

## Development of accounting information system design for student organizations based on microsoft excel

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### Abstract

Student organizations in the Faculty of Economics and Business, Diponegoro University (FEB Undip), are required to prepare financial reports as part of their accountability for faculty-provided funds. The Non-Profit Organization Accounting Information System (SI AFIT), designed to assist in recording and preparing financial reports, currently faces limitations that hinder its effectiveness. This research aims to develop an improved version of SI AFIT using Microsoft Excel to address these challenges.

The study employed interviews with system users—comprising treasurers, auditors, and socializers from student organizations—alongside system observations and analysis of user guides to identify existing problems, their causes, and potential solutions. The findings revealed a critical issue: the lack of synchronization between the input and output modules in the previous system. To address this, researchers designed both logical and physical models of the system to guide the development process.

The improved system was tested by simulating 150 cash-in transactions, 500 cash-out transactions, and 54 memorial transaction accounts. Results demonstrated that the updated system effectively resolved prior issues, enabling better financial recording and reporting processes. This development highlights the potential of Excel-based accounting systems in supporting financial transparency and accountability within student organizations.

**Keywords:** Accounting information system, student organizations, financial reporting, excel-based systems

### Introduction

Student organizations (*ormawa*) at the Faculty of Economics and Business, Diponegoro University (FEB Undip) are required to prepare financial reports as part of their accountability reports, in accordance with the Standard Secretariat Guidelines for Student Organizations at FEB Undip. To support this, a financial recording system that can produce accurate and credible reports is essential. A good recording system not only assists in organizational decision-making but also facilitates the audit process by ensuring that all transactions are properly documented.

The Non-Profit Organization Accounting Information System (SI AFIT) was designed as a tool to support financial recording and reporting in student organizations. Nuriadini and Hadiprajitno (2022) [40] stated that an accounting information system can provide financial reports quickly, precisely, and accurately, thereby improving the reliability of information for users. Therefore, the presence of a system like SI AFIT is crucial in enhancing the efficiency and accountability of financial reporting within student organizations.

However, the implementation of SI AFIT version 1.6 at FEB Undip encountered several technical issues. One major problem was the system's failure to read transaction data entered into the input module, which caused the ending balance not to reflect the newly recorded transactions. If not immediately addressed, this issue could undermine the credibility of the resulting financial reports.

This study aims to identify the causes of errors in SI AFIT version 1.6 and to develop a better system. The development process begins with an analysis of formula errors within the system, followed by the design of a more efficient new system. The improved system is intended to resolve technical issues, enhance the user interface, and introduce new features that make data entry easier for users.

The results of this study are expected to improve the accuracy and accountability of financial reports within student organizations. With a more reliable system in place, these organizations are expected to manage funds more efficiently, increase transparency, and strengthen stakeholders' trust in the financial reports produced.

### Literature Review

#### Basic Concepts of Systems

Jogiyanto (2005) [24] stated that a system is a network of related procedures that come together to carry out an activity or accomplish a specific goal. According to Susanto (2013), a system is a collection or group of subparts/systems/components—either physical or non-physical—that are interconnected and work together to achieve a particular objective. Similarly, Sutarman (2009) [53] defined a system as a set of elements that interact within a unity to achieve a main goal. Turban (1998) [54] explained that a system is a collection of objects such as resources, procedures, or people that perform functions or objectives. Davis (1984) added that a system consists of parts that are interrelated and operate together to reach a goal or intention. Simanungkalit (2012) [23] classified systems into three categories: (1) Based on existence: natural systems and human-made systems, (2) Based on interaction: closed systems and open systems, (3) Based on form: conceptual/abstract systems and physical systems. Each system has three main functions: Input, Processing, and Output

#### Basic Concepts of Information Systems

O'Brien (2013) [41] defined an information system as an organized combination of people, hardware, software, and databases that collect (input), transform (process), and disseminate (output) information in an organizational

context. Cegielski (2014) <sup>[10]</sup> stated that an information system is a process involving the collection, processing, analysis, and distribution of information for specific purposes. Laudon and Laudon (2009) <sup>[29]</sup> technically defined an information system as a series of interconnected components that obtain, process, store, and distribute information to support decision-making and control in an organization.

