Integrated Stock Information System
On Smartphone Stores

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Abstract

This research is motivated by the increasing number of smartphone shops nowadays, where there are many shops where if a buyer asks for goods and it happens that the stock of goods in the store is empty, the seller will ask other stores directly for stock, so it is less effective in terms of time and prospects. buyers will wait a long time. Therefore, the purpose of this study is to create a prototype system to integrate stock in smartphone stores where stores that are integrated with the system can see each other's stock information from other stores in the system, so that it is expected to speed up or help sellers get information on which store which are still in stock. The methodology used in this research is literature study, observation, interviews, and software development using the waterfall method. This research produced a prototype of an integrated inventory integration information system at a smartphone store which also has a function for processing purchasing and sales data and more importantly a search menu for information on the availability of goods at other stores which if implemented properly will make it easier and faster for shop owners in the search for information on the availability of goods in other stores. The results of this research can be developed into a smartphone marketplace and its accessories in accordance with technological developments.

Keywords*: stock inventory integration, information system, smartphone shop*

Abstrak

Penelitian ini dilatarbelakangi oleh semakin banyaknya toko smartphone saat ini, dimana banyak toko yang apabila ada pembeli yang menanyakan barang dan kebetulan stok barang di toko tersebut kosong maka penjual akan menanyakan stok barang ke toko lain secara langsung, sehingga kurang efektif dari sisi waktu dan juga calon pembeli akan menunggu lama. Oleh karena itu tujuan dari penelitian ini adalah membuat sebuah prototype system untuk mengintegrasikan stok barang pada toko smartphone dimana toko yang terintegrasi dengan sistem tersebut dapat saling melihat informasi stok barang dari toko lain di sistem tersebut, sehingga diharapkan dapat mempercepat atau membantu penjual mendapatkan informasi toko mana yang stok barangnya masih ada. Metodologi yang digunakan dalam penelitin ini adalah studi literatur, observasi, wawancara, dan pembuatan perangkat lunak menggunakan metode waterfall. Penelitian ini menghasilkan sebuah prototipe sistem informasi integrasi stok barang terpadu pada toko smartphone yang juga mempunyai fungsi untuk pengolahan data pembelian dan penjualan serta yang lebih utama adalah menu pencarian informasi ketersediaan barang di toko lain, yang jika diterapkan dengan baik maka akan mempermudah dan mempercepat para pemilik toko dalam pencarian informasi ketersediaan barang di toko lain. Hasil dari penelitian ini bisa dikembangkan menjadi sebuah marketplace smartphone dan kelengkapannya yang sesuai dengan perkembangan teknologi.

Kata kunci *: integrasi stok barang, system informasi toko smartphone*

1. INTRODUCTION

In 2019 there were at least 3.2 billion smartphone users, up 5.6% from 2018. Meanwhile, the number of active devices used reached 3.8 billion units. Tiongkok is the country with the largest number of smartphone users. Panda Country controls 27% of the world's total smartphone users. Over the past year, the world's active online user population was around 4.12 billion users. In 2022, the number of smartphone users is estimated to reach 3.9 billion users. This growth will be driven by developing regions, including the Middle East and Africa, Latin America, and Southeast Asia [1].

Along with the very high rate of smartphone users, it's no wonder that the smartphone sales business has also increased rapidly, one of which is in the sales sector. Lots of galleries or shops that provide smartphones. However, the number of sellers as well as buyers often has not been matched by an information system (especially stock of goods) that supports the buying and selling activities. Often if there is a buyer

who wants to buy a smartphone and the store stock is empty, then the seller will ask another seller if the stock is still there or not. To speed up or help sellers get information on which stores the stock is not empty, it is necessary to create an information system that integrates the stock of goods between smartphone stores for sellers or stores.

Research conducted by Pasaribu (JS (2021) with the title Development of a Web Based Inventory Information System which is published in the journal International Journal of Engineering, Science & InformationTechnology (IJESTY), is explained : CV. T. Kardin Knives Indonesia needs to utilize information technology in warehouse inventory management, no longer manual management, namely recording on paper media which will be prone to data discrepancies. The web application here is defined as an inventory application, through views that include items to be stored in the warehouse and incoming and outgoing product transactions. The research method used here is Research and Development (R&D). Making the software is done with the waterfall model. The results of this study produce web-based software using the YII Framework with the MVC (Model View Controller) method. Through a web application that provides direct contact, it is hoped that the service process for consumers can be clear and fast. This inventory application can be used as a product inventory material in a warehouse which includes recording, processing, and reporting warehouse inventory data. Another benefit is that with this web-based application, the head office can find out the inventory in the warehouse so that it can quickly take action to replenish the warehouse inventory. [2].

