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Website-Based Loan Application Information System at PT. BPR BKK Jateng Banyumas

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Abstract

Abstract. PT. BPR BKK Jateng, Banyumas Branch is a financial institution whose main activity is savings, but in addition to savings, it also serves credit loan and deposit applications. In the credit loan application system that is currently running at PT. BPR BKK Jateng, Banyumas Branch, where customers who want to apply for a credit loan still have to come directly to the bank. This is considered ineffective, because it makes customers have to come directly to the bank many times when there are incomplete credit application requirements. A website-based credit loan application information system needs to be created to facilitate the credit loan application process. A website-based information system was chosen because of its advantage, namely that it can be accessed anywhere using an internet connection. The method used in creating this website-based credit loan application system uses the SDLC (System Development Life Cycle) method with a waterfall model. This system is built using the programming language PHP (Hypertext Preprocessor), CodeIgniter Framework, MySQL Database. The result of this final assignment is a system that can help customers more easily apply for credit loans, access information about credit loan services and help admins more easily document credit loan application data at PT. BPR BKK Jateng, Banyumas Branch.

Background

Information technology currently has a tremendous influence in various fields. Along with the development of increasingly advanced information technology, an organization or institution is required

to improve its performance, because they definitely need fast information, accurate data and strong data security. Thus they must be able to keep up with the pace of technological developments in order to be able to go hand in hand with technological developments.

The role of technology in the banking sector is very much needed. The banking industry is one of the industries that has made information technology the main facilitator of its business activities. With the support of information technology, the growth of the banking business is required to be more creative and efficient so that it can excel compared to others and achieve the expected profit.

Banking is a place for various transactions that are closely related to finance, a place to save money, invest, make payments, send money, and so on. The progress of banking in a country can be used as a benchmark for the progress of the country itself. The more advanced a country is, the greater the role of banking in controlling the country.

In banking, the services provided to customers are in the form of savings, loans, and deposits. Law No. 7 of 1992 concerning Banking as amended by Law No. 10 of 1998 (Banking Law) defines credit as the provision of money or bills that can be equated with it, based on an agreement or loan agreement between the bank and another party that requires the borrower to repay the debt after a certain period of time with interest. Credit is provided by conventional commercial banks, BPRs, and Pegadaian.

BPR is one of the financial institutions that is part of the financial system in Indonesia. The financial system is defined as a system consisting of financial institutions whose activities collect funds from the public (Asmara Jaya, 2020). Another definition is that the People's Credit Bank (BPR) is a bank financial institution that accepts deposits only in the form of time deposits, savings, or other forms that are equated with it and distributes funds to the public (Mahardika & Suardhika, 2018).

PT. BPR BKK Jateng Banyumas Branch is a regional-owned company in Banyumas Regency which operates in the banking economic sector. The types of services available at PT. BPR BKK Jateng, Banyumas Branch, are savings or deposits, and credit loans. PT. BPR BKK Jateng, Banyumas Branch is a bank that has operated a computer system in its banking service activities. There are several programs that have been implemented, namely in recording transactions and inputting customer data which already uses a computer program, in addition to inputting customer savings, it has also gone through the system.

As for the credit application service of PT. BPR BKK Jateng, Banyumas Branch, which still uses a manual system where prospective customers must come directly to the place and must write their personal data manually through the loan application form provided by bank officers at PT. BPR BKK Jateng, Banyumas Branch, in addition, information for credit applications is still less efficient, where when there are prospective customers who want to know more detailed information about credit applications such as requirements and a list of the amount of money that can be disbursed, they still have to come directly to PT. BPR BKK Jateng, Banyumas Branch to request the list.

From the problems above, it can be fixed by building a more efficient system. Realizing the importance of information innovation to facilitate the management of customer credit applications. The author created a website-based credit loan application information system to provide convenience in the credit application process. By utilizing this information system, the credit application process can be carried out by the applicant without having to come in person. Information regarding the requirements and filling out the credit application form can be done by utilizing a website-based application that can be accessed anywhere using an internet connection.

A website-based credit loan application information system that can support operational credit application activities. With this system, it is hoped that it can provide convenience for system actors, both customers and companies. The convenience provided is in the form of convenience in applying for credit loans and also sending files.

Method

In analyzing and developing complex information systems, methods are needed that can help design in detail so that they can produce accurate information. The research method and software development techniques in this final project use the SDLC (System Development Life Cycle) method, namely the waterfall model. The waterfall model or what is often called the waterfall method is often called the classic life cycle, the name of this model is actually "Linear Sequential Model" which describes a systematic and sequential approach to software development (Wahid, 2020). The stages in the waterfall model according to Pressman include:

1. Analyzing

   This analysis stage explains what kind of system is needed to manage the collected data. The data needs are obtained through the process of observation, interviews, and literature studies.

   The author collects data using data collection methods, namely observation, interviews, and literature studies. The data collection was carried out during the PKL (Field Work Practice) activities starting from the beginning of March, precisely on March 14 to April 25, 2022. In the PKL activity, the author made direct observations of the flow of submitting a credit loan application, and the author also conducted interviews with several employees at PT. BPR BKK Jateng Banyumas Branch, namely Mrs. Ririn who works in the customer service department whose job is to serve customers and receive requirements for applications from customers and provide information to customers, besides Mrs. Ririn, I also interviewed Mrs. Nurul who works in the credit department.
2. Design

   This stage is carried out to produce a design from the analysis that has been done previously. In this stage explains the general description of the system to be created. By designing the system design starting from Use Case Diagram, Class Diagram, Activity Diagram, and Sequence Diagram, as well as Entity Relationship Diagram (ERD).

   In this stage, it explains the general description of the system to be created. By designing the system design starting from Use Case Diagram, Activity Diagram Class Diagram, and Sequence Diagram, as well as Entity Relationship Diagram (ERD). The design creation started from April 11 to May 30, 2022. The following are the results of the system design design that will be created:

   a. Analysis of Current Programs

      Data recording and processing activities at PT. BPR BKK Jateng Banyumas Branch have used several computer systems, but in applying for a credit loan, prospective customers must come directly to the bank to apply by filling out the application form.

   b. Description of the Program to be Developed

      The Credit Loan Application Information System at PT. BPR BKK Jateng, Banyumas Branch will be built with a website-based system. In developing this Information System, the author uses the PHP programming language and the CodeIgniter framework and MySQL. This system will present a credit loan application form for customers, manage the status of customer applications for credit loans, and the reports generated are prospective customer reports, as well as credit loan application reports.

   c. Program Design

      In creating a Website-Based Credit Loan Application Information System at PT. BPR BKK Jateng Banyumas Branch, the author uses the Unified Modeling Language (UML) modeling method consisting of Use Case Diagrams that describe the relationship between the system and the actors that will be created in the credit system, Activity Diagrams that explain the activities that occur in each process, Class Diagrams that map the structure of

a particular system by modeling classes, attributes, operations and relationships between objects, and Sequence Diagrams that explain and display the interactions between objects in a system in detail.

1) Use Case Diagram

The following is a use case diagram for the Website-Based Credit Loan Application Information System at PT. BPR BKK Jateng, Banyumas Branch, which describes the activities carried out by the actor.

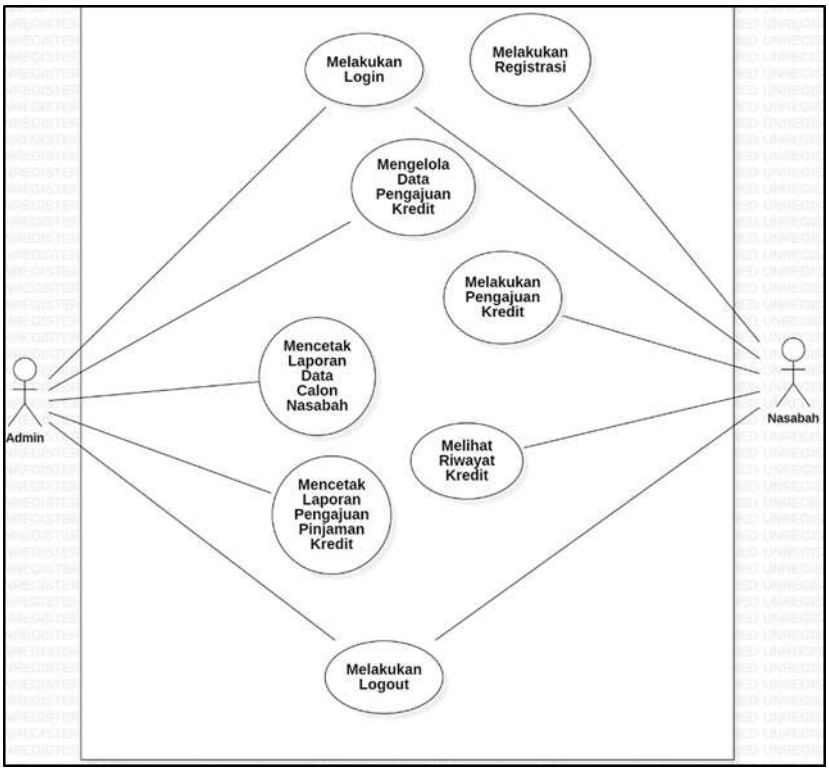

Figure 1. Use Case Diagram

The following is a description of the use case diagram of the Website-Based Credit Loan Application Information System at PT. BPR BKK Jateng Banyumas Branch.