According to Simanungkalit (2012) <sup>[23]</sup>, an information system consists of integrated components that form a single unit to achieve system objectives. These components include: (1) Input Block, (2) Model Block, (3) Output Block, (4) Technology Block, (5) Database Block, (6) Control Block. Romney and Steinbart (2021) <sup>[44]</sup> categorized information systems into three overlapping components that form an integrated information system (IS): (1) People, (2) Organization/Entities, (3) Technology.

### Accounting Information Systems

An accounting information system is a system that processes transaction data to produce information useful for planning, control, and business operations (Kasmir, 2020) <sup>[28]</sup>. Truner *et al.* (2017) explained that an information system comprises processes, procedures, and systems that collect accounting data from business processes. The accounting information system involves recording accounting data in proper records; processing the recorded data by classifying, summarizing, and consolidating it; and reporting the processed accounting data to both internal and external stakeholders. Romney and Steinbart (2021) <sup>[44]</sup> identified six components that enable an accounting information system to fulfill its business functions: (1) Users of the accounting information system, (2) Procedures and instructions for collecting, processing, and storing data, (3) Data, which includes transaction information and organizational activity data, (4) Software for processing data, (5) IT infrastructure, such as computers, internet networks, and both hardware and software used for data processing, (6) Internal controls and security procedures to protect the accounting information system. Susanto (2008) also grouped accounting information system components into: Hardware, Software, Brainware (Human Resources), Procedures, Database, and Communication Network.

### Information System Design

According to Suheri (2020) <sup>[51]</sup>, a good information system should be designed, built, and developed effectively through collaboration among various parties because information systems bring benefits to an entity's management systems. In this study, information system design is conducted to build a new accounting information system that can resolve previous problems and enhance the user experience.

Putra and Andriani (2019) explained that Unified Modeling Language (UML) is an industry-standard language used to define requirements, perform analysis and design, and depict architecture in object-oriented programming. UML helps represent the information system design to make it ready for users. In this research, UML is used to illustrate how the system will be developed, providing a reference for the researcher during the development process.

### 1. Logical System

Yasin and Sari (2020) stated that logical design is a method that uses object-oriented design with diagrams as tools to define the structure, relationships, and processes within the system. It focuses on how data is managed, processed, and

interacts to ensure that users' functional needs are effectively and efficiently met. Logical design serves as the main guide for the researcher in developing a system based on user requirements. In this study, two diagrams with relevant functions and interrelations are used: the use case diagram and the activity diagram.

### 2. Physical Design

Yasin and Sari (2020) defined physical design as the phase of translating the previously created logical design into the physical form of a system or application, including the user interface design and the development of the system's backend. In this research, the physical design phase includes several system development steps using Microsoft Excel.

### 3. Microsoft Excel

Noviar and Suciono (2013) <sup>[38]</sup> stated that Microsoft Excel is a widely used spreadsheet program for numerical data processing and is commonly used to assist in calculations, data analysis, data management, and chart creation. Samodra (2023) outlined Microsoft Excel's functions as follows: organizing data, calculating data, analyzing data, creating charts, creating reports

Microsoft Excel was chosen as the platform for developing the accounting information system due to several considerations relevant to the users—who are students. Microsoft Excel is not only a familiar application among students but is also included in the Microsoft Office package provided by Diponegoro University to its students.

### Research Methodology

This study employs a qualitative research approach using a case study method. According to Sugiyono (2013) <sup>[50]</sup>, qualitative research is based on post-positivist philosophy and is used in naturalistic research, where the researcher acts as the key instrument. Sampling in qualitative research is conducted purposively and through snowball techniques, while data collection involves triangulation, and the data analysis process is inductive or qualitative in nature. The case study method is chosen because it enables the researcher to gain an in-depth understanding of the existing Accounting Information System (AIS), allowing for the identification of weaknesses and issues and the development of a new system as a solution. This approach is considered relevant because each stakeholder has unique needs and characteristics. Through the case study approach, the researcher is able to gain deeper insights into user experiences, challenges faced, and user expectations for the new system.

The qualitative approach is chosen to understand the challenges of the accounting information system used by student organizations within the Faculty of Economics and Business (FEB) without requiring data quantification. Mulyana (2016) <sup>[36]</sup> states that qualitative research does not rely on statistical evidence, mathematical logic, or numerical principles. Instead, it aims to preserve the form and content of human behavior and analyze its quality rather than transforming it into quantitative data. Thus, the main focus is to analyze and describe phenomena or research objects through human activities, attitudes, and perceptions, both individually and in groups.

