

## **DESIGN AND DEVELOPMENT of FINANCIAL FLOW MOSQUE INFORMATION SYSTEM (SIKEMAS) USING CLIENT SERVER-BASED OBJECT ORIENTED**

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**Abstract:** DKM has objectives such as overseeing the security and orderliness of the mosque as a whole, and managing the financial flows that exist within the mosque. Financial flow is a means of cash flow in a period related to the responsibility of company or agency management in managing cash both from operational, funding and investment activities. In managing current financial flows, DKM Masjid Al Ashlah Kopo Bandung still uses conventional manual recording methods. Such a system raises problems, including documentation of donors, calculations of zakat to be paid by congregations that are not in accordance with procedures. This makes the management and recording of cash flows less effective and efficient and also makes the management of the Bendahara DKM limited. SiKeMas is a system that has the goal of providing convenience in facilitating various DKM needs in managing financial flows, as well as informing DKM about the management of financial flow data. The research method used is the Object Oriented approach with various tools the design uses the UML. The system development is carried out using the prototype method. The results of this research are an application based on Desktop Client-Server with JAVA NetBeans IDE 7 and MySQL DBMS.

**Keywords:** DKM; Financial Flow; SiKeMas;

**Abstrak:** DKM memiliki tujuan antara lain mengawasi keamanan dan ketertiban masjid secara keseluruhan, serta mengelola aliran keuangan yang ada di dalam masjid. Arus keuangan merupakan sarana arus kas dalam suatu periode yang berkaitan dengan tanggung jawab manajemen perusahaan atau instansi dalam mengelola kas baik yang berasal dari kegiatan operasional, pendanaan maupun investasi. Dalam mengelola aliran keuangan saat ini, DKM Masjid Al Ashlah Kopo Bandung masih menggunakan metode pencatatan manual yang konvensional. Sistem seperti itu menimbulkan masalah, antara lain dokumentasi donatur, perhitungan zakat yang harus dibayarkan jamaah tidak sesuai prosedur. Hal ini membuat pengelolaan dan pencatatan arus kas menjadi kurang efektif dan efisien serta membuat pengelolaan DKM Bendahara menjadi terbatas. SiKeMas merupakan sistem yang bertujuan untuk memberikan kemudahan dalam memfasilitasi berbagai kebutuhan DKM dalam mengelola aliran keuangan, serta menginformasikan kepada DKM tentang pengelolaan data aliran keuangan. Metode penelitian yang digunakan adalah pendekatan Object Oriented dengan berbagai tools perancangan menggunakan UML. Pengembangan sistem dilakukan dengan menggunakan metode prototype. Hasil dari penelitian ini adalah sebuah aplikasi berbasis Desktop Client-Server dengan JAVA NetBeans IDE 7 dan MySQL DBMS.

**Kata kunci:** Arus Keuangan; DKM; SiKeMas;

## INTRODUCTION

Information technology is currently penetrating into the sphere of religious society. The high number of Indonesian people who are Muslim makes this information technology needed in helping the scope of places of worship, for example, mosques, these places of worship are often found in various regions. This makes the mosque a living part within the scope of society in Indonesia. The mosque has a function, namely a place to carry out Muslim worship, its function sometimes turns into a place for social activities. As time goes by, social activities in the mosque produce associations of Muslims who have the same vision and mission to advance the mosque. In mosque social activities there is usually an organization commonly called DKM (Mosque Prosperity Council). The administrative management of the mosque management, activities for the prosperity of the mosque, and the physical maintenance of the mosque are carried out by the DKM [1]. With its enormous role in community development, then DKM has the potential to increase the welfare of the mosque. [2].

DKM has objectives such as overseeing the security and order of the mosque as a whole, and managing financial flows within the mosque [3]. Financial records for all agencies, including mosques in order to provide accountability for financial management to the public [4]. Financial flow or cash flow is a means of cash flow in and out in a period related to the responsibility of company or agency management in managing cash both from operational, funding and investment activities [5]. Financial flows can be interpreted as a facility contained in the scope of the budget and includes changes in the present value position re-

sulting from operating, investing and treasury activities which provide indicators of cash inflows and outflows of entities [6].