Research conducted by Al-Hashem AO and Al-Ma'aitah (2019) with title Integrated Information Systems from Internal and External Integration Perspectives as a Prerequisite for Electronic Service Quality which is published in the TEM Journal, is explained : The purpose of this research is to investigate the benefits of internal and external integration in improving the quality of computer-based services in companies. To achieve this goal, the proposed study model was tested on respondents with a random sample of 224 participants using a questionnaire. the results obtained indicate that there is a significant impact of internal and external integration on the quality of computer-based services. Therefore, the Arab Bank should consider internal and external integration as a prerequisite for computer-based service quality in an ever-changing business environment[3].

Research conducted by Qashlim A and Basri (2018) with title Integration of Information System Based on Supply Chain Management (SCM) for Pharmaceutical Warehouse in Mamasa Regency which is published in the ComTech: Computer, Mathematics and Engineering Applications, is explained : This research provides insight for management to realize the importance of Information Technology (IT) in supporting daily operational activities. This study also provides recommendations for pharmaceutical warehouse managers in providing benefits to the agencies/companies involved. This research provides insight for management to realize the importance of Information Technology (IT) in supporting daily operational activities. This study also provides recommendations for pharmaceutical warehouse managers in providing benefits to the agencies/companies involved. This research provides insight for management to realize the importance of Information Technology (IT) in supporting daily operational activities [4].

Research conducted by Sukadi and Rendrarini D (2019) with title Perancangan Sistem Informasi Stok Barang Terpadu pada Toko Handphone di Pasar Singosaren Surakarta which is published in the Pilar Teknologi, is explained that in order to speed up or help sellers get information on which stores the goods are not empty, it is necessary to make an integrated stock information system for mobile sellers in Singosaren Surakarta market. And in that research produced an integrated Stock Information System Information Design at a Mobile Store in Surakarta Singosaren Market [5].

Based on this description, in this study a prototype stock information system was created that was integrated with smartphone shops to make it easier for sellers or shops to find information on which store items were still available, where an information system is a system to meet daily transaction processing needs within an organization and provide information needed for decision making [6].

2. RESEARCH METHODOLOGY
The methodology used to compile this research is as follows:

a. Study of literature
Literature study is an activity that aims to collect data related to research from various sources which can later be used as a reference or reference material. The sources used are usually in the form of journals, papers, or news sources.

b. Observation
Observation is one of the things that must be done to photograph a situation that occurs in the object of research. From the observations it was found that there are lots of shops that provide smartphones, but from the seller's and buyer's point of view it is often not balanced with information systems (especially stock items) that support buying and selling activities.

c. Interview
In the interview stage, the aim was to obtain information directly from the sellers who complained about several problems, including the frequent occurrence of buyers who wanted to buy smartphones, but the store in question turned out to have the goods purchased were not available and the seller sometimes still had to ask other sellers whether the item was still available or not.

So in this case a little slow down in service to consumers. To speed up service to consumers, it is necessary to create an information system that integrates inventory between smartphone stores for sellers or shops.

As for the design and analysis in making this software using the waterfall method. The Waterfall model is a software life process that has a linear and sequential process [7]

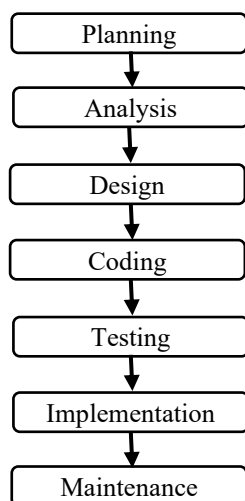The stages of the waterfall method are as shown in Figure 1.