The research process includes several stages: identifying problems, analyzing the root causes, identifying the system, proposing solutions, designing the system, testing it, and preparing a user guide. The object of this study is the Non-Profit Organization Accounting Information System (SI

AFIT) version 1.6, which will be further developed as it currently faces several issues in fulfilling the financial recording needs of student organizations. The subjects of this research are student organizations at FEB Undip, which are non-profit entities managed by students and require accounting information systems to support financial management, including recording and reporting.

Participants in this study consist of three treasurers from FEB Undip student organizations, one auditor from the FEB Undip Student Audit Board, and one system socializer from the same body. The study uses qualitative data gathered from interviews with these participants, system observations, and relevant documentation. These sources provide insights into how the accounting information system functions within the student organizations. Data analysis follows the steps of data reduction, data display, and drawing conclusions.

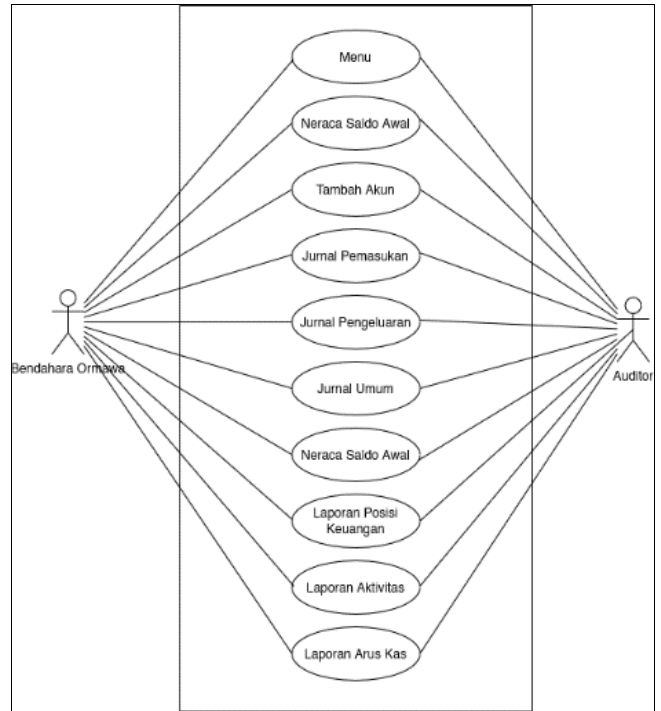
**Results and Discussion**

The study involved five participants: Participant 1, Participant 2, and Participant 3 served as treasurers of student organizations (Ormawa) who had used the previous version of the system; Participant 4 acted as a system socializer to student organizations using the same version; and Participant 5 was an auditor treasurer who also used the older system version. Based on the interviews with participants, system observations, and documentation review, seven main issues were identified in the previous version of the Accounting Information System: (1) lack of synchronization between input and output modules, (2) difficulty in adding new accounts, (3) formatting errors when uploaded to the cloud, (4) absence of input guidance in the system, (5) unprotected formulas that could be accidentally altered, (6) no warnings when a section was left incomplete by the user, and (7) user guide that was not easy to understand.

To address these problems, solutions were developed and implemented into the new version of the system. The system development process involved designing both the logical and physical components of the system.

