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Android-Based Activity Information Application in Surabaya

Tommy Nuril Hudha[1*], Pamudi[2], David Hermansyah[3]

[*1,2, 3)] Teknik Informatika, Dr Soetomo University Surabaya, Semolowaru No. 84, 60118 Surabaya
[*1]*email : tom.itscak@gmail.com*
[2]*email: pamudi@unitomo.ac.id*
[3]*email: david.hermansyah@unitomo.ac.id*

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ABSTRACT *– Surabaya is the capital of East Java which also became the second metropolitan city after Jakarta. As one of the largest cities in Indonesia, Surabaya often holds major events. During the past year counted already dozens or even hundreds of activities held in Surabaya. Usually events are held in order to commemorate the anniversary of the city and other celebrate. The usual events include cultural fairs, culinary festivals, and job fair. Android is an open source operating system that allows software to be freely modified and distributed by device makers and app developers. Therefore the author has the idea to utilize android technology as one of the media information by creating an application. This application is made to publish an events to be held in Surabaya, which is titled "Application Information of Events in Surabaya Based Android".*

Keywords *- Android app, Event information, Mysql, Javascript*

Aplikasi Informasi Kegiatan Di Surabaya Berbasis Android

ABSTRAK *– Surabaya merupakan Ibukota Jawa Timur yang juga menjadi kota metropolitan kedua setelah Jakarta. Sebagai salah satu kota terbesar di Indonesia, Surabaya sering kali mengadakan acara-acara besar. Selama satu tahun belakangan ini terhitung sudah puluhan bahkan hampir ratusan kegiatan yang diadakan di Surabaya. Biasanya acara atau kegiatan tersebut diadakan dalam rangka memperingati hari jadi kota maupun peringatan lainnya. Kegiatan yang biasa diadakan antara lain pameran budaya, festival kuliner, hingga bursa kerja. Android merupakan sistem operasi dengan sumber terbuka yang memungkinkan perangkat lunak untuk dimodifikasi secara bebas dan didistribusikan oleh pembuat perangkat dan pengembang aplikasi. Maka dari itu penulis mempunyai ide untuk memanfaatkan teknologi android sebagai salah satu media informasi dengan menciptakan sebuah aplikasi. Aplikasi ini dibuat untuk mempublikasi kegiatan-kegiatan yang akan diselenggarakan di Surabaya, yaitu dengan judul "Aplikasi Informasi Kegiatan Di Surabaya Berbasis Android".*

Kata Kunci *– Aplikasi Android, Informasi Kegiatan, Mysql, Javascript*

1. INTRODUCTION

Surabaya is the capital city of East Java and the second-largest metropolitan area in Indonesia after Jakarta. As one of the major cities in the country, Surabaya frequently hosts large-scale events. Over the past year, dozens, and in some cases nearly hundreds, of events have been organized in the city. These events are commonly conducted in commemoration of the city's anniversary or other significant occasions. Typical activities include cultural exhibitions, culinary festivals, and job fairs.

Such events generally attract considerable public attention. However, not all citizens are adequately informed about ongoing or upcoming activities. At present, information dissemination regarding these events is primarily conducted through notice boards and banners. This conventional approach is considered less effective and efficient, as a substantial number of residents remain uninformed. Consequently, there is a need for a technological application that can assist organizers in providing the public with accessible information concerning event schedules in Surabaya, such as sports, arts and cultural performances, entertainment, social activities, workshops, and job fairs, integrated with digital mapping features.

The advancement of technology in the era of modernization, particularly mobile technology, enables users to obtain extensive information in a timely manner. Android, as one of the most significant outcomes of mobile technology development, is equipped with digital mapping capabilities. Being an open-source operating system, Android allows software to be freely modified and distributed by device manufacturers and application developers. Based on this potential, the authors propose utilizing Android technology as an information medium by developing an application designed to disseminate and publicize events to be held in Surabaya.

2. LITERATURE REVIEW

The rapid development of information technology, particularly mobile applications, has significantly influenced how people access and disseminate information. Android, as an open-source operating system, has become one of the most widely adopted platforms for mobile application development because it enables developers to freely modify and distribute applications (Pengenalan Android, 2011). This openness has encouraged innovations in various sectors, including public information services..

