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Inventory Application Using Reorder Point Method (Study On One Of The Knitted Textile Companies)

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Abstract

The research findings indicate that the design of the Android-based Smart Tourism application at Dangiang Cibeger Nature Tourism, Garut Regency, aims to enhance the quality of tourism services by utilizing digital technology. In the contemporary digital age, mobile applications serve as a valuable means of disseminating information, promoting tourism, and facilitating the efficient and modern management of tourism locations.

The findings of this study demonstrate that the deployment of the Smart Tourism application offers substantial benefits for both travelers and tourism management. This program provides tourists with access to information, aids in travel planning, and enhances the overall tourism experience. Simultaneously, for tourism administrators, the application serves as a potent promotional tool, enhancing tourist attendance and providing data for assessment and future tourism development.

This research illustrates that the Smart Tourism application can serve as an innovative solution for technology-driven tourism management and development. With effective execution, this application can enhance the allure of Dangiang Cibeger, draw more tourists, and promote the sustainability of tourism in the Garut Regency. Consequently, the evolution and maintenance of this application must continue to align with technological advancements and the evolving needs of travelers.

Keywords : *Inventory, Information System, Reorder Point*

INTRODUCTION

Inventory serves as a location for the reception, storage, and distribution of supplies, resources, or assorted commodities. (Setyadi et al., 2024) Warehousing is essential to an organization. Inventory denotes a facility utilized for the storage of products during the storage process, which constitutes an operation or function of retaining objects. The objective of inventory management is to coordinate production with constrained inventories or to establish raw material strategies to fulfill product orders. (Heaviside et al., 2020)

Warehousing is crucial for organizations, as it can influence the company's revenue. An inadequate inventory system can result in problems such as outdated products, misplaced things, and others, ultimately diminishing the company's revenue. An efficient service system defines quality inventory. (Lukiman & Richard, 2020) A service system is deemed adequate if it provides security assurances, ensures the accessibility of information regarding incoming and outgoing commodities, maintains a systematic organization of stored objects, and adheres to documentation standards.

Warehouse managers may optimize storage space while overseeing and managing all products to ensure efficient operations. This includes preparing the warehouse, providing operational oversight, maintaining equipment, inspecting incoming and outgoing commodities, selecting items, packaging, and shipping for utilization. Warehouse operations require an efficient storage system to facilitate seamless manufacturing processes and enhance operational efficiency, hence expediting activities within the warehouse.

Inventory is a key component of the company's logistics framework, used for storing items such as raw materials, spare parts, and finished goods. The warehouse must also function as a source of status, condition, and location information for the stored components. Contemporary warehouse management systems have integrated information technology referred to as Warehouse Management Systems (WMS). A Warehouse Management System governs the operations involved in the receipt and despatch of products. The complete procedure is executed by a specialized system, generally aided by computers, pallets, forklifts, and high racks. WMS is essential for optimizing warehouse efficiency in areas such as storage, receiving, and shipping by established plans.

There are two categories of methodologies for defining a system: one that prioritizes procedures and another that concentrates on parts or components. The procedure-centric approach characterizes a system as a network of interrelated procedures that collaborate to execute an activity or attain a specific objective. Conversely, the systems approach, which emphasizes aspects or components, characterizes a system as a collection of interacting parts aimed at achieving a specific objective.

Understanding Sub Systems

A system often consists of multiple subsystems. Components of a larger system are referred to as subsystems. A system may comprise components of the system or subsystems. A computer system may comprise subsystems, including hardware and software. (Puspita & Reswanda, 2020)

Definition of System

Each system comprises a structure and processes. The system's structure consists of its constituent components. Simultaneously, the system's operations elucidate the functionality of each component in collaboration to fulfill the system's aims. From the aforementioned description, a system is fundamentally a collection of interconnected components that operate collaboratively to attain a particular objective. (Efrilianda et al., 2018)

A system serves a distinct function. Some characterize the purpose of a system as attaining a goal, but others describe it as fulfilling objectives. Goals often encompass a broader scope, whereas objectives possess a more limited focus.

System Characteristics

The fundamental model of a system comprises input, processing, and output. This is a fundamental idea of a system, acknowledging that a system can include several inputs and outputs concurrently. Moreover, a system possesses distinct features and attributes that delineate its identity as a system. (Nwanya & Isi, 2018)

The attributes under consideration include several key aspects of a system. First, system components comprise various interacting elements that collaborate to function as a cohesive unit. System boundaries delineate the limits that separate the system from other systems or its external environment. The external system environment refers to any entity outside the system's scope that influences its operation. Additionally, a system connector, or interface,

serves as a medium that links the system with other subsystems.

