SALES ORDER PROCESSING SYSTEM

PROJECT REPORT

P-973

submitted in partial fulfillment of the requirements
for the award of the degree of
M. Sc., (Applied Sciences - Computer Technology)
of Bharathiar University

Submitted by

L. SUNDHARARAMAN

Reg. No : 0137Q0058

Guided by

Dr. S. THANGASAMY
Mr. P. GOPALAKRISHNAN

KUMARAGURU COLLEGE OF TECHNOLOGY

(Affliated to Bharathiar University)

KUMARAGURU COLLEGE OF TECHNOLOGY

Coimbatore-641006

Department of Computer Science and Engineering

Certificate

This is to certify that the report entitled "Sales Order Processing" has been submitted by L. Sundhararaman *Reg.No:0137Q0058* in partial fulfillment for the award of the degree of ***Master of Science in the Applied Science - Computer Technology*** , Branch of Bharathair University, Coimbatore - 641046 during the academic year 2001 - 2003.

S.J.....

Guide

S.J.....

Head of the Department

Certifies that the candidate with the university Registration No.0137Q0058 is examined in the project viva-voce examination held on 10/05/03.

R.....

[ap/cse/kct] (10/5/2003)

Internal Examiner

.....

External Examiner

DSQ
SOFTWARE LIMITED

31st March, 2003

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. L Sundhararaman** was deputed as Project Trainee from Dec 2002 to 31st March, 2003 to do his M.Sc., Applied Science - Computer Technology final year project as part of his curriculum. He has completed the project titled **"Sales Order Processing "** based on Supply Chain Management in AS/400.

During his project tenure, his conduct and performance was satisfactory. He was sincere and hardworking.

We wish him success in all his future accomplishments.

10.4.03

N. Natarajan
Project Manager

P V Satya Pratap
Vice President - Legal & Corporate Affairs

Acknowledgement

This project in itself is an acknowledgement to the inspiration drive and technique assistance contributed to it by many individuals.

I would like to bring forth my sincere thanks to **Dr.K.K.Padmanaban**, Principal, Kumaraguru College of Technology, Coimbatore, for allowing me to undertake this project work.

I wish to express my deep sense of gratitude to **Dr.S.Thangasamy**, Head of Department, Department of Computer Science and Engineering, for his invaluable suggestions.

I owe a great deal to our course coordinator **Mr. Dinesh Ranganathan** M.S, Assistant Professor, Department of computer science, for his constant guidance.

I greatly thank **Mr.Sivan Arul Selvan** M.Sc, M.C.A, Class Advisor & Faculty Guide, and Department of Computer Science, who inspired me with his creative suggestions.

I am also grateful to **Mr. P. Gopalakrishnan** M.C.A., for his immense care towards my project and guidance for its successful completion.

It is a source of immense pleasure to express my deep sense of gratitude to **Mr.N.Natarajan** Project Manager, DSQ Software Ltd., Chennai, who gave me the total knowledge of this project and for giving me the opportunity to do this project in his esteemed concern.

I put forward my heartiest thanks to **Mr.Ashok Anand Jha** for his support and help towards my project completion.

I reciprocate the kindness shown to us by the staff members of the Department of Computer Science and Engineering. Last, but not least, I express my heartfelt gratitude to all my friends especially, **Ms.Anusha Saravana Devi** and **Mr.Durairaj**, without their help I could have never come this far towards this feat.

Table of Contents

Organization Profile

About DSQ Sotware Ltd.,

DSQ Software Limited is a global company providing IT consulting and software development services in diverse application areas. Established in 1992, we have consistently provided high-quality software solutions in a cost-effective manner and on time, to a discerning clientele worldwide.

We have been able to provide best-of-breed solutions to our customers through our well-defined and managed quality processes and standards outlined by our SEI-CMM Level 5 assessment.

We provide our customers access to a vast pool of qualified and skilled human resources through our worldwide team of Software professionals that combines multiple platform skills and rich domain experience in various industry segments.

Providing our customers the compelling benefits of offshore software development from our development centers based in Chennai and Bangalore in India, we stay closely connected to our customers through our development centers and business offices in the USA, UAE, Oman, Kuwait, Saudi Arabia, and Singapore. Equipped with modern infrastructure, hardware and software resources, our offices are closely knit by high-speed communication links.