In the context of decision-making methods, the Simple Additive Weighting (SAW) method is one of the most commonly applied techniques within the Multiple Attribute Decision Making (MADM) framework. SAW allows decision makers to evaluate alternatives based on weighted attributes, making it widely applicable in recommendation systems and event prioritization (Setiaji, 2006; Saaty, 1994). Several studies have demonstrated the effectiveness of SAW in supporting structured and systematic decision-making processes (Sistem Pendukung Keputusan, 2014)

Mobile applications integrated with Geographic Information Systems (GIS) have also been widely used to improve access to location-based services. For instance, research on GIS for public facilities in Bojonegoro demonstrates how Android-based applications can enhance community access to spatial information and local services (Latif, 2013). Similarly, the use of GPS technology for positioning has been recognized as an essential feature in mobile applications to provide real-time location tracking and navigation support (Abidin, 2000).

Moreover, the application of Unified Modeling Language (UML) has been a standard practice in software engineering to design system architecture, interaction processes, and data flow structures. UML diagrams such as use case, sequence, and activity diagrams have been extensively used to model user interactions and system functionalities (Brigida, 2013). These modeling tools facilitate the structured development of mobile applications and ensure that both functional and non-functional requirements are addressed systematically.

In the domain of event management, digital solutions are increasingly replacing traditional methods of information dissemination, such as brochures and banners. Previous studies indicate that web-based and mobile-based systems provide more efficient and effective communication channels between organizers and participants (Arief, 2011). The integration of event scheduling, categorization, and notifications into mobile platforms enables users to receive timely updates, while organizers benefit from streamlined information distribution.

Based on the reviewed literature, it is evident that Android-based applications, supported by GIS technology and decision-making algorithms like SAW, have strong potential to optimize the dissemination of event-related information. The combination of these technologies not only addresses the inefficiencies of manual methods but also enhances user engagement through interactive features and personalized recommendations.

3. RESEARCH METHOD

This method is one of the most well-known and widely used approaches in dealing with Multiple Attribute Decision Making (MADM) situations. MADM itself is a method used to determine the optimal alternative from a set of alternatives based on specific criteria. The Simple Additive Weighting (SAW) method requires decision-makers to assign weights to each attribute. The total score of an alternative is obtained by summing the results of multiplying each attribute rating (which can be compared across attributes) by the weight of the respective attribute. Each attribute rating must be dimensionless, meaning it has undergone a matrix normalization process beforehand. The decision-making process essentially involves selecting an alternative. The SAW method is also commonly referred to as the weighted sum method. The fundamental concept of SAW is to calculate the weighted sum of performance ratings for each alternative across all attributes. The SAW method requires the normalization of the decision matrix (X) into a comparable scale so that all alternative ratings can be evaluated consistently.

Based figure 1 illustrates the workflow of the Simple Additive Weighting (SAW) method used in the decision-making process. The flowchart shows that the system begins by identifying alternatives and criteria, followed by assigning weights to each criterion. Afterward, the decision matrix is normalized to ensure that all attribute values are comparable across alternatives. The normalized values are then multiplied by their respective weights

to calculate the total score for each alternative. Finally, the alternative with the highest total score is selected as the optimal recommendation according to the SAW method.

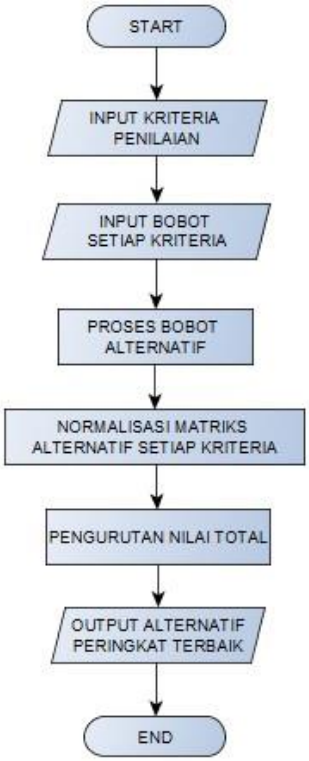

Figure 1. Flowchat Method SAW

SYSTEM ANALYSIS AND DESIGN

System Description and Architecture

The Android-based mobile application is designed to facilitate the implementation of events in Surabaya. This application functions as a central information hub for upcoming events in the city. It was developed with the objective of reducing the reliance on brochures or word-of-mouth information, which are considered less effective and efficient.

In this system, members can post events and related information about upcoming activities in Surabaya. To become a member, users must first register in order to add events and receive event notifications. Within the application, event information can be viewed through the *timeline* menu, while categorized event information is accessible via the event category menu. Additionally, users can search for event locations using the digital map feature provided by the application. Regular users are limited to logging in and viewing event information, whereas administrators act as system managers responsible for managing both system data and user data.

