

Geographic Information System for Aceh Souvenir Shop Locations Based on Android

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ABSTRACT

This study presents the design and implementation of an Android-based Geographic Information System (GIS) for mapping souvenir shops in Aceh Province. The system was developed to address the lack of an integrated digital platform that provides reliable information about local souvenir vendors. Using GIS technology, the application enables users to view shop locations, product details, and navigation routes through interactive map visualization. The system development followed the Waterfall model, consisting of five main stages: requirements analysis, design, implementation, testing, and maintenance. Data were collected through literature review, field observation, and interviews. The application was built using Flutter for the mobile interface, PHP for the web server, and MySQL for database management, supported by the Google Maps API for spatial data integration. The resulting system features two main interfaces: a web-based dashboard for administrators and an Android application for end users. Testing showed improvements in efficiency, with reductions of approximately 43% in data entry time, 80% in report generation, and 40% in manpower requirements, along with an 86% reduction in annual operational costs. These findings demonstrate that the GIS-based system is effective, secure, and practical for managing and distributing information about Acehese souvenir shops. Beyond its functional benefits, the application supports local tourism and strengthens small business visibility by providing accessible, location-based information.

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1. Introduction

The rapid development of information technology has significantly influenced how organizations manage and distribute information. Information systems play a vital role in supporting operational efficiency and decision-making within institutions or businesses by ensuring the quality and accuracy of the data being processed (Satria, Yana, Munadi, & Syahreza, 2017; Wali & Ahmad, 2017). Over the past decade, mobile-based technologies have become increasingly dominant due to their accessibility and integration with everyday activities. Smartphones, supported by numerous applications, enable users to perform tasks ranging from communication to navigation and business transactions (Cahyatie, 2019). One of the most practical implementations of this technological advancement is the use of Geographic Information Systems (GIS) to visualize spatial data and assist users in identifying specific locations relevant to their needs. In many regions, travelers or consumers often struggle to locate reliable information about souvenir shops. They typically rely on word-of-mouth recommendations, which frequently lead to inaccurate or incomplete results (Purnawan, 2019; Bimo Prakoso, Sugianto, & Hermanto, 2018). This limitation highlights the need for a digital platform capable of organizing and displaying information about local souvenir shops efficiently. GIS-based applications can serve as a solution by mapping and analyzing geographic data to help users find the nearest or most suitable stores. The development of such systems requires the integration of internet-based technologies and mobile platforms that provide real-time access to spatial data.

Compared to traditional maps, which were manually produced, GIS enables digital processing, storage, and visualization of geographical information, allowing users to retrieve and interpret spatial data interactively (Ramadhani, Anis, & Masruro, 2013; Zhu, Wright, Wang, & Wang, 2018).

This research focuses on the design and implementation of an Android-based Geographic Information System for souvenir shop locations in Aceh Province. The system aims to help both residents and visitors identify and access information about local souvenir shops more efficiently. By leveraging GIS technology, users can visualize locations, view product information, and estimate distances between destinations. The study is titled “Geographic Information System for Aceh Souvenir Shop Locations Based on Android.” Previous research has explored similar implementations of GIS for tourism and retail purposes. Purnawan (2019) developed a GIS-based Android application for souvenir shops in Yogyakarta, which provided tourists with store locations and allowed users to rate products. Likewise, Prakoso, Sugianto, and Hermanto (2018) designed an Android-based GIS for souvenir shops in Palembang using the Rational Unified Process (RUP) methodology, integrating observation, questionnaires, and literature reviews. Hasmoro (2014) also created a mobile GIS for souvenir shops in Semarang to centralize store locations and simplify shopping experiences for tourists. Although these studies share a similar objective—facilitating access to local souvenir shop information—this research differs in its focus on Aceh Province and in its use of more recent development tools, making it an original contribution to the field. GIS is defined as a computer-based system designed to collect, manage, analyze, and visualize geographic data (Maharani, Apriani, & Kridaklaksana, 2017). It integrates spatial and non-spatial information to provide a digital representation of real-world phenomena, enabling users to interpret relationships between geographic features (Irwansyah, 2013). GIS applications have been widely adopted in various domains, including urban planning, tourism mapping, and regional development (Gunawan, 2011; Handayani, Piarsa, & Wibawa, 2015; Ibrahim, Taslim, & Rijal, 2018). The system’s ability to represent complex geographic data through multiple layers makes it a valuable analytical and decision-support tool (Satria *et al.*, 2017; Dewi *et al.*, 2017).

