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DESIGN OF AN ANDROID-BASED DIGITAL FINANCIAL RECORDING SYSTEM: A CASE STUDY OF BRILINK KAHIYANG AGENTS IN SUKARAJA

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Abstract: The development of digital technology encourages the need for an efficient and integrated financial recording system, especially for BRILink agents in rural areas such as BRILink Kahiyang agents in Sukaraja. The main problem faced is the recording of financial transactions that are still done manually, so there is often data loss, recording errors, and delays in making financial statements. Another emerging issue is the low literacy of digital agencies and limited technological infrastructure. Analysis of the problem shows that the manual system has not been able to meet the need for efficiency, accuracy, and transparency in day-to-day financial management. As a solution, this study designed an Android-based digital financial recording system that is easily accessible and used by BRILink Kahiyang agents in Sukaraja. This system is expected to automate transaction recording, minimize input errors, and provide real-time and structured financial reports. The research method used is the Waterfall model which includes the stages of Needs Analysis, System Design, Implementation, testing, and maintenance. Data collection was conducted through observation and interviews to determine the needs and constraints of users directly. In the system design process, various tools are used such as Android Studio for application development, SQLite for local database management, and UML (Unified Modeling Language) for system modeling with use Case, Activity, Sequence, and Class diagrams. The system designed includes transaction recording features, automatic report generation, and data security based on login and password. The results of this study are expected to improve the efficiency, accuracy, and transparency of financial records of BRILink Kahiyang agents in Sukaraja, and support digital transformation in the microfinance sector.

Keywords: Android; BRILink; Financial Information System; Digital Transformation; Waterfall

Abstrak: Perkembangan teknologi digital mendorong perlunya sistem pencatatan keuangan yang efisien dan terintegrasi, khususnya bagi agen BRILink di daerah pedesaan seperti agen BRILink Kahiyang di Sukaraja. Masalah utama yang dihadapi adalah pencatatan transaksi keuangan yang masih dilakukan secara manual, sehingga sering terjadi kehilangan data, kesalahan pencatatan, dan keterlambatan dalam pembuatan laporan keuangan. Kendal lain yang muncul adalah rendahnya literasi agen digital dan terbatasnya infrastruktur teknologi. Analisis masalah menunjukkan bahwa sistem manual belum mampu memenuhi kebutuhan akan efisiensi, akurasi, dan transparansi dalam pengelolaan keuangan sehari-hari. Sebagai solusinya, penelitian ini merancang sebuah sistem pencatatan keuangan digital berbasis Android yang mudah diakses dan digunakan oleh agen BRILink Kahiyang di Sukaraja. Sistem ini diharapkan dapat mengotomatisasi pencatatan transaksi, meminimalisir kesalahan input, serta menyediakan

laporan keuangan yang real-time dan terstruktur. Metode penelitian yang digunakan adalah model Waterfall yang meliputi tahapan Analisis Kebutuhan, Perancangan Sistem, Implementasi, Pengujian, dan Pemeliharaan. Pengumpulan data dilakukan melalui observasi dan wawancara untuk mengetahui kebutuhan dan kendala pengguna secara langsung. Dalam proses perancangan sistem digunakan berbagai tools seperti Android Studio untuk pengembangan aplikasi, SQLite untuk manajemen database lokal, dan UML (Unified Modeling Language) untuk pemodelan sistem dengan diagram use Case, Activity, Sequence, dan Class. Sistem yang dirancang meliputi fitur pencatatan transaksi, pembuatan laporan otomatis, serta keamanan data berbasis login dan password. Hasil penelitian ini diharapkan dapat meningkatkan efisiensi, akurasi, dan transparansi pencatatan keuangan agen BRILink Kahiyang di Sukaraja, serta mendukung transformasi digital di sektor keuangan mikro.

Kata kunci: Android; BRILink; sistem informasi keuangan; transformasi digital; Waterfall

INTRODUCTION

The development of digital technology is driving a transformation in financial recording, especially for MSMEs and financial service agents such as BRILink, one of which is the BRILink Kahiyang agent in Sukaraja. Android-based digital financial recorders are an effective solution to improve transaction efficiency, accuracy, and transparency [1], [2]. This system enables real-time integration of BRILink transaction services, thus facilitating financial monitoring and reporting [3]. However, limited digital literacy and uneven technological infrastructure remain challenges in adopting this technology in several regions [4]. This study also discusses the importance of digitalizing financial management to optimize BRILink agent performance and increase financial inclusion [5]. Therefore, designing an easy-to-use Android-based digital financial management system is crucial to improve operational sustainability and reliable financial services [6].

The Android-based digital financial recording system for BRILink Kahiyang agents in Sukaraja was designed

with key aspects including recording efficiency, data accuracy, and ease of user access. Efficiency is reflected in the system's ability to reduce manual recording time and

errors [7]. Data accuracy is crucial for reliable financial reports as a basis for business decision-making [8]. Easy access via the Android platform allows agents to record anytime and anywhere, supporting flexible and real-time operations [9], [10]. These variables are interrelated to form an optimal system for BRILink transaction management.

