# Smartphone-Based Accounting Information System Application: An Innovation Technology Solution For Startup

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***Abstract***.

*This study aims to create an Accounting Information System (AIS) application that can be accessed using a smartphone. The object of the study is PT Orangiro Makmur Jaya (OMAJA POWER). This company is one of the startups that focuses on electrical. This type of research is Research & Development (R&D) with the Analysis, Design, Development (ADDIE) model. The results of this study are the testing of the feasibility of the application by material experts resulting in an average value of the feasibility percentage of 98% which means that the application is very feasible to implement. Next are the results of the testing of the feasibility of the application by media experts with an average value of the feasibility percentage of 100% which means that the application is very feasible to implement. Then the percentage of user satisfaction based on the Performance indicator reached 4.90%, and on the Information and data indicator 4.92%. Meanwhile, the Economic indicator obtained a percentage of 4.95%. Then on the Control and security indicator, the level of satisfaction shows a percentage of 4.94%. Next is the Efficiency indicator showing a percentage of 4.93%. The Service indicator shows a percentage of 4.92%. So, based on this percentage, it can be concluded that the existence of an AIS using the PIECES Framework is very satisfying for users.*

***Keywords:*** *Startup, Smartphone and Accounting Information System.*

## I. INTRODUCTION

Nowadays, technological advances are able to provide significant changes in human life, including in the economic sector. Along with the rapid progress in information and communication technology, the world has witnessed a profound transformation in the way businesses and economies operate. Technological innovation is key to creating new opportunities, increasing efficiency, and driving overall economic growth [1]. Since the fourth industrial revolution or known as the digital era, technology has become a major driver of economic growth. Digital technologies such as the internet, cloud computing, big data, artificial intelligence (AI), and the Internet of Things (IoT) have enabled companies to optimize their operations, expand market reach, and increase productivity [2].Startups are industry players that are increasingly contributing to economic growth conditions in Indonesia, especially in this digital era [3]. The presence of startups as a whole has the potential to develop into a business that has unpredictable opportunities compared to other businesses. Considering the rapid pace of technology that often disrupts the innovation process, conveying new ideas and realizing them into challenges and competitive [4]. Startups in Indonesia continue to grow rapidly and have a positive impact on economic growth. Startups are defined in many ways. One of the more common definitions states that a startup is a temporary organization seeking a repeatable and scalable business model [5].

Meanwhile, A. Skala (2019) concluded the definition of a startup as a new company that is still in the early stages of operation or an entity that creates and implements digital technology or information and communication technology [6]. According to Startup Genome data processed by Failory in 2020, it was reported that 9 out of 10 startup companies failed to run operations and make a profit. Based on research [7] The causes of startup company failure are due to unclear and unstructured planning, burn rate, competition with competitors or new players which causes many players in the industry to compete for market share, and

not utilize technology in their business processes, thus experiencing challenges in managing inefficient finances and limited resources.Based on previous research that analyzed business development strategies in the digital era with a focus on startup companies and identified that the advantages of startup companies include flexibility, innovation, and the ability to adapt quickly to market changes with opportunities in the digital era including the growth of e-commerce, adoption of new technologies, and extensive online connectivity [8]. The research conducted by Nurcahya and Majapahit aims to examine the application of Information Technology as an effort to expand the local product market considering the urgency of MSMEs for the stability of the Indonesian economy [9]. Then the research conducted by [10] aims to test the role of information technology on the profits of SMEs. The research conducted by [11] examine the relevance of information technology in the effective management of selected SMEs in Lagos.In this context, technology plays an important role, especially smartphone-based technology, which is able to support various aspects of business operations.

By adopting technology-based solutions, startups can improve financial efficiency. This transformation includes leveraging digital technology to generate added value, increase efficiency, and improve customer experience [12]. Digital transformation also refers to the process and strategy of integrating technology into business operations to improve customer service and the quality of products and services offered. With digital transformation, businesses can stay competitive in a sea of competitors. PT Orangiro Makmur Jaya (OMAJA POWER), a startup company engaged in the electrical sector, faced problems in integrating financial data. The absence of an effective Accounting Information System (AIS) was an obstacle to the company's financial reporting and transparency process [13].Therefore, an AIS that is easily accessible, affordable, and user-friendly is needed, which can support startups in increasing the transparency and accuracy of financial reports through automation. This solution is expected to be able to help startups make decisions based on accurate and relevant data, thereby increasing the company's operational efficiency. This study aims to create an AIS application that can be accessed using a smartphone. In order to make it easier for PT OMAJA POWER to integrate financial data so that the reporting process becomes more effective and transparent. The software used in making the application is AppSheet. Based on previous research, it was concluded that Appsheet can be designed into an application according to the company's needs [14],The Appsheet application has the advantage of being accessed on mobile devices that have an Android or iOS operating system. In its operation, Appsheet has a simple level of access so that data stored on the Google Drive cloud can lighten the user's device [18]. The novelty of this research is the result of previous research suggestions to add security features, notification features, and visualization features and focuses on AIS.