System input represents the energy introduced into the system, which may manifest as maintenance input or signal input. The system output consists of the processed energy categorized into beneficial results. Furthermore, a system can possess a process that transforms input into output. Finally, a system has specific and deterministic goals; without a target, its operations become futile. A system is deemed successful if it achieves the designated objectives.

Basic Concepts of Information

Information is a processed form of data that has intrinsic value and may be categorized into three distinct types. Strategic information is employed for long-term decision-making, whereas tactical knowledge is essential for medium-term judgments. Conversely, technical information is crucial for daily operational requirements. Information is data that has been categorized, processed, or analyzed for application in decision-making processes. An information processing system converts data into valuable information, transforming it from a nonfunctional state into a helpful format for the recipient. (Nobil et al., 2020)

Information Environment

Information is a fundamental resource in contemporary management. Numerous strategic decisions rely on precise information. Information management encompasses all operations related to acquiring, optimizing, and disposing of information that is no longer beneficial promptly. Information is employed not only for internal purposes within an organization but also by external entities beyond the organization. (Jodlbauer & Dehmer, 2020)

Functions and Information Cycles

The purpose of information is to augment knowledge or diminish the uncertainty of the information recipient. The information supplied to users may originate from data input into the processing system. In complex decision-making circumstances, knowledge can only enhance certainty or narrow the range of possibilities. The information accessible to decision-makers identifies potential risk factors across various income levels.

Data is an unrefined form that lacks significant meaning on its own, necessitating additional processing. (Nasution et al., 2022) Data is transformed into information through a designated processing paradigm. When a model processes data, it transforms the data into information, which the recipient uses to make decisions and perform activities, thereby generating new data. The new data is acquired as input, reprocessed by a model, and perpetuates a cycle.

Information Quality

The caliber of information is contingent upon three criteria: it must be precise, current, and pertinent. "Accurate" signifies that the information must be devoid of errors and not deceptive. "Timely" signifies that the information provided to the user must be prompt; obsolete information loses its usefulness over time. "Relevant" signifies that the knowledge

must be advantageous to the user.(Mardiati & Saputra, 2023)

Information Value

The value of information is assessed by two elements: its benefits and the costs incurred in acquiring it. Information is deemed valuable when its advantages surpass the expenses associated with its acquisition. Moreover, most information cannot be accurately evaluated in monetary terms, yet its functional worth can be approximated. The assessment of information value is generally linked to cost-effectiveness or cost-benefit analysis. (Nobil et al., 2020)

Basic Concepts of Information Systems

An information system is the implementation of a system within an organization to fulfill the informational requirements of all management tiers. Information is essential for management in decision-making. This information is derived from the information system. An information system is a system within an organization that fulfills the requirements of everyday transaction processing supports operational operations, facilitates managerial actions and strategic initiatives, and generates pertinent reports for designated external parties. (Puspita & Reswanda, 2020)

Components and Types of Information Systems

An information system comprises components known as building blocks, which include the input block, model block, output block, technology block, database block, and control block.

1. Input Block, denotes the data entering the information system.
2. Model Block, comprises a synthesis of procedures, logic, and mathematical models that process the input data.
3. Output Block, delivers high-quality information and documentation beneficial for all management tiers and system users.
4. Technology Block, functions as the toolkit within the information system. Technology is employed to obtain input, implement models, store and retrieve data, produce and convey outputs, and provide comprehensive system management.
5. Database Block, denotes a compilation of interconnected data.
6. Control Block, encompasses the design and implementation of diverse controls to mitigate potential dangers to the system, ensuring that any problems that arise can be promptly rectified.

Efficient warehouse management decreases operational expenses. In contrast to manual record-keeping, a systematic method utilizing information technology significantly facilitates employees' tasks in the warehouse. The system to be developed will utilize the PHP programming language, as it is a user-friendly, web-based language that leverages a MySQL database.

METHOD

This study employs a quantitative research design. Quantitative research is a methodology for evaluating specific hypotheses by analyzing the relationships among variables.

