

## Mobile Stock Information System Using the Waterfall Method (Case Study at An Electronics Retailer in Bandung)

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### Abstract

*Efficient inventory control is a crucial aspect of the retail sector, particularly in the electronics industry, such as mobile phones. This study aims to assess the efficacy of the Waterfall methodology in developing a mobile stock management system that is both efficient and dependable. This study employs a qualitative methodology, gathering data from multiple mobile phone retail shops that have adopted the Waterfall method for developing a stock management system. The collected data encompasses the progression through development stages, encountered restrictions, time duration, and attained outcomes. The data is studied to ascertain the strengths and shortcomings of the Waterfall technique in the specific context of controlling cellphone stock. The research findings demonstrate that the Waterfall technique offers a well-defined framework for creating a stock management system. Delineated phases, such as requirements analysis, design, implementation, testing, and implementation, aid firms in effectively overseeing projects with a disciplined and quantifiable approach.*

*Furthermore, the Waterfall technique enables firms to gain a comprehensive perspective of the project from initiation to completion. Nevertheless, this study also pinpointed certain shortcomings in implementing the Waterfall technique. One drawback is the need for adaptability in handling evolving requirements or enhancements that may emerge during the development process. Hence, companies must meticulously evaluate the worthiness of accommodating these alterations. Based on this study, it is determined that the Waterfall technique can be a very efficient strategy for developing a mobile phone stock management system, mainly when the specific objectives and requirements have been adequately established. However, companies must consider the possibility of evolving requirements and be open to modifying the development process as necessary. This research offers valuable insights to firms in selecting a development approach that aligns with their specific context and business requirements.*

**Keywords :** Stock, Cellphone, Stock Management, Waterfall method

### INTRODUCTION

Inventory management is an essential aspect of corporate operations that significantly impacts efficiency, the quality of customer service, and the organization's profitability. (Akbar & Fauzi, 2023; S Pasaribu, 2021) Efficient inventory management can mitigate the risks of inadequate or excessive stock levels, which could harm the organization. Nevertheless, due to the swiftly evolving dynamics of commerce and the economic milieu, difficulties in inventory

management are becoming increasingly intricate. (Al Fajar et al., 2022)

Being an electronic retail branch, it is already equipped with inventory management capabilities to store merchandise and monitor stock levels. Inventory management at Electronic retailer in Bandung entails conducting daily stock audits by thoroughly examining all warehouse goods. The process of documenting the receipt and dispatch of items is carried out through stock cards. These cards are completed with the quantities of incoming and existing inventory,

stored, and transmitted to Microsoft Excel. As a result, there is an accumulation of stock card data, and the paper is susceptible to ripping and misplacement, resulting in mistakes in data management. The stock verification procedure typically requires 1-2 hours to complete in a single day, depending on the volume of orders. This task is performed by a team of 3 to 4 individuals.

To address the concerns above and optimize the inventory verification procedure for reporting purposes, it is imperative to implement an information system capable of effectively managing inventory data and incoming and existing goods reports. (Supriyanti et al., 2019) In order to streamline data management, it is necessary to condense the information into a web-based information system and construct a database-accessible information system.

#### System and Information

An information system within an organization manages daily transactions, supports operations, has a managerial focus, and includes strategic activities. (Wahyuni & Wadly, 2023) Additionally, it furnishes external entities with the requisite reports. The notion of information systems encompasses:

#### Input Section

Input refers to the data that is being entered into the information system. The input here encompasses many techniques and mediums for acquiring input data, which may encompass fundamental documents.

#### Block Model

This block encompasses a fusion of procedures, logic, and mathematical models that alter incoming data and stored data in the

database in a specific manner to produce the intended output.

#### Output Section

The output of an information system is high-quality information valuable to all system users and is the outcome of the system's products.

#### Technological Barrier

Technology serves as the essential set of tools within the information system. The Technology Block is a component that accepts input, executes models, stores and retrieves data, produces and provides output, and aids in overall system control.

#### Fundamental Unit

A database is a cohesive compilation of interconnected data stored within computer hardware and utilized by software to perform manipulations.

#### Control Block

The control block is employed to mitigate any dangers or risks to the information system. A block that receives input executes models, saves and retrieves data, generates and sends output, and aids in system control.

#### Fundamental Notion of Inventory

Inventory is the fundamental notion of financial management. (Gunawan et al., 2021; Purwaningsih et al., 2021) The company's inventory consists of products essential to its core business operations. These goods are designed to be used or sold within less than one year in order to generate future profits. (Setiyani, 2019)

The Mobile Phone Inventory Information System is an instance of an information system specifically created to facilitate the operations of an organization or corporation in gathering, analyzing, and delivering extensive data via web-based information services. The proposed system

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[illegible]