**Logical Design**

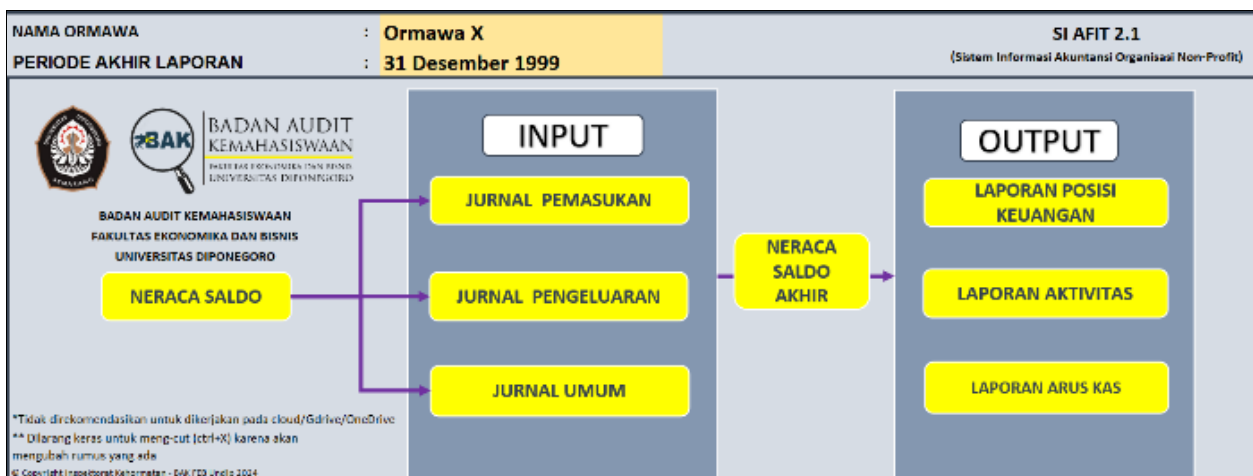
The logical design was created to visualize the functions and workflow of the system. In this study, the logical design was represented using an activity diagram that outlined system access for each actor. The system recognizes two actors—treasurers and auditors—who share the same level of access due to their mutual need for all available use cases in the system. Therefore, no access restrictions were applied between them. There are 10 use cases that both treasurers and auditors can access in the developed system.



**Physical Design**

**1. Menu Module**

This module serves as a quick access point to all system modules grouped by section. In the Menu, users can input their organization identity and the reporting period end date, which are marked in yellow for easy identification.



**2. Trial Balance Module**

Users can input the beginning balances from the previous period's trial balance. A red button is provided to access the "Add Account" module directly from this section. Users enter the initial balances into the yellow-highlighted columns, which correspond to each account from the previous period.







8. Statement of Financial Position Module

This module displays real accounts grouped into assets, liabilities, and net assets. Because Ormawa FEB Undip is a non-profit entity, the term "net assets" is used instead of

"equity" in accordance with relevant financial standards. Users view the automatically generated report without making manual changes, as the system adjusts flexibly to any added or modified accounts.

| Ormawa X  |        | STATUS           |        |      |
|---|--------|------------------|--------|------|
| LAPORAN POSISI KEUANGAN                         |        | 31 Desember 1999 |        |      |
| KODE DAN NAMA AKUN                              | POS    | DEBIT            | KREDIT |      |
| <b>1000 ASET</b>                                |        |                  |        |      |
| 1101 Kas  | DEBIT  | Rp               | -      | -    |
| 1102 Deposito Berjangka                         | DEBIT  | Rp               | -      | -    |
| 1201 Piutang Dana Kemahasiswaan                 | DEBIT  | Rp               | -      | -    |
| 1202 Piutang dari Pihak Ketiga                  | DEBIT  | Rp               | -      | -    |
| 1203 Pinjaman Kas ke Anggota                    | DEBIT  | Rp               | -      | -    |
| 1204 Pinjaman Modal Dana Usaha                  | DEBIT  | Rp               | -      | -    |
| 1205 Investasi Jangka Pendek                    | DEBIT  | Rp               | -      | -    |
| 1206 Piutang Dividen                            | DEBIT  | Rp               | -      | -    |
| 1301 Persediaan                                 | DEBIT  | Rp               | -      | -    |
| 1401 Perlengkapan Sekretariat                   | DEBIT  | Rp               | -      | -    |
| 1501 Peralatan Sekretariat                      | DEBIT  | Rp               | -      | -    |
| 1502 Akumulasi Penyusutan Peralatan Sekretariat | KREDIT |                  |        | Rp - |
| <b>2000 LIABILITAS</b>                          |        |                  |        |      |
| 2101 Utang kepada Anggota Kepanitiaan           | KREDIT |                  |        | Rp - |
| 2201 Utang Konsumsi Kepanitiaan                 | KREDIT |                  |        | Rp - |
| 2202 Utang Operasional                          | KREDIT |                  |        | Rp - |
| 2301 Pendapatan Diterima Dimuka                 | KREDIT |                  |        | Rp - |
| 2401 Provisi                                    | KREDIT |                  |        | Rp - |
| 2501 Utang Lain-Lain                            | KREDIT |                  |        | Rp - |
| <b>3000 ASET NETO</b>                           |        |                  |        |      |
| 3101 Aset Neto Tidak Terikat                    | KREDIT |                  |        | Rp - |
| 3102 Aset Neto Terikat Sementara                | KREDIT |                  |        | Rp - |
| 3103 Aset Neto Terikat Permanen                 | KREDIT |                  |        | Rp - |
| <b>JUMLAH</b>                                   |        | Rp               | -      | Rp - |