In this study, GIS is applied to the context of local commerce, particularly in promoting Aceh’s distinctive souvenirs. Souvenirs—often referred to as keepsakes or mementos—hold cultural and economic significance as they represent tangible memories of a travel experience (Hitchcock & Teague, 2019). These items range from food products such as *kue bhoi*, *ikan kayu*, and *kopi Aceh*, to handicrafts like *songket* and *kupiah riman* (Tokopedia, 2018). Souvenir industries not only contribute to tourism appeal but also support local economies by connecting producers with a broader market (Wibowo, 2012; Lava, 2011; Basri, 2019; Faris & Nugraha, 2019; Wali *et al.*, 2019). The use of Android technology in GIS applications provides a versatile platform due to its open-source nature and extensive user base. Android allows developers to create applications in multiple programming languages, including Java, Kotlin, and C++, using the Android Software Development Kit (SDK) to produce executable APK files (Hou, Lu, Du, & Guo, 2017; Smyth, 2017). Compared to proprietary systems such as iOS, Android offers greater flexibility for customization and deployment (Altuwajri & Ghouzali, 2018; Greene & Shilton, 2018; Hu, Wang, Bezemer, & Hassan, 2019). This advantage makes Android an ideal platform for location-based information systems (Samsudin & Muslihudin, 2018; Vaupel, Taentzer, Gerlach, & Guckert, 2018; Wali *et al.*, 2019). To achieve the study’s objectives, the research adopts several methodological stages. The process begins with data collection, which includes literature review, field observation, and browsing relevant online resources. The next step involves data analysis, synthesizing survey findings and technical requirements to determine system specifications. System design follows, incorporating flowcharts, context diagrams, and

database structures to model application architecture. Afterward, system implementation is conducted using PHP, MySQL, and Android-based development frameworks. Finally, system testing and evaluation employ black-box testing to ensure that all functionalities operate according to specifications and that the application meets user needs (Chong & Diamantopoulos, 2020; Christudas, 2019; Combaudon, 2018; Dawodi *et al.*, 2019).

Through these steps, this research aims to produce a reliable and user-friendly Android-based GIS application that enables users to locate and explore Aceh's souvenir shops efficiently. The system is expected to support tourism development, enhance accessibility to local businesses, and demonstrate how GIS technology can be integrated into mobile platforms to address spatial information challenges in regional commerce.

2. Methodology

Geographic Information Systems (GIS) have emerged as a critical technology for representing, managing, and analyzing spatial phenomena. Built upon the principles of geography, GIS enables users to collect, process, and interpret spatial data in digital form (Ramadhani, Anis, & Masruro, 2013). It allows geographical information—once confined to traditional maps—to be stored, manipulated, and visualized through computational tools (Irwansyah, 2013; Zhu, Wright, Wang, & Wang, 2018). GIS is a computer-based system designed to handle geospatial data efficiently by integrating spatial references and non-spatial attributes (Maharani, Apriani, & Kridaklaksana, 2017). According to Satria *et al.* (2017) and Dewi *et al.* (2017), GIS facilitates data collection, storage, and analysis of geographical features that are essential for decision-making processes. The system has been applied across multiple domains, including village mapping (Handayani, Piarsa, & Wibawa, 2015), tourism development (Ibrahim, Taslim, & Rijal, 2018), and the assessment of rural resources (Gunawan, 2011). In addition, GIS-based visual interfaces have been widely used to present regional potentials in a structured and accessible format, enabling sustainable data integration for administrative and planning purposes (Cahyatie, 2019). Souvenirs, often referred to as *oleh-oleh* in Indonesia, hold both cultural and economic value as tangible mementos from travel experiences. Hitchcock and Teague (2019) describe souvenirs as material representations of tourism, serving as symbolic links between place and memory. In the Indonesian context, souvenirs—also called *cendera mata*—may take the form of food, crafts, or apparel (Wibowo, 2012; Lava, 2011; Basri, 2019). Such items may include t-shirts, cups, household utensils, or decorative artifacts, often labeled to signify their origin (Faris & Nugraha, 2019; Wali *et al.*, 2019). In Aceh, distinctive souvenirs reflect local heritage, including *Kopi Aceh*, *Kue Bhoi*, *Kupiah Riman*, *Songket*, *Kue Adee Meureudu*, *Kue Keukarah*, *Ikan Kayu*, and *Dendeng Aceh*, each contributing to the region's culinary and artistic identity (Tokopedia, 2018). These items reinforce both the economic vitality of small producers and the symbolic significance of cultural preservation within the tourism industry.

