Applied Business and Administration Journal (ABAJ)
Vol. 3, no. 1, Jan 2023, pp.1-12
ISSN: 2828-0040

DESIGN OF INVENTORY MONITORING INFORMATION SYSTEM OF OFFICE EQUIPMENT AND SUPPLIES AT BAZNAS CITY OF BANDUNG BASED ON MACRO EXCEL (VBA)

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Article Info

Article history:

Received 12 22, 2023

Accepted 01 25, 2024

Keywords:

Information Systems

Inventory

Monitoring

ABSTRACT (10pt)

BAZNAS, the National Amil Zakat Agency, is the official institution overseeing zakat management at the national level. In Bandung City, BAZNAS runs programs such as Healthy Bandung, Smart Bandung, Taqwa Bandung, and Caring Bandung, contributing to the city's prosperity. To streamline office operations, related institutions must conduct inventory activities for office equipment and supplies. However, BAZNAS Bandung City currently employs a manual inventory management system, involving paper-based recording, recapitulation, and individual input into Excel sheets, leading to inefficiency, security concerns, and data loss risks. Recognizing the need for improvement, a new information system has been designed using Microsoft Excel, Macros, and Visual Basic Applications. The design includes Data Flow Diagrams and Entity Relationship Data to enhance the management and monitoring of inventory data, ensuring data integrity and structured inventory activities. Project evaluations, following the End User Computing Satisfaction (EUCS) principle, show that the system meets institutional needs and is user-friendly. Users are provided with a manual book during testing to enhance system understanding. While the trial results are positive, constructive feedback suggests the need for further feature enhancement to ensure smoother system operation and greater overall benefits. This information system aims to speed up and simplify inventory data management, bringing efficiency to BAZNAS Bandung City's operations.

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INTRODUCTION

BAZNAS Bandung City is an institution that is authorized to manage zakat throughout Indonesia and is located at Jalan Siswa Pejuang 45 No. 10, South Ring, Lengkong District, Bandung City, West Java. In accordance with Law no. 23 of 2011, the task of managing zakat includes planning, implementation, coordination in collection, distribution and utilization. In

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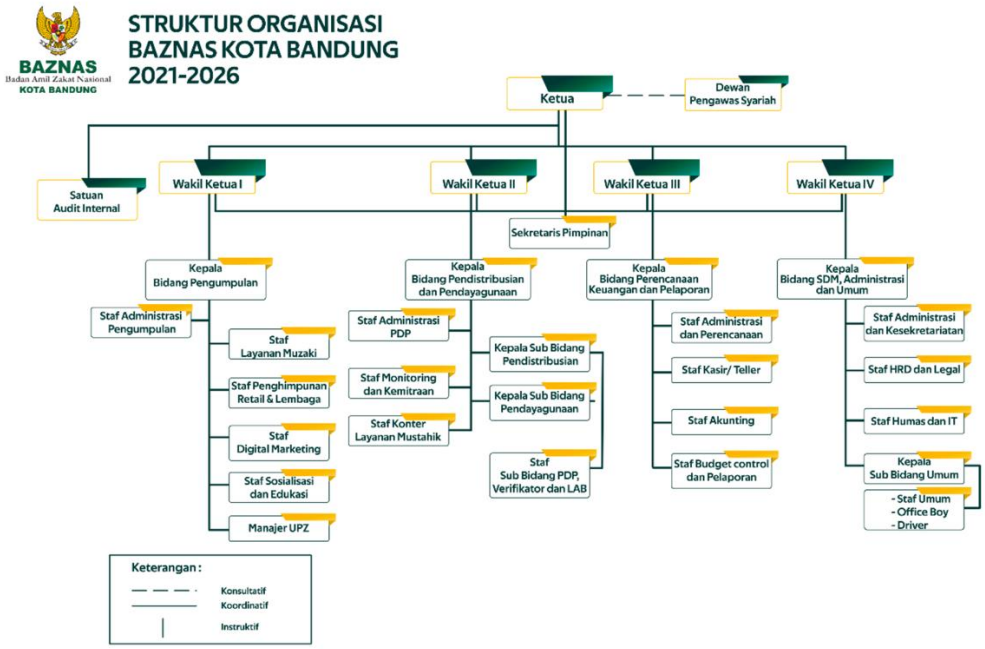
carrying out its responsibilities, BAZNAS Bandung City is divided into four fields, including Field IV which is often called SAU Field 1 (HR, Administration and General). Further details about this division can be found through the organizational structure attached below.



