JISTE (Journal of Information System, Technology and Engineering)
Volume 2, No. 1, pp. 175-186
E-ISSN: 2987-6117
http://gemapublisher.com/index.php/jiste
Received: January 2024
Accepted: February 2024
Published: March 2024

Waste Bank Management Information System

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Abstract

Waste bank management is becoming increasingly popular to create a clean and comfortable environment. For this reason, it is important to have an Android-based waste bank application as an alternative solution to the waste problem in society. The waste management application also provides education regarding public concern for cleanliness and concern for the environment so that it can create an environment that is clean and free from waste. Management of this waste bank will improve the economy for the community because there is rupiah value obtained from the sale of waste banks in the community. This waste bank application also consists of waste pickup, transaction, and education features. The method used for waste management is to carry out transactions directly, and its use can be displayed using an Android smartphone, since almost all people have a cellphone to carry out waste bank management transactions. This information system application provides economic value to the community because the results from the disposal of sorted waste can be sold into funds or money as savings that can be withdrawn at the end of each month.

Keywords: waste bank, bash id, community empowerment.

INTRODUCTION

According to Law Number 18 of 2008 concerning waste management, it is stated that waste is a national problem, so its management needs to be carried out comprehensively and integrated from upstream to downstream so that it provides economic benefits, is healthy for the community and safe for the environment, and can change people's behavior. According to the definition of the World Health Organization (WHO), waste is something that is not used, is not worn, is not liked, or is something that is thrown away that comes from human activities and does not occur by itself. The problem of waste has become something that is no longer an isolated problem in the household. Mobile trash officers will manually collect the thrown-away trash after placing it in a trash can. However, this waste disposal process has several obstacles, one of which is that the existing waste is not grouped, so waste that can still be recycled or has economic value still cannot be sorted by the community. Therefore, to overcome this problem, an information system was created in the form of waste bank

management, which can be accessed online via a mobile application by the public. The waste bank application is a container used to accommodate sorted waste, such as plastic waste, which will be distributed to places where crafts are made from waste. Waste management using the Waste Bank system is expected to be able to help the government handle waste and improve the community's economy.

Through the design of the Waste Bank Management Information System "Bash ID," which is an abbreviation for Indonesian Waste Bank, it is hoped that it can increase user or community participation using this application throughout Indonesia. For example, this research took place on a pilot project in Parung sub-district, Bogor district. This mobile-based Waste Bank application is also expected to make it easier for users to access the application anywhere and anytime.

METHOD

In designing the waste bank management application, the author used the RAPID method to develop an information system by analyzing several existing applications. At this stage, researchers design applications, starting with analyzing business processes, creating business flows, designing functional stages, databases, and user interfaces, until the application can be used by the public. This waste bank management information system is based on a mobile application that can be accessed and used by the public, especially housewives.

RESULT AND DISCUSSION

To build a bank management application to this end, the author carried out an analysis of the waste bank management information system on existing waste bank applications as a benchmark and reference, such as the "Simba.id" website and the "mySmash" mobile application. Both information systems are good, with several different features and displays. In terms of system access, the analysis results conclude that mobile use is more effective and efficient compared to website-based use. On the website "Simba.id" and the mobile application "mySmash," there are several features that have been developed and removed with the aim of making it effective and easy for users to use the waste bank information system. These menus and features include picking up trash, buying trash, categories, news, and statistics. Therefore, a draft proposal was made for several features in the "Bash.id" mobile application, where the process flow of the "Bash.id" Waste Bank Management Information System has several stages in using or accessing the mobile application, which can be seen in figure 1 below.

