

## TESIS^ APPROVAL STATUS FORM

JUDUL: SAND PAPER SALES MANAGEMENT SYSTEM

SESI PENGAJIAN: \_\_\_\_\_

Saya POH KHEE HUI  
(HURUF BESAR)

mengaku membenarkan tesis (PSM/Sarjana/Doktor Falsafah) ini disimpan di Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dengan syarat-syarat kegunaan seperti berikut:

1. Tesis adalah hakmilik Kolej Universiti Teknikal Kebangsaan Malaysia.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. \*\* Sila tandakan (/)

\_\_\_\_\_ SULIT (Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)

\_\_\_\_\_ TERHAD (Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)

\_\_\_\_\_ TIDAK TERHAD

  
(TANDATANGAN PENULIS)

Alamat tetap : 13, JALAN BUNGA CEMPAKA 5A  
TAMAN MAWAR 56100 KUALA LUMPUR

Tarikh : 8/10/04

  
(TANDATANGAN PENYELIA)

MOHD SUFFIAN SULAIMAN

Nama Penyelia

Tarikh : 8/10/04

# **SAND PAPER SALES MANAGEMENT SYSTEM**

**POY KHEE HUI**

This report is submitted in partial fulfillment of the requirements for the Bachelor of Information and Communication Technology (Software Development For BITS).


**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY  
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA  
2004**

**ADMISSION**

I admitted that this project title name of  
**SAND PAPER SALES MANAGEMENT SYSTEM**

is written by me and is my own effort and that no part has been plagiarized without  
citations.

STUDENT :  Date : 11/10/04  
(POY KHEE HUI)

SUPERVISOR :  Date : 11/10/04  
(MOHD SUFFIAN SULAIMAN)

## **DEDICATION**

To my beloved parents

## ACKNOWLEDGEMENT

First of all, I would like to give thanks to my supervisor Encik Mohd Suffian Sulaiman for giving assistant to complete this project successfully. He had guided me and advised me through the whole process of completing this project. Besides that, he had spent his precious time to check and give comment to my report so that I can make appropriate correction.

In addition, I would also like to thank to some of my colleagues that working in the Goldsoft Sdn Bhd (my previous industrial training company). They had given me a lot of suggestion, advice while I was doing the final year project. They have spent their time to teach me, correct my mistake when I did something wrong and help me to solve some problems that I was not able to solve.

Lastly, I would like to say thanks to my beloved parents. Thank you for their support and encouragement until at the end of my project. Special thanks to my father who has helped me a lot regarding to business transaction.

## ABSTRAK

Sistem Pengurusan Jualan Kertas Pasir dibangunkan untuk kegunaan BW Sdn Bhd untuk mengurus data. BW Sdn Bhd adalah sebuah syarikat yang menjual kertas pasir. Sebelum system ini dibangunkan, syarikat ini menyimpan data dalam fail kertas. Syarikat ini telah menghadapi beberapa masalah semasa mengurus data dalam bentuk fail. Contohnya, risiko kehilangan data adalah tinggi, masa yang panjang untuk mencari maklumat dan keperluan ruangan yang besar untuk menyimpan data. Tujuan sistem ini dibangunkan adalah untuk memastikan data disimpan dengan cekap dan efisien. Selain itu, sistem ini dapat memastikan data yang disimpan adalah lebih selamat, betul dan mempunyai kebolehpercayaan yang tinggi. Segala data contohnya maklumat pekerja, maklumat stok, maklumat jualan dan maklumat pelanggan akan disimpan dalam pangkalan data. Pengguna sistem ini termasuk pentadbir, penyelaras jualan, kerani and penyelenggara stor.

Pengguna boleh memasukkan, mengemaskini dan menghapuskan data yang disimpan dalam pangkalan data. Selain daripada itu, pengguna dapat menjana pelbagai laporan seperti laporan stok dan laporan jualan melalui sistem ini. Sistem ini dibangunkan dengan menggunakan Oracle Database 9i, Oracle Form Builder 6i, Oracle Report Builder 6i dan SQL Plus 8.0.