Android has become the predominant mobile operating system, integrating communication, productivity, and entertainment within a single platform (Greene & Shilton, 2018; Altuwajiri & Ghouzali, 2018). Unlike proprietary systems such as Microsoft Windows, which require licensing fees, Android operates as an open-source platform that allows vendors to customize its functionality in collaboration with Google (Hu, Wang, Bezemer, & Hassan, 2019; Samsudin & Muslihudin, 2018). In contrast, Apple's iOS remains restricted to specific hardware such as iPhones and iPads (Vaupel, Taentzer, Gerlach, & Guckert, 2018). Android applications are typically developed using languages such as Java, Kotlin, and C++, compiled with the Android Software

Development Kit (SDK) to produce APK files executable on smartphones (Hou *et al.*, 2017; Smyth, 2017). Its extensive libraries and high adaptability make Android an ideal foundation for location-based GIS systems (Wali *et al.*, 2019). Furthermore, its compatibility with database tools such as MySQL and cross-platform frameworks like Flutter enhances its capacity for real-time geospatial applications (Christudas, 2019; Dawodi *et al.*, 2019). Flutter, introduced by Google, represents a significant shift in mobile application development by allowing cross-platform deployment from a single codebase (Windmill, 2020). It enables developers to design applications for Android, iOS, Windows, Linux, macOS, and Google Fuchsia efficiently (Le Clainche *et al.*, 2019). Flutter functions as a Software Development Kit (SDK) incorporating two key elements: the Flutter Framework, which uses the Dart programming language and provides user interface widgets, and the Flutter SDK, which contains development tools for building and testing applications (Syaputra & Ganda, 2019; Panjaitan & Pakpahan, 2021). Compared with traditional methods that require separate codebases for Android and iOS (Krishnada & Tanone, 2019), Flutter accelerates development through features such as hot reload, allowing immediate visualization of code changes (Tashildar *et al.*, 2020). Despite its advantages—cross-platform support, smooth performance, and customizable design—Flutter applications tend to have larger file sizes and fewer open-source libraries. Additionally, Dart, the programming language used by Flutter, remains less familiar to many novice developers, limiting its early adoption (Tashildar *et al.*, 2020).

In system design, Data Flow Diagrams (DFDs) serve as foundational tools for visualizing how information moves through a system (Chong & Diamantopoulos, 2020). Originally developed by Larry Constantine and Ed Yourdon in the 1970s, DFDs represent processes, data stores, and external entities that interact through data flows (Hertana, 2020). They facilitate communication between users and system developers by illustrating how data inputs are transformed into outputs within a structured process model (Muchlis, Fitri, & Nuraini, 2021). DFDs help developers convey system architecture clearly, describe process interconnections, and design functional models that reflect user requirements (Salimuddin, 2020). The main symbols used include circles or rounded rectangles for processes, arrows for data flow, parallel lines for data stores, and rectangles for external entities (Ramadhan & Astutik, 2021). Such visual representation not only enhances stakeholder understanding but also assists in iterative system refinement during development stages. Complementing DFDs, the Entity Relationship Diagram (ERD) provides a structural representation of data organization within databases (Supriyadi, Andryana, & Gunaryati, 2021). ERDs define how entities—objects or concepts of interest—relate to one another through attributes and relationships (Rashkovits & Lavy, 2021). These diagrams are integral in designing logical database schemas that maintain data consistency and integrity. Common ERD components include entities (depicted as rectangles), attributes (as ovals), and relationships (as diamonds) that indicate associations such as one-to-one, one-to-many, or many-to-many (Ramírez-Noriega *et al.*, 2020). As Schildgen (2020) notes, ERDs serve both as learning tools and as practical models that guide developers in conceptualizing and implementing databases that align with organizational requirements.

