

DEVELOPMENT OF RETAIL CLOUD INVENTORY SYSTEM



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BACHELOR OF COMPUTER ENG. TECH. (COMPUTER SYSTEMS)

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**DEVELOPMENT OF RETAIL CLOUD
INVENTORY SYSTEM**

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Computer Engineering Technology (Computer Systems) with Honours.

by
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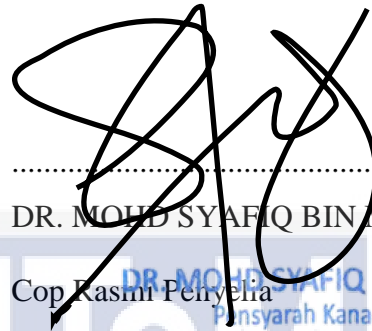
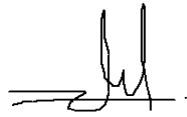
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This report is submitted to the Faculty of Electrical and Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Computer Engineering Technology (Computer Systems) with Honours. The member of the supervisory is as follow:

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ABSTRAK

Pasar raya adalah salah satu tempat yang dikunjungi orang semasa Perintah Kawalan Pergerakan (PKP). Pasar raya menyediakan makanan dan minuman untuk memenuhi keperluan manusia. Tempat ini juga menjual keperluan asas orang seperti pencuci, sabun dan perkakas. Ini meningkatkan jumlah orang yang akan datang dan telah berkembang dari segi transaksi pembayaran yang lebih senang dan senang. . Namun, disebabkan kawasan simpanan barangan yang terhad di kedai runcit, jumlah stok masuk perlu dirancang dengan betul mengikut trend pembelian pelanggan. Oleh itu, pemantauan inventori stok dan analitik data sangat penting untuk memastikan stok sentiasa tersedia untuk pelanggan. Pada projek ini, kami memfokuskan untuk menaiktaraf sistem inventori runcit berasaskan 'cloud' untuk meningkatkan keberkesanan pengurusan stok masuk mahupun keluar. Kami berharap sistem yang dicadangkan kami dapat membantu peruncit menguruskan inventori mereka secara sistematik dan cekap. Ini akan membantu peruncit untuk bersiap sedia menghadapi sebarang kemungkinan dengan mengambil satu langkah ke depan. Sistem ini juga akan membantu peruncit dengan menyediakan laporan penjualan berdasarkan trend penjualan. Trend penjualan adalah penting untuk menentukan tindakan apa yang perlu diambil untuk memastikan peruncit mendapat keuntungan dengan memanfaatkan keadaan semasa seperti 'Hari Raya Aidilfitri' atau Tahun Baru Cina.

ABSTRACT

The supermarket is one of the place that people go during current Ristrict Movement Order (RMO). Supermarket provides food and drink to comply with human need. This place also sells the basic necessity of people such as detergent, soap and utensils. This increase the number of people to comes and has expand in terms of payment transactions which is more convenient and easy. However, due to limited area of physical storage in the grocer, the number of incoming stocks need to be properly planned according to the customer buying trend. Hence, the stock inventory monitoring and data analytical is very important to ensure the stocks are always readily available for the customers. In this project, we focus to develop cloud-based retail inventory system to increase the effectiveness of stock management incoming/outgoing. We developed this system to can help retailers to manage their inventory systematically and efficiently. This helped the retailer to prepare for any possible consequences by taking one step ahead. This system also helped the retailers by preparing sales report based on sales trend. Sales trend is important to decide what action need to be taken to make sure the retailers will gain profits by taking advantages of the current situation such as 'Hari Raya Aidilfitri' or Chinese New Year.

DEDICATION

The thesis is entirely dedicated to my loved parents, who were my source of inspiration and helped us to give up, who are still offering their social, spiritual, emotional and financial support. My parents, sisters, relatives, mentors, acquaintances and colleagues were invited to complete this study and to offer their words of advice. And finally, to Allah SWT, I'm grateful for your encouragement, determination, mind power, protection, expertise, and a healthy lifestyle. I give you all these things.



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I would like to express my sincere gratitude to individuals and organizations for supporting me throughout my study. In the first instance, I want to express my sincere thanks for the enthusiasm, patience, informative suggestions, helpful knowledge, practical advice and continuing ideas I've always been doing in research and writing, my supervisor, Dr. Mohd Syafiq bin Mispan. I am able to complete this work due to my tremendous knowledge, vast experience and technical skills in applying. This project would not have been possible without its assistance and guidance. In my research, I couldn't have thought of a better supervisor. I also wish to express my sincere thanks to the Universiti Teknikal Malaysia Melaka for accepting me into the graduate program. Finally, last but by no means least also to everyone in BEEC class it was great sharing premises with all of you during the last three years. Thanks for all your support!