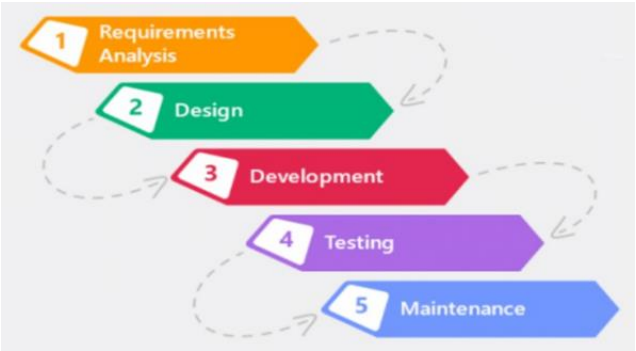

Figure 1. SDLC Design Framework

The data collection method refers to the process of gathering data related to the study's variables. An efficient strategy for this process is the utilization of the waterfall method, a well-established model within the Software Development Life Cycle (SDLC). This approach is especially favored in the creation of information systems and software because of its systematic characteristics.

The waterfall model employs a methodical and linear approach, ensuring the completion of each step before proceeding to the next one. The phases of the waterfall model encompass requirements gathering, design, implementation, verification, and maintenance. Each phase is essential for producing a resilient and operational system, as meticulous attention to detail in the initial stages mitigates problems in subsequent phases.

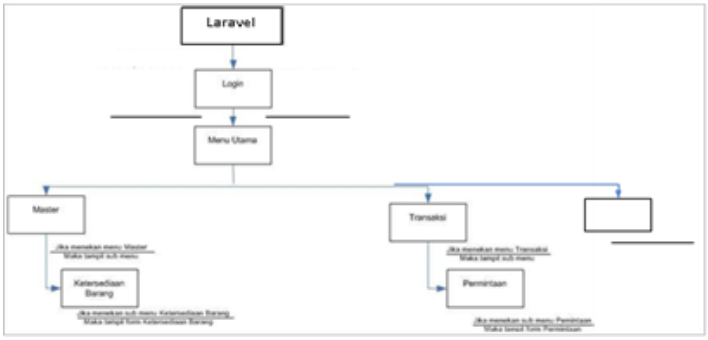

Figure 2. General Inventory Model

RESULTS AND DISCUSSION

SWOT Analysis

SWOT analysis represents Strengths, Weaknesses, Opportunities, and Threats. This strategy functions as a tool for strategizing and evaluating prospective results for a business. Entrepreneurs, startups, initiatives, or particular organizations commonly employ SWOT analysis. Several key factors must be considered when conducting a SWOT analysis. The components of the SWOT analysis are as follows:

Table 1. KPI Analysis

Strength	Weakness	Opportunities	Threats
This factor pertains to the advantages or strengths held by a company or organization performing the SWOT analysis. These strengths provide a foundation for comparing one's business with others. Strengths may encompass accomplishments in attaining particular objectives and the distinctiveness of the organization.	Every enterprise or initiative inherently possesses vulnerabilities that must be meticulously recognized. These deficiencies can hinder the advancement of an enterprise if no further measures are taken to address them. Consequently, assessing vulnerabilities is essential for understanding the deficiencies within the organization and identifying solutions to rectify the problems.	The opportunity component within an organization is utilized to uncover external prospects that can be exploited for product development and market competition. The organization must adeptly seize favorable prospects to bolster its expansion and competitiveness.	Threats denote any prospective hazards that may adversely affect the company. By anticipating these hazards, the organization can develop strategies to mitigate them and reduce their associated risks.

Inventory Application Functional

1. Login: The initial interface of the inventory information system application for the company is the login page. Users must provide their username and password on this page to gain access to the program.
2. Main Menu: This is the program interface that displays upon the triumphant entry of the user's username and password. The primary menu comprises product information, transactions, reports, and administration. It functions as an access point to further menus.
3. Product Availability: This program interface presents the names of products along with their respective available amounts. This submenu offers details regarding product availability.
4. Requests: This program interface includes the product names, their amounts, and the objectives of the requests. This submenu facilitates the submission of requests for required items.
5. Incoming Goods: This program interface encompasses the product names and their respective quantities. This submenu serves to input acquired commodities into the inventory information system.
6. Outgoing Goods: This program interface displays the product names and the designated amounts for release.