MySQL, one of the most widely used open-source relational database management systems, underpins the storage and retrieval of structured data in various applications (Christudas, 2019). It supports SQL-based operations for querying and managing data efficiently and is valued for its speed, reliability, and flexibility across multiple operating systems, including Linux, macOS, and Windows (Dawodi *et al.*, 2019). MySQL follows a client-server architecture in which clients issue structured queries to a central database server that processes and returns results (Combaudon, 2018). Modern implementations allow multiple concurrent requests, secure user authentication, and encryption protocols

to ensure data integrity (Siahaan & Sianipar, 2020). In practical development, graphical tools such as MySQL Workbench, SequelPro, and phpMyAdmin simplify database management by providing intuitive interfaces for schema design, data manipulation, and performance monitoring. The integration of these conceptual frameworks—GIS for spatial analysis, Android and Flutter for mobile application development, DFD and ERD for system modeling, and MySQL for data management—forms the technological foundation of this research. Together, these elements facilitate the design of an Android-based Geographic Information System capable of mapping, managing, and displaying souvenir shop locations in Aceh. This combination of tools ensures not only efficient data processing but also the creation of an interactive platform that enhances user accessibility and supports local tourism and commerce.

3. Results

The development of the Android-based Geographic Information System (GIS) for souvenir shop locations in Aceh was conducted at the Department of Youth, Sports, and Culture in Pidie Regency. The site was selected for its accessibility and its relevance to the researcher's academic location, as no digital mapping system for Aceh's souvenir stores previously existed. The system was designed to operate through the internet, ensuring global accessibility as long as users are connected to an active network. Hardware and software tools used in this project included an ASUS laptop with an Intel Core i5-4230U processor at 3.50 GHz, Windows 10 (64-bit), Google Maps API, free web hosting, Flutter 2.5, and Android version 9 (Pie) or above. Supporting materials included video tutorials on Flutter-based app development, scholarly articles on GIS and Android integration, and technical journals on Google Maps utilization.

The system design process followed the Waterfall model, a structured, sequential methodology comprising five primary phases: requirements analysis, system and software design, implementation and unit testing, integration and system testing, and finally, operation and maintenance. During the requirements analysis stage, the researcher collected detailed data on user and system needs through interviews, document analysis, and observation. The system and software design phase transformed these requirements into architectural models, including system blueprints and database schemata. In the implementation and unit testing stage, the system was coded into smaller modules using Flutter, PHP, and MySQL before each unit underwent functionality verification. Integration and system testing combined all components into a unified system, tested using black-box techniques to confirm correct functionality and detect any logical or interface-related errors. The operation and maintenance phase ensured long-term stability by addressing software errors, optimizing performance, and adjusting features based on user feedback.

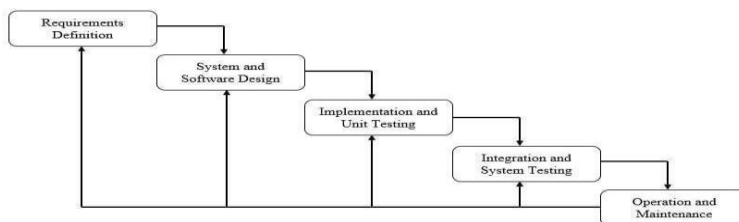


Figure 1. Waterfall System Development Model

The application design comprised three main user interfaces: the Home Page, the List of Souvenir Shops, and the About Page. The application's workflow (Figure 2) begins at the home screen, where users can access menu options and navigate to shop listings

or view information about the app developer. The List page presents store names, available products, and geographic markers on the map, while the About page provides details about the application’s development and contact information.

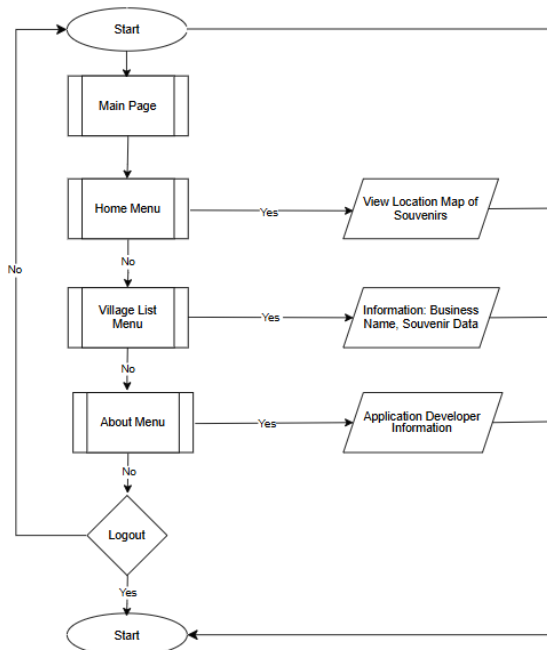


Figure 2. Simplified Application Flowchart

From the server perspective, the Android system communicates with a web-based database to manage Points of Interest (POI). Administrators log in through a secured portal to manage data related to shops and products. After authentication, the admin dashboard allows operations such as adding, updating, or deleting POI data. Each transaction automatically updates the MySQL database, ensuring real-time synchronization with the Android application (Figure 3).