Figure.1 Metode Waterfall

In Figure 1 it can be explained as follows:
1. Planning
   The planning phase involves estimating the physical, manpower and funding requirements needed to support system development and to support its operations after it is implemented later.
2. Analysis
   The stage where the needs of the system itself will be analyzed and whether a system is feasible to build or not. In the system to be built, the analysis phase includes understanding the process flow that is running, knowing the scope of the system to be built, and user needs.
3. Design
   The stage where to change the needs in the analysis stage into a representation in the form of software. Making the main specifications, namely designing entity relationship diagrams for database formation.
4. Coding
   The stage where programming is made with a machine-understandable coding process for a predetermined design.
5. Testing
   The stage where the software testing that has been made is carried out. All software functions must be tested, so that the software is free from errors, and the results are in accordance with the requirements that have been previously defined.

6. Implementation
   The implementation stage was not carried out because this research was only limited to making prototypes.
7. Maintenance
   Maintenance is correcting errors that were not found in the previous stages, improving the implementation of the system unit, and improving system services as new requirements [8]

3. RESULTS AND DISCUSSION

This chapter describes the flow of creating a system using the waterfall method, namely:

A. Planning

For planning, a set of computers connected to a network or the internet is needed, and users with three levels, namely admin, operator, and search (guest).

B. Analysis

The making of an information system prototype that integrates the stock of goods in smartphone stores is based on the large number of smartphone shops today, where there are many shops where if a buyer asks for goods and by chance the stock of goods in the store is empty, the seller in that store will ask other stores for stock. . If more than one shop is contacted, it will be less effective in terms of time and also prospective buyers will wait a long time.

System functional requirements:
1. The system is able to log in users which include admins, operators, and guests (users from other stores)
2. The system is capable of storing goods data and purchasing and selling transaction data
3. The system is capable of processing purchase and sale transactions
4. The system is able to search for goods data

C. Design

1. Flowchart System
   Flowchart is a graphical depiction of the steps and sequence of procedures of a program. A flowchart is a chart that shows the logical flow of a program or system procedure. Flowcharts are used primarily as a communication aid and for documentation [9]. Flowcharts can be used to present manual activities, processing activities or both [10]

   The following is a flowchart of an integrated stock information system at a smartphone store as shown in figure 2:

Figur 2. Flowchart system

In Figure 2, it is explained that in the integrated stock information system on smartphone stores the flow in the system is:
1) From user data will be inputted to the system, then user data will be processed and stored in the user table, and from the user table will generate user list display.
2) From the inventory will be inputted to the system, then the item data will be processed and stored in the goods table, from the item table will produce a display list of items that can be seen either by the store user himself or users from other stores whose username the shop admin has entered it.

2. Data Flow Diagrams
Data flow diagrams are structured analysis and design techniques that are visual tools for describing logistics models and revealing the transformation of data in the system [11].
The following is a data flow diagram of an integrated stock information system at a smartphone store as shown in Figure 3:

Figure 3. Level 0 data flow diagram

In Figure 3 explained that in the system of each store that is connected or using an integrated stock information system on smartphone stores has the right to user data input, user data info, input data items, item data info, and also view data other items in the store.
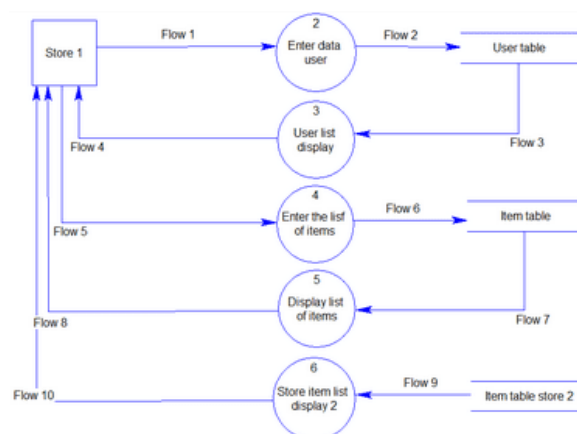In more detail the rights of each store are described in Figure 4.

Figure 4. Level 1 data flow diagram

From Figure 4 it can be seen that each store has rights, namely input user data and viewing the user list, inputting item data and viewing item data, and also viewing items in its own store and other stores.

3. Tables
a. User Table
The user table functions to store user identity data, both users from the store itself or guest users from other stores. The user table structure is as shown in table 1.