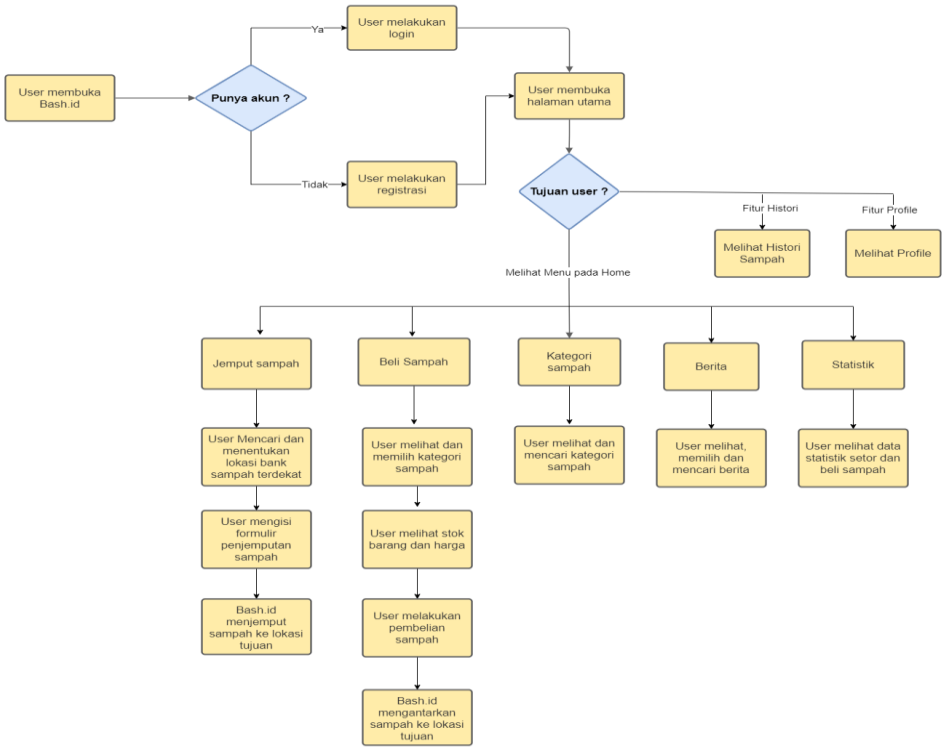


Figure 1. Waste Bank Management Information System Process Flow

Based on the picture above, you can see the flow of the information system design process being created. For a detailed explanation regarding the process flow, see the table below.

Table 1. Process Flow

Process flow	Information
User Opens Bash.id	The user first downloads and opens Bash.id
Users log in or register	Next, the user will log in if the user already has a Bash.Id account and register first if the user does not have a Bash.id account.
Displays the main page	Users will enter the main page display which contains the Home, History and Profile features
Users see the trash history feature	If the user selects the waste history feature, Bash,id will display a History page containing the history of depositing waste and buying waste

Users see the Profile feature	If the user selects the news feature, Bash.id will display a profile page containing settings and profile edits
Pick Up Trash	At home there is a trash pick-up menu, namely 1. User selects the Pick-up trash menu 2. Bash.id will display a map that allows users to search and determine the nearest Bash.id location 3. After that, the user will fill in the waste pickup form and confirm the waste pickup 4. Bash.id will pick up the trash at the destination location
Buy Junk	At Home there is a Buy Trash menu, namely 1. User selects the Buy Trash menu 2. Users view and select waste categories 3. After the user selects the desired waste category, category details will appear in the form of stock and price 4. User makes a waste purchase 5. Bash.id will pick up the trash at the destination location
Waste category	At Home there is a Waste Category menu, namely 1. Users view and search for waste categories on Bash.id 2. Collect waste data based on existing waste bank classifications
News	At Home there is a News menu, namely 1. Users view, select and search for items on Bash.id 2. Users can view waste bank educational information
Statistic	At Home there is a Statistics menu, namely

	1. Users can see statistical data in the form of waste deposits and waste purchases 2. View the current waste data 3. Users can see data on how much savings the community has and this financial data can be retrieved at the end of the month.

The use case diagram in the "Bash.id" waste bank management information system consists of 3 actors, including users in the form of customers and collectors as well as administrators in managing the "Bash.id" application, which can be seen in the image below.