Tabel 1. Use Case Description

No	Use Case	Deskripsi
1.	Registration	The registration process for prospective customers by creating an account as customer access rights.
2.	Login	The process of validating access rights before entering the system, which is carried out by the admin and customer.
3.	Applying for a Credit Loan	This is the access right of customers who will apply for a credit loan.

4.	View Credit History	It is the access right of customers who have submitted an application to find out the status of their application. When the status states waiting for validation, customers can still change and delete data that has been saved, but when the application status is in the validation process, the data that has been saved cannot be changed or deleted.
5.	Managing Credit Application Data	It is the admin's access right to manage customer data that makes a submission.
6.	Printing Prospective Customer Data Reports	It is the admin's access right to print reports on prospective customer data.
7.	Printing Credit Loan Application Data Report	It is the admin's access right to print credit loan application reports.

2) Activity Diagram
   a) Customer Register Activity Diagram
   This customer register activity diagram illustrates the customer flow when registering.

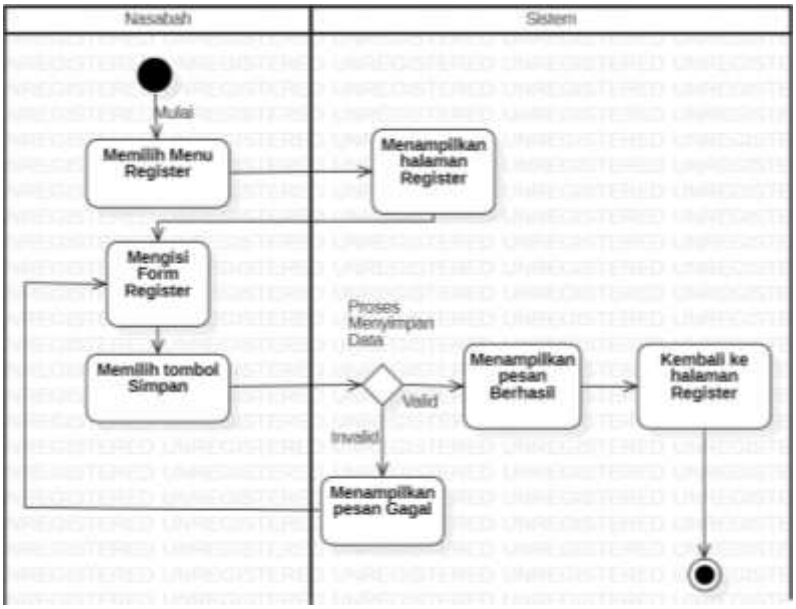

Figure 2. Customer Register Activity

b) Customer Login Activity

This customer login activity describes the flow when a customer logs in.

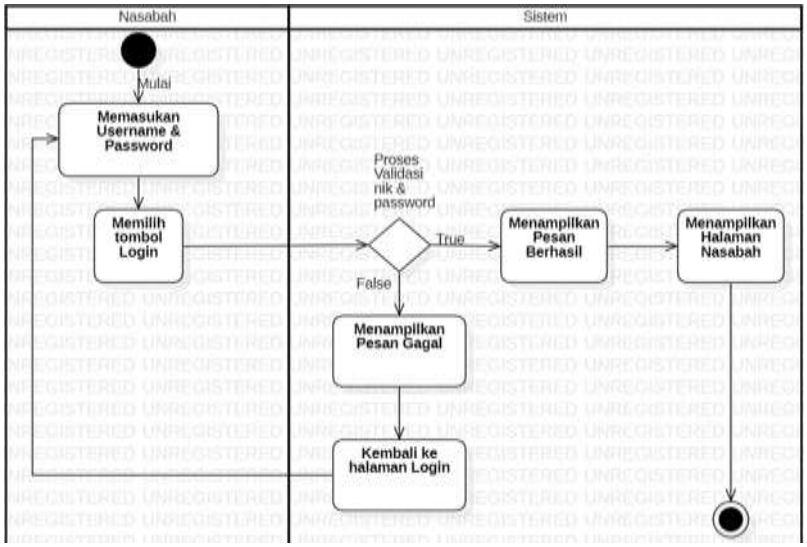

Figure 3. Customer Login Activity

c) Activity Diagram for Customer Credit Loan Application

This activity diagram is used to describe the flow of credit loan applications made by customers.

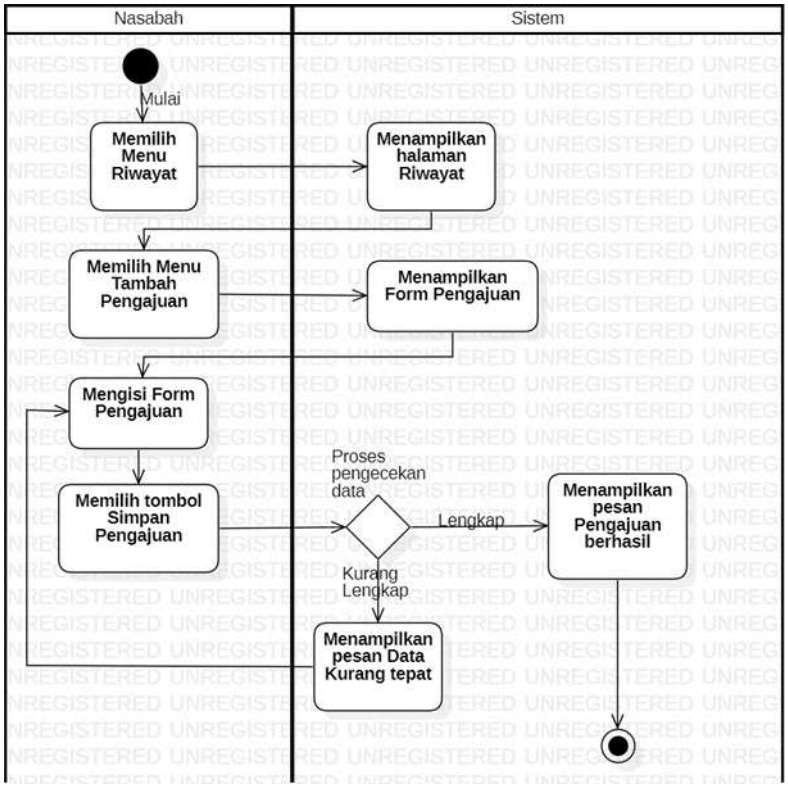

Figure 4. Activity Diagram for Customer Credit Loan Application

d) Activity Diagram View History

This activity diagram for viewing history illustrates the customer flow when viewing the history of credit loan applications that have been made.

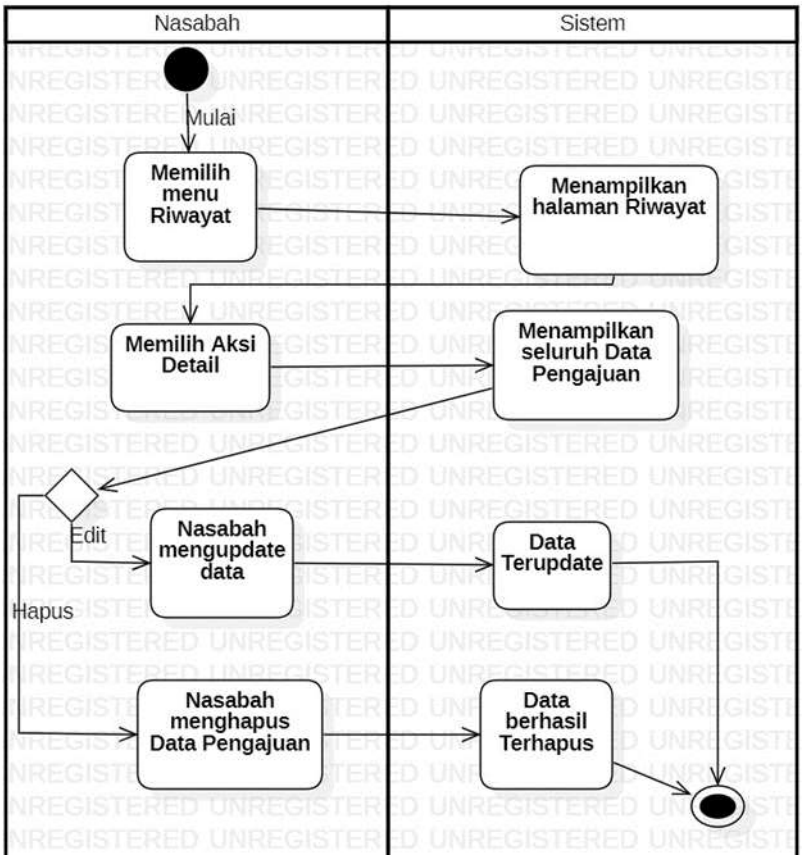

Figure 5. Activity Diagram View History

e) Admin Login Activity Diagram

This login activity diagram for admin illustrates the flow when the admin logs in.