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LIST OF ABBREVIATIONS

DBMS	Database Management System
POS	Point Of Sale
SDLC	Systems Development Life Cycle



CHAPTER 1

INTRODUCTION

This chapter deals with a brief background of the project, problem statement, objectives, and scope of Development of Retail Cloud Inventory System.

1.1 Background

Malaysia in the process to achieve Industrial Revolution (IR 4.0) where technology will be most important component in our daily life. However, there is certain field cannot catch up with IR 4.0 such as business field especially retailers. Most of them still using classic way to manage their stores. Some of them having problem to manage their stores as it is very hard since there is a lot of work need to be done. As the effects, most of them having problem to gains profits and it cause them to shut down their stores. Taking care of Point of Sales without any systematic plan or equipment also let them having trouble to manage a lot of incoming customers.

Retailers usually update their stock just by deciding how much the stocks left just by looks at them. This is not efficient because they does not know the actual amount and this will cause them losses of their financial budget. There is also retailers that will calculate they inventory after they closed their stores. This will let the retailers take such an unnecessary burden to calculate each stocks even if they have workers. This also will take a lot of their times where they may lack of rest. It seem normal but their productivity will drop day by day and this will let them having trouble to gain the profits needed.

The fundamental target off these project is to build a retail inventory system that will help most of the retailers so manage their stores efficiently without carry any unnecessary burdens. This system will connect to the cloud system that will make a cloud-based retail inventory system. Cloud-based system is easier to access no matter where we belong, as long as we have the internet access, we can access into the system. Moreover, this system is using real-time database as basic of the system. Real-time database can process data in real-time condition and this will help any retailers especially to manage their inventory

12 Objective

The purposes that have been established for the solution of the problem set out in the list of problems are:

- i. To develop a cloud based software that manage the retail inventory for business organisation.
- ii. To perform a simple analysis of the sales trend based on the retail inventory data.

13 Problem Statement

Most of retailer especially small and midsize retailers still using manual way to manage their inventory system. This will cost a waste of time just to manage it while technology nowadays is taking part in our lifestyle and of course in business field. In Malaysia, the country is on the path to achieve the Industrial Revolution 4.0 (IR 4.0). Therefore the government are encourage the people to use the modern technology to help

their daily work. This technology will help the retailers to improve their ways to manage their inventory.

Moreover, most of the retailer cannot come out with sales analysis. This will let them having trouble to improve their sales and they cannot detect the exact value of monthly or annual sales. The solution to overcome this problems is to develop a cloud based software that manage the retail inventory on behalf of small and midsize retailers and also perform a simple analysis based on sales.

14 Scope of Project

Based on the objective, the scopes of the project that are highlighted as follows:

- i. The users can collect the information based on sales. The results will show how many item sold already and determines the quantity of selected item.
- ii. The users can retrieve features such as Point of Sale (POS), inventory management and analysis report.
- iii. The application is targeted on small and midsize retailers to manage their business.
- iv. This application is a web based application that use android based platform as their interface.

15 Project Scope

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16 Thesis Outline

This thesis has been constructed as follows. Chapter 1 describes the main ideas of the project, mostly on the objectives, the problem statement and the scope of the project. Moreover, Chapter 2 will include further detail on the existing projects and literature reviews that have been carried out. Studies are mentioned that apply to this initiative, where the knowledge was collected from journal articles, papers and online media. The approach used to execute this project is described in Chapter 3, which describes the approaches and strategies utilized in design, interfaces and functions. Chapter 4 includes tests, results and discussions. Finally, the summary and recommendation for this project are set out in Chapter 5.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter will discuss about the relevant studies of the previous research that connect to this research to gain a better finding information and to avoid the unnecessary repetition of the area of problems. The point that will be touch in this chapter are commonly about database, cloud system and the application that used in the previous application such as Point of Sale (POS) and inventory management.

2.1 Database Management System (DBMS)

Database Management System (DBMS) is a technology that help people to manage or arrange their data efficiently compare to file management system. Nowadays, DBMSs are the critical component of data-intensive (“Big Data”) applications (Aken *et al.*, 2017). In this section, we will discuss about the DBMS, the idea behind the DBMS and comparison between DBMS and file management system.

2.1.1 Introduction of DBMS

The Database Management System (DBMS) is an application system used to store, manage, and display data (Utomo, Sayyidati and Rahmanto, 2018). It consists of a group of programs that manipulate the database. The DBMS acknowledges an application request for data and instructs the operating system to include relevant details. Database

Management System (DBMS) is suitable for an efficient management of large amounts of data (Achour, Bouazizi and Jaziri, 2016).