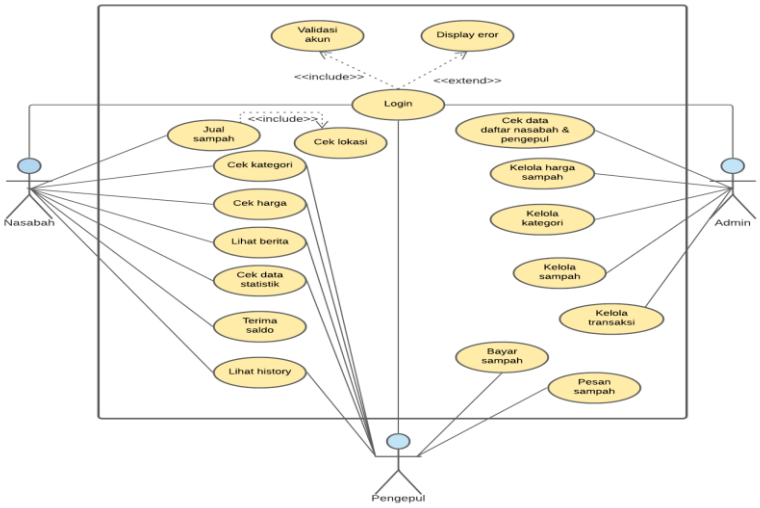


Figure 2. Use Case Diagram

The use case diagram shows three actors who will be involved in the system: customers/community, collectors, and admin. The three actors can log in to the "Bash.id" mobile application. Furthermore, customers can take several actions, including selling waste, viewing categories, viewing prices, viewing news, viewing statistical data, checking the nearest location, receiving balances, and viewing history in waste management. Meanwhile, collectors can make payments for waste, order or buy waste, and provide a history of their actions.

Then the admin can view the list of customers and collectors, manage prices, manage waste categories, receive waste, and manage user transactions. A more detailed flow can be seen in Figure 3 above regarding the use case diagram. In the Bash.id waste bank management information system, several activity diagrams have been designed that relate to the use of mobile applications. This activity diagram consists of registering, logging in to the application, viewing categories, viewing news, viewing statistics, viewing balances, picking up trash or selling trash, purchasing trash, and history. For more detailed details regarding each activity, see the picture regarding the activities carried out, including:

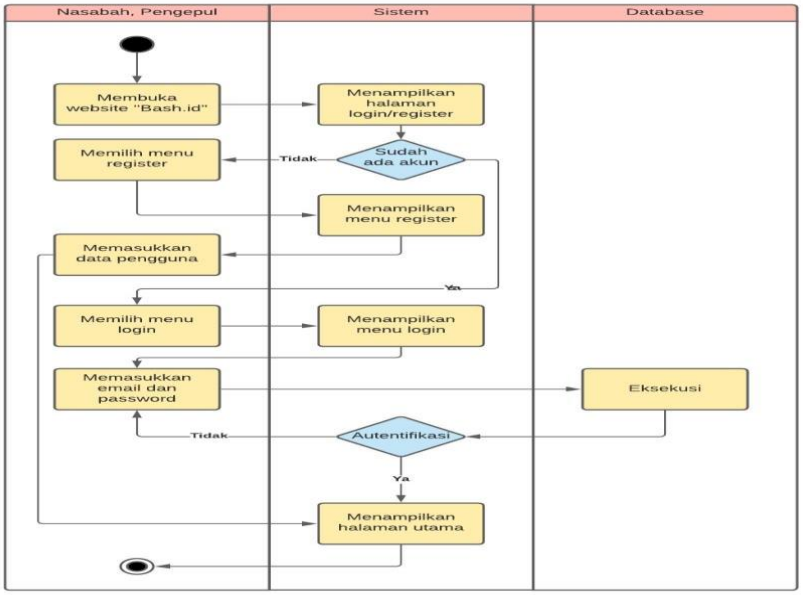


Figure 3. Activity Diagram Register

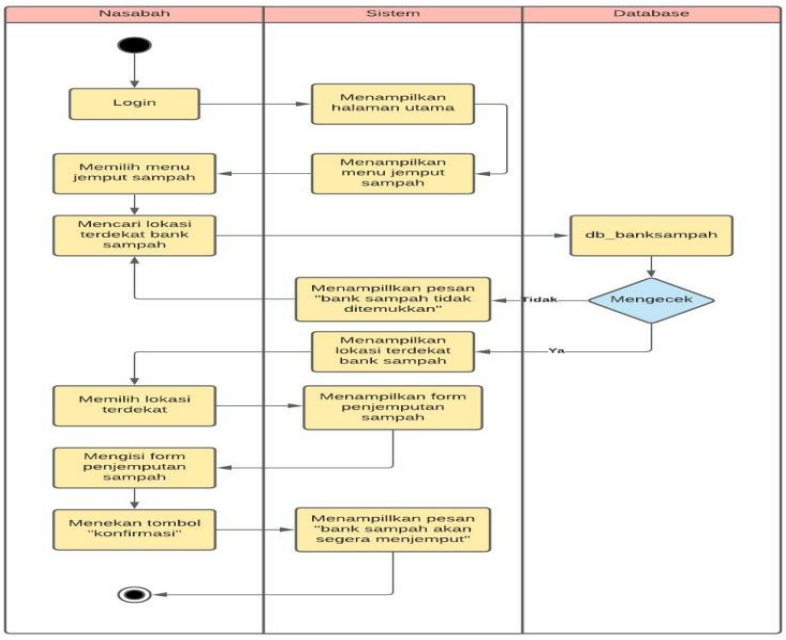


Figure 4. Activity Diagram for Picking Up Trash

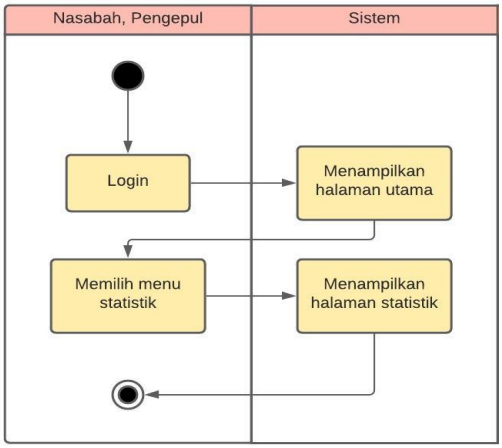


Figure 5. Activity Diagram Statistics

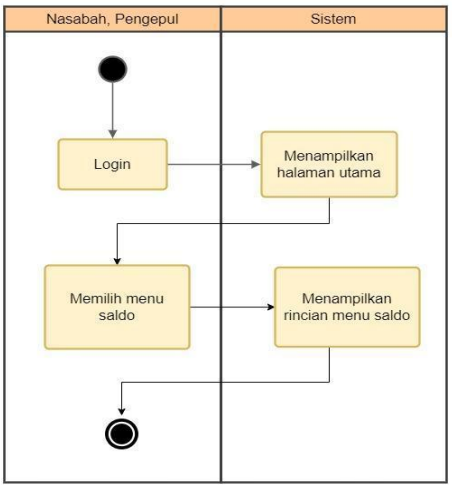


Figure 6. Activity Balance Diagram

In the activity, statistical data and balance diagrams are very useful because the public and customers can see and find out the amount of the trash bank savings balance. If you have a sufficient balance, you can withdraw funds in cash with a minimum remaining balance in accordance with applicable regulations. The balance can be withdrawn in cash at the middle and end of the month.