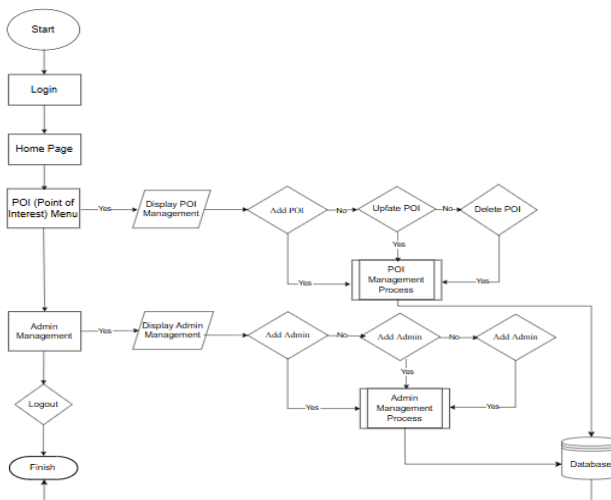


Figure 3. Server-Side Workflow for Android GIS Application

The logical data model of the system was represented using Data Flow Diagrams (DFD)

and Use Case Diagrams. The DFD contextual model (Figure 4) visualizes how data such as shop locations, product details, and user interactions flow between the Android application and the MySQL server. The Level-1 DFD (Figure 5) expands this process, showing data transformation between input (user request) and output (map visualization). The use case diagrams (Figures 6 and 7) describe how users and administrators interact with the system. The client-side use case emphasizes navigation, viewing locations, and product details, while the server-side diagram illustrates administrative control over POI management, including creating, editing, and deleting records.

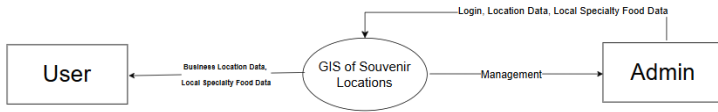


Figure 4. Context Diagram

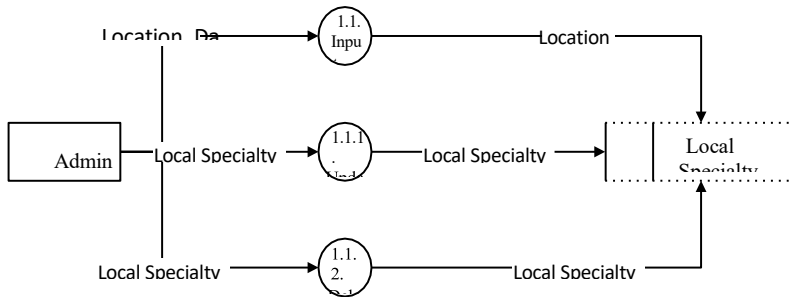


Figure 5. Data Flow Diagram Level 1

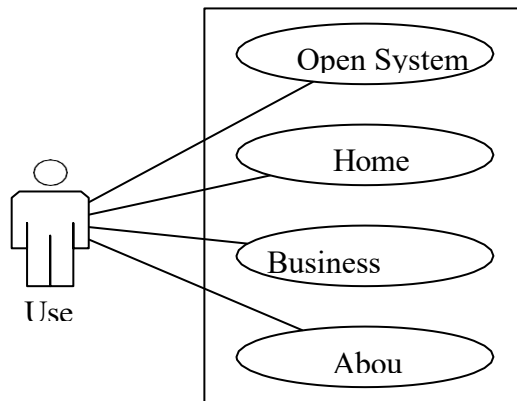


Figure 6. User Use Case Diagram

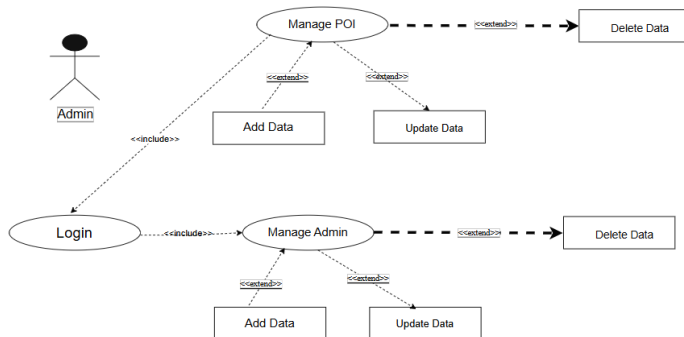


Figure 7. Administrator Use Case Diagram

The Activity Diagrams (Tables 1–3) depict sequential interactions between users and the system. Table 1 shows the workflow for opening the main page and viewing maps. Table 2 outlines the process of navigating through the list of shops, displaying details, and returning to the home screen. Table 3 illustrates access to the “About” section, where system and developer information are presented.