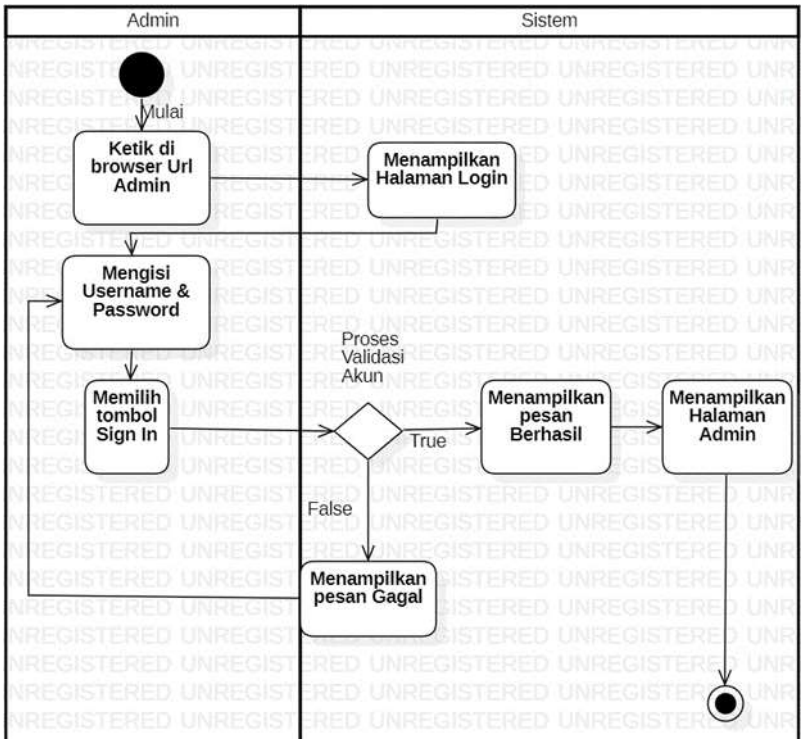

Figure 6. Admin Login Activity Diagram

f) Activity Diagram for Managing Credit Loan Application Data

This activity diagram illustrates the flow when the admin manages credit loan application data from customers.

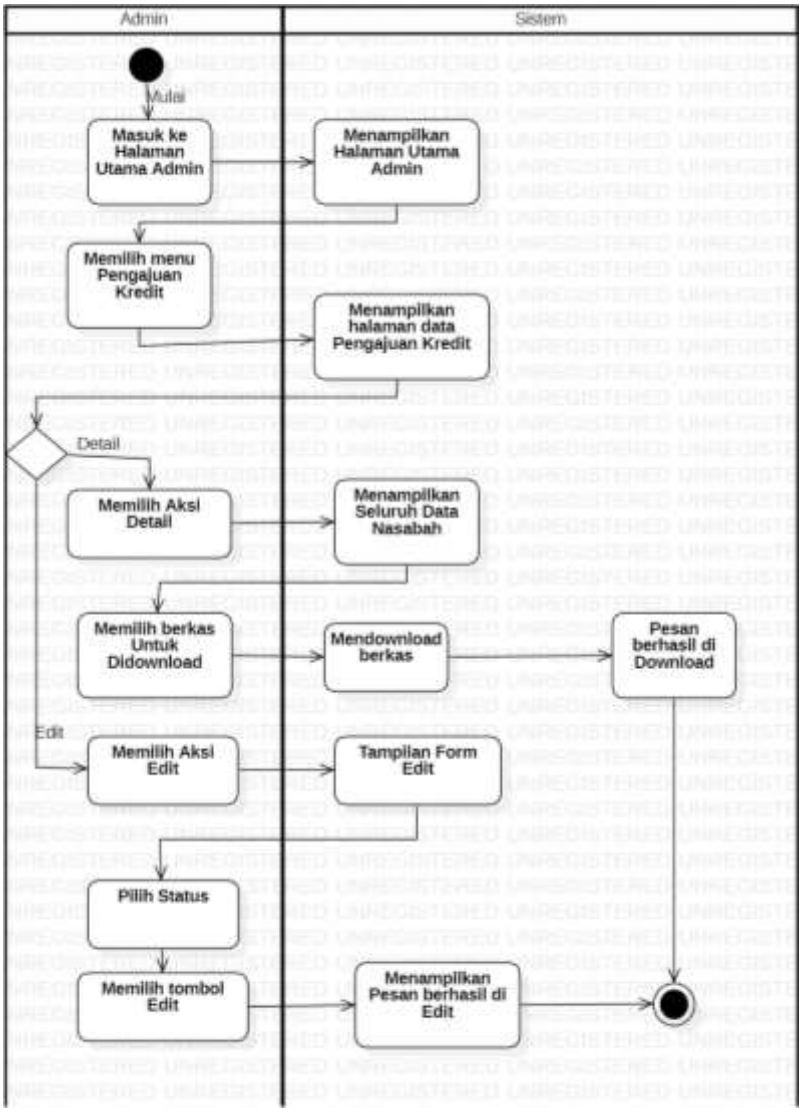

Figure 7. Activity Diagram for Managing Credit Loan Application Data

g) Activity Diagram Printing Prospective Customer Reports

This activity diagram illustrates the flow when the admin prints a prospective customer report.

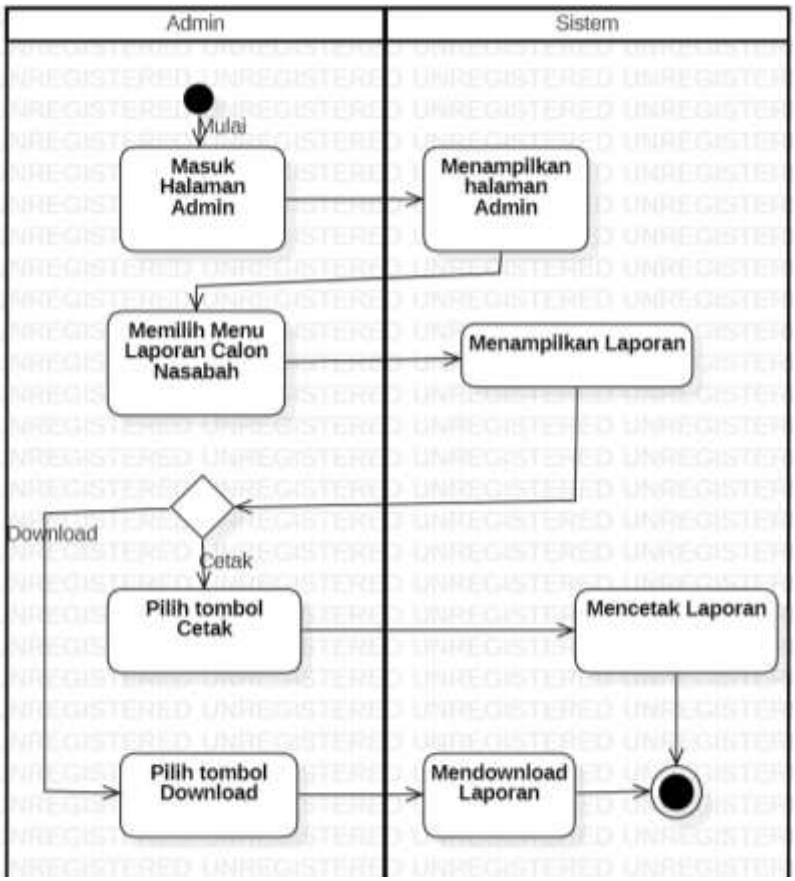

Figure 8. Activity Diagram Printing Prospective Customer Reports

h) Activity Diagram Printing Submission Report

This activity diagram illustrates the flow when the admin prints the submission report.