9. Activity Report Module

Instead of an income statement, the system provides an Activity Report, reflecting revenues and expenses over a certain period. In line with nonprofit financial reporting

standards, activities are categorized as unrestricted, temporarily restricted, or permanently restricted. The report groups account accordingly and is auto-generated by the system.

| Ormawa X   |        |               |                   |                  |                  |   |
|--|--------|---------------|-------------------|------------------|------------------|---|
| LAPORAN AKTIVITAS  |        |               |                   |                  |                  |   |
| KODE DAN NAMA AKUN   | POS    | TIDAK TERIKAT | TERIKAT SEMENTARA | TERIKAT PERMANEN | 31 Desember 1999 |   |
| <b>4000 PENDAPATAN</b>   |        |               |                   |                  |                  |   |
| 4100 Aset Neto Berakhir Pembatasannya - Tidak Terikat                | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4101 Dana Turunan Periode sebelumnya - Tidak Terikat                 | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4201 Pendapatan Iuran Kas Bulanan - Tidak Terikat                    | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4202 Pendapatan Donasi Kas Bulanan - Tidak Terikat                   | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4203 Pendapatan Dana Kemahasiswaan - Terikat Sementara               | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4204 Pendapatan Dana Usaha - Tidak Terikat                           | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4205 Pendapatan Donasi Kepanitiaan - Terikat Sementara               | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4206 Pendapatan Donasi Dibatasi oleh Pemberi Dana - Terikat Permanen | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4207 Pendapatan Iuran Panitia - Tidak Terikat                        | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4208 Pendapatan Sponsorship - Terikat Sementara                      | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4209 Pendapatan Jasa Giro Bank - Tidak Terikat                       | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4210 Pendapatan Profit and Loss Sharing - Tidak Terikat              | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4211 Penjualan - Tidak Terikat                                       | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4301 Pendapatan Lain-Lain - Tidak Terikat                            | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4401 Pendapatan Dividen - Tidak Terikat                              | KREDIT | Rp            | -                 | Rp               | -                | - |
| 4402 Gain/Loss Penjualan Investasi                                   | KREDIT | Rp            | -                 | Rp               | -                | - |
| <b>JUMLAH PENDAPATAN</b>   |        |               |                   |                  |                  |   |
| <b>5000 HPP DAN BEBAN PROGRAM KERJA</b>                              |        | Rp            | -                 | Rp               | -                | - |
| 5100 Aset Neto Terbatas dari Pembatasan                              | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5200 Harga Pokok Penjualan   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5301 Beban Program Kerja A   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5302 Beban Program Kerja B   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5303 Beban Program Kerja C   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5304 Beban Program Kerja D   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5305 Beban Program Kerja E   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5306 Beban Program Kerja F   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5307 Beban Program Kerja G   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5308 Beban Program Kerja H   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5309 Beban Program Kerja I   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 5310 Beban Program Kerja J   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| <b>JUMLAH BEBAN PROGRAM KERJA</b>                                    |        |               |                   |                  |                  |   |
| <b>6000 BEBAN KESIKILAJARAN DAN INTERNAL</b>                         |        | Rp            | -                 | Rp               | -                | - |
| 6101 Beban Fotokopi dan Print  | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 6102 Beban ATK   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 6103 Beban Penyusutan Peralatan Sekretariat                          | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 6104 Beban Dana Turunan  | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 6105 Beban Profit and Loss Sharing                                   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 6106 Beban cetak MMT, Pamflet, Banner                                | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 6107 Beban Konsumsi  | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 6108 Beban Transportasi  | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 6109 Beban Administrasi Bank   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 6200 Beban lain-lain   | DEBIT  | Rp            | -                 | Rp               | -                | - |
| 6300 Beban Pajak   | DEBIT  | Rp            | -                 | Rp               | -                | - |