## ABSTRACT

Sand Paper Sales Management System is a system that developed for BW Sdn Bhd. Previously, the company was using paper file to store the data. Data management by using paper file system is not efficient. There are some problems occurred in the existing system such as high risk of losing data that stored in paper file, user has to take long time to retrieve data and there is a lot of space that needed to store the paper files. The purpose of developing the system is to ensure the company can manage data and works in more efficient, systematic and accurate way. Besides that, this system will ensure the data stored in the system is more secure, accurate and reliable. All data such as employee's information, stock's information, sales information and customer profile will be stored in the database of the system. User is able to insert, update and delete data in the system. System user is included administrator, sales coordinator, clerk and storekeeper. Administrator is able to record and keep track employee's profile. Sales coordinator is able to generate sales order, purchase order, delivery order, invoice, receipt and several sales reports through the system. Besides that, storekeeper is able to keep track stock in the store, generate several stock reports. This system will be developed by using Oracle Database 9i, Oracle Form Builder 6i, Oracle Report Builder 6i and SQL Plus 8.0.

## TABLE OF CONTENTS

CHAPTER	TITLE	PAGES
	TITLE	i
	ADMISSION	ii
	DEDICATION	iii
	ACKNOWLEDGEMENT	iv
	ABSTRAK	v
	ABSTRACT	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	xi
	LIST OF FIGURES	xiii
	LIST OF ABBREVIATION	xiv
	LIST OF APPENDIXES	xv
CHAPTER 1	INTRODUCTION	
	1.1 Preamble/Overview	1
	1.2 Problem Statement	2
	1.3 Objective	4
	1.4 Scopes	5
	1.4.1 Users	5
	1.4.2 Modules	5
	1.5 Contributions	7
	1.6 Expected Output	8



<b>CHAPTER 2</b>	<b>LITERATURE REVIEW</b>	
2.1	Introduction	9
2.2	Fact and Finding	10
2.3	Conclusion	14
<b>CHAPTER 3</b>	<b>PROJECT PLANNING AND METHODOLOGY</b>	
3.1	Introduction	15
3.2	High-Level Project Requirements	
3.2.1	Project Facilities Requirement	16
3.2.2	Software Requirement	17
3.2.3	Hardware Requirement	18
3.3	System Development Approach	18
3.4	Project Schedule and Milestones	22
3.5	Conclusion	23
<b>CHAPTER 4</b>	<b>ANALYSIS</b>	
4.1	Introduction	24
4.2	Analysis of Current System	
4.2.1	Business Process	25
4.2.2	Problem Analysis	26
4.2.3	Problem Statements	28
4.3	Analysis of To Be System	
4.3.1	Functional Requirement	28
4.3.2	Technical Requirement	
4.3.2.1	Software Requirement	32
4.3.2.2	Hardware Requirement	33
4.3.2.3	Implementation/Deployment Requirement	33
<b>CHAPTER 5</b>	<b>DESIGN</b>	
5.1	Introduction	34

5.2	Preliminary/High-Level Design	35
5.2.1	Raw Input/Data	35
5.2.2	System Architecture	39
5.2.3	User Interface Design	39
	5.2.3.1 Navigation Design	40
	5.2.3.2 Input Design	41
	5.2.3.3 Output Design	45
5.2.4	Database Design	45
	5.2.4.1 Logical Database Design	46
5.3	Detailed Design	47
5.3.1	Software Specification	47
	5.3.1.1 Class Diagram	47
	5.3.1.2 Sequence Diagram	49
	5.3.1.3 Collaboration Diagram	53
	5.3.1.4 State Diagram	54
	5.3.1.5 Activity Diagram	54
	5.3.1.6 Component Diagram	54
	5.3.1.7 Deployment Diagram	55
5.3.2	Physical Database Design	55