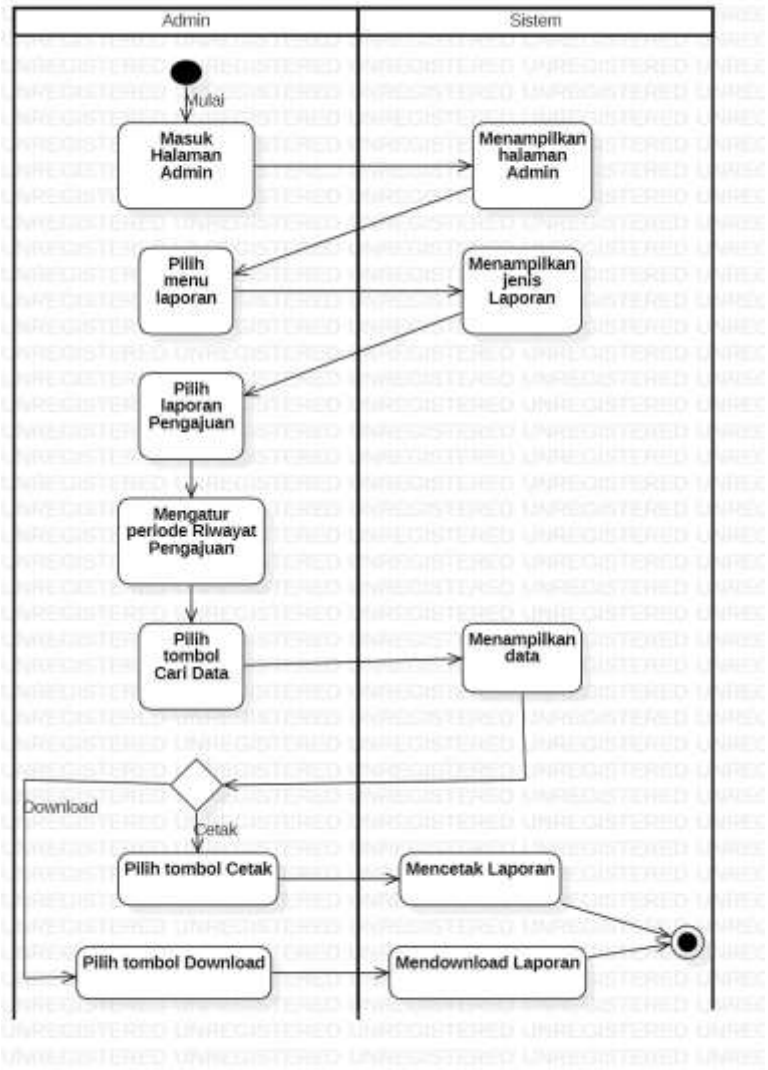

Figure 9. Activity Diagram Printing Submission Report

3) Class Diagram

The following is a class diagram of the Website-Based Credit Loan Application Information System at PT. BPR BKK Jateng, Banyumas Branch. Class diagram for credit loan applications.

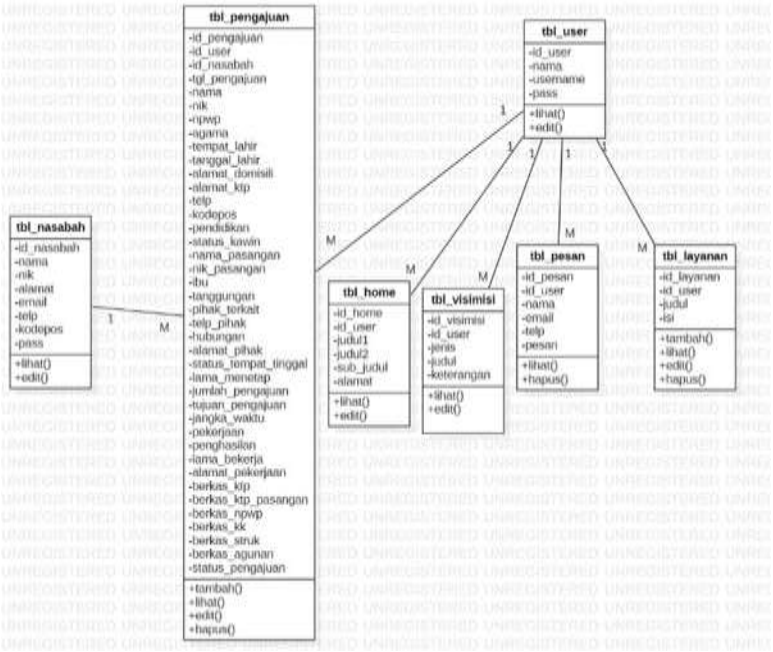

Figure 10. Class Diagram

4) Sequence Diagram

The following is a sequence diagram of the Website-Based Credit Loan Application Information System at PT. BPR BKK Jateng Banyumas Branch:

a) Sequence Diagram of Customer Register

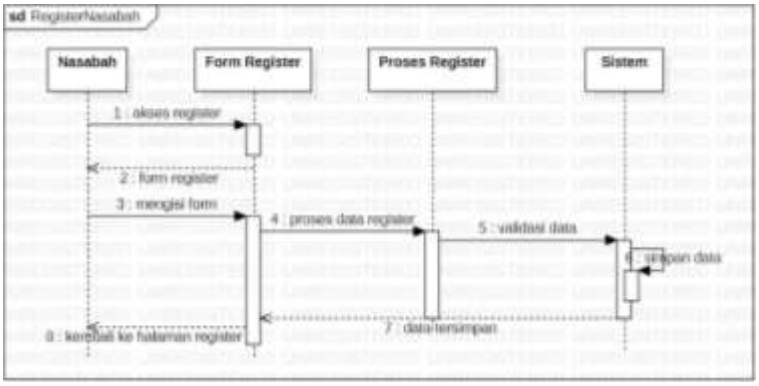

Figure 11. Sequence Diagram of Customer Register

b) Customer Login Sequence Diagram

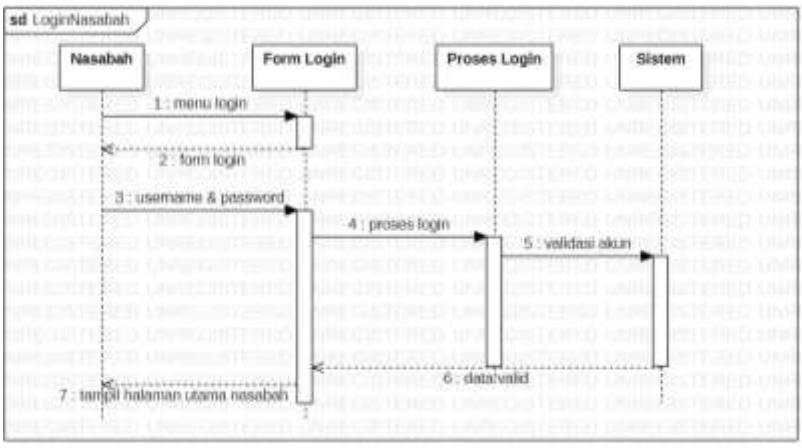

Figure 12. Customer Login Sequence Diagram

c) Sequence Diagram for Credit Loan Application

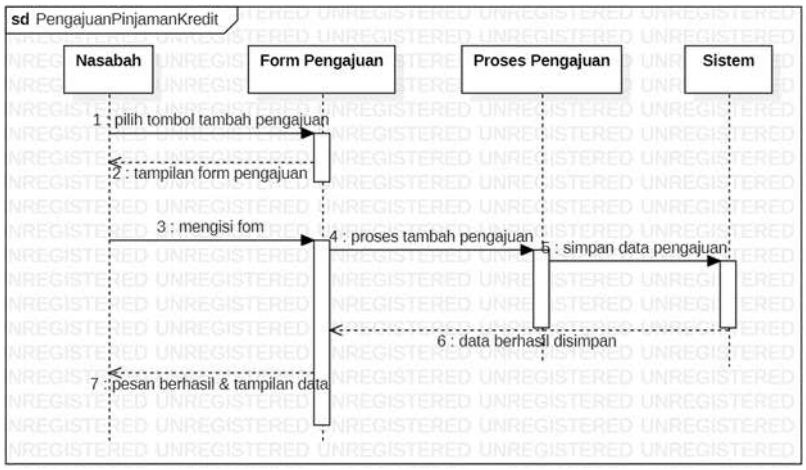

Figure 13. Sequence Diagram for Credit Loan Application

d) Sequence Diagram Managing History

- View Submission Data Details

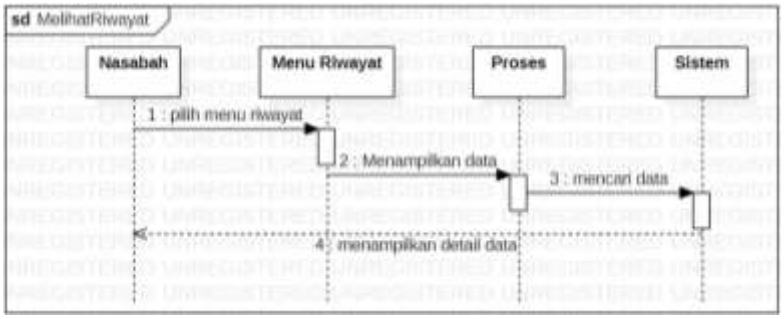

Figure 14. View Submission Data Details

- Updating Submission Data

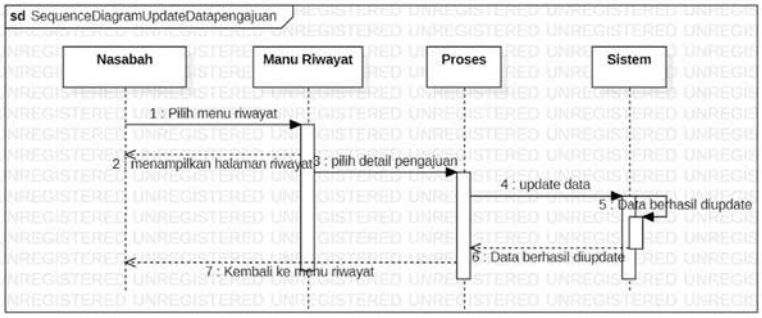

Figure 15. Updating Submission Data

- Deleting Submission Data

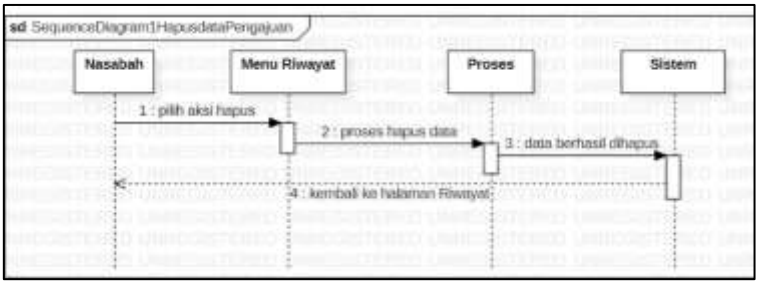

Figure 16. Deleting Submission Data

e) Admin Login Sequence Diagram

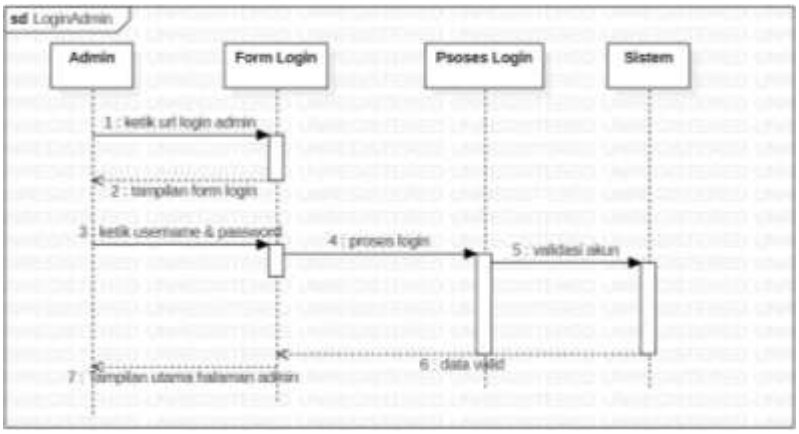

Figure 17. Admin Login Sequence Diagram

f) Sequence Diagram Managing Submission Data

- View Data Details

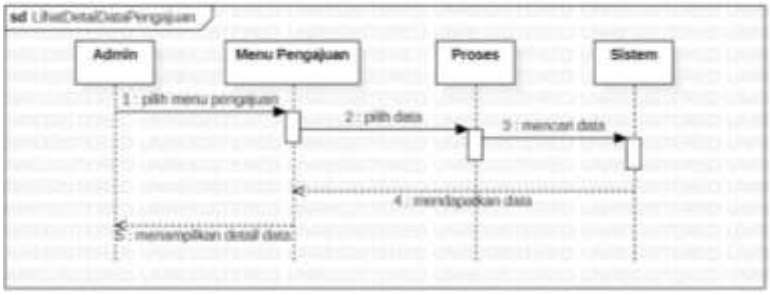

Figure 18. View Data Details

- Updating Data

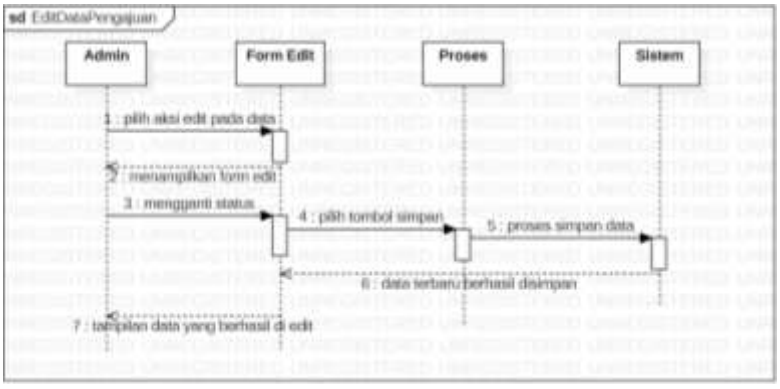

Figure 19. Updating Data

g) Sequence Diagram Printing Prospective Customer Reports

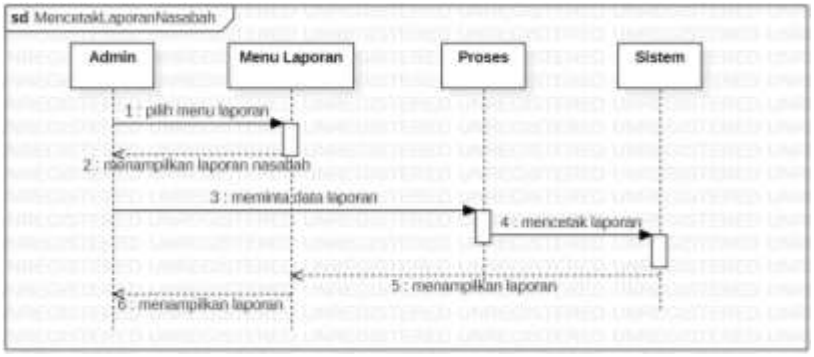

Figure 20. Sequence Diagram Printing Prospective Customer Reports

h) Sequence Diagram Printing Submission Report

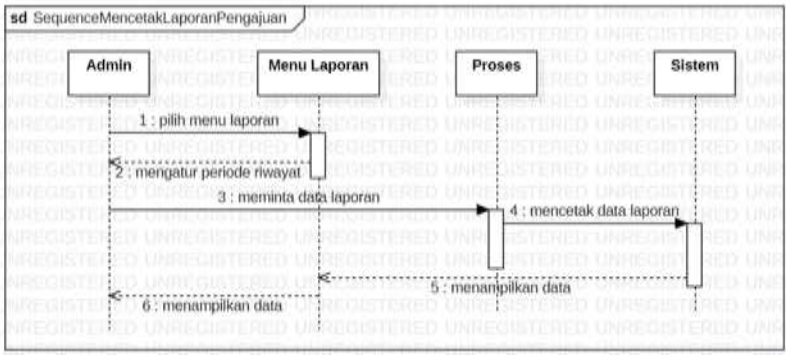

Figure 21. Sequence Diagram Printing Submission Report

5) Entity Relationship Diagram

The following is an ERD (Entity Relationship Diagram) design for a Website-Based Credit Loan Application Information System at PT. BPR BKK Jateng, Banyumas Branch.

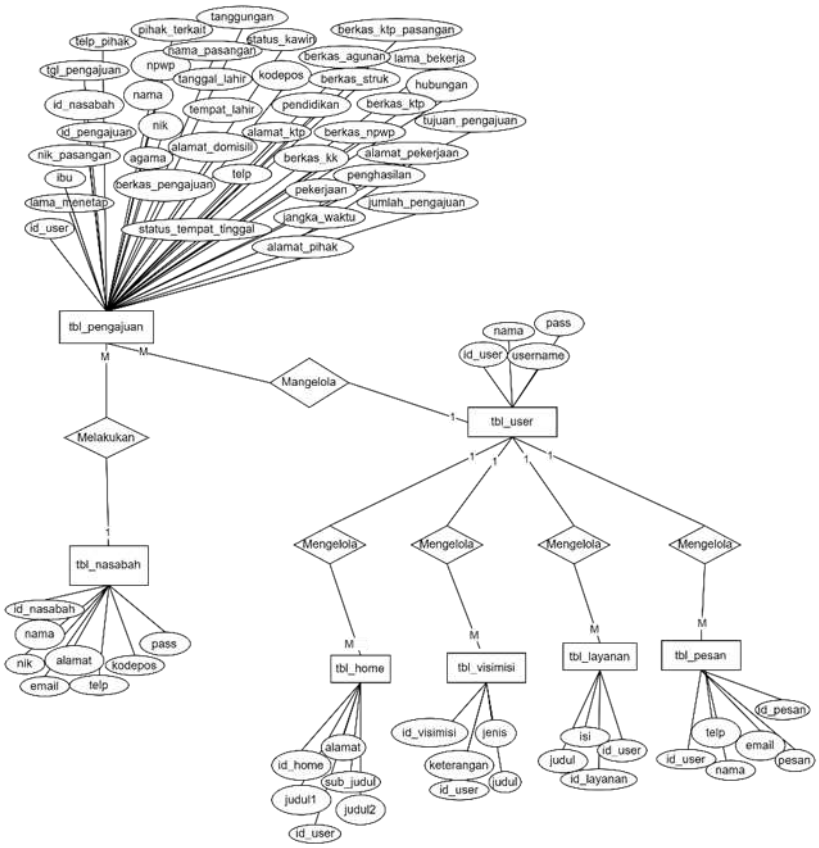

Figure 22. Entity Relationship Diagram

Result and Discussion

After conducting the analysis and designing the model, the next step is to build a program as a result of the design. The program that has been built will then be tested so that there are no errors in use.

1. Implementasi

   This stage is to implement the database design and interface into a programming language, the programming language used in this study is PHP (Hypertext Preprocessor) and the CodeIgniter Framework. This stage is the real stage in building a credit loan application information system. User interface of the Website-Based Credit Loan Application Information System at PT.BPR BKK Jateng Banyumas Branch, as follows:

a) Home Page

The main page is the main display on the Credit Loan Application Information System website.

Figure 23. Home Page

b) Register Form

This registration form is used for customers who do not have an account to log in for the first time.