Although efficiency, data accuracy, and ease of access have become important foundations in designing a digital financial recording system, observations and interviews with BRILink Kahiyang agents revealed several significant obstacles. The continued use of manual recording leads to the risk of data errors, reporting delays, and difficulties in real-time transaction monitoring. Furthermore, limited digital literacy and access to technological devices are major obstacles to optimizing the use of Android-based applications [2], [11], [12]. This problem requires the design of a system that is not only technically effective but also easy to use to increase productivity and transparency in BRILink agent financial records.

The problems arising from manual record-keeping and digital literacy constraints reinforce the need for an integrated and easy-to-use digital financial record-keeping system. Several previous studies have highlighted the effectiveness of BRILink agents in promoting financial inclusion and managing digital transactions [13], [14], but not many have focused on designing an Android-based digital

financial record-keeping system that accommodates real-time needs and accessibility. Therefore, the purpose of this study is to design a digital financial record-keeping system solution that integrates various BRILink transaction services in real time to increase efficiency, accuracy, and transparency. This research is necessary given the strategic role of BRILink agents in expanding access to financial services for communities in remote areas while empowering MSMEs through easy digital transactions..

METHOD

System Development Method

In developing this system, we used the Waterfall method, which is a linear and sequential software development model, where each stage must be completed thoroughly before proceeding to the next stage [15]. The main stages include Requirements Analysis, System Design, Coding, Testing, and Maintenance. This model allows for a structured and orderly development process [16]. However, this method is less flexible in dealing with changing needs during the development process [17]. The following is a picture of the stages of the waterfall method:

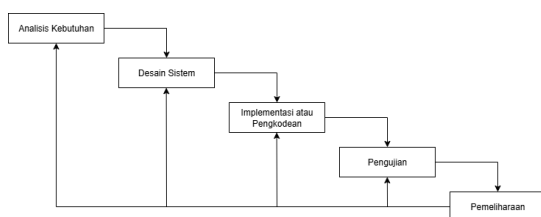


Figure 1. Method Stages

Data Collection Method

The data collection method for this study was carried out in two stages:

a. The observation phase of this study was conducted at the BRILink Kahiyang agent located in Sukaraja village. We directly observed the manual financial transaction recording process carried out

by the agent, including the recording method, the types of transactions that frequently occur, and the obstacles encountered in financial management. This observation aimed to obtain a concrete picture of the business process and the needs of the digital financial recording system to be designed.

b. The interview phase involved a question-and-answer session with the owner of the BRILink Kahiyang agent in Sukaraja. The interview was conducted face-to-face at the agent's location in Sukaraja village, Buay Madang District, Sukaraja Regency East Ogan Komering Ulu, South Sumatra. We asked one question focusing on transaction recording experiences, challenges with manual recording, the need for digital system features, and expectations for an Android-based financial recording application.

RESULTS AND DISCUSSION

System Design

After the requirements analysis and data collection stages were completed, the next step was system design. In this study, the Unified Modeling Language (UML) was used as an object-oriented modeling language to design an Android-based digital financial recording system for BRILink agents [18]. UML is a standard language that enables effective and structured system visualization, design, and documentation [19]. This method facilitates the creation of modular models of various system components and their processes. To illustrate the workflow and interactions within the system, several UML diagrams were used, such as use case diagrams, class diagrams, sequence diagrams, and activity diagrams, designed with the diagram.io tool. Figma software, which supports interactive prototyping, was used to design the application's user interface. This design accommodates the real-time needs and ease of access for BRILink agents in managing digital financial records. The following is a summary of the system design:

a. Usecase diagram

Use case diagrams are used to identify the main functions within a system and the actors who interact with them. This diagram can also illustrate the interaction between one or more systems with the system to be built using these functions. This use case design shows the interaction between the admin actor and the system's main features, starting with the registration and login processes. After logging in, the admin can access included functions such as managing customer data, recording transactions, viewing and creating daily, weekly, and monthly financial reports, and receiving transaction notifications. This diagram emphasizes that all operational features are only available after successful authentication, thus supporting security and structured system access control.

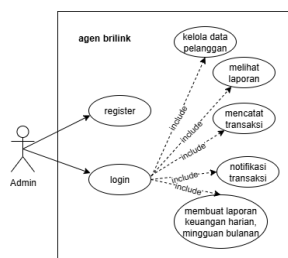


Figure 2. System Usecase Diagram

b. Class diagram

A class diagram illustrates the system structure through classes containing attributes as variables and operations as functions that define the behavior of each class. This diagram shows the process flow of the BRILink system, which consists of four main stages: transactions, agents, reports, and notifications, which loop together to form an integrated workflow. The process begins when an agent performs a financial transaction, then the system records and stores the data. The transaction data is then processed into a financial report that can

be accessed by the agent for evaluation or printing. After the report is generated, the system sends a notification to the agent confirming the transaction status.