## II. METHODS

This type of research is Research and Development (R&D). It aims to create new products or develop existing products [23]. Product development in this study is a smartphone-based AIS application using Appsheet using the Analysis, Design, Development, Evaluation (ADDIE) model. The following are the ADDIE stages in this study:

1. *Analysis*. This is the first stage in this research. At this stage, a root cause analysis is carried out starting from conducting interviews in each department of the company. Interview informants were all employees at PT OMAJA POWER Malang branch, namely: President Director, Administration and Finance Manager, Administration and Finance Supervisor, Operational Manager, and Operational Supervisor. The results of the interview are a Business Process Model and Notation (BPMN) designed with the Bizagi application.
2. *Design*. The next stage is design. At this stage, a solution design has been made based on data in the analysis stage. The following are the stages of this research: data collection from each department, carry out a cleaning process for each data that has been collected, and creating a smartphone-based AIS application design according to company needs

3. *Development*. At this stage, it is a research development process after completing the design stage. The following are the research steps, namely; perform Extract, Transform, & Load (ETL) based on the collected data. The process of discarding unused data and create a smartphone-based AIS application according to company needs
4. *Implementation*. Next is the implementation stage, carrying out the following stages: conducting application validation by material and media experts regarding the feasibility of smartphone-based AIS applications and conduct application testing with company employees
5. *Evaluation*. The last stage in this research is evaluation. Where at this stage is a stage to get responses and feedback from the company with the aim of developing smartphone applications to be better according to the company's needs. At this stage using the PIECES framework to analyze the success of the system. There are six variables used, namely: Performance, this analysis is carried out to determine the performance of a smartphone application, whether the application is running well or not. Information and Data, this analysis is carried out to find out how much and how clear information will be produced by the application. Economics, this analysis is carried out to find out whether the application is right to be applied to PT OMAJA POWER by looking at the costs incurred. Control and Security, this analysis is carried out to find out the extent of supervision and control carried out so that the application runs well. Efficiency, this analysis is carried out to find out whether a system is efficient or not, viewed from the little input can produce a satisfactory output. Service, this analysis is carried out to find out how the application can present a good display to users so that they can quickly understand the existing data.

After the questionnaire was created based on the PIECES framework. The researcher measured employee satisfaction with the application that had been created using a Likert scale with the following value categories: very satisfied = 5; satisfied = 4; moderate = 3; dissatisfied = 2; and very dissatisfied = 1 [24]. Then the percentage satisfaction index will be calculated using the following formula according to [25]:

$$\text{Index (\%)} = \frac{\text{Total of Score}}{\text{highest Likert score x total of respondents}} \text{X } 100$$

In this study, the primary data source came from interviews with all employees at PT OMAJA POWER Malang branch, namely: President Director, Administration and Finance Manager, Administration and Finance Supervisor, Operations Manager, and Operations Supervisor.The data collection method was conducted by interview. The interview technique used semi-structured interviews. The informants selected used the saturation sampling method where the research sample used all members of the population. The parties who became informants in this study included: President Director, Administration and Finance Manager, Administration and Finance Supervisor, Operational Manager, and Operational Supervisor. The data analysis technique used in this study is a qualitative analysis using a questionnaire instrument that refers to the PIECES framework and assessment based on a Likert scale.