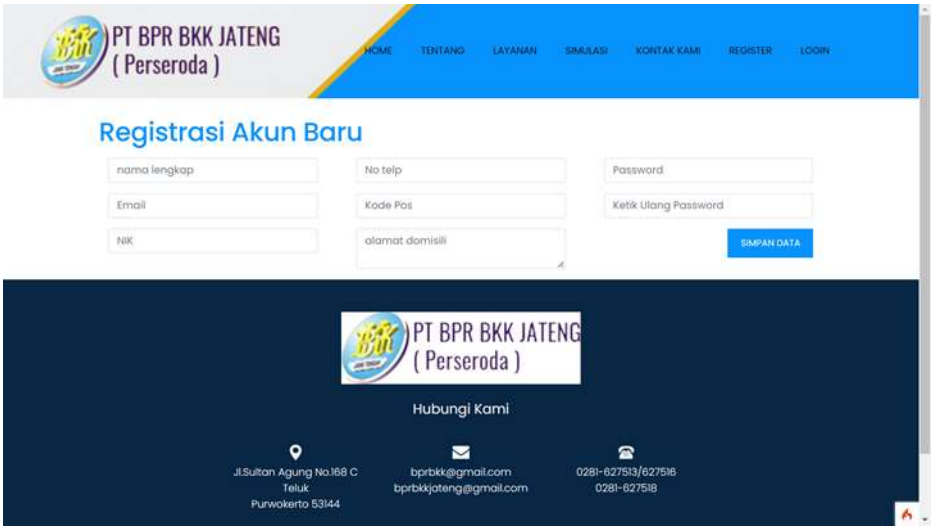

Figure 24. Register Form

c) Customer Login Form

This customer login form is used only for customers to log in.

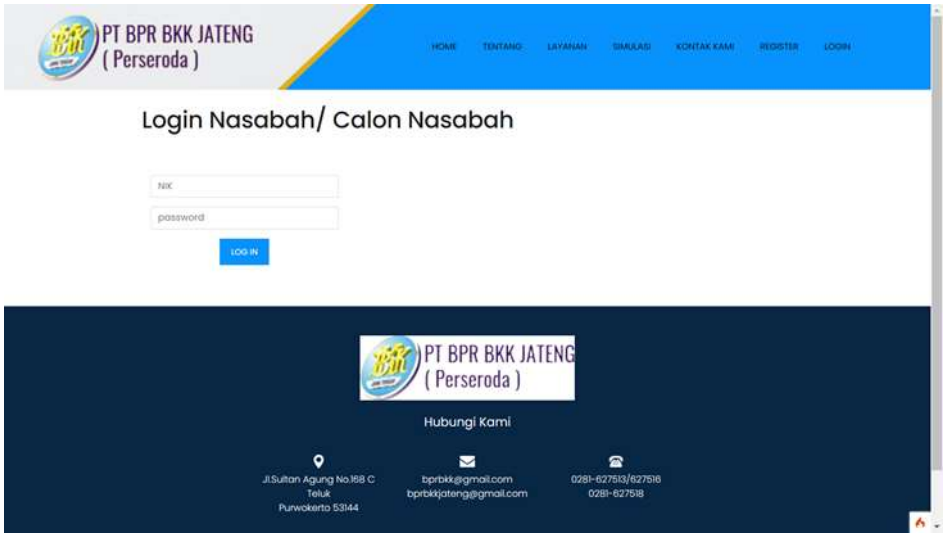

Figure 25. Customer Login Form

d) Admin Login Form

This admin login form is used only for admins when logging in.

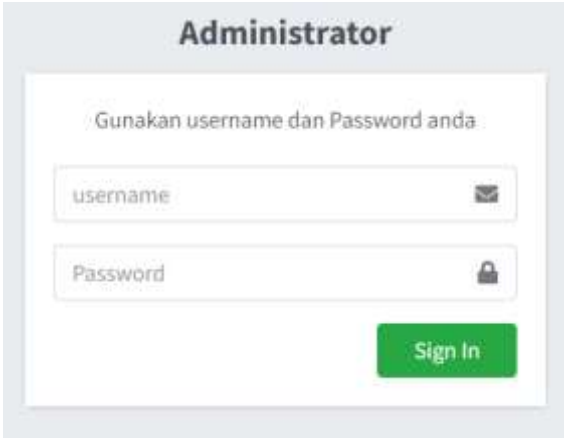

Figure 26. Admin Login Form

e) Customer Dashboard

The main customer page is the display that will appear when the customer successfully logs in. On this page there are menus that can be accessed by the customer.

Figure 27. Customer Dashboard

f) Customer History Menu

This customer history menu is a menu for the history of credit loan applications made by customers, and also to add more credit loan applications.

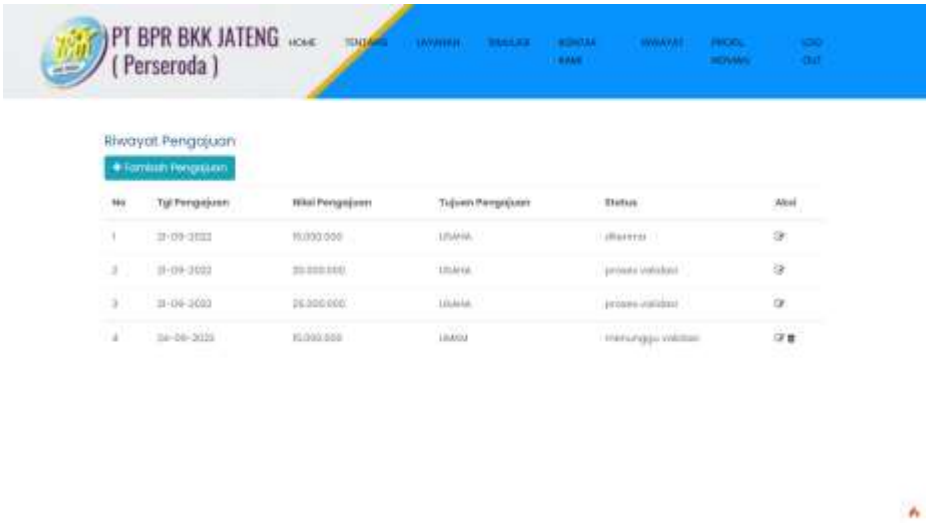

Figure 28. Customer History Menu

g) Loan Application Form

This loan application form is done when the customer who will make an application, then must fill out the form first completely. And send some files that are used as requirements.

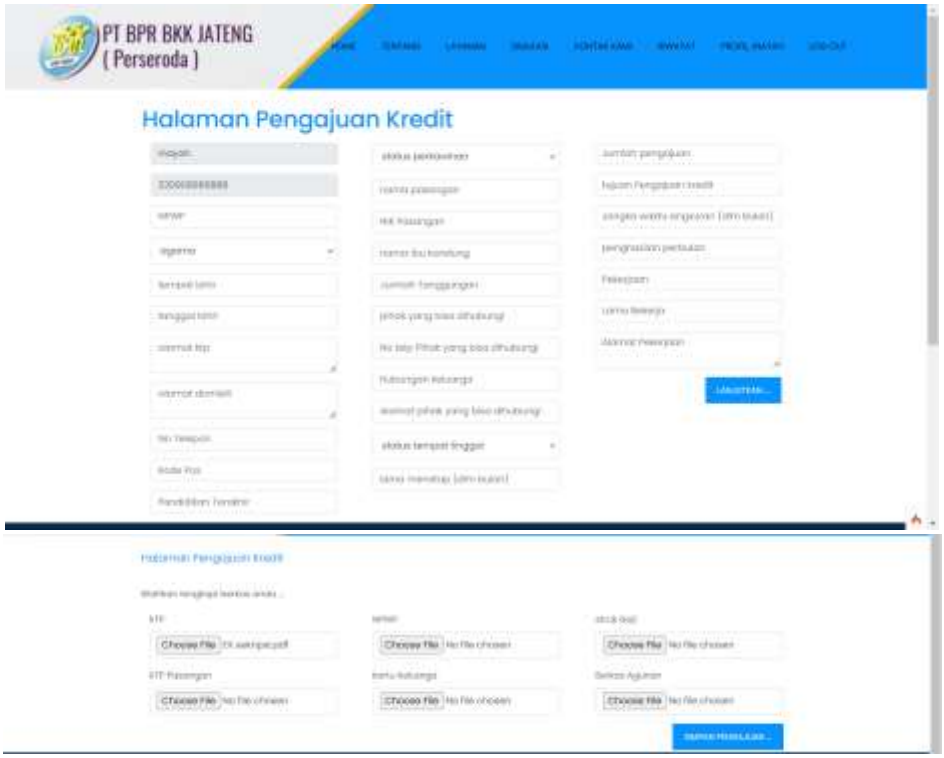

Figure 29. Loan Application Form

h) Admin Dashboard

The admin main page is the display that will appear when the admin successfully logs in. On this page there are menus that can be accessed by the admin to manage customer data and manage information.