Gambar 1. 1 Stuktur Organisasi BAZNAS Kota Bandung
Sumber : https://baznaskotabandung.org/

The organizational structure of BAZNAS Bandung City combines line and functional structures. The main leader, namely the chairman, leads with the support of the SAI committee for decision input. The division of labor is based on management functions, including collection, distribution, utilization, financial planning, as well as human resources, administration and general affairs. Advantages include high productivity, sound decisions, and employee cooperation, although there are disadvantages such as confusion in tasks, slow decision making, and lack of flexibility.

According to Mathis & Jackson (2006), HRM has three roles: administrative (focusing on tasks and recording), operational and employee advocacy (part of employee champion), and strategy (human capital and contribution to the company). The HR or SAU, Administration and General Division at BAZNAS Bandung City is responsible for managing human resources, administration and inventory of office equipment. Observations of work practices show that inventory management is still not optimal, especially in recording the collection of office equipment which is done manually. This can make it difficult to find the data if it is needed in the future.

Manual recording in office inventory results in ineffective management and uncontrolled collection of goods. This makes it difficult for companies to calculate the number of goods that have gone out, making the procurement process increasingly irregular. This irregularity can be

seen from the purchase of ATK with varying amounts every month. For example, BAZNAS Bandung City carried out 12 stationery purchase transactions amounting to Rp. 5,555,100 in March 2022, while in April 2022 there were only 2 transactions with expenditure of Rp. 461,600. This significant difference makes inventory management increasingly unstructured, not in accordance with the budget provided. Total ATK purchases in 2022 will reach IDR. 28,636,910, exceeding the budget by around Rp. 24,000,000 per year.

Another problem is recording equipment inventory which is only written on sheets of paper, then typed into an Excel table every month. This separate data requires extra work when creating monthly reports because you have to combine and recalculate data from all equipment in each room in each certain period. Additionally, this form of data increases the risk of data loss, requires manual inspection of each room, slows monitoring, and hinders evaluation of damaged equipment and repurchase of new equipment.

To overcome this problem, the author designed the application as a monitoring information system in the form of a dashboard using Microsoft Excel VBA macros. This choice was taken because the operation of the visualization feature is simple and clear, making it easier for Bandung City BAZNAS employees or Amil to use.

LITERATURE REVIEW

2.1 Inventory

Rusi et al (2019) explain that inventory of goods is the activity of recording data related to goods or assets in a company, involving recording procurement, placement, mutation, transfer and maintenance. Harsono et al (2004:163) state that inventory involves activities such as registering, recording in an inventory list, compiling and managing all state and regional assets, as well as providing regular and orderly reports on the use of goods in accordance with provisions to facilitate the presentation of data on state assets or local government.

The purpose of the inventory, according to Dzaki et al (2022), includes facilitating monitoring of goods usage activities, assessing responsibility for maintenance, and saving the foundation's goods. Saputra et al (2022) added that the purpose of inventory is not only to provide knowledge about institutional assets, but also involves safeguarding, securing, saving goods, as well as supporting planning, procurement, equipment and needs to achieve institutional effectiveness and efficiency. Nirmala & Afriansyah (2020) stated that the objectives of inventorying infrastructure include, among other things, ensuring that equipment is not frequently lost, providing written evidence regarding the management of goods, making it easier to check goods, monitor and delete goods.

Hariyanti (2014) suggests several ways to carry out inventory control, including: 1) Unannounced checks by SAI as an internal audit unit to close gaps in transactions that are not in accordance with procedures, 2) Routine checks every three months by the Head of Department to observe the suitability of cash amounts with related records, with corrective action if errors or discrepancies are found, 3) Accountability for assets managed as a precaution against using finances without correct procedures, 4) Accountability of the Household Department for goods received and distributed to avoid receiving and distributing goods

without records , 5) Involvement of all departments in the procurement of inventory items to ensure good cooperation, 6) Cash holding is carried out centrally by one person to minimize deviations in cash amounts.