## III. RESULT AND DISCUSSION

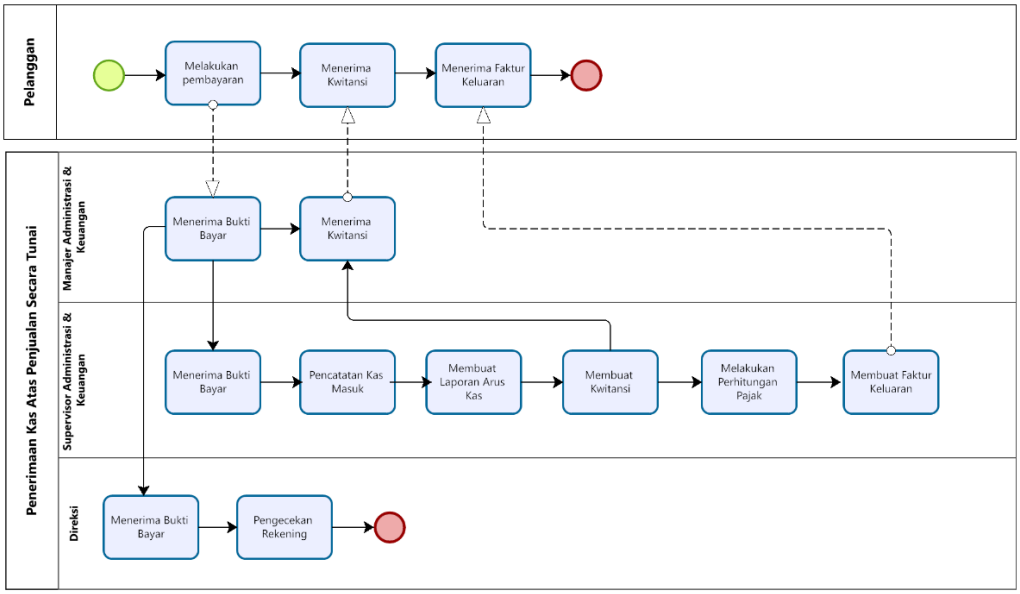
### 1. *Analysis*

The problems that occur in OMAJA POWER will be visualized using BPMN. In describing the business process, As-Is BPMN and To Be BPMN can be used. As-Is BPMN can describe the current business process. While To Be BPMN can describe the proposed business process. This study focuses on AIS with a cash receipt and disbursement cycle.

#### *As-Is* BPMN Cash Receipts from Cash Sales

The current business process, related to cash receipts from cash sales, there are four parties involved, namely: customers, administration & finance managers, administration & finance supervisors, and directors. As depicted in Figure 1.

**Fig 1.** As-Is BPMN Cash Receipts from Cash Sales



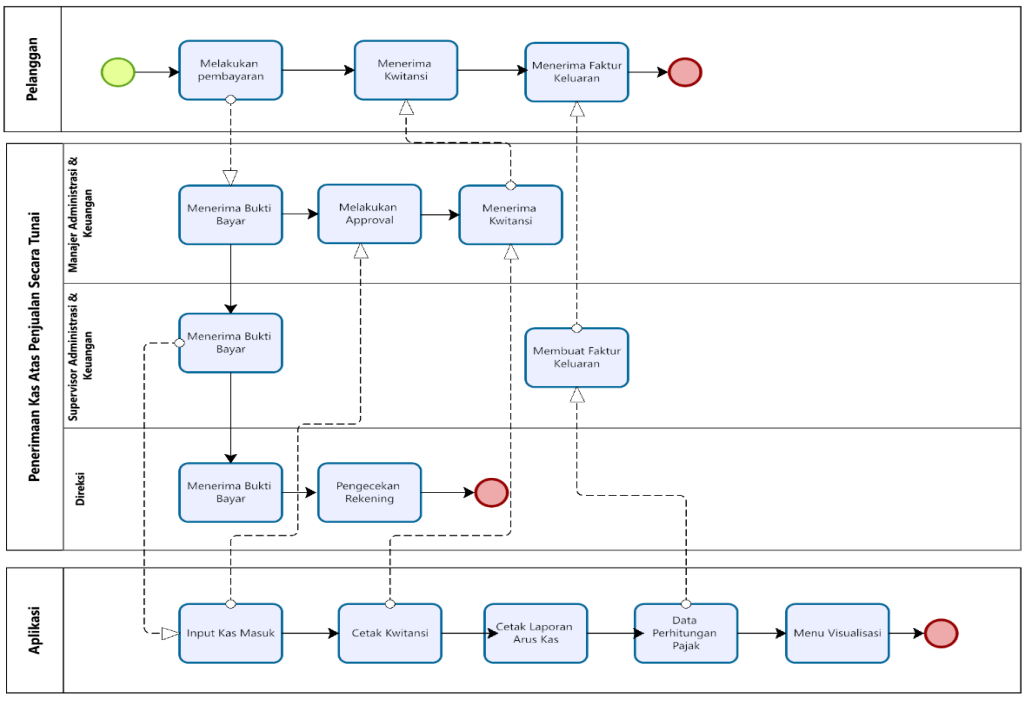

*Source: data processed by the author (2024)*

This process begins when a customer makes a payment and submits proof of payment to the administration & finance manager. Then the administration & finance manager sends the proof of payment to the administration & finance supervisor and the board of directors. Furthermore, the board of directors will check the account and the administration & finance supervisor will record incoming cash, create a cash flow report using excel, create a receipt using excel, calculate taxes, and create an output invoice. Then the administration & finance manager receives the receipt and submits it to the customer. The use of excel in this as-is business process takes quite a long time.