Table 1. Activity Diagram — Home Page

Step	User Action	System Response
1	Launch App	Display Home Menu and Map
2	Select “Maps”	Show Geographical Layout of Shops
3	Return	Navigate to Main Page

Table 2. Activity Diagram — List of Souvenir Shops

Step	User Action	System Response
1	Select “List”	Display Shop Names and Product Information
2	Tap Shop	Show Details and Map Location
3	Return	Navigate Back to Home Menu

Table 3. Activity Diagram — About Page

Step	User Action	System Response
1	Select “About”	Show Developer and App Information

A Class Diagram (Figure 8) defines the relationships between major components such as the main application, POI management, and admin control. The system architecture features separate classes for home, list, and about pages, interconnected through a central application controller, while the POI management module functions independently as part of the administrative subsystem.

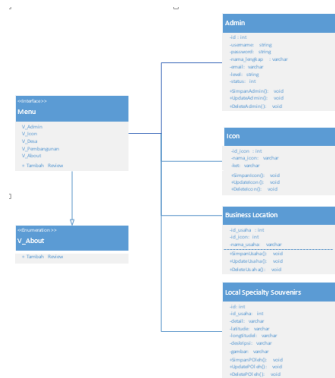


Figure 8. Class Diagram Structure

The Database Design consists of three primary tables: *Admin*, *Shop Location*, and *Souvenir Products*. These tables define data attributes, types, and relational structures. The *Admin* table stores authentication details, while the *Shop Location* table holds store metadata and coordinates. The *Souvenir Products* table links specific products to their corresponding stores via foreign keys.

Table 4. Admin Table Schema

No	Field	Type	Size	Description
1	user_id	int	255	Primary Key
2	foto	text	-	Profile Picture

3	username	varchar	50	Admin Username
4	password	varchar	50	Admin Password
5	level	varchar	1	Access Level

Table 5. Shop Location Table Schema

No	Field	Type	Size	Description
1	id_lokasi	int	11	Primary Key
2	nama_usaha	varchar	255	Shop Name
3	deskripsi	text	-	Description
4	alamat	text	-	Address
5	hp	varchar	12	Contact Number
6	email	varchar	50	Email Address
7	website	varchar	100	Website URL
8	lat	varchar	255	Latitude
9	lng	varchar	100	Longitude
10	gm	text	-	Google Maps Link
11	foto	text	-	Shop Image
12	status	int	-	Shop Status
13	tanggal	timestamp	-	Date Added

Table 6. Souvenir Product Table Schema

No	Field	Type	Size	Description
1	id_oleh	int	11	Primary Key
2	id_lokasi	int	11	Foreign Key (Shop ID)
3	nama_pd	varchar	100	Product Name
4	deskripsi	text	-	Product Description
5	foto	text	-	Product Image
6	harga	double	-	Product Price
7	status	int	-	Product Status
8	tanggal	timestamp	-	Date Added

The User Interface (UI) was designed with simplicity and clarity to facilitate user interaction. The admin dashboard features navigation menus for managing data, viewing reports, and generating visual analytics. Figures 9–10 illustrate the evolution of interface design, from the initial login screen to data entry and reporting pages. The Android user interface includes five accessible menus: Home, Location, Product, Maps, and About Us (Figures 10–15). The *Home* screen serves as the navigation hub; the *Location* screen displays shops and product listings; the *Product* screen presents detailed information with prices and images; the *Maps* interface integrates Google Maps visualization of all shop locations; and the *About Us* section provides developer and application background information. Through these integrated processes and designs, the GIS-based Android application provides a structured, efficient platform for managing and visualizing data related to Aceh's souvenir shops. It enables users to access accurate geographical and product information while offering administrators an intuitive management interface, supporting both tourism promotion and local business development.