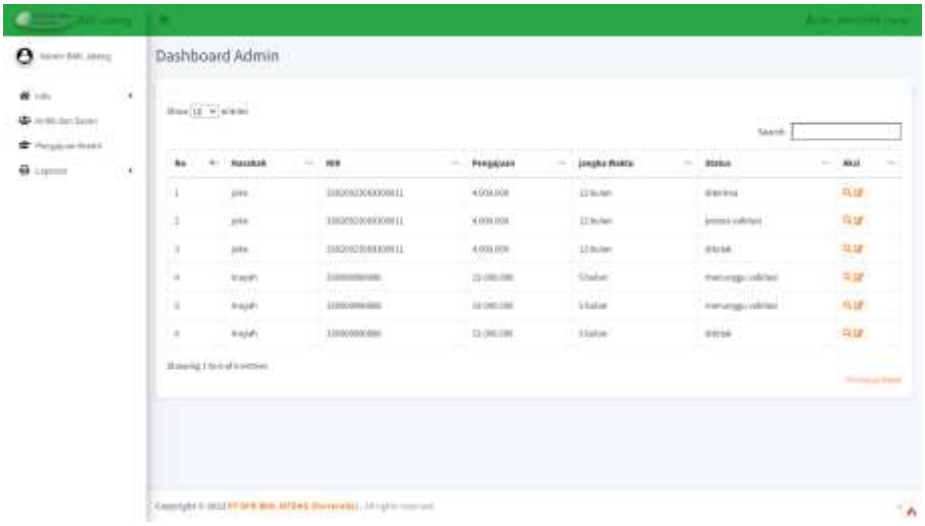

Figure 30. Admin Dashboard

i) Credit Application Menu

In this credit application menu there is a list of customer data that applies for credit, the admin is tasked with changing the status of the customer who applies whether the application is accepted or rejected. In addition, the admin can also see in detail all customer data through detailed actions.

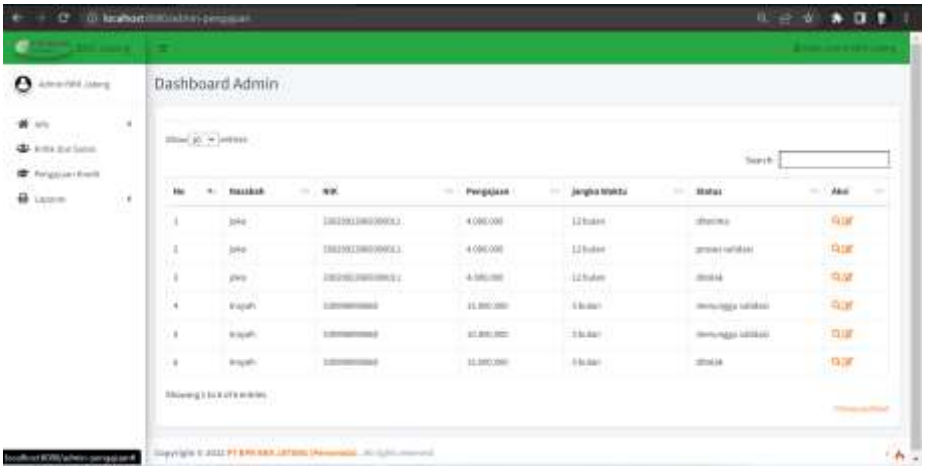

Figure 31. Credit Application Menu

j) Update Status Form

This status update form functions for admins to manage customer applications, by changing the status of credit applications every time someone submits an application.

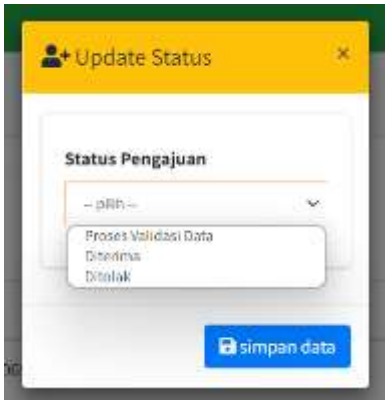

Figure 32. Update Status Form

k) Submission Details

In this application details, all data and files sent by the customer are stored when submitting a credit application.

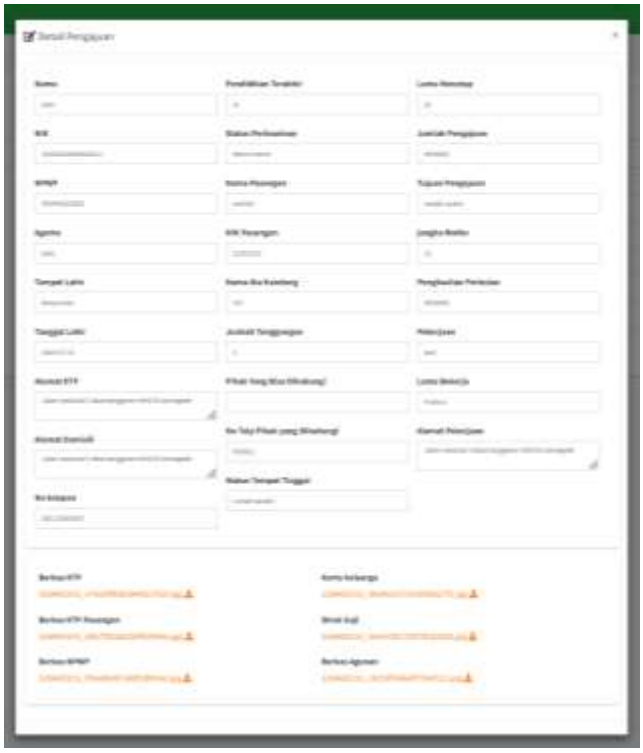

Figure 33. Submission Details

l) Reports Menu

This report menu is used for printing, there are two reports, namely the prospective customer report and the loan application data report.

- Prospective Customer Report

  To view the prospective customer report menu, you can do so by pressing the report menu and then selecting the prospective customer report.

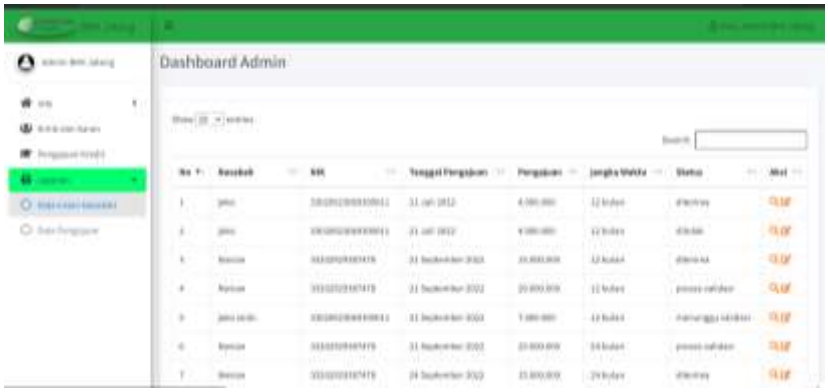

Figure 34. Prospective Customer Report

After pressing the prospective customer data menu, the prospective customer data will appear.

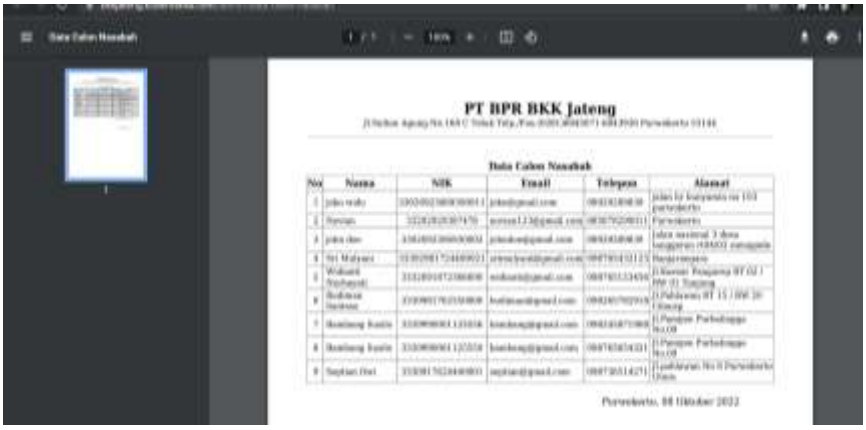

Figure 35. Prospective Customer Data

Then press the printer button to print the prospective customer report.

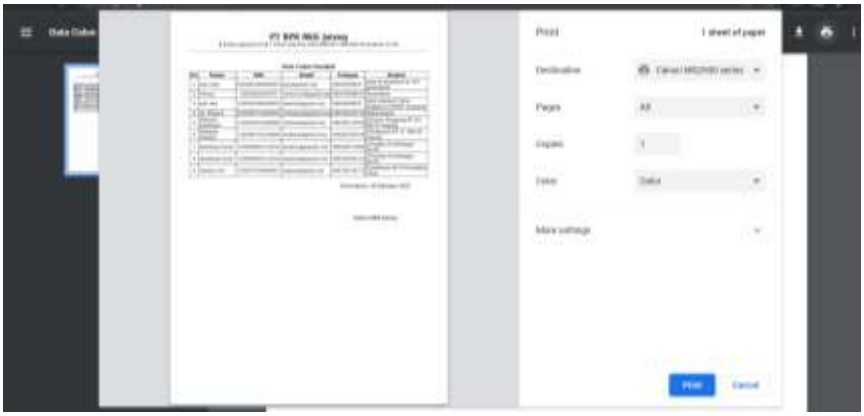

Figure 36. Print Prospective Customer Data

- Loan Application Report

  To view the loan application report menu, you can do this by pressing the report menu, then selecting the application data, then determining the required application data period, then pressing the search data button.