***To Be* BPMN Cash Receipts from Cash Sales**

The proposed business process, related to cash receipts from cash sales, there are five parties involved, namely: customers, administration & finance managers, administration & finance supervisors, and directors. As shown in Figure 2.

**Fig 2.** To-Be BPMN Cash Receipts from Cash Sales



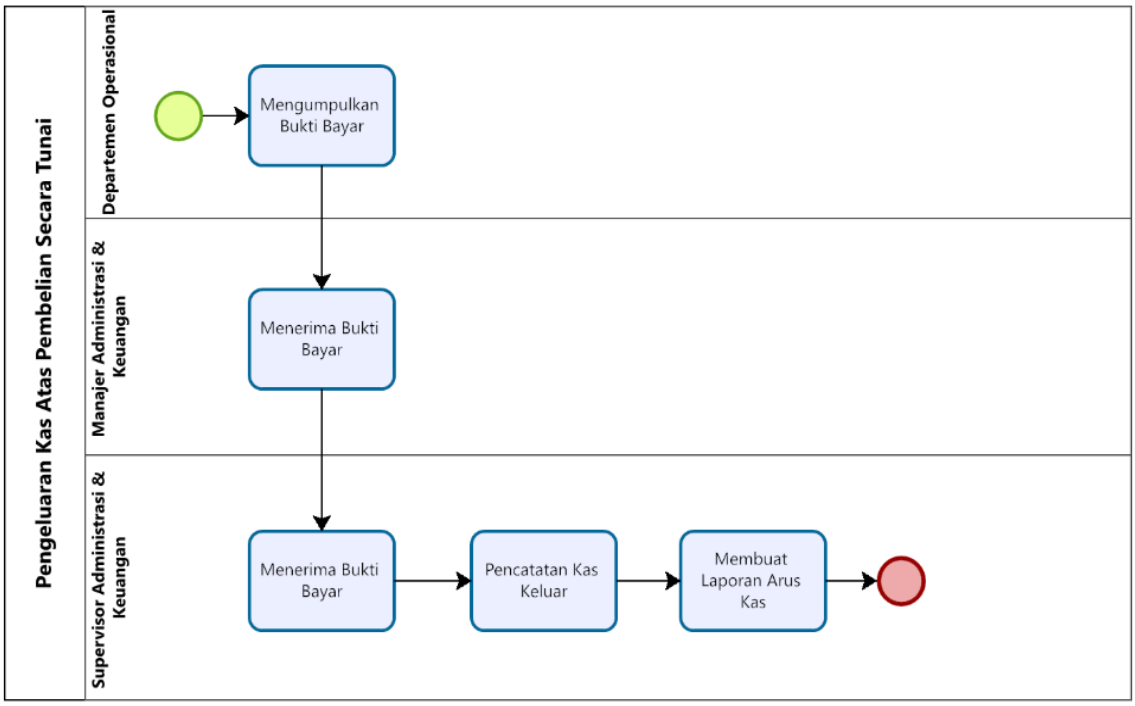

*Source: data processed by the author (2024)*

This process begins when the customer makes a payment and submits proof of payment to the administration & finance manager. Then the administration & finance manager sends the proof of payment to the administration & finance supervisor and the board of directors. Furthermore, the board of directors will check the account and the administration & finance supervisor will record incoming cash on the application, print receipts, print cash flow reports, calculate taxes, and create output invoices. Then the administration & finance manager receives the receipt and submits it to the customer. Then there is a visualization menu to present data with simple graphs so that it is easy for the board of directors to monitor financial conditions and projects. The existence of this application makes it easier for company employees to coordinate between the administration and finance departments with the company's board of directors and makes it easier to monitor the company's condition in real time.

***As-Is* BPMN Cash Disbursements for Cash Purchases**

The current business process, related to cash disbursement for cash purchases, there are three parties involved, namely: operational department, administration & finance manager, administration & finance supervisor. As shown in Figure 3.