## CHAPTER 6

### IMPLEMENTATION

6.1	Introduction	63
6.2	Software Development Environment Setup	64
6.3	Implementation Status	65

## CHAPTER 7

### TESTING

7.1	Introduction	70
7.2	Test Plan	71
	7.2.1 Test Organization	71
	7.2.2 Test Environment	71
	7.2.3 Test Schedule	72

7.3	Test Strategy	72
	7.3.1 Classes of Tests	73
7.4	Test Design	76
	7.4.1 Test Description	76
	7.4.1.1 User Login Test	76
	7.4.1.2 Management Module Test	77
	7.4.1.3 Purchase Module Test	78
	7.4.1.4 Sales Module Test	81
	7.4.1.5 Stock Module Test	85
	7.4.2 Test Data	87
7.5	Test Case Results	87
<b>CHAPTER 8</b>	<b>PROJECT CONCLUSION</b>	
8.1	Observation on Weaknesses and Strengths	92
	8.1.1 Weaknesses	92
	8.1.2 Strengths	93
8.2	Propositions for Improvement	94
8.3	Conclusion	95
<b>BIBLIOGRAPHY</b>		96
<b>APPENDIXES</b>		97

## LIST OF TABLES

TABLE	TOPIC	PAGES
3.1	Activities during System Development	22
4.1	Software Requirement	32
5.1	List of Raw Data	35
5.2	List of Input	41
5.3	List of Classes	48
5.4	MA_COMPANY	55
5.5	MA_PAYTERM	55
5.6	MA_STAFF	55
5.7	PO_INV	56
5.8	PO_INVDET	56
5.9	PO_INVRCP	57
5.10	PO_PO	57
5.11	PO_PODET	57
5.12	PO_RCP	57
5.13	PO_RCPDET	58
5.14	PO_RCPPO	58
5.15	PO_SUPPLIER	58
5.16	SA_CUSTOMER	58
5.17	SA_PDO	59
5.18	SA_PDODET	59
5.19	SA_PDOPSO	59
5.20	SA_PINV	59
5.21	SA_PINVDET	60
5.22	SA_PINVPDO	60
5.23	SA_PSO	60
5.24	SA_PSODET	60
5.25	SA_RCP	61
5.26	ST_GROUP	61
5.27	ST_STOCK	61
5.28	ST_TRX	62
5.29	ST_TRXDET	62
5.30	ST_TYPE	62
6.1	System Development Progress	65
7.1	Test Schedule	72
7.2	Test Case for Product's Size	73
7.3	Test Case for Product's Unit Price	73

7.4	Test Case for Product's Discount Rate	73
7.5	Testing Analysis for Total Amount and Discount	75
7.6	User Login Test Description	76
7.7	Management Module Test Description	78
7.8	Purchase Module Test Description	80
7.9	Sales Module Test Description	84
7.10	Stock Module Test Description	86
7.11	Test Result	87

**LIST OF FIGURES**

<b>FIGURE</b>	<b>TOPIC</b>	<b>PAGES</b>
1.1	Modules in Sand Paper Sales Management System	6
3.1	Waterfall Model	19
5.1	Entity Relationship Diagram	46
6.1	Environment Architecture	64
7.1	Black Box Test on Total Amount and Discount	75

**LIST OF ABBREVIATIONS**

IPTA	-	Institut Pengajian Tinggi Awam
IPTS	-	Institut Pengajian Tinggi Swasta
SPSMS	-	Sand Paper Sales Management System
SDN BHD	-	Sendirian Berhad

## LIST OF APPENDIXES

APPENDIXES	TOPIC	PAGES
A	SYSTEM ARCHITECTURE	97
B	NAVIGATION DESIGN	98
C	USE CASE DIAGRAM	103
D	CLASS DIAGRAM	104
E	SEQUENCE DIAGRAM	111
F	COLLABORATION DIAGRAM	125
G	STATE DIAGRAM	139
H	ACTIVITY DIAGRAM	140
I	COMPONENT DIAGRAM	142
J	COMPONENT DIAGRAM	143
K	USER INTERFACE DESIGN	144
L	UNIT TESTING FORM	156
M	QUESTIONNAIRE	168
N	USER MANUAL	170
O	GANTT CHART	179