The general overview of the system describes the architecture or design concept that broadly connects readers and event organizers through digital media, hardware devices such as mobile devices, and, most importantly, the availability of internet connectivity, which is the core of the system's architecture.

Users upload event details and categories via Android mobile devices connected to the internet. The server then receives the data, and the database stores the information submitted by users. Administrators are authorized to manage event categories and user data that have been entered into the system.

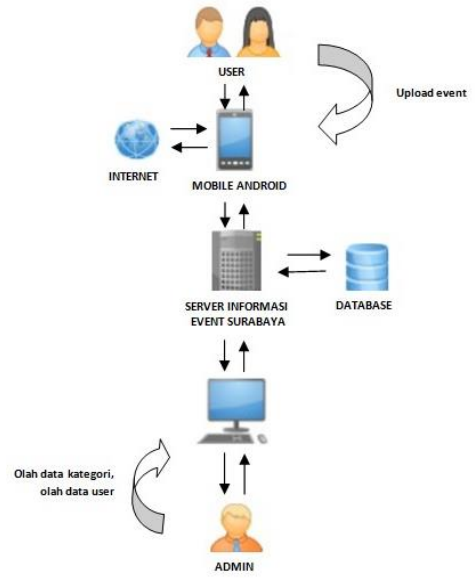

Figure 2. Information Technology Architecture

Figure 2 illustrates the overall information technology architecture of the Android-based event information system. The diagram shows how users interact with the application through mobile devices connected to the internet. Event data submitted by users is transmitted to the server, where it is processed and stored in the system database. Administrators have the authority to manage event categories and user data through server-side access. This architecture demonstrates a structured flow of information between users, the application, the server, and the database to ensure seamless event publication and retrieval.

Use Case Diagram

The main actors in this system are the User and the Contributor (Admin). During the login process, the admin verifies data by entering a username and password. The next step is accessing the client and category menus, where the admin can manage client and category data, including adding, deleting, and editing entries. The logout function is provided to exit the system.

Regular users can only receive event information. Meanwhile, users who wish to become verified are required to register, which serves as new user

enrollment before logging in. This process allows the user to upload events, provide photos, and specify the event location in Surabaya. Users can also select categories that have been provided by the application. Additionally, a logout menu is available for users who wish to exit the application.

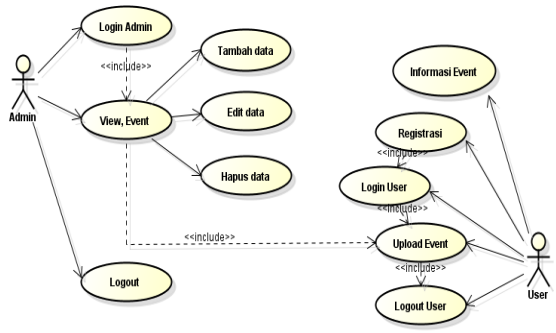

Figure 3. Use Case Diagram

Sequence Diagram

In the sequence diagram, there is one (1) actor and three (3) objects in the design of this application, along with several interaction sequences. The first sequence shows the user performing registration by selecting *Sign Up* and then completing the registration form, which is subsequently stored in the database. Once the registration data has been saved, the system redirects the user back to the login page.

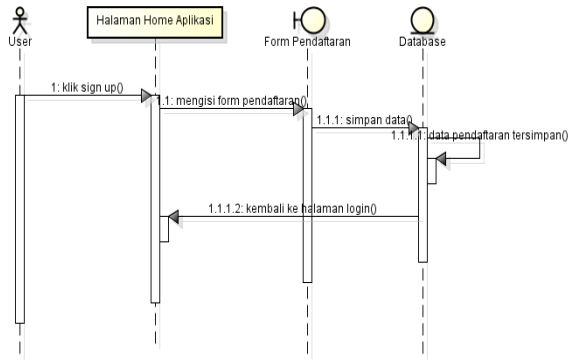

Figure 4. Sequence Diagram

Activity Diagram

The activity diagram illustrates the various flows of activities within the system being designed, including how the process begins, how it ends, and the possible interactions that may occur. The activity diagram for the User Registration process starts with the user registering through the *Sign Up* option. The user then fills out the registration form by entering their first name, last name, email, and password. The data entered is subsequently stored in the database. Once the registration data has been saved, the system redirects the user back to the login page.

Based on figure 5, presents the activity diagram that describes the workflow of the user registration process within the application. The diagram begins with the user selecting the Sign Up option and filling in the required registration form fields such as first name, last name, email, and password. Once the user submits the form, the system processes and saves the registration data into the database. After the data is successfully stored, the system redirects the user back to the login page. This activity flow ensures that the registration process operates systematically and supports proper user authentication within the application.