DKM Al Ishlah Mosque is a mosque prosperity council organization which is located at Jalan Raya Kopo No 188 Bandung City. This DKM carries out various roles and functions in the prosperity of the mosque, starting from managing the orderliness of the mosque to managing financial flows. At this time the financial flow of DKM Al Ishlah Mosque is very active because of the large number of donors who give charity every month such as paying zakat, infaq, and qurban. In addition, this mosque is undergoing renovations starting from 2019 and is expected to be completed in 2024.

The design and development of the information system in this study takes several references to previous research. The application built will help minimize calculation errors and improve the calculation process and improve transaction input income or expenditure [7]. In other studies, it has been revealed that a web-based financial information system functions to enter transaction data, general journals, ledgers, trial balance, financial position, profit and loss and changes in capital [8]. The use of information systems in the financial management of mosque financial flows can be used as data processing, minimizing delays, and the availability of a database that integrates all related data, so that it can exercise control [9]. Design and build computerized systems are needed in every organization to make it easier to produce existing information, thereby minimizing errors, as well as providing accurate and fast information in providing the information needed [10]. It can be said that there is a need for a

financial accounting information system that produces financial information that is processed from activity data per period and data on the distribution of muzzaki funds so as to produce financial reports [11].

Based on previous research that has been discussed previously, it can be identified that the system designed and built can fulfill the sustainability of the mosque's financial flow process where the use of the information system is intended to assist any activities related to the process of financial flows. The goal of the results of the design and development of the proposed information system is to be able to produce information according to user needs. Therefore, the system designed and built is in accordance with what is needed by the object of research in carrying out activities related to the process of financial flows.

## METHOD

### Research Method

The research method is a step to obtain data for specific purposes and uses [12]. The research method used in this research is the descriptive research method. The descriptive method is a method that collects all the data and then analyzed and compared based on the facts ongoing for further conclusions to be drawn on the study [8], [9]. The purpose of this method is to provide a description, explanation, and validation of the phenomenon being research [10].

### System Approach and Development Method

The system approach and development method describes the steps of the research process to solve research problems from the initial plan to the achieve-

ment of system research and development goals. A system approach method is an approach to how to use tools and rules to complete the stages of developing an information system. The systems approach method used in this study is an object-oriented approach. The tools used in this research are use case diagrams, use case scenarios, and class diagrams. While the system development method used in this study is the prototype model. The prototype model is a software development method that uses a prototype to give an overview of the system that the development team will build for system users (clients), the purpose of using this prototype is to overcome mismatched software requirements between developers and system users (clients) [11].

### User Satisfaction Measurement Methods

The method used to measure the level of user acceptance of SiKeMas uses a survey method. Survey methods are methods for recruiting participants, collecting data, and utilizing various instrumentation methods [13], [14].

The measurement was carried out by distributing questionnaires to 15 DKM users with a total of 13 questions. The questionnaire was made using the Likert scale ordinal measurement model.

Table 1. Level Value

Value	Description
1	Very Poor
2	Poor
3	Acceptable
4	Good
5	Very Good

### Zakat Calculation Method

The rules for calculating zakat used in this study refer to Minister of Religion

Regulation Number 31 of 2019 concerning Shari'a and Procedures for Calculation of Zakat Mal and Zakat Fitrah and Utilization of Zakat for Productive Businesses [15].

### 1. Rules for Calculation of Zakat Fitrah

The calculation of the amount paid for zakat fitrah is as follows:

2.5 x the price of rice per kilo [16].  
(1)

Example :

Price of rice: 14,000 then zakat fitrah paid  $2.5 \times 14,000 = 35,000$

### 2. Rules for Calculating Income Zakat

The calculation of the amount of zakat income paid is as follows:

zakat income = (Total Income per month + Other income (Bonus, THR, others)-Expenditures) x 2.5 % [16].  
(2)

Example :

The income per month = Rp. 5,000,000

Other income = Rp. 1,000,000

Expenses = Rp. 2,000,000

Zakat income =  $(5,000,000 + 1,000,000 - 2,000,000) \times 2.5 \% = 100,000$

### 3. Trade Zakat Calculation Rules

The calculation of the amount of trade zakat payments is as follows:

Trade zakat = (Capital + Profits 1 year + Receivables - Debt Losses) x 2.5% [16]. (3)

Example :

Capital 1 year = Rp. 10,000,000,-

Profit 1 year = Rp. 5,000,000,-

Receivables = Rp. 1,500,000,-

Maturity Debt = Rp. 500,000,-

Loss = IDR 0,-

Trade zakat =  $(10,000,000 + 5,000,000 + 1,000,000 + 1,500,000 - 500,000) \times 2.5 \% = 175,000$

So the trade zakat paid is Rp. 175.000,-

## RESULT AND DISCUSSION

The results of this study consist of the design of SiKeMas and the application of the SiKeMas program.

### System Overview Built

The proposed system will be built with a Client Server desktop-based application, using the JAVA NetBeans IDE 7 programming with MySql DBMS. While the network topology used is the bus topology which connects the treasurer and the Ziswaf Empowerment Coordinator who has the main task of developing the role of DKM to carry out management including planning, implementing and supervising zakat, infaq shodaqoh and waqf. Consideration of choosing a bus topology for the reason that this topology has a single cable along the network and is suitable for use in several small-scale companies, because this type of topology has controllable characteristics [17].

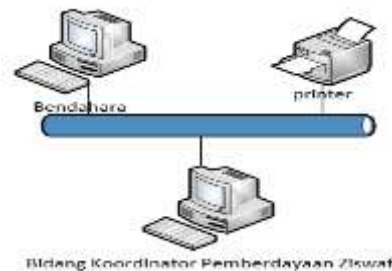


Image 1. SiKeMas Architecture.

### Results of Measuring Respondents' Satisfaction with SiKeMas

From distributing the questionnaires, the following results were obtained :

Table 2. Recapitulation of User Responses

No	Indicator	Respondent					Total Value
		1	2	3	4	5	
1	Is the color on the application display comfortable to use?	0	0	0	0	15	75
2	Is the size of the text on the display obvious?	0	0	0	0	15	75
3	Is the information provided on each feature of the application easy to understand?	0	0	1	2	12	71
4	Does every feature in the application not experience errors/bugs?	0	0	0	0	15	75
5	Is the data input process in the application relatively fast?	0	0	0	2	13	73
6	Is the language provided in the application easy to understand?	0	0	0	1	14	74
7	Does the application produce the correct zakat calculations?	0	0	0	1	14	74
8	Has the application produced a correct recap of infaq and sadaqoh?	0	0	0	0	15	75
9	Is the zakat management process as expected?	0	0	0	0	15	75
10	Is the budget data management process as expected?	0	0	0	0	15	75
11	Is the form of the report as expected?	0	0	0	0	15	75
12	Is the application easy to learn and use?	0	0	0	2	13	73
13	Is the application useful for officers?	0	0	0	3	12	72
<b>Total</b>							<b>962</b>

From the results of table 2, it will be interpreted using the interval criteria in table 3.

Table 3. Index Criteria

No	Index	Description
1	0% - 19,99%	Very Dissatisfied
2	20% - 39,99%	Dissatisfied
3	40% - 59,99%	Neither Dissatisfied
4	60% - 79,99%	Satisfied
5	80% - 100%	Very Satisfied

While the interpretation of the calculation score is as follows [18] :

$$Y = \text{Highest Likert score} \times \text{number of respondents} \times \text{number of questions} \quad (4)$$

$$Y = 5 \times 15 \times 13 = 975$$

$$X = \text{Lowest Likert score} \times \text{number of respondents} \times \text{number of questions} \quad (5)$$

$$X = 1 \times 15 \times 13 = 195$$

$$\begin{aligned} \text{Index \%} &= (\text{Total Score} / Y) \times 100\% \quad (6) \\ &= (962/975) \times 100 \% \\ &= 99 \% \end{aligned}$$

From the results of measuring user satisfaction, a percentage of 99% was obtained stating that SiKemas can assist DKM officers in managing zakat. Infaq and shadaqoh well.

## User Interface SiKeMas

### Main Menu Page

The main page is displayed after the login process. On this main page, only a few menus can be active or can be accessed according to user access rights.