**Fig 3.** As-Is BPMN Cash Disbursements for Cash Purchases



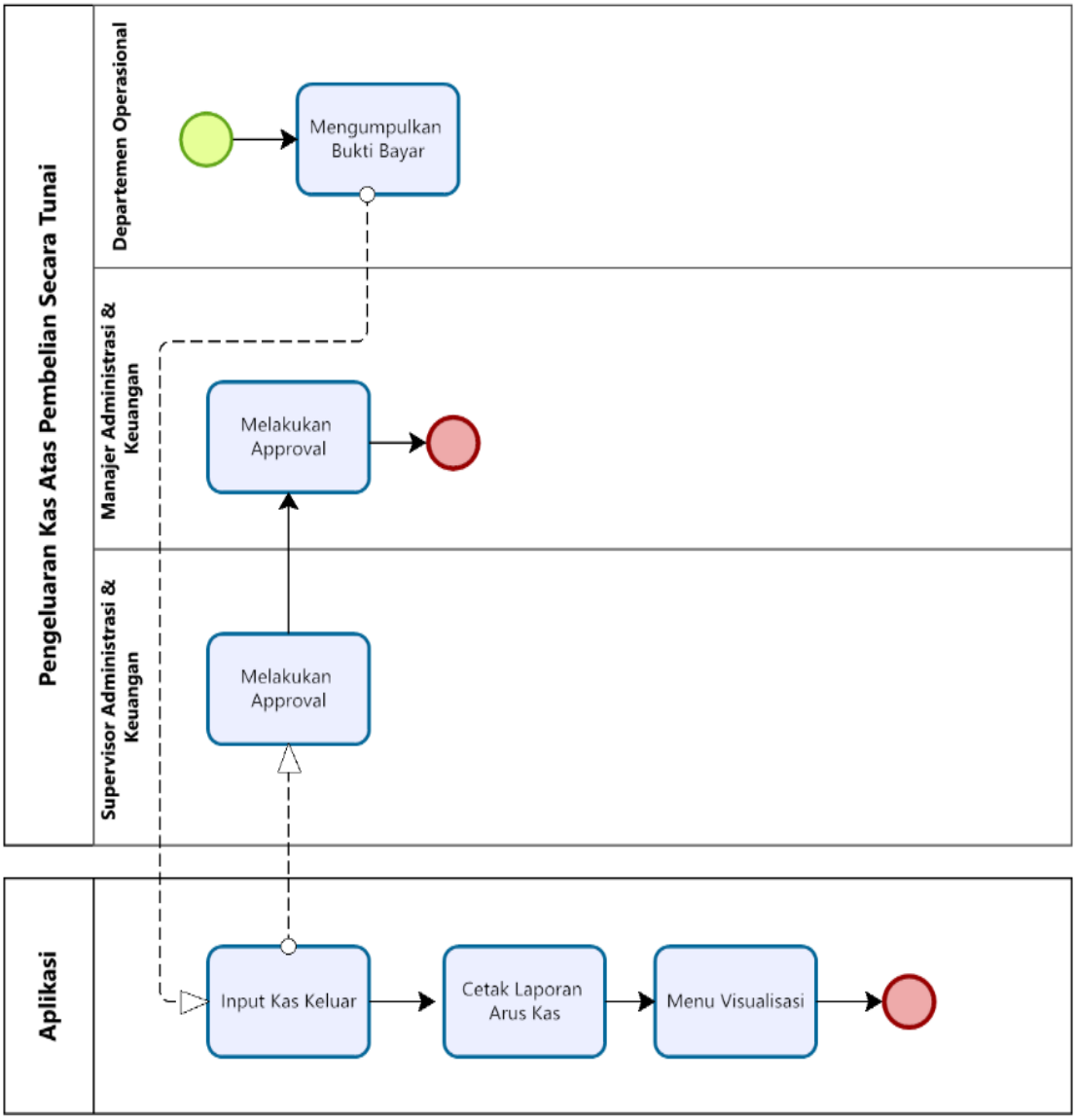

*Source: data processed by the author (2024)*

This process begins when cash is disbursed for cash purchases made by the operational department during the project. After the project is completed, the operational department collects proof of payment and then submits it to the administration & finance manager and sends the proof of payment to the administration & finance supervisor. Furthermore, the administration & finance supervisor records cash out and creates a cash flow report. The process of collecting proof of payment until receiving proof of payment takes a long time, depending on the duration of the project that is ongoing so that often proof of payment is received in a damaged condition so that it is difficult to read.

***To Be* BPMN Cash Disbursements for Cash Purchases**

The proposed business process, related to cash disbursement for cash purchases, there are four parties, namely: operational department, administration & finance manager, administration & finance supervisor and application. As depicted in Figure 4.