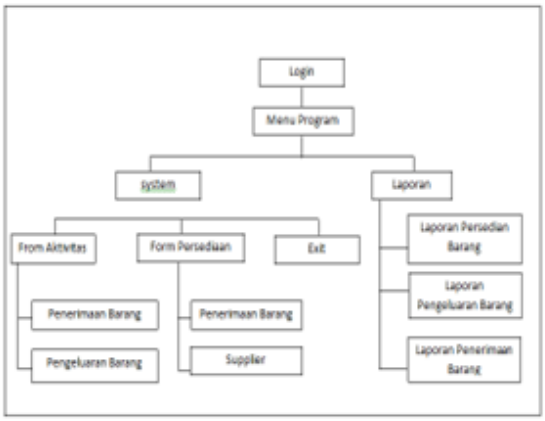

Figure 3. Inventory Application Design

Goods Inventory System Design

The user sends a requisition for supplies to the general department. Should the requested items be available, they will be promptly allocated to the user by completing the outgoing goods documentation alongside the Delivery Order and meeting minutes. This operation automatically diminishes the available inventory. If the required items are unavailable or out of stock, the general department will submit a requisition. Upon completion of the requirement, they will solicit price quotations from vendors. The general department will input price quotations from suppliers into the inventory information system, and the most advantageous offer will be chosen to generate a Purchase Order (PO).

The author delineates the procedures for executing diverse operations and generating reports inside the inventory system into five processes that function in the proposed computerized system, detailed as follows:

1. Goods Request: Users requiring items shall submit a request (order) to the general staff by completing a request form.
2. Issuance of Goods: The general staff will verify the availability of the requested commodities. If they exist, the staff will disseminate them alongside a report. Should the desired materials be unavailable, a requisition will be initiated.
3. Requisition: The general staff will submit a requisition to management for things needed to satisfy requests for commodities that are unavailable or out of stock.
4. Vendors: The general staff will develop a list of vendors that furnish price quotations for the authorized desired items.
5. Purchase Order (PO): The general staff will present a purchase order (PO) to management for the procurement of commodities.
6. Fund Disbursement: The treasurer shall authorize the purchase order for the acquisition of commodities.
7. Report: The general staff will furnish reports about inventory activities.

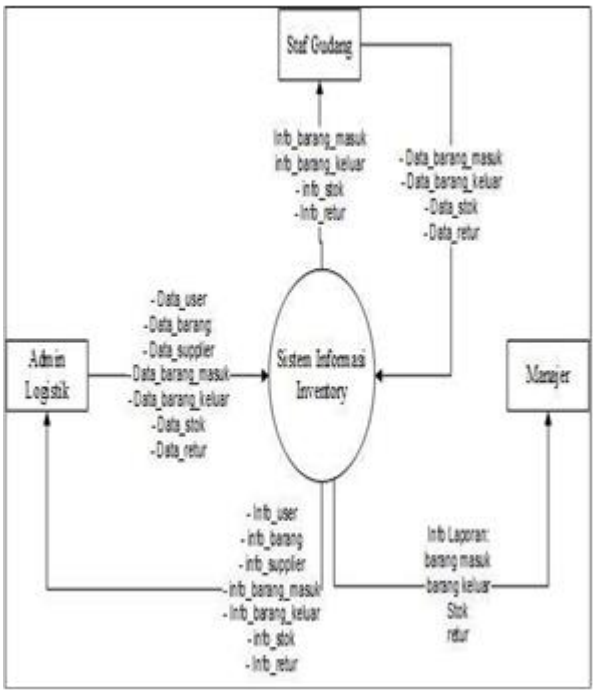

Figure 4. Goods Inventory System Design

The system's development initiates with the procedures of goods requisition, goods issuance, goods receipt, requisitioning, Purchase Order (PO) creation, and report generation. This solution is anticipated to improve the company's overall performance while maintaining a straightforward user experience. The program employs a straightforward method that aligns with manual activities, facilitating smooth adaptation to the new system's implementation.

Database Design

Following the study of the existing system presented in the preceding chapter, the subsequent stage is to devise the suggested system to fulfill the users' future requirements. This will be achieved by the interconnections between tables via associations, culminating in a relational data model.

The following will explain the steps taken in database design:

Entity Relationship Diagram (ERD)

The Entity Relationship Diagram (ERD) illustrates the data types and their interrelations inside the system. The objective of modeling the ERD is to depict the relationships among data storage, eradicate data redundancy, and establish a model that is comprehensible to both users and personal computers (PCs).