## CHAPTER I

### INTRODUCTION

#### 1.1 Preamble/Overview

Sand Paper Sales Management System is an automation system that is developed to replace manual system. This system is developed for BW Sdn Bhd to manage data. BW Sdn Bhd is a company that sells sand paper to the retail shops or factories. The company will get the product from different suppliers and then sell the product to customer. The company has several salespersons that responsible to promote the products.

This system can be used to manage data which are related to business transaction, stocks and staffs. User is able to insert, update and delete data through forms that is provided in the system. The system can be use to record stock information, staff's information and business transaction information. Besides that, this system able to generate several print note such as purchase order, delivery order, sales order, invoice and receipt in computerized form. In addition, this system will used to generate several types of report such as Latest Stock Balance Report, P/O Listing report and Top Salesman Summary Report.

Sand Paper Sales Management System can ease the job of sales coordinator, clerk and storekeeper. Each user will be given a unique username and password. Users

will use their own username and password to access the system. This can ensure the data kept in the system is always secure, consistent, reliable and systematic.

Waterfall Model is the methodology that will be used to develop Sand Paper Sales Management System. This is one of the most popular methodologies used to develop a new system. There are six phases involved in this methodology, which include preliminary investigation phase, project analysis phase, system design phase, system implementation phase, system testing and evaluation phase and system maintenance phase. Each phase has its own tasks and activities.

## 1.2 Problem Statement

The company is managing data manually before using Sand Paper Sales Management System. User records transactions information, stock information and staff's information in paper file. The company has to spend a lot of space to store different types of file. Besides that, it is not efficient to use paper file system nowadays because it wastes a lot of time, energy and cost to manage it. There are several problems occur in the company with the current system.

(a) Data or records are easily getting lost.

Data or transaction records will be recorded in paper file. Data kept manually in paper file could be lost if the paper files misplaced or lost. The risk of losing the data is high if the files are not managed properly. Losing data may cause many problems occur. For example, user may not be able to keep track stock that has been ordered if a purchase order's file was missing.

(b) User found difficulty to keep track transaction.

Stocks and transactions information that are written in paper file is difficult to keep track. For example, user has to waste a lot of time to search for a single record if the file is not managed efficiently. It will make the user frustrated in data searching.

(c) Data that recorded manually is not clear or not in order form.

Sometimes, data written in the paper file cannot be read clearly because of the handwriting. This situation may cause users get the incorrect information or data. For example, if the quantity of stocks in the purchase order cannot be read clearly, storekeeper may send incorrect amount of stocks to the customer. This will bring a lot of inconvenient to the storekeeper.

(d) Incorrect calculate the total amount or quantity stock.

Sometimes, the user careless in calculating the total amount of stocks, it will cause the calculated value incorrect. This may also cause a lot of problems in the future.

(e) Data stored in the paper file is less secure.

Many confidential data will be recorded in paper file such as staff's detail, stock detail and transaction records. Record that stored in the paper file can be easily read by unauthorized person. This is less secure to keep the record in paper file system. The worst thing happens if the person uses the record for illegal purpose.

(f) Required more space to store files.

There are many file, form, purchase order, invoice, receipt and other documentations have to keep in orderly so that it can ease the searching process. It required more and more space to store all the documentation in the future. This is one of the weaknesses of the paper file system.

### 1.3 Objective

The objective of the system is to ensure that the operation in the company can be run smoothly and in efficient manner.

(a) To protect data from getting lost.

Data in the system will be stored in the database. Data such as stocks record, transactions record and staff's detail will not easily getting lost by using the system. Besides that, this system will ensure data is always accurate and reliable.

(b) To enable user to access and retrieve data quickly and easily.