**Fig 4.** To-Be BPMN Cash Disbursements for Cash Purchases




*Source: data processed by the author (2024)*

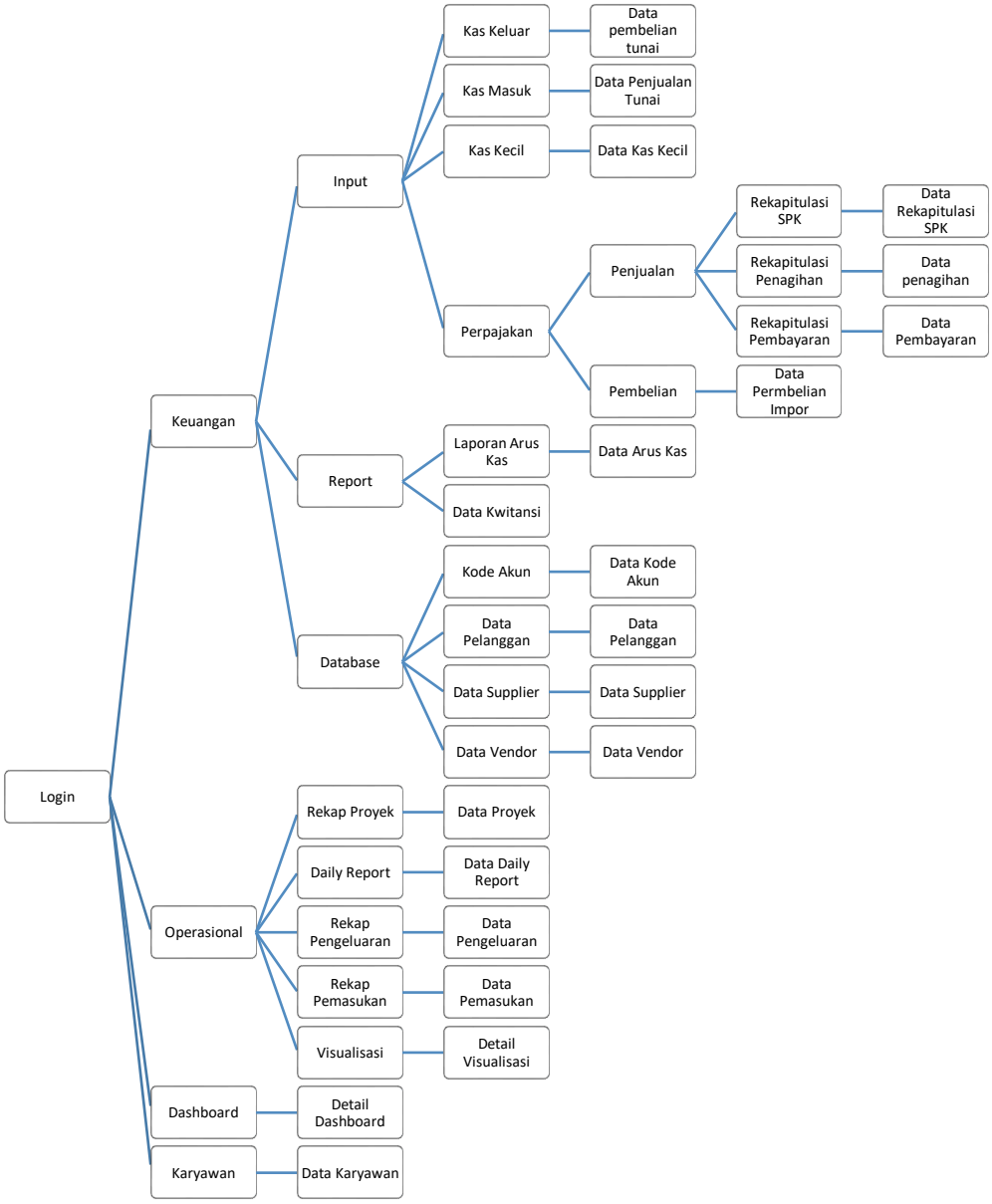
This process begins when there is a cash expenditure on cash purchases made by the operational department during the project. After the project is completed, the operational department collects proof of payment, then inputs it into the application and is approved by the administration & finance manager and administration & finance supervisor. Furthermore, cash flow printing and visualization can be done to facilitate project financial monitoring. The existence of this application allows the operational department to input data and take pictures of proof of payment during the project. So that this process can anticipate damaged or lost documents and facilitate financial monitoring between departments.