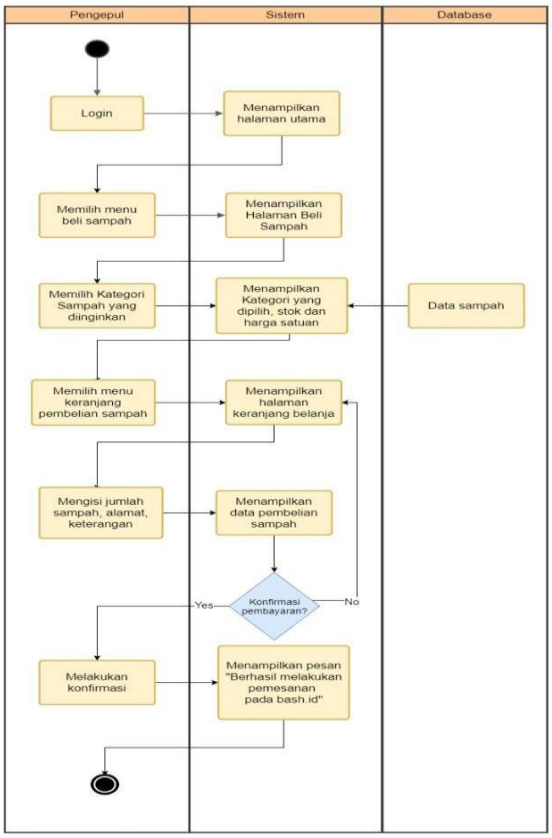


Figure 7. Activity Diagram for Buying Trash

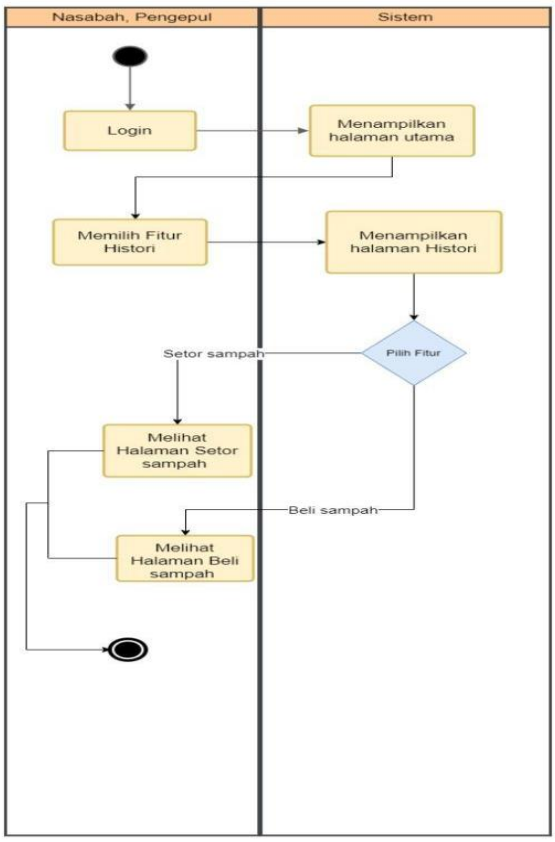


Figure 8. Activity History Diagram

In the class diagram analysis of the waste bank management information system for the "Bash.id" mobile application, there are several classes that are related to each other and have attributes and operations. The class diagram can be seen in the image below.