User can easily retrieve data by using computerized system. Users do not have to search a record one by one in the data file. For example, users only have to key in a stock code and the stock detail will be displayed on screen. This system reduces time that used for searching a particular record, processing record and managing data.

(c) To keep records clearly and in orderly.

Data or records will be typed by using computer. This will ensure the data that recorded in the system is clearly and tidy compare to the existing system. This will make the user easily keep track of the record. Besides that, this will reduce the risk of users getting wrong data because of the unclear handwriting. Besides that, there is not much space required to store the data. Data will be stored in the computer.

(d) To produce correct figure.

The system will automatic generate the total amount. This will ensure the figure is always correct.

(e) To ensure data stored in a secure place.

Data is the most important asset for a company. User is required to key in valid password before using the system. This will ensure the data is in secure, consistent and

in reliable condition. Besides that, user is able to backup the data in a reliable storage medium such as CD.

(f) To generate report and other print note in more tidy and accurate.

User is able to generate purchase order, invoice, receipt and several types of report in standard style, more tidy and accurate compare to the existing system. This will make the operation of the company running more smoothly and in standardize format.

## **1.4 Scope**

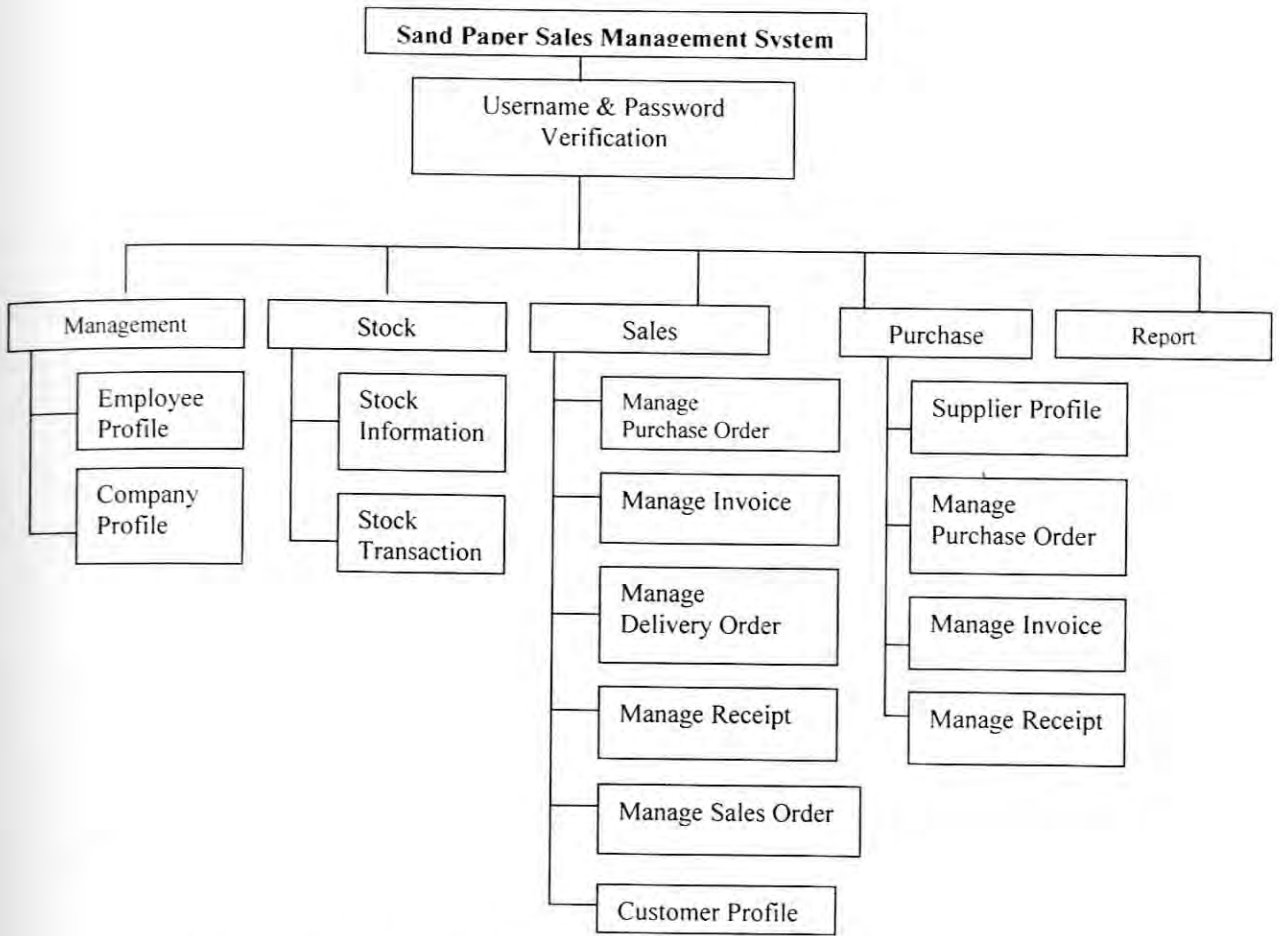
### **1.4.1 Users**

The system will be used by:

- (a) Administrator.
- (b) Sales Coordinator.
- (c) Clerk.
- (d) Storekeeper.

### **1.4.2 Modules**

The scope of the project is focuses on the community in the abrasive trading company. Modules that are included in this system are as below:



**Figure 1.1: Modules in Sand Paper Sales Management System**

#### 1.4.2.1 Explanation for Each Module in the System

(a) Username and Password Verification.

Users have to enter valid username and password before they can access the system. This process is necessary to ensure the data in the system is secured and consistent.

(b) Management Module.

Management module is used to record staffs' profile and company's profile.

(c) Stock Module.

Stock module is used to record stock's information and stock transaction. User is able to know the status of the stock, quantity stock in the store and cost for each stock in this module. Besides that, this module will generate several stock related reports such as stock balance report and stock variance report. . In addition, each branch's profile will be recorded in this module too.