4. Discussion

The Geographic Information System (GIS) for mapping souvenir shops in Aceh, developed as an Android-based application, was designed through several key stages: input design, output design, process design, control design, workforce

planning, and cost estimation. The primary objective of this system is to assist both local communities and tourists in locating authentic Acehese souvenir shops efficiently through an interactive digital platform. Each development phase was carefully planned to ensure the system is user-friendly, secure, and capable of processing and presenting spatial data accurately. The input design consists of three main components: data entry for administrators, data entry for business locations, and data entry for products or souvenirs. These inputs are processed through a web-based interface that allows administrators to add, update, or delete records as needed. All data are automatically stored in a MySQL database to maintain accuracy and consistency. The output design, on the other hand, produces three primary reports: the administrator report, business location report, and product report. These outputs can be accessed both via the web platform and the Android application, where the information is presented in a clear and structured format suitable for decision-making and public access.

The system control mechanism was developed with two layers of security: user control and application control. User control begins at the registration stage, where data validation ensures that duplication or redundancy is prevented. Only verified administrators are granted access to the system, and all usernames and passwords are encrypted to prevent unauthorized access or data breaches. Application control ensures that only public data are visible on the website's public pages, while sensitive information remains protected behind login authentication. These layers of control maintain data integrity and enhance the overall security of the system.

In terms of manpower, the system was designed to operate efficiently with minimal human resources. Based on testing and operational analysis, only one trained operator is required to manage the entire application. A short technical training session is sufficient to enable the operator to input, update, and monitor all necessary data. This efficiency demonstrates the system's ability to optimize human resources while minimizing operational workload. From the financial perspective, the total cost required to develop and operate the system was estimated at approximately IDR 28,820,000. This includes the costs of system development, hosting, domain registration, web maintenance, software training, and other operational needs. Monthly expenses are projected at around IDR 1,585,000, with quarterly maintenance costs estimated at IDR 1,050,000. These figures indicate that the proposed system is cost-effective compared to conventional manual data management, which requires higher recurring expenses and more manpower.

The system development was carried out over a four-month period, following the waterfall model, which includes data collection, system analysis, design, coding, simulation testing, data entry, user training, and maintenance. The final system consists of two main interfaces: a web-based platform for administrators and an Android-based application for end users. The web interface begins with a homepage containing information about the developer, contact options, and a secure login form. The login feature acts as a security gate, ensuring that only authorized users can access the administrative dashboard. Once logged in, administrators are directed to the main dashboard that contains several key menus such as *Master Data*, *Reports*, *Graphs*, and *User Management*.

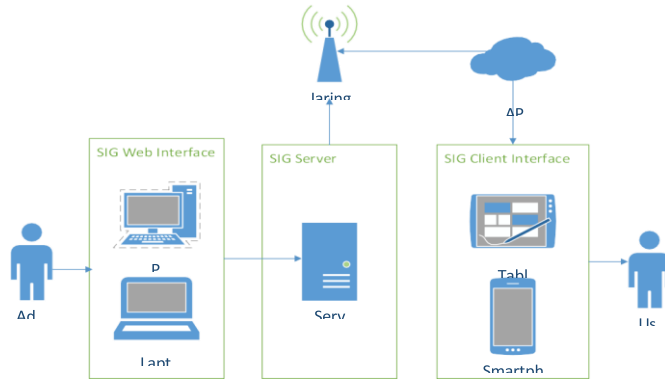


Figure 9. GIS System Prototype Design

The *Location Input Form* enables administrators to enter details about each business, including the store name, address, description, contact information, images, Google Maps link, and precise geographic coordinates (latitude and longitude). Figure 10 shows the page layout where location data are entered and stored. Similarly, the *Product Input Form* allows administrators to register souvenir products, such as traditional foods or crafts, including the product name, description, price, and image. Data entries can be edited or deleted as required, ensuring that the information remains up-to-date.

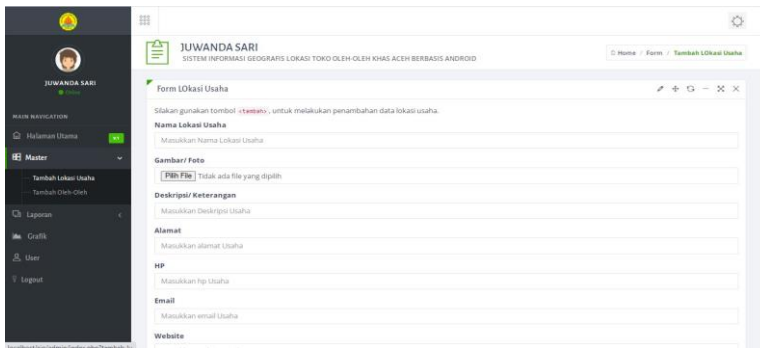


Figure 10. Business Location Input Page

User account management is carried out through the *User Management Page*, which allows the administrator to modify user credentials and passwords for enhanced data security. The interface, depicted in 11, helps maintain authorized access and prevents unauthorized modifications.