**2. *Design***

a. Data collection from each department. In the early stages of design, data is needed from each department.

b. Creating an Accounting Information System application design according to company needs. The following is a design of the application display using a conceptual framework.

**Fig 5.** Conceptual Framework for Application Design




*Source: data processed by the author (2024)*

The conceptual framework aims to design the application workflow. The initial display of the application is the login form. When the login is successful, it will display four main menus, namely: finance, operations, dashboard, and employees. Then in the finance menu there are three sub menus, namely: input, Report, database. In the input menu there are three detailed menus, namely: cash out for cash purchases by displaying related data, petty cash by displaying related data, and taxation which is divided into taxation when selling and buying. When the sale contains details of the SPK recapitulation, billing, and payment by displaying data according to the recapitulation details.

Furthermore, the Report sub menu displays a cash flow report with cash flow data and receipts with receipt data. The database sub menu displays four detailed menus, namely: account code contains account code data, customer data contains customer data, supplier data contains supplier data, and vendor data contains vendor data. Furthermore, the operational menu contains four sub menus, namely: project recap contains project data, daily report contains daily reports, expenditure recap contains project expenditure data,

income recap contains project income, and visualization contains visualization details. Next, the dashboard menu contains dashboard details and the employee menu contains the employee menu.

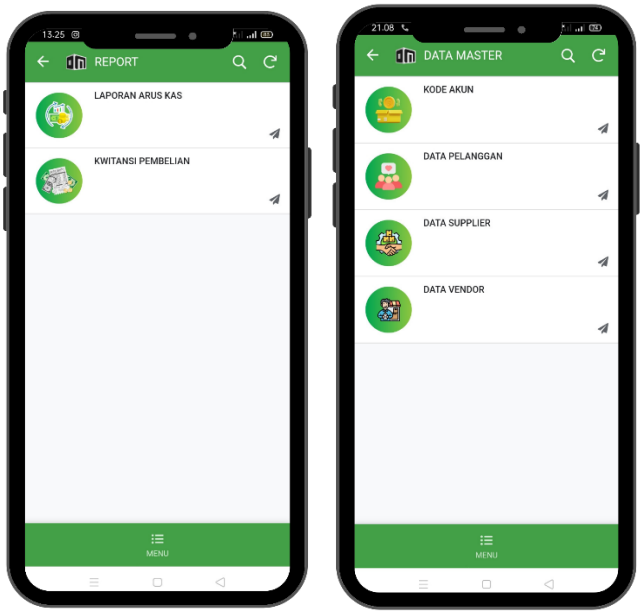
### 3. *Development*

At this stage, it is a research development process after completing the design stage. The following are the research steps, namely;