### 10. Cash Flow Statement Module

This module identifies all cash inflows and outflows. Since Ormawa FEB Undip does not engage in investing or financing activities, and because categorizing cash flows would complicate transaction entry, the system presents a

simplified cash flow report without activity classification. It calculates net cash increase or decrease over a period and the ending cash balance. Users cannot alter the report, as it is auto-adjusted to account changes.

| Ormawa X  |           |            |
|---|-----------|------------|
| LAPORAN ARUS KAS                                      |           |            |
| 31 Desember 1999                                      |           |            |
| KODE DAN NAMA AKUN                                    | Kas Masuk | Kas Keluar |
| <b>ARUS KAS MASUK DAN KELUAR</b>                      |           |            |
| <b>1000 ASET</b>                                      |           |            |
| 1101 Kas  |           |            |
| 1102 Deposito Berjangka                               |           |            |
| 1201 Piutang Dana Kemahasiswaan                       |           |            |
| 1202 Piutang dari Pihak Ketiga                        |           |            |
| 1203 Pinjaman Kas ke Anggota                          |           |            |
| 1204 Pinjaman Modal Dana Usaha                        |           |            |
| 1205 Investasi Jangka Pendek                          |           |            |
| 1206 Piutang Dividen                                  |           |            |
| 1301 Persediaan                                       |           |            |
| 1401 Perlengkapan Sekretariat                         |           |            |
| 1501 Peralatan Sekretariat                            |           |            |
| 1502 Akumulasi Penyusutan Peralatan Sekretariat       |           |            |
|   |           |            |
|   |           |            |
|   |           |            |
| <b>2000 LIABILITAS</b>                                |           |            |
| 2101 Utang kepada Anggota Kepanitiaan                 |           |            |
| 2201 Utang Konsumsi Kepanitiaan                       |           |            |
| 2202 Utang Operasional                                |           |            |
| 2301 Pendapatan Diterima Dimuka                       |           |            |
| 2401 Provisi  |           |            |
| 2501 Utang Lain-Lain                                  |           |            |
|   |           |            |
|   |           |            |
|   |           |            |
| <b>3000 ASET NETO</b>                                 |           |            |
| 3101 Aset Neto Tidak Terikat                          |           |            |
| 3102 Aset Neto Terikat Sementara                      |           |            |
| 3103 Aset Neto Terikat Permanen                       |           |            |
| <b>4000 PENDAPATAN</b>                                |           |            |
| 4100 Aset Neto Berakhir Pembatasannya - Tidak Terikat |           |            |

### System Testing

The system was tested to ensure that it performs its intended functions in financial reporting. Testing was conducted through simulated transaction entries to evaluate the user experience. Functional testing was first performed on the navigation and conditional formatting features, both of which were confirmed to work properly. The system was then tested by preparing financial reports using both the developed system and Microsoft Excel. The simulation included entering beginning balances, 150 incoming cash transactions, 500 outgoing cash transactions, and 54 non-cash transactions. The system successfully recorded and processed all transactions, generating accurate reports. This was evidenced by the absence of discrepancies between the reports produced by the system and those manually prepared using Excel.

### Conclusion

Based on interviews with participants, system observations, and documentation, it was found that the previous version of the system required improvements. The researcher developed enhancements to address the previously identified issues by designing both logical and physical aspects of the system. As a result, a new system was produced with updated interfaces and features to support accounting record-keeping within student organizations at FEB Undip.

However, during the process, several challenges arose but were successfully resolved. These included: (1) the absence

of historical data regarding the system's development, which made it impossible to conduct interviews with the previous developers, (2) the limited availability of research related to the development of accounting information systems specifically for student organizations, resulting in a lack of references, and (3) the unavailability of guidelines or references for creating or developing systems using Microsoft Excel, requiring the researcher to rely on improvisation and trial-and-error.

The researcher also offers several recommendations for future studies. Subsequent researchers are encouraged to consider the continuously evolving nature of student organizations at FEB Undip, which may require periodic system adjustments and updates. Moreover, future research could broaden its scope by involving more student organizations outside FEB Undip to gain deeper insights into a wider variety of accounting needs.

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