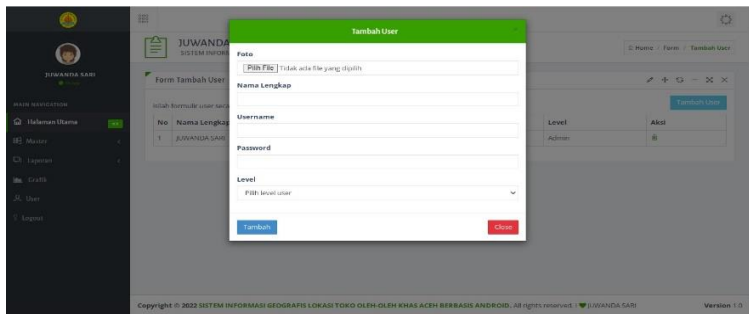


Figure 11. Administrator User Management Page

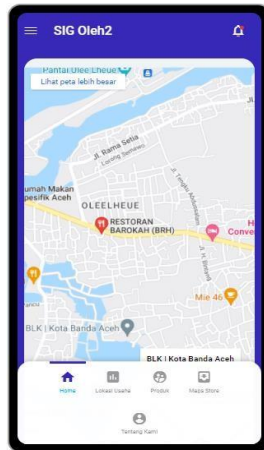


Figure 14. Maps Store Display

Lastly, the *About Us* page provides information about the developer and the purpose of the system's creation, as shown in Figure 15.

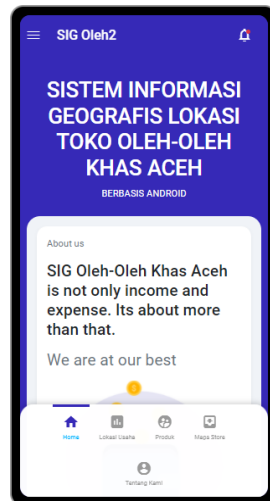


Figure 15. About Us Page

The system evaluation revealed significant improvements compared to the previous manual approach. Data entry time decreased by approximately 43%, report generation time was reduced by 80%, and manpower requirements declined by 40%. Moreover, annual operational expenses were reduced by nearly 86%, highlighting the efficiency and economic advantage of the new system. These findings confirm that the Android-based GIS is not only functional and secure but also highly efficient in terms of time, cost, and resource utilization. Overall, the implementation of this Geographic Information System has proven to be a valuable technological advancement for promoting Acehese cultural products. By integrating spatial and non-spatial data into a single platform, the system provides accurate, accessible, and visually interactive information for both administrators and end users. The Android-based GIS enhances public access to local business information, supports tourism development, and serves as a sustainable digital solution for regional economic empowerment.

5. Conclusion and Recommendations

Based on the results of the development and implementation of the Android-based Geographic Information System (GIS) for mapping souvenir shops in Aceh, several conclusions can be drawn. The developed system effectively manages and organizes information about souvenir vendors throughout Aceh in a centralized database hosted on a single server. This structure allows data to be accessed, updated, and retrieved easily whenever required, ensuring efficiency and consistency in data management. Furthermore, the system provides significant convenience for users and tourists by offering accurate and up-to-date information about local souvenir shops through an accessible Android application interface. This digital platform supports the promotion of Acehese cultural products and facilitates better engagement between local businesses and visitors. To ensure the long-term functionality and usefulness of the system, several recommendations are proposed. First, the application should be utilized optimally by local stakeholders, including tourism authorities and shop owners, as a primary tool for managing and disseminating information about Acehese souvenirs. Second, training sessions for operators and future system administrators are essential to maintain data accuracy and ensure efficient operation. Well-trained personnel will enhance information processing speed and reliability. Third, regular maintenance of both hardware and software components must be prioritized to safeguard data integrity and ensure the system's continuous performance. In addition, user passwords and access credentials should remain confidential to prevent unauthorized access or data manipulation. Lastly, future research and system development could focus on integrating route optimization features and more detailed content within the application, such as shop ratings, user reviews, and real-time navigation. Expanding these functionalities will further enhance the system's role as a comprehensive digital tourism tool, supporting Aceh's local economy and cultural visibility.

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