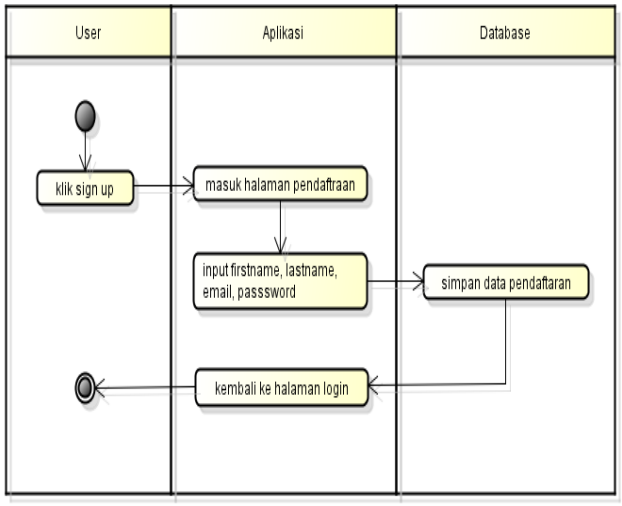

Figure 5. Activity Diagram

Class Diagram

The Class Diagram is used to represent the classes within the event application, which are divided into four categories: client, timeline, category, and user.

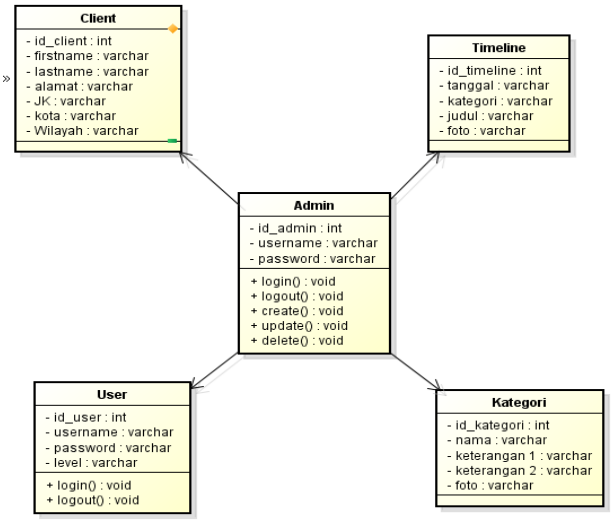

Figure 6. Class Diagram

Based on figure 6, displays the class diagram that represents the structural framework of the Android-based event information application. The diagram includes four main classes: client, timeline, category, and user, each defining specific attributes and functions. These classes illustrate how data is organized within the system and how different components interact with one another. The relationships shown in the diagram indicate dependencies and associations that support the

overall application workflow. This class structure ensures that the system is designed with clear modularity, making it easier to manage, maintain, and expand in future development.

4. RESULT AND DISCUSION

In the testing phase of the Android application, a testing scenario was carried out to verify the achievement of the objectives set by the authors. There are two main objectives targeted, namely:

- To provide information to users.
- To provide recommendations to each verified user.

In the *timeline* menu display, the application presents a list of upcoming events in Surabaya, similar to a homepage. Each event includes information related to its field, workshops, and other activities associated with the event.

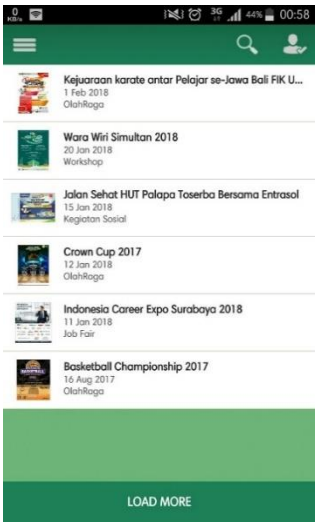

Figure 7. Home Page

The next step is the event category display, in which registered events are categorized according to their respective fields as provided by the application. Within this event category interface, only the administrator has access rights to add, delete, or edit categories. Event categories can only be created by the administrator through the server, while users are able to view events based on these categories.

Based on, figure 7 shows the home page display of the Android-based event information application, presenting a timeline of upcoming events in Surabaya. Each event listed includes essential details such as the event field, workshop information, and related activities. This interface is designed to function as the main information hub for users, allowing them to quickly view ongoing and upcoming events. The layout helps users easily navigate through event listings and stay updated on the latest activities in the city. Overall, the home page serves as an accessible and informative overview of currently available event information.