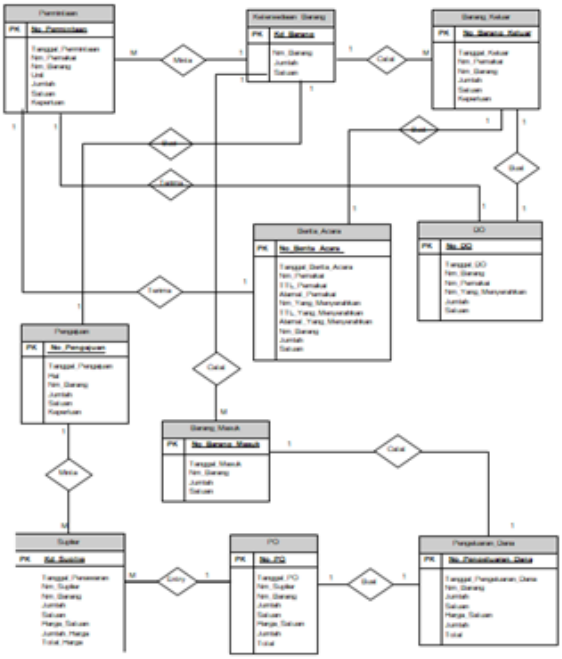

Figure 5. Entity Relationship Diagram

Database Relational

The database design is executed after a comprehensive understanding of system requirements from the user's viewpoint has been acquired. The first step in this database design is to develop a conceptual data model that will underpin the database. Upon establishment of the database model, the conceptual data model will be enhanced and executed.

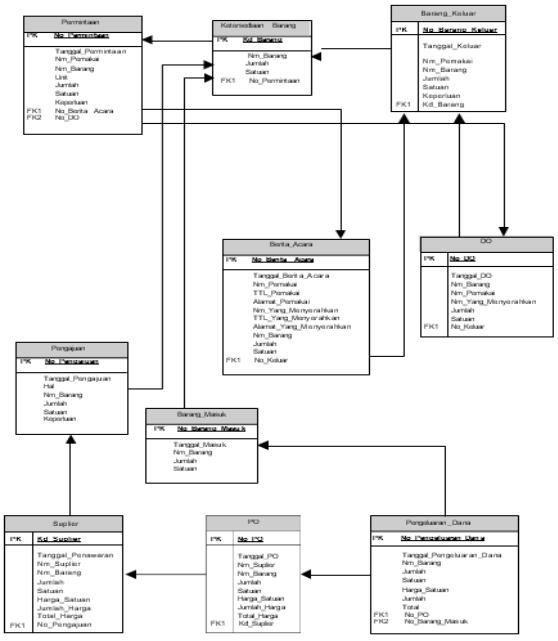

Figure 6. Relational Database

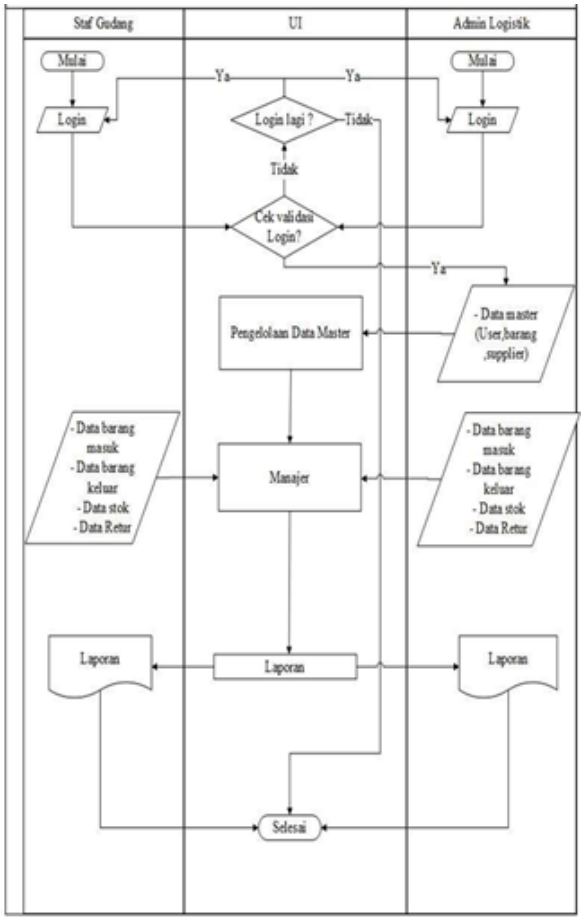

Figure 7. Proposed goods inventory system

CONCLUSION

The author concludes that the built inventory information system can efficiently educate users about their necessary items, ensuring rapid fulfillment of their needs. The collaboration among general staff, the treasurer, and system users enhances efficiency in distributing supplies to those in need. Furthermore, digital data storage streamlines the processes of storing and retrieving item information as needed. This information system provides insights into master items, transactions, and reports for designated periods, thereby enhancing decision-making regarding inventory activities.

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