Characteristics or types of inventory management according to Pornawan (2022) include: 1) Stock review: Scheduled inventory inspection with reorders to meet the minimum level required, 2) ABC analysis: Grouping inventory based on the value and significance of product costs, 3) Economic order quantity (EOQ): Formula for the ideal amount of inventory to purchase, 4) Safety stock: Inventory exceeds expected demand, 5) Perpetual inventory management: Calculation of inventory of goods recorded manually in a spreadsheet or using pen and paper.

2.2 Office Equipment and Supplies

Office equipment, as explained by Santoso (1998:143) and Sri Endang et al (2010:43), are tools used to complete office work efficiently. Adding to this, office equipment, according to Abubakar (2000:173), is a tool or device that supports office management more quickly, accurately and efficiently. The benefits of office equipment and supplies include supporting and complementing office work, providing convenience and increasing the speed of office activities, and producing maximum, good and satisfying results. The characteristics of office equipment, according to Rohim (2018), involve depreciation costs, can be sold, have a useful life of more than a year, run using electricity, are more expensive, and have the aim of supporting business processes. Examples of office equipment include desktop computers, machines, tables, chairs, printers, filing cabinets, and laptops.

Meanwhile, the characteristics of office equipment are that it has no depreciation costs, cannot be sold again, has a useful life of less than a year, is used without electricity, is cheaper, and has the aim of complementing the business. Examples of office supplies include stationery, stopmaps, paper clips, envelopes, stamps, and printer ink.

2.3 Microsoft Excel VBA

VBA or Visual Basic for Applications is a function of Visual Basic that is used in software. In Microsoft, VBA is a tool that can be used to develop programs with functions to provide control over Excel. Herawati & Herlina (2021) state that macros are a series of program functions and commands that can be found in the Visual Basic menu. In Microsoft Excel, this feature allows recording user activity through tools and record new macros, which function to record activity and convert it into many program lines.

Aditya Wulandari & Puspa Sari (2021) explain that the Macro feature in Microsoft Excel has a number of advantages. First, using Macros can save time and speed up work completion. Second, using Macros can also save energy, because the work process runs automatically. Lastly, consistent use of Macros can reduce the error rate in work, because work is based on commands written in the program code, so the risk of errors that may occur is relatively low, unless there is an error in the program code commands.

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2.4 Monitoring and Evaluation (Monev)

Monitoring, according to Sutabri (2012), is a step to assess the extent to which activities are in accordance with plans, identify problems, assess work and management patterns, and measure progress. Kriyan et al (2018) define monitoring as a schematic assessment carried out continuously on the progress of a job. Evaluation is carried out after monitoring results are obtained, and is a comparison between one data and another. The two, monitoring and evaluation, are interrelated and cannot be separated (Widiarto, 2012).

The objectives of monitoring, according to Mardiani (2013), include reviewing activities according to plan, identifying problems, assessing work and management patterns, understanding the relationship between activities and objectives, and adapting activities to environmental changes. Monitoring principles, as outlined by Manurian et al (2019), include referring to goals, oriented towards success criteria (Key Performance Indicators/KPI), the principle of benefits as a reference, and implemented objectively.

The Monitoring and Evaluation System (Monev) has subsystem indicators, including input, process, output, results and impact (Suhato, 2010). Monitoring has advantages, such as saving time, energy efficiency, and reducing error rates in work (Aditya Wulandari & Puspa Sari, 2021). Monitoring also allows adjustments to activities without deviating from goals, helps identify problems, and provides an assessment of work and management patterns (Mardiani, 2013).

METHODS

Project design is carried out through the following stages:

1. Design of Monitoring Information Systems

   The design of the system for monitoring inventory data of office equipment and supplies aims to make it easier to record and monitor inventory data of office equipment and supplies in BAZNAS Bandung City.

2. Designing Data Flow Diagrams (DFD)

   Data Flow Diagram is a diagrammatic depiction showing the flow of data from an information system. With this, it will be seen how the design of an information system is, because the function of the DFD itself is to describe the system and convey the modeling design.