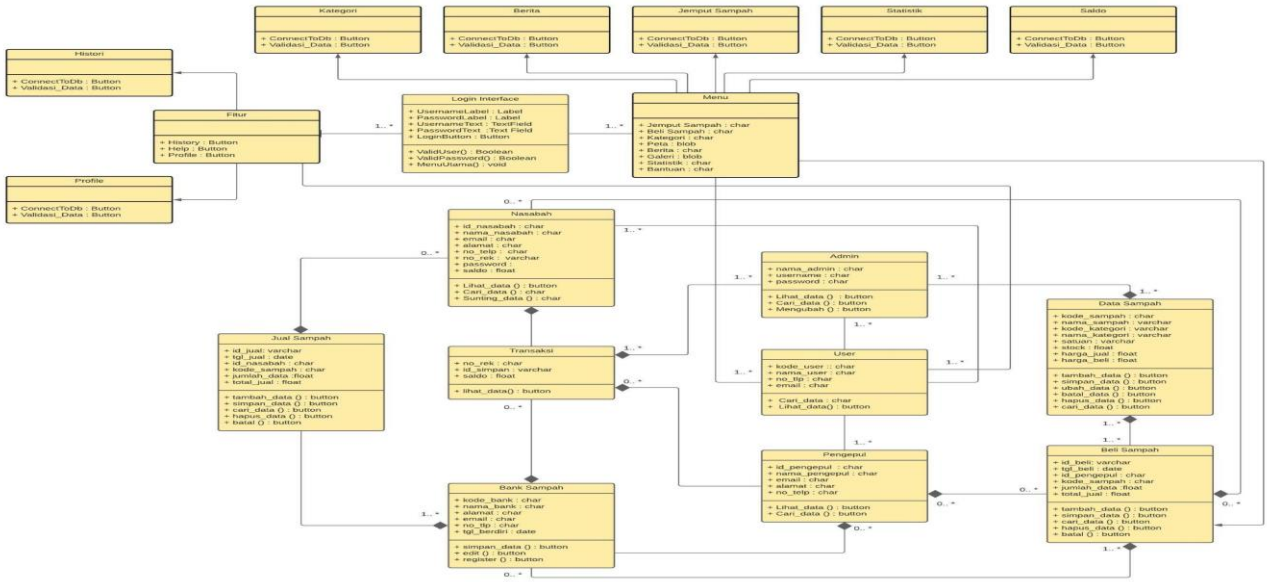
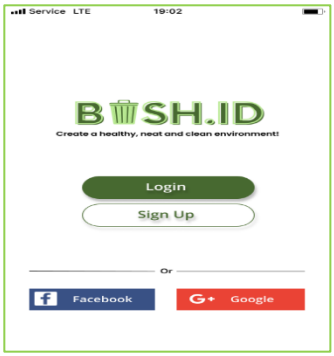


Figure 9. Class Diagram

There is a class login interface in the class diagram above that connects to a menu that the user class can access. Users themselves consist of 3, including customers, collectors, and admins, in which case all three can access "Bash.id" from their respective perspectives as users. Then there is a waste data class that is connected to the buy waste class. Customers and collectors can conduct transactions, and the admin is in charge of handling waste data. The waste bank has relationships with customers, collectors, and waste sellers to carry out management. The existence of a history class in a system is used to record forms of management that have been carried out by users or as evidence that is related to the buying and selling of waste. On the menu, there are several classes, including picking up trash, buying trash, news, categories, and statistics. Meanwhile, regarding the login interface, it has profile and history features.

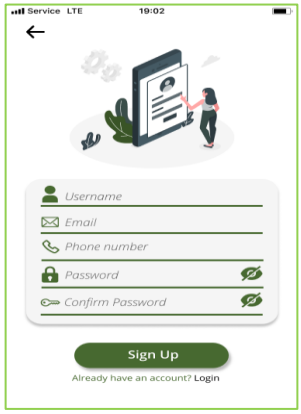
The initial display or launch of the application, namely the splash screen on "Bash.id," has a mobile-shaped display that is dominated by the color green, which means cleanliness and goes green, which in choosing this color is intended to match the design concept of the mobile application for the waste bank management information system. .

The design of "Bash.id" is also expected to create a modern atmosphere in terms of design so that it is harmonious and comfortable for users to use. The following is the waste bank management information system application:



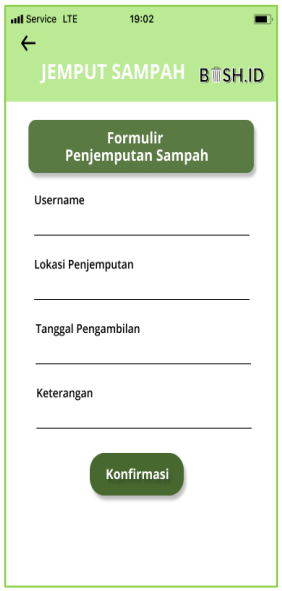
The Launch screen display on the "Bash.id" application has a characteristic sentence that says "Create a healthy, neat, and clean environment," which is followed by a login menu function for users who already have a "Bash.id" account and sign-up for users who want to register.