Table 1. User table

Field Name	Data Type	Wide	Information
Username	Varchar	15	Username
Password	Integer	15	User password
Level	Varchar	15	User level
Username	Varchar	25	Username
Birthdate	Date	-	User's date of birth
Address	Varchar	30	User address
Telephone	Integer	13	User phone number

b. Item table
Item table is used to store item data, which consists of item code, item name, price, quantity, and item description. The item table structure is as shown in table 2.

Table 2. Item table

Nama Field	Tipe Data	Lebar	Keterangan
Good_code	Varchar	10	Item number
Name_of_goods	Varchar	25	Name of goods
Price	Integer	8	Price of goods
Qty	Integer	3	The amount of goods
Information	Varchar	30	Item description

c. Purchase table
This table is used to store transaction data for purchasing goods, while the data stored is the transaction number, transaction date, supplier name, quantity of goods, and also description of the goods. The purchasing table structure is as shown in table 3.

Table 3. Purchase table

Field Name	Data Type	Wide	Information
Transaction_number	Varchar	10	Purchase transaction number
Date	Date	-	Purchase date
Name_suplier	Varchar	25	Supplier name
Qty	Integer	3	Purchase amount
Information	Integer	30	Transaction description

d.   Purchase details table
This purchase details table is used to store detailed data on goods purchase transactions, while the data stored is the transaction number, item number, quantity of goods, and also the price of the goods. The structure of the Purchase details table is as shown in table 4.

Table 4. Purchase details table

Field Name	Data Type	Wide	Information
Transaction_number	Varchar	10	Purchase transaction number
Item_Number	Varchar	10	Item number
Qty	Integer	3	The amount of goods
Price	Integer	8	Price of goods

e.   Sales table
This table functions to store data on the sale of goods, while what is stored is the transaction number, transaction date, consumer name, number of items, and transaction description. The sales table structure is as shown in table 5.

Table 5. Sales table

Field Name	Data Type	Wide	Information
Transaction_number	Varchar	10	Sales transaction number
Date	Date	-	Sales date
Consumer_name	Varchar	25	Name of consumer
Qty	Integer	3	Purchase amount
Information	Integer	30	Transaction description

f.   Sales detail table
This table functions to store detailed data on sales of goods, while what is stored is the transaction number, item number, quantity of goods, and price of goods. The structure of the Sales detail table is as shown in table 6

Table 6. Sales detail table

Field Name	Data Type	Wide	Information
Transaction_number	Varchar	10	Sales transaction number
Item_Number	Varchar	10	Item number
Qty	Integer	8	Number of sales
Price	Integer	3	Price of goods

D. Coding
The coding or program creation stage, where the program is created using the PHP programming language and the database uses MySQL. The display or interface of the information system that integrates the stock of goods at the Smartphone store is as follows:

In the integrated stock information system on smartphone stores the user can be divided into 3, namely:
1) Admin
Admin has the right to configure the system.
2) Operator
The operator has the right to make purchases and sales transactions.
3) Guest
This guest is a user from another store who has the right to see the stock of store items that are connected to the integrated stock information system on smartphone stores.

Following is the interface:
1) Login Form
For the login form, for all users the same. In the login form there is a username, password, and captcha display. As in figure 5.

Figure 5. Display the login form

In Figure 5 it can be explained that to log in the first step is to enter a username and password, then enter the captcha code that appears on the screen then click Log In
2) Admin User Form
In the User Admin main menu there is a Master and Logout menu. Master Menu to configure the system and Logout menu to exit the system. As in figure 6.

Figure 6. Display the main user admin menu

In Figure 6 it can be explained that the admin user display has two menus, namely Master and also Logout.

3) User Operator Form

In the User Operator main menu there are 3 (three) menus, namely Purchase, Sales Transactions, and Logout menu. Purchase menu to process purchase transactions, sales transaction menu to process sales transactions, and Logout menu to exit the system. As in figure 7.
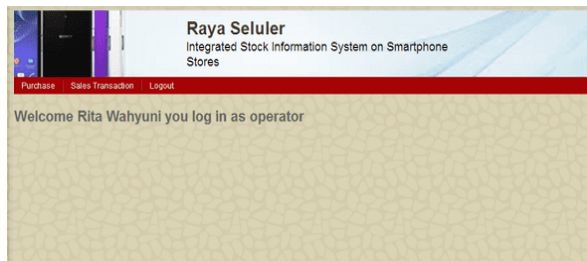

Figure 7. Display the main User Operator menu

In Figure 7 it can be explained that there are three user operator menus, namely Purchase to process purchase transactions, Sales Transactions to process sales data, and Logout to exit the system.

