Page	- Send a message or question to an admin	Successful
23	Manage Account Pages	- Manage user accounts	Successful
24	Page: My Profile	- View and edit user profiles	Successful

SYSTEM TESTING AND USER EVALUATION

Empirical Testing Methods

Empirical testing on the application of the Village Community Innovation Information System (SINOMADES) was carried out to measure the level of acceptance, usability, and user satisfaction with the developed system. The testing method was conducted through user surveys using a five-level Likert scale-based questionnaire, namely: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree.

The respondents in this test amounted to 30 people consisting of village innovators and system administrators in Bekasi Regency. The aspects evaluated include the ease of use of the system, clarity of appearance and information, efficiency of the reporting process, the benefits of the system for innovation data management, and overall user satisfaction.

User Evaluation Results

Based on the results of questionnaire data processing, the average score in each aspect of the evaluation was obtained as follows:

- The ease of use of the system obtained an average score of 4.43 which was included in the category *of strongly agreed*, indicating that users did not have difficulties in operating the features of SINOMADES.
- The clarity of information and interface display received an average score of 4.30 with the category *strongly agreed*, which indicates that the information presented by the system is easy to understand and the application display is rated user-friendly.
- The efficiency of reporting and data management obtained an average score of 4.47 with the category *of strongly agreed*, showing that the system is able to speed up the process of data entry and reporting village innovations compared to the previous manual method.
- The system's benefits for documentation and monitoring of innovation obtained an average score of 4.53 which belongs to the category *of strongly agree*, confirming that SINOMADES helps users in monitoring the development of innovations in real-time.
- Overall user satisfaction gets an average score of 4.50 with the *category of strongly agree*, which indicates an excellent acceptance rate of the system.

DISCUSSION OF TEST RESULTS

The results of empirical tests show that the SINOMADES application has a high level of usability and user satisfaction. The average score of all aspects of the evaluation was above a score of 4.0, which indicates that the system has met the needs of users in the management of village innovation data. The implementation of SINOMADES not only improves administrative efficiency, but also supports transparency, data accuracy, and ease of access to information for all stakeholders. Thus, the results of this Likert scale-based evaluation strengthen the research findings that SINOMADES is feasible to be applied as a support system for village innovation management in Bekasi Regency and has the potential to be further developed on a regional and national scale.

CONCLUSION

This research succeeded in creating an application that is able to change the process of entering village innovation data, which was previously done manually, into digital. With the implementation of this application, the management of village innovation data in Bekasi Regency becomes easier, faster, and more efficient. The application is designed to minimize data entry errors and improve information accuracy, making it easier for managers to monitor and process innovation data in real-time. The Village

Community Innovation Information System Application (SINOMADES) offers a structured and systematic solution to manage village innovation. With SINOMADES, managers can easily access, verify, and manage village innovation data, which supports the modernization of data management at the village level. The implementation of this system is expected to continue to be improved to improve the efficiency of data management and encourage more villages to participate in better innovations. The SINOMADES application increases the effectiveness of village innovation data management in Bekasi Regency by making data collection more structured, reporting faster and more accurate, and real-time innovation monitoring. SINOMADES also strengthens collaboration between innovators and networks with the government and the private sector, accelerating the transformation of Bekasi Regency into an innovation hub. Based on the results of the research and implementation that has been carried out, here are some suggestions for further development: In order for the benefits of the SINOMADES application to be felt by more people, it is recommended to implement this system in areas outside Bekasi Regency. By expanding the range of applications, more villages can manage their innovation data more effectively. In addition, conducting further research to assess the impact of the implementation of this application on the overall village innovation will provide valuable information that can be used to improve and develop the application in the future.

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