As an alternative, it is provided with other application connectors in the form of Facebook and Google to make it easier for users to access the application directly.

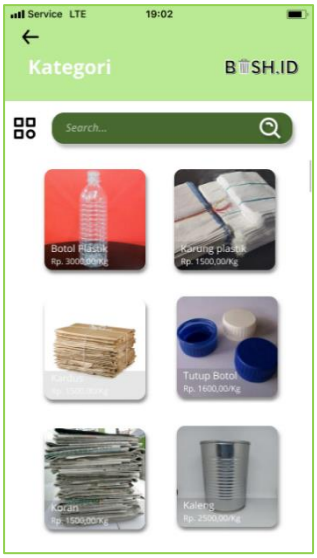


In the Login display, the user can enter the username and password that were previously registered. Then, if you have problems, you can choose an alternative function in the form of forgetting your password on the bottom left side. If you want to save your account on the "Bash.id" application, you can put a check mark on the right side of Remember Me. Click login to enter and use the application. For the register display, users can register themselves using data in the form of a username, email, telephone number, password, and password confirmation. After the user enters the data correctly, they will automatically successfully sign up for the application.

On the main page menu, or homepage, there are a series of application features and activities. The main features consist of menu functions for picking up trash, buying trash, categories, news, and statistics related to the "Bash.id" waste bank. At the top, there is a user balance feature for activities using the "Bash.id" application, whether selling rubbish or buying rubbish. Furthermore, there is a gallery feature that can be shifted to the right and left as an application wall to provide information about activities or galleries related to the latest "Bash.id" managed by "Bash.id." The bottom-side features include the home menu described previously, a history menu related to user activity in picking up and buying trash, and a profile menu for managing user accounts. It is hoped that the developments and proposals from the previous system can provide comfort as well as useful features and menus for users to use.



In the trash pick-up menu, users can search for the location point or place to pick up trash using the search bar, in which case, if the user succeeds in finding the location point, then a trash pickup form will appear containing data on safeguarding efforts and responsibilities. pick-up. The form contains the user's valid username, the pick-up location containing the user's complete correct address, the pick-up date as a schedule, and information regarding waste or additional information regarding waste pick-up. After that, the user can click the confirmation button.



In the buy trash menu, users can also buy trash from other users. In this menu, there are categories related to the type of waste you want to buy, such as plastic bottles, sacks, bottle caps, cardboard, and so on. After the user selects one of these categories, he continues with clearer details regarding the waste he wants to buy, such as the desired stock amount and weight. The next step is to enter the category selection into the basket, which requires filling in the correct complete address and information required by the user.

On the news menu, customers or collectors can see the latest information regarding waste bank management in Indonesia. The menu can display articles and literacy knowledge. If you want to find the news you want, users can search via the search bar above to make searching easier.

In the statistics menu, users can see "Bash.id" waste statistics from time to time, which display details of waste deposits and waste purchases. Apart from that, it can display statistical curves related to user accounts while using the "Bash.id" application. It is hoped that this menu can maximize information regarding user use of the application.

With the history feature, users can see details regarding activities that have been carried out. The history feature will display several details, including waste deposits and waste purchases. The record information contains transaction number, date, total, details of item name, quantity, and unit price. If users require proof of transactions pertaining to "Bash.id" activities, they can view this history feature at any time. It is hoped that this history feature will make it easier for users to recap data or simply view the history of activities that have been carried out.

CONCLUSION

The Waste Bank Management Information System "Bash.id" can be used or accessed online via a mobile application, which helps the public to sell and purchase waste, view statistics, view categories, and view news related to waste banks so that it can increase the community's economic capacity and at the same time improve environmental cleanliness (Go Green). Waste Bank Management needs to add other interesting functional features to make waste management easier for users and, if possible, collaborate with banks for these savings.

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