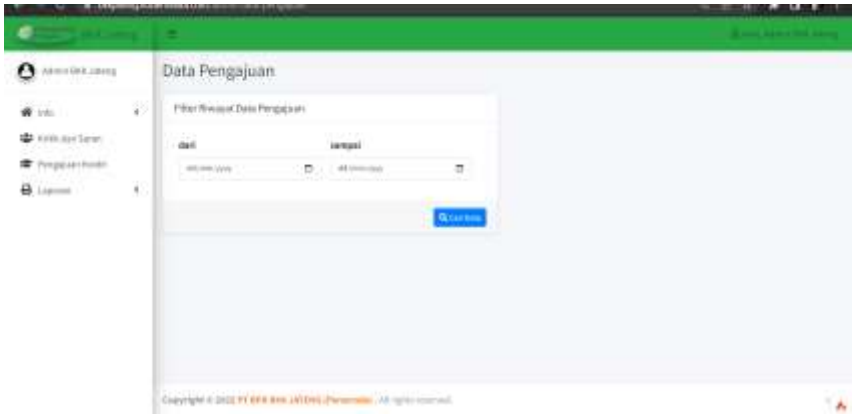

Figure 37. Submission Report

Then the data will appear according to the specified period.

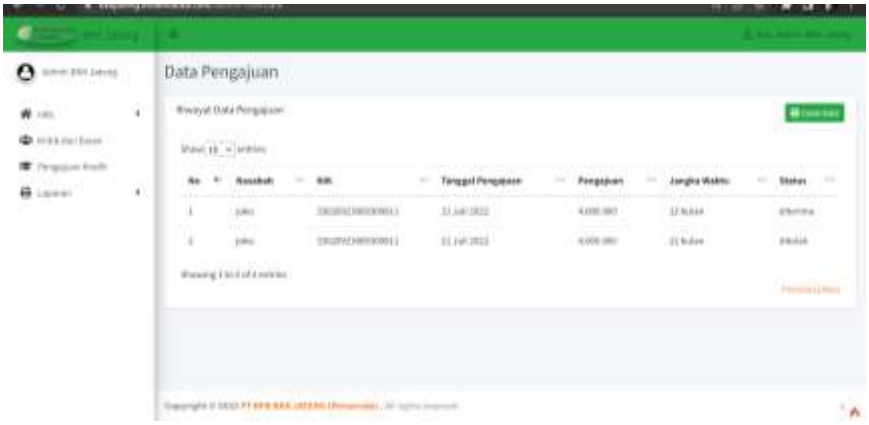

Figure 38. Submission Data Page

Then press the print data button to print the loan application report.

Figure 39. Print Report Page

2. Testing

Perform functional testing on the system built to determine whether the system created is in accordance with its design. This testing is also carried out to prevent errors so that when used it can operate smoothly.

Testing on the Website-Based Credit Loan Application Information System at PT.BPR BKK Jateng Banyumas Branch was carried out using the White Box and Black Box Testing methods, the following are the test results:

a) White Box Testing

1) Login Code

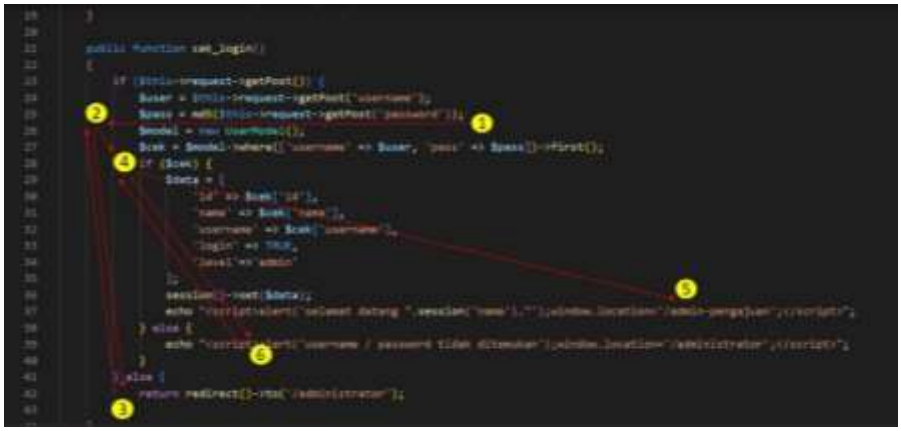

Figure 40. Login Code

2) Flowgraph Login

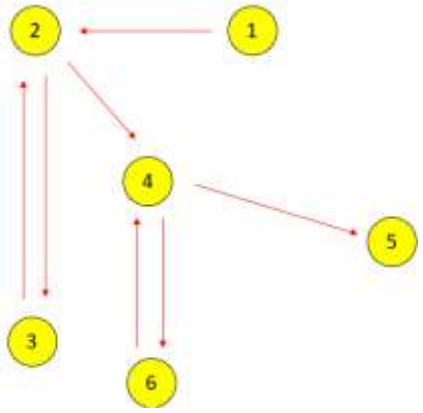

Figure 41, Flowgraph Login

Based on the Flowgraph, Cyclomatic Complexity can be calculated using the following formula:

V (G) = E – N

So the calculation of Cyclomatic Complexity is as follows:

V (G) Number of Edges – Number of Node + 2

= 7 – 6 + 2

= 3

So that three paths are obtained, namely as follows:

First Path = 1 – 2 – 4 – 5

Second Path = 1 – 2 – 3 – 2 – 4 – 5

The Third Path = 1 – 2 – 4 – 6 – 4 – 5

b) Black Box Testing

Table 2. Black Box Testing

No	Skenario Pengujian	Test Case	Hasil yang Diharapkan	Hasil pengujian	Kesimpulan
1.	*Fill in the Username and Password accordingly, then click the Sign in button.*	Username : admin Password : 1	The system will accept login access, then display the message "welcome BKK Jateng admin" and display the admin main page.	As expected	[v] Valid [ ] Invalid

2.	*Username and Password are not filled in then click the Sign in button*	Username : (empy) Password : (empy)	The system will reject and display the message "Please fill out this field"	As expected	[v] Valid [ ] Invalid
3.	*Username and Password are filled in incorrectly, then click the Sign in button*	Username : user Password : 123	The system will reject and display the message "username and password not found", then return to the login page again.	As expected	[v] Valid [ ] Invalid

Conclusion

Based on the results of the research on the website-based credit loan application information system at PT. BPR BKK Jateng, Banyumas Branch, the following conclusions can be drawn:

1. The existence of a website-based credit loan application system will help customers in submitting applications online and can be done anywhere using an internet connection.
2. With this website-based credit loan application system, it is easier to obtain information related to existing credit services.
3. With this website-based credit loan application system, it also makes it easier for bank officers to document loan application data from customers.

References

Asmara Jaya, I. A. (2020). Peran dan Tantangan BPR (Badan Perkreditan Rakyat) Saat Ini. *Jurnal Ilmiah Satyagraha*.

Iqbal, M., Tamsah, H., Nongkeng, H., Arni, A., Tahir, S. B., Wibowo, A., & Bahang, M. (2021). Performance Analysis of Public Health Center Employees with Organizational Commitment and Reward and Punishment Systems Through Organizational Culture. *Proceedings of the International Conference on Industrial Engineering and Operations Management* (pp. 3631-3639). Sao Paulo: IEOM Society International.

Mahardika, I. A., & Suardhika, I. S. (2018). Analisis Faktor-Faktor yang Mempengaruhi Kinerja Sistem Informasi Akuntansi pada Bank Perkreditan Rakyat (BPR) di Kota Denpasar. *E-Jurnal Akuntansi*.

Prasuteja, S. G., Wibowo, A., Racma, D. F., Widiastuti, R. Y., & Suyudi, S. (2024). Website-based Collection Inventory Information System Design at Wayang Sendang Mas Banyumas Museum. *Journal of Intelligent Systems and Information Technology*, 94-104.

Setyawati, E., Wibowo, A., & Riyana, E. W. (2019). Waste management information system based on android. *Media Aplikom*, 96-104.

Suyudi, S., Setyawati, E., Widiastuti, R. Y., Hermanto, D. C., Lianawati, Y., & Wibowo, A. (2023). Digital workplace and SMEs performance: How the Mediating role of digital leadership capability? *International Journal of Social and Management Studies*, 53-61.

Wahid, A. A. (2020). Analisis Metode Waterfall Untuk Pengembangan Sistem Informasi. *Jurnal Ilmu-Ilmu Informatika Dan Manajemen STMIK*, 1-5.

Wibowo, A., Nugroho, A., Marbun, P., & Fransisca, D. C. (2018). Information system planning strategy on higher education institution based computer: a case study of a STIKOM yos sudarso purwokerto Indonesia. *International Journal of Engineering & Technology*, 2835-2844.

Wibowo, A., Setyawati, E., Adilla, A., & Najmudin, N. (2022). The Effect of Implementing Android Based Information System on Waste Management. *International Journal of Economics, Business and Management Research*.