(d) Sales Module.

Sales module is used to record transaction's detail. This module is used to generate purchase order, invoice, delivery order, receipt and sales order. User is able to keep track the sales transaction in this module.

(e) Customer Module.

Customer module is used to record customer's profile.

(f) Report.

User is able to generate several types of report through this module.

## 1.5 Contributions

(a) To ensure the company operate in more efficient manner.

By using the system, user such as clerk, administrator, store keeper and sales coordinator is able to manage data and works in more efficient way. This system will produce standardize documentation such as purchase order, delivery order, invoice and receipt. This will make the system works in more systematic manner. Besides that, this can reduce the time, energy and cost that used to manage data and works.

(b) User is able to retrieve data in easier way.

By using the system, user is able to retrieve data in an easier way compared to using the paper file system. For example, user only has to enter the stock code and the details of the stock will be displayed on the screen. User is no need to search the stock's detail from one fail to another fail. This will reduce the time for searching a record.

(c) Reduce the risk of losing data.

Data is the most important asset of the company, losing data will be a big lost for a company so it is important to keep the data in the secure place. Data will be stored in database of the new system. This may reduce the risk of losing data compare with stored data in paper file.

(d) Avoid mistake that caused by unclear handwriting.

By using this system, user will not face any problem that regarded to the unreadable handwriting. For example, storekeeper will pack incorrect quantity of the goods if the quantity for the goods that written in the purchase order is not clear. It will bring a lot of inconvenient later.

## **1.6 Expected Output**

Sand Paper Sales Management System will be completed and can be used to manage data at the last stage of the project. Sand Paper Sales Management System will be a system that can make the job easier and efficient because it is an automation system. This system can be used by administrator to store staff's data; clerk and sales coordinator can use this system to record sales transaction's data and generate several sales transaction print note; storekeeper can use the system to manage stock information. Sand Paper Sales Management System will be a user friendly, with security features and is a reliable system.