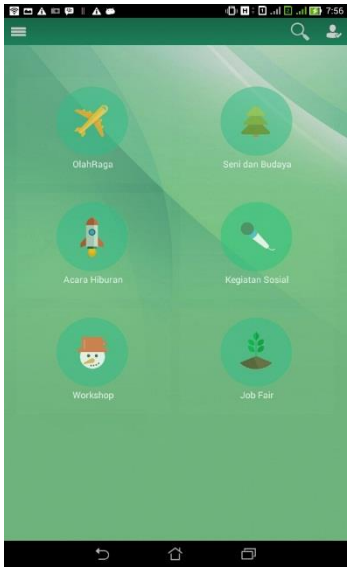

Figure 8. Category Display Page

Figure 9 shows the right-side menu display after the user has logged in under the event category. In this view, the user can add event information, upload events, and receive notifications.

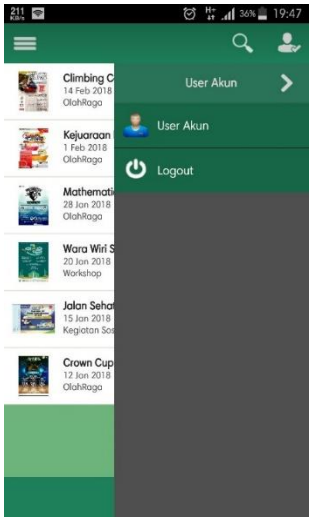

Figure 9. Login Menu Display Page

Figure 10 presents the page display for registered users. Users are able to post events as well as delete them, since the application provides a delete option for each event. Figure 10 presents the page display for registered users. Users are able to post events as well as delete them, since the application provides a delete option for each event. This interface is designed to give verified users full control over the content they contribute to the platform. It also ensures that event information remains accurate and up to date, as users can easily remove outdated or incorrect posts. The layout allows users to manage their events efficiently while maintaining a clear and organized display. Overall, this page supports user engagement by enabling active participation in event sharing within the application.

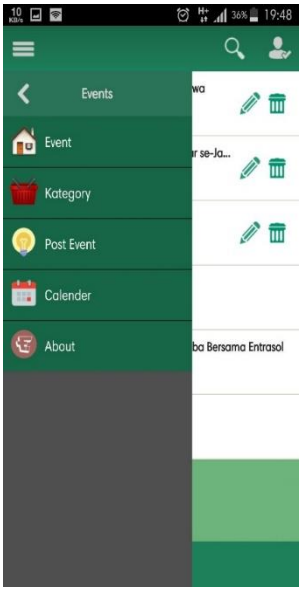

Figure 10. Page of Registered Users

The final step is the page display when a user wants to search for a specific event. In this view, several events are shown according to their respective categories. The application will suggest events currently taking place in Surabaya. The events appearing at the top are those with the highest number of views, likes, and comments.

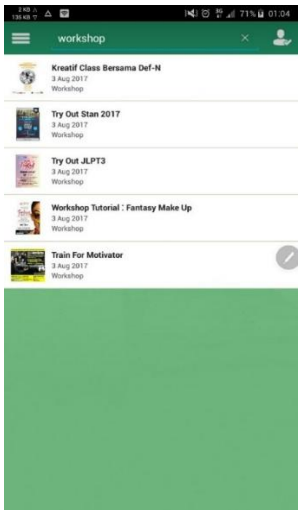

Figure 11. Event Search Page

5. CONCLUSIONS

The results show that the Android-based event information application successfully meets the research objectives by providing real-time access to event schedules and enabling organizers to deliver information more efficiently. The application also supports users in monitoring event implementation and locating event venues through integrated mapping features. System testing confirms that the features work properly and improve the effectiveness of information dissemination in Surabaya. This study contributes to the development of mobile-based public information services and demonstrates the practical value of integrating GIS and mobile technology. Furthermore, the application reduces reliance on traditional promotional media such as brochures and banners, making event information more accessible to a wider audience. It also enhances user engagement by allowing verified users to upload, edit, and manage event data directly from their devices. The centralized system architecture ensures that information remains consistent and up to date. Overall, the application streamlines communication between event organizers and the community by providing a unified platform for event publication. In addition, the system promotes transparency and encourages community participation by displaying categorized events and offering location-based services. The research also demonstrates the relevance of the SAW method for supporting event management and prioritization processes. The findings indicate strong potential for the system to be scaled for regional or national use. Future improvements may include adding push notifications, user feedback features, integration with social media, and enhanced security mechanisms to support long-term system sustainability.

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