3. Designing an Entity Relationship Diagram (ERD)

   ERD is defined as a diagram that provides an overview of data that has a relationship or connection with the database to be designed.

Work procedures are created to clarify the work flow so that it is in accordance with what was planned. The following is an explanation of the work procedure.

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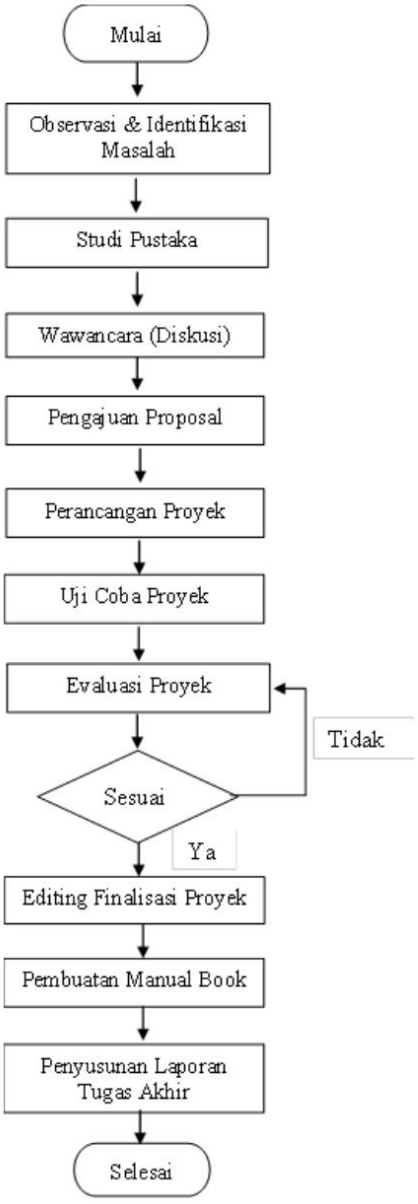

Gambar 3.1 Flowchart Work

RESULTS AND DISCUSSIONS

This project was created using the Microsoft Excel application, because from the start of planning this application was expected to be very helpful because its operation could be said to be easy to understand. The results of the activities will be explained in relation to the results of project testing and the final results of the project.

After the project creation is complete, the next step is to carry out trials to check the conformity of the project with BAZNAS' needs. Testing is not only to measure suitability, but also to obtain

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the assessments and evaluations needed to improve the project. The trial process was carried out on May 16 2023, by introducing the project through a demo and trying out its use by the Head of Human Resources, Administration and General Sub-Bid.

The information system that has been designed by the author is then tested using Alpha and Beta testing. Alpha testing, as explained by Wahyudi et al (2016: 74), focuses on the functional requirements of the system and is carried out using the black box method. This trial includes testing system features by inputting data into the form provided. The purpose of Alpha testing is to assess whether the information system is functioning smoothly. Details of Alpha testing can be seen in table 4.1.

Table 4.1 Alpha Testing

Komponen	**Aksi**	**Hasil yang Diharapkan**	**Hasil Akhir**
Login	Proses login dapat terbuka ketika sudah mencantumkan *username* serta *password* yang benar, lalu menekan tombol 'Login'.	Dapat membuka sistem yang otomatis dialihkan pada halaman beranda. Jika password atau username salah maka tidak berkenan masuk ke dalam sistem dan terdapat peringatan mengenai password atau username yang salah tersebut.	Sesuai
Halaman Beranda	Menekan tombol Menu	Dapat membuka halaman menu	Sesuai
	Menekan tombol *Monitoring*	Dapat membuka halaman *dashboard monitoring*	Sesuai
	Menekan tombol *Open sheet*	Dapat membuka halaman *open sheet*	Sesuai
	Menekan tombol Simpan	Dapat menyimpan data yang terdapat pada sistem	Sesuai
	Menekan tombol Keluar	Dapat mengeluarkan halaman beranda	Sesuai
Halaman Menu	Menekan tombol form barang baik	Dapat membuka halaman form barang baik	Sesuai
	Menekan tombol form barang rusak	Dapat membuka halaman form barang rusak	Sesuai
	Menekan tombol form data pegawai	Dapat membuka halaman form data pegawai	Sesuai
	Menekan tombol form peminjaman	Dapat membuka halaman form peminjaman	Sesuai
	Menekan tombol form pengembalian	Dapat membuka halaman form pengembalian	Sesuai