**Fig 6.** Main Menu Page, Finance Menu Page, and Input Page

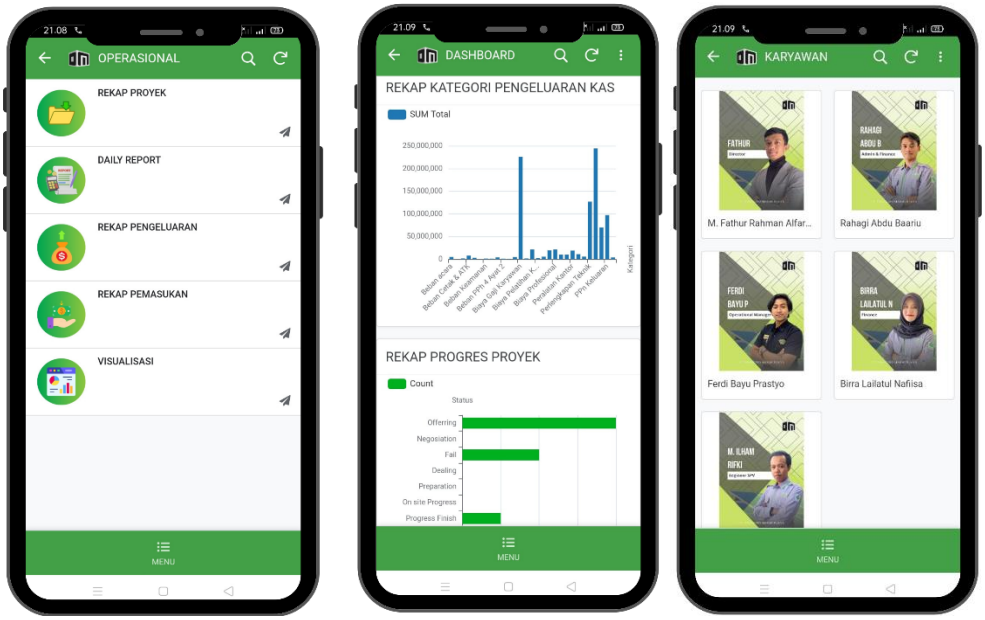

This main menu page will appear if the user is the Director and the Administration and Finance Department. The finance menu contains financial submenus, namely: input, report, and master data. Then the input submenu contains cash out for cash purchases, cash in for cash sales, petty cash, and taxation divided into sales (SPK recapitulation, payment recapitulation, and billing recapitulation) and purchases. Next is the report and master data page shown in Figure 7.

**Fig 7.** Report Page, and Master Data Page




The report page displays cash flow reports and purchase receipts. While the master data displays account codes, customer data, supplier data, and vendor data. Next are the operational, dashboard, and employee pages shown in Figure 8.

**Fig 8.** Operational Page, Dashboard Page, and Employee Page




The operational menu displays project recaps, daily reports, expenditure recaps, income recaps, and visualizations. While the dashboard menu displays cash inflow recaps, cash sales, cash needs recaps, cash expenditure category recaps, project progress recaps, cash flow reports. Next is the employee menu that displays data for each employee.

**4. *Implementation***

Next is the implementation stage. At this stage the application will go through a feasibility test by material experts and media experts. After the testing by the experts is done, the next implementation is carried out by the company's employees. Such as the stages below:

a. Validating the application by material and media experts regarding the feasibility of the application. The results of the application feasibility test by material experts produced an average value of the feasibility percentage of 98%, which means that the application is very feasible to implement. Next are the results of the application feasibility test by media experts with an average value of the feasibility percentage of 100%, which means that the application is very feasible to implement.

b. Implementing applications with company employees

The first implementation was carried out together with the Operational Department, namely the Operational Manager and Operational Supervisor. The implementation with the Operational Department resulted in suggestions for improvement, namely: more diverse visualization colors, changing the details of the receivables chart, providing a file upload menu in the agreement document upload section, adding a daily report menu, adding a list category in the form of employee consumption costs and security costs. Furthermore, the implementation with the Administration and Finance Department, namely: Administration and Finance Manager and Finance Supervisor. During the implementation with the Administration and Finance Manager, the following suggestions for improvement were produced: change the signature upload on the receipt form to a direct signature, change the receipt number to a unique number, delete the depositor's signature and change it to the recipient's signature, recapitulation of receivables payments is dated, the employee list is made detailed and added add, update, delete features. Then the next implementation was carried out together with the company Director online using Google Meet. When implemented with the company Director. The Director was quite satisfied with the application and asked to continue improving the application features.

**5. *Evaluation***

The application implementation stage will go through a feasibility test by material experts and media experts. After the test is carried out, the next implementation is carried out by company employees using the PIECES framework and measuring the level of user satisfaction. In calculating the satisfaction of the PIECES Framework, there are five indicators with the following percentages: Performance indicator 4.90%,

Information and data indicator 4.92%. While the Economic indicator gets a percentage of 4.95%. Then in the Control and security indicator the level of satisfaction shows a percentage of 4.94%. Next is the Efficiency indicator showing a percentage of 4.93%. The Service indicator shows a percentage of 4.92%. So based on this percentage, it can be concluded that the existence of an AIS using the PIECES Framework is very satisfying for users.

## IV. CONCLUSION

This research succeeded in designing an AIS application for smartphones according to PT OMAJA POWER's needs in managing company finances. Application design using AppSheet. The application can be customized according to startup needs, providing flexibility in financial data integration, and making the reporting process easier and more effective and transparent. Based on the results of this study, the system feasibility test has been carried out by material and media experts. The results of the application feasibility test by material experts produced an average value of the feasibility percentage of 98%, which means that the application is very feasible to implement.

Next are the results of the application feasibility test by media experts with an average value of the feasibility percentage of 100%, which means that the application is very feasible to implement. Then the percentage of user satisfaction based on the Performance Indicator reached 4.90%, on the Information and data indicator 4.92%. Meanwhile, the Economic indicator obtained a percentage of 4.95%. Then on the Control and security indicator, the level of satisfaction showed a percentage of 4.94%. Next is the Efficiency indicator showing a percentage of 4.93%. The Service indicator shows a percentage of 4.92%. So based on this percentage, it can be concluded that the existence of an AIS using the PIECES Framework is very satisfying for users

## V. ACKNOWLEDGMENTS

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