SWOT analysis is a systematic procedure for identifying determinant factors in determining success within a company or relevant institution, where strengths, weaknesses, opportunities, and threats are identified. In the efforts of Berkah Cell, every effort is made to be the best and to remain optimistic and consistent in order to continue growing into a better and larger business. To foster the growth of this business, Berkah Cell provides the best possible service to consumers, such as providing fast service, answering consumer questions in a friendly

| Kekuatan<br>(Strength)                                                                                                                                 | Kelemahan<br>(Weakness)                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Peluang<br>(Opportunity)                                                                                                                                    | Ancaman<br>(Threats)                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Sistem yang sedang berjalan saat ini memiliki keunggulan di bagian rekap laporan dan pencatatan yang baik dan sesuai dengan laporan keluaranya barang. | Proses pencatatan barang hingga pembelian laporan memakan waktu yang cukup lama karena prosesnya masih manual serta penggunaan buku catatan dalam mencatat barang masuk atau keluar memakan biaya dalam pembelian buku dan alat tulisanya dan memakan tempat penyimpananya.<br>Terjadi kesalahan perhitungan barang dan kesalahan saat pemindaan data kedalam microsoft excel dikarenakan kertas rusak, tulisan tidak jelas, atau kertas hilang sehingga harus melakukan pengecekan ulang. | Minimalisir penggunaan berbasis tertulis sehingga dengan adanya sistem yang akan dibuat maka lebih cepat dalam proses mengelola data dan pembuatan laporan. | Ancaman yang meliputi kehilangan data, kesalahan pengelolaan, peretakan keamanan atau masalah kinerja |

## ii. Scenario Table

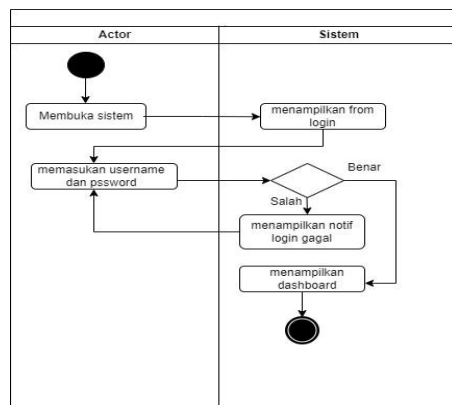
| No | Field       | Type    | Size | Keterangan |
|----|-------------|---------|------|------------|
| 1. | kode_barang | varchar | 6    | Primarykey |
| 2. | nama_barang | varchar | 255  |            |
| 3. | brand       | varchar | 255  |            |
| 4. | stok        | int     | 11   |            |
| 5. | harga       | double  |      |            |
| 6. | active      | enum    |      |            |

Postcondition : Sistem menampilkan halaman *dashboard*

### Main Flow of Event

| Action actor                                  | System Response                                                             |
|-----------------------------------------------|-----------------------------------------------------------------------------|
| 1 Membuka Sistem                              | 2 Menampilkan <i>form login</i>                                             |
| 3 Mengisi <i>Username</i> dan <i>Password</i> |                                                                             |
| 4 Memilih tombol <i>login</i>                 | 5 Memverifikasi <i>login user</i>                                           |
|                                               | a. Jika benar maka sistem akan mengalihkan User ke <i>dashboard</i>         |
|                                               | b. Jika salah maka sistem akan menampilkan <i>notif user tidak dikenali</i> |

## iii. Activity diagrams

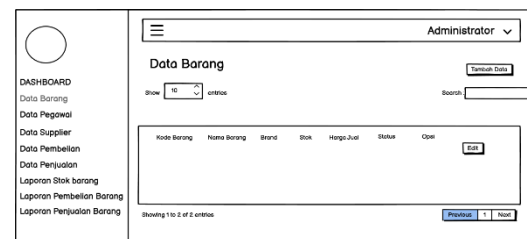


## d) System Design

### i. Database Design



## ii. Interface Design



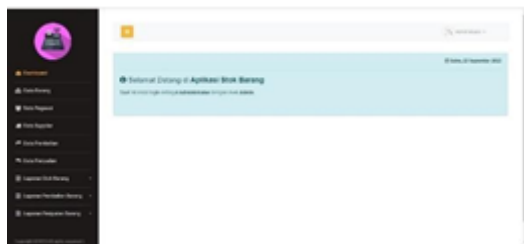
## RESULT AND DISCUSSION

Interface implementation is a crucial step in addressing user requirements during computer interaction. An intelligently crafted interface significantly aids users in comprehending the system's operations and can potentially optimize system performance. Below is the execution of the application:

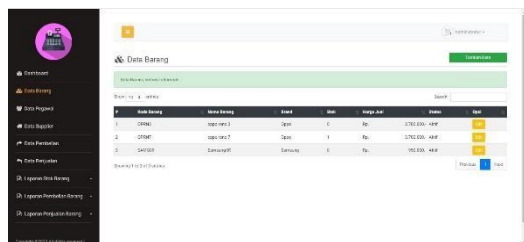
### Display of Login Page



Home Page/Dashboard Display



Item Data Page Display



## CONCLUSION

Upon completing the system's construction, its presence can facilitate inventory management and automate report generation, resulting in time savings and increased efficiency.

Regarding potential input proposals and considerations for future researchers:

Based on the conclusions above and the performed research, numerous recommendations can be considered to enhance the system's quality. Here are the suggestions:

The author additionally proposes maintaining this information system to guarantee its efficiency and long-term viability for consumers.

The customization and future development of this system can be carried out by future researchers at Berkah Cell using the waterfall technique.

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