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	Menekan tombol form pengambilan ATK	Dapat membuka halaman form pengambilan ATK	Sesuai
	Menekan tombol *Add*	Dapat menambahkan informasi yang baru terisi pada form	Sesuai
	Menekan tombol *Update*	Dapat mempebarui data yang terdapat pada tabel data form	Sesuai
	Menekan tombol *delete*	Dapat menghapus data yang sudah terdapat pada tabel data	Sesuai
	Menekan tombol *reset*	Dapat mengosongkan kembali form yang sudah terisis	Sesuai
	Menekan tombol *search*	Dapat mencari data yang dibutuhkan pada tabel data	Sesuai
	Menekan tombol *print*	Dapat membuka halaman *print view* dan mencetak laporan	Sesuai
	Menekan dan mengisi seluruh kolom pada setiap form	Dapat mengisi seluruh form dan informasi tersimpan dengan baik	Sesuai
Halaman *Dashboard Monitoring*	Menambah atau Menekan dan mengisi tabel rekapitulasi	Dapat menambah atau mengurangi informasi dan formula rumus yang terdapat pada tabel rekapitulasi	Sesuai
	Menekan tombol untuk keluar dari halaman	Dapat keluar dari halaman *dashboard monitoring*	Sesuai
Halaman *open sheet*	Dapat menekan seluruh tombol *sheet* data	Dapat membuka seluruh halaman *sheet* data yang tersedia	Sesuai
	Menekan tombol keluar untuk kembali pada halaman beranda	Dapat kembali pada pada halaman beranda	Sesuai

Through this software, the author succeeded in designing an information system that provides significant benefits for BAZNAS Bandung City, including:

1) Neat and Secure Inventory Management: This information system allows inventory data to be stored in a structured and secure manner. This data is arranged in integrated sheets, preventing data loss that might occur if it is scattered.

2) Available Formulas and Functionality: The information system used is equipped with special forms and functional buttons such as adding, updating, deleting and searching data. This will really help officers manage data more efficiently.
3) Direct Connection with Monitoring Dashboard: All data is connected directly to the monitoring dashboard, allowing officers to carry out monitoring easily. This eliminates the need to perform manual monitoring and analysis on each data sheet, saving significant time.

Although this information system provides advantages, keep in mind that regular maintenance is required considering some of the disadvantages it has.

1) Risk of Data Damage and Loss: This system is susceptible to the risk of data damage and loss due to virus attacks. Therefore, routine maintenance of the hardware and regular backup of information system files on external storage media is necessary.
2) Data Management Limitations: This information system has limitations in managing very large data simultaneously. Users need to pay attention to storage capacity so as not to cause errors in the data storage process.Click or tap here to enter text.

CONCLUSION

The results of the Office Equipment and Equipment Monitoring Information System Design project at BAZNAS Bandung City Based on Microsoft Excel VBA provide several relevant conclusions.

The initial condition of the goods inventory database at BAZNAS Bandung City was not well organized. Data is spread across various worksheets, causing disorganization and manual management of papers with less efficient tables. The monitoring process takes time because officers have to look for data manually on different sheets for recapitulation.

This information system was specifically designed according to the needs of BAZNAS Bandung City, using Microsoft Excel VBA Macro. This software provides an attractive and functional appearance with menu features, inventory data processing forms, monitoring dashboards, and automation of calculations through data sheets.

Evaluation by SAU at BAZNAS Bandung City on May 16 2023 provided input for the author for improvements. However, the HR, Administration and General sectors feel that this system suits their needs. They appreciate the ease of use and attractive visual features. The new data storage format makes it easier to process inventory data, with all data stored in one unified system.

In terms of maintenance, the author recommends carrying out routine maintenance on the hardware to avoid viruses. BAZNAS Bandung City can also consider developing the system by adding more features and dashboards. Regular and scheduled inventory data collection is recommended so that data can be input properly and does not pile up, ensuring that inventory reviews and activities are carried out in a structured manner.

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