The idea of using a DBMS to remove the burden of data management was one of the original selling points of the relational model and declarative query languages (Pavlo *et al.*, 2017). Since a lot of data need to be processed nowadays, classing file management system cannot handle the data. Even they can, it will consume a lot of time where it will waste a lot of things such as money in certain fields especially business fields. Therefore, the DBMSs are now the critical part of every data-intensive application in all facets of society, business, and science (Pavlo *et al.*, 2017). Part of what makes DBMSs so enigmatic is that their performance and scalability are highly dependent on their configurations (Aken *et al.*, 2017).

Based on Figure 2.1, the DBMS is connected to a database as a storage to store all the data. The DBMS also connect to database application where the end users will access the application as the interface to reach the data stored on the database. However, there are certain end users who can reach directly to the DBMS as they are the one who configure, control and manage the DBMS.

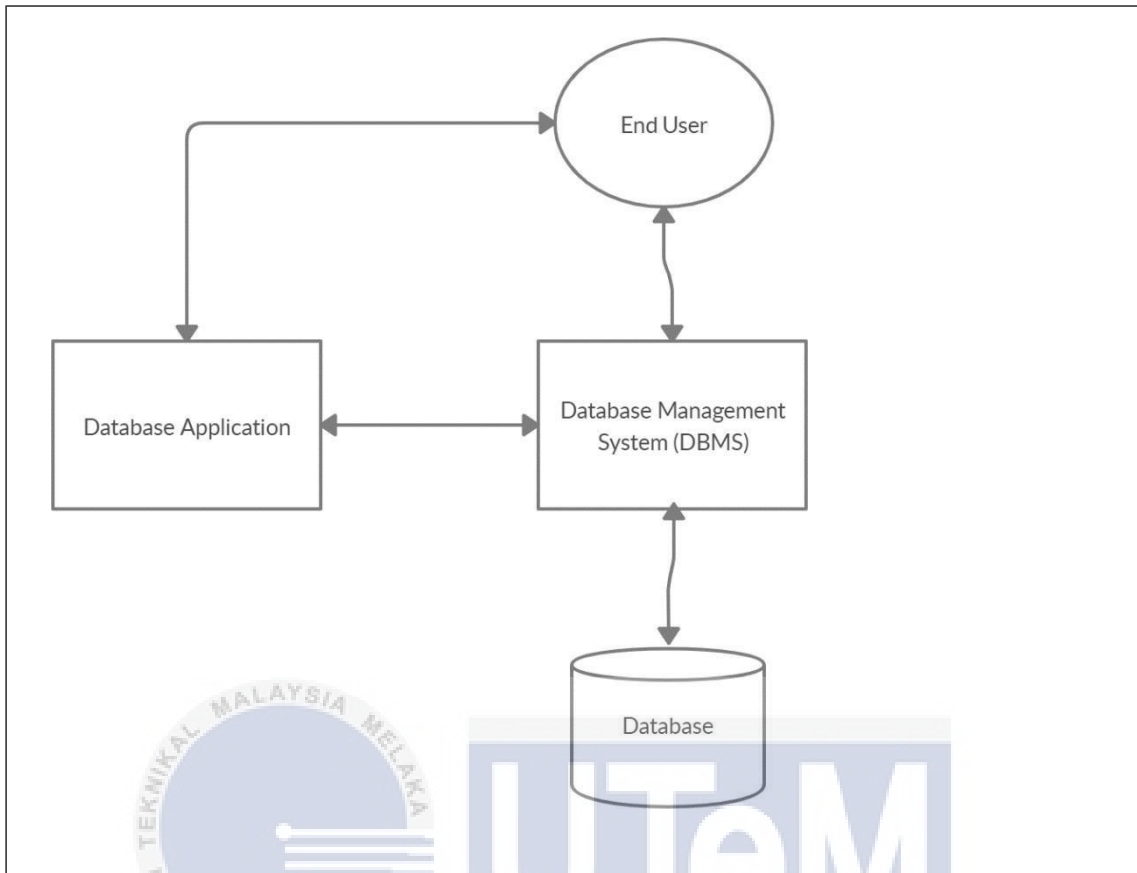


Figure 2.1: DBMS System Schematic

Table 2.1 shows the different between DBMS and File Management System where the aspects covered is data redundancy, consistency and security. From the table, we can conclude that DBMS can be the best investment where it reduce the cost that will stable a company's financial.