Image 5. Main Menu

### Officer Data Page

The officer data page is used to input user data that can access the system. The user name and access rights must be clear according to the needs of the user itself.

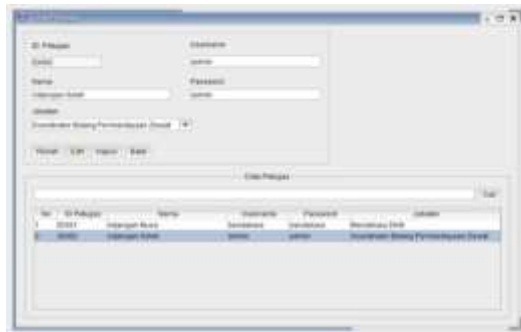


Image 6. Officer Data Page

### Donor Data Page

This donor data page is used to input donor data registered at DKM Al Ishlah Mosque. When inputting donor data, all fields must be filled in clearly.

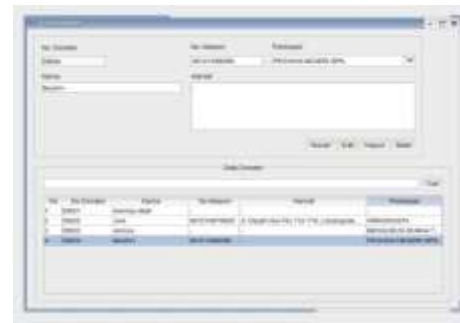


Image 7. Donor Data Page

### Mustahik Data Page

This page is used to input mustahik data registered at the DKM Al Ishlah Mosque. When inputting mustahik data, all fields must be filled in clearly.



Image 8. Mustahik Data Page

### Muzakki Data Page

This page is used to input muzakki data registered at the Al Ishlah Mosque's DKM. When inputting donor data, all fields must be filled in clearly.

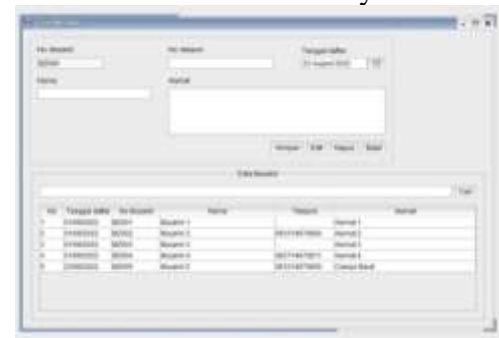


Image 9. Muzakki Data Page







Image 15. Zakat Distribution Page

After the data is saved, a list of zakat recipients will appear which can be printed.



Image 16. Zakat Recipients List Page

The coordinator will give zakat to mustahik and when finished, the treasurer will update the zakat distribution data and the money received from zakat will decrease.

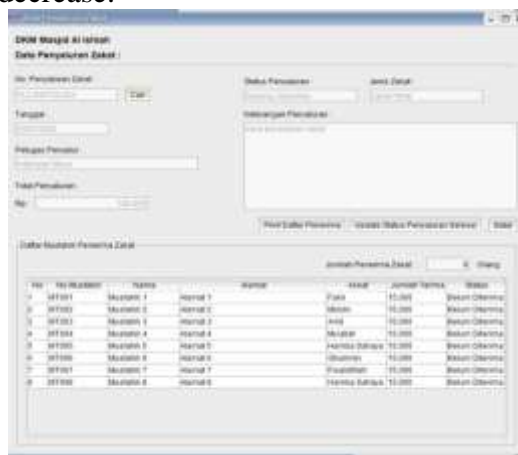


Image 17. Zakat Data Update Page

## CONCLUSION

SiKeMas can easily help facilitate the management of DKM financial flows, especially the Bendahara DKM. This built system can simplify and speed up various management of financial flows in DKM. The head of the DKM can receive various final information reports regarding the management of financial flows, including the management of zakat receipts reports, it is hoped that it will be easy to inform the congregation of the mosque. SiKeMas can assist in making reports, making it easier to find donor data and muzakki and mustahik data easily. The Ziswaf Field Coordinator can easily and accurately manage receipts of infaq and almsgiving, receive zakat and distribute zakat to mustahik. SiKeMas can produce effective calculations of each management process including preparing reports on the final results of managing DKM financial flows.

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