4) Guest User Form

In the Main User Guest Menu there are 3 (three) menus, namely Look for Items in the Store Itselt, Look for Items in Other Stores, and Logout menu.

a) Menu Look for Items in the Store Itselt

In the Look for Items in the Store Itselt, the first time that is displayed is the display of item names. As in figure 8.
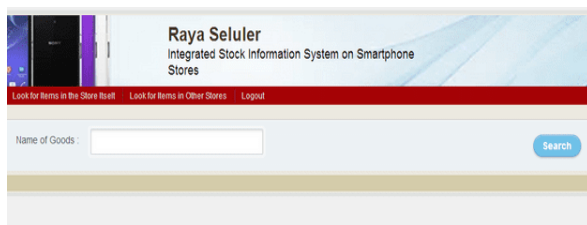

Figure 8. Display input Name of Goods in the search for goods in the store itself

Figure 8 shows the guest user's main menu display on the Look for Items in the Store Itselt Menu, where this is the menu for searching for items in the store itself.

b) Menu Look Items in Other Stores

In the Look Items in Other Stores menu that first appears is the choice of the store name to search for merchandise and also the name of the item. As in figure 9.
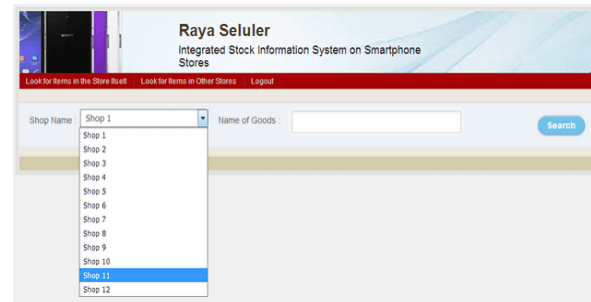

Figure 9. Display Store Name and Item Name in search in other stores

Figure 9 shows the guest user's main menu display on the Look Items in Other Stores Menu where this is a menu for searching for goods at other stores which can be done by selecting the store name then entering the name of the item you are looking for.

E. Testing

Testing or testing is a critical element of software quality assurance, and in this study testing uses Black Box Testing.

Black Box Testing is testing that is generally related to verifying that the system can actually function from the user's perspective [12]. Black box testing only aims to see whether the program is in accordance with the expected function or not without knowing the program code used [13].

Black Box Testing in research is presented in table 7 as follows:

Table 7. Black Box Testing

Description	Expected Results	Status
Enter Username, Password, and captcha code correctly	The user will successfully enter the system	Succeed
Admin adds a list of users on the Master menu	A menu appears to add a user	Succeed
The user (Operator) selects the Purchase menu to record goods purchase transactions	The purchase form appears	Succeed
The user (Operator) selects the Sales Transaction menu to record sales data	A form appears to record sales transactions	Succeed
The User (Guest) selects the Look for Items in the Store Itselt menu to view item data in the store itself	The goods data search form appears in the store itself	Succeed

Table 8. Black Box Testing (advanced)

The User (Guest) enters the name of the item or selects the Search button when searching for the item	The item list view appears	Succeed
The user (Guest) selects the Look Items in Other Stores menu to look for item data at other stores in the system	A search item menu appears in other stores	Succeed
The user (Guest) chooses the name of the store where stock information will be viewed	Shows a list of shops that are in the system	Succeed
The user (Guest) after selecting the store then enters the name of the item to search for the item	Displays a list of items in the selected store	Succeed

4. CONCLUSION

From this research it can be concluded that:

a. The prototype of the integrated inventory integration information system at this smartphone store also has a function for processing purchasing and selling data and more importantly the search menu for information on the availability of goods at other stores, which if properly implemented will make it easier and faster for store owners to search for information. availability of goods in other stores

b. The results of this research can be developed into a smartphone marketplace and its accessories in accordance with technological developments.

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