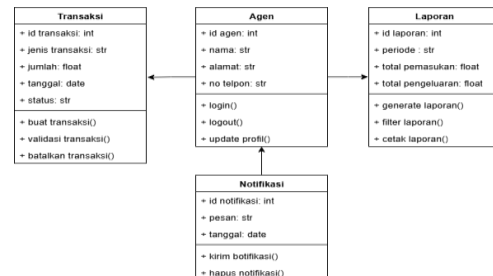


Figure 3. System Class Diagram

c. Sequence diagram

Sequence diagrams are used to model interactions between objects in a system sequentially over time. This diagram shows how objects or system components communicate with each other through messages sent and received in a specific scenario. This diagram illustrates the transaction recording system process flow, which begins when a BRILink agent logs in to access the service. After successfully logging in, the agent begins the recording process by entering transaction data, which is then received by the system. The system validates the data to ensure its accuracy. If validation is successful, the transaction data is saved to the database. Once the save is complete, the system sends a notification to the agent regarding the transaction status. Finally, the agent can access and view the financial reports generated based on the recorded data.

If validation fails, the system redirects the process to the transaction data receiving stage for correction and revalidation.

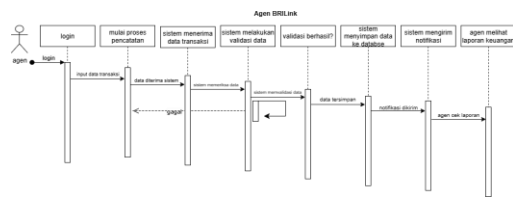


Figure 4. Squence Diagram System

d. Activity diagram

Activity diagrams are used to illustrate the dynamic aspects of a system. These diagrams visualize the workflow or process sequentially from one activity to another, including branching, iteration, and parallel activities. This diagram depicts the flow of BRILink system activities, starting with the agent's login process, continuing with recording financial transactions such as cash deposits or payments, and ending with access to financial reports. After the agent enters their login data, the system displays the requested page. The agent then records the transaction into the system. The system then validates the recorded transaction data. If the data matches, the system displays the requested report. However, if there is an error, the system directs the agent to re-enter the data

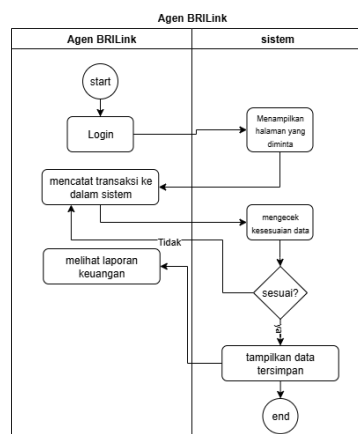


Figure 5. System Activity Diagram

System Interface Design

After designing the system using UML, the next step was to design the interface for the Android-based financial recording application. The purpose of this design is to provide a visual representation of each page of the application so that users can understand the flow and appearance of the system being built. The following is a display of the resulting system interface design:

a. Interface login

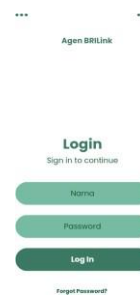


Figure 6. Interface login

Figure 6 shows a layout of the system login page. This view contains a form for entering a username and password. In the Android-based financial recording system, login access is granted to the BRILink admin.

b. Interface dashboard



Figure 7. Dashboard Interface

Figure 7 shows the dashboard page displaying key features to make it easier for users to manage and monitor financial activities. The transaction recording feature allows for quick and accurate input for deposits, withdrawals, and payments. The transaction recap feature presents a real-time summary of income, expenses, and balances in tabular or graphical form. The settings feature is used to manage preferences, access rights, and system configuration. A logout button is provided as a secure option to exit the application. All features are designed to make the dashboard an intuitive and efficient control center for supporting digital financial management.



Figure 9. Transaction Summary

Figure 9 shows a simple transaction history summary page. Users can view data based on a specific date range, and they can download and print transaction data.

c. Interface Settings



Figure 10. Interface Settings

Figure 10 shows a concise and structured application settings page, there is a menu for managing account data, for the identity confirmation process, as well as terms and conditions, so that all setting controls and account administration access are easily found by users on one screen.

CONCLUSION

Based on the results of this research report, it can be concluded that the design of a digital financial recording system for BRILink Kahiyang agents in Sukaraja is necessary to address various problems that arise in the manual transaction recording process. Currently, BRILink agents still use conventional recording methods that are prone to input errors and difficulty in producing accurate and fast financial reports. With the rapid development of information technology, especially in the field of digital banking, the implementation of a web-based financial recording system or digital application is an effective solution to increase the efficiency and accuracy of transaction recording. This system design is able to facilitate structured transaction recording, customer data management, and real-time, integrated financial reporting. This not only helps BRILink agents manage transactions better but also supports transparency and ease of monitoring by users.

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