Being a reliable software outsourcing partner to a global clientele has put us among the 15 largest software service companies in India and 56th among the most valuable companies in India (Business Standard).Today, we are a US$91Mn company and. have strategic investments from Bank of America and CSFB.

Organization

To provide tailor-made solutions to our customers' needs, we are organized in a lean, customer-centric structure as **technology-oriented Strategic Business Units** and **industry-specific Strategic Business Units**.

Our **technology-oriented Strategic Business Units** evolve from the extensive skill sets we possess in various platforms and are focused on application areas, which find predominance in today's IT scenario, covering all industry segments. We currently have **five** horizontal SBUs as:

- e-Business Solutions
- Enterprise Solutions
- CAD/CAM/GIS
- IT Infrastructure Support Services
- Quality Services

Our **industry-specific Strategic Business Units** are based on the rich domain experience we have gained in implementing projects in certain industry segments. They answer all application areas and IT issues specific to the needs of the particular industry segments like:

- Telecom & Networking
- Insurance, Banking & Finance Solutions
- Logistics, Retail & Manufacturing
- Government Utilities, Healthcare & IT Related

Synopsis

The project proposed is a module of comprehensive enterprise supply chain management software. The module corresponds to the development of software that automates the sales order processing. The application is planned to be developed on IBM AS/400 machine. The project is for automating the process of purchase in a b2b scenario. The application generates reports and documents during various phases of its operation cycle to help the process get into a position where there is less human intervention. The various operations automated by the application are

- Customer Management such as creation and Maintenance of individual particulars.
- Handling Customer Inquiries and Creation of Quotations for them.
- Sales order Generation and Maintenance including the Sales Return handling.
- Picknote and Invoice Generation
- Managing Transportation and Packaging for the product delivery

1. Introduction:

The project is software that automates the sales order processing in an enterprise. The functionality of the system is to serve the customer inquiries and orders, for the goods that the supplier posses in a supply chain management environment. A supplier selling the product to the customer is the potential user of the developed system.

The software developed is concerned mainly upon the effective data management and security of the application. The quality of the software was continuously assessed and tested at every juncture ahead of further proceedings in the project development. The developed software is integrated along with the other modules that comprise the functionality of the enterprise supply chain management.

The application is developed for IBM AS/400 machine. The software is programmed using the high level programming language RPG/400 and CL/400. The application uses the DB2/400, the IBM's relational database, for data manipulations. The development process also made extensive use of the various tools such as SEU, SDA, RLU etc., for certain portions.

1.1 Project Purpose

In a typical scenario of a sale, the customer(s) inquire their requirement's availability to the supplier. The supplier responds to the customer and provides the necessary details as applicable based upon the business logic and customer type. Here the software assists the supplier for effective management and easy accessing, creating, storing and updating data. The application automates various tasks of sales order processing by providing a single-point-multi-access facility to the end-user. By having a common data operation point, the application collects, process, updates several different data locations upon an instant operation. Software to increase the productivity of an office should provide efficient data entry and management facilities. Computerizing the business will provide functional improvements with respect to speed, quality of service, availability, reliability, cost-effectiveness, expandability, and adaptability. Developing a computerized solution in IBM AS/400 should provide additional stability and security to the software along with significant performance gain over the solutions implemented in other platforms.

The various factors that influenced the application development are briefly depicted below.

- **Speed**

  Speed corresponds to the overall performance improvement of the software. Improving the data handling operations and providing results to the user maximize the overall speed of the software in order to minimize the response time.

- **Quality of Service**

  The organization, which the software serves, is largely benefited in terms of improved in the quality of service to their clients and improved business process.

- **Availability**

  The software is designed to be available to a various groups of users based on their designation and usability levels. The features available to them are restricted based on the portion of the software and data that is applicable for their usage.

- **Reliability**

  With the test processes that have been carried out using the tools available for the AS/400, the software has successfully given 94% - 99% effective reliability performance for the various data handling operations.

- **Cost-effectiveness**

  The implementation and usage of the software is expected to provide the organization significant savings on their automated operations. The application is optimized to provide inexpensive operations, be it with computer-related expenses or any other.

- **Expandability**

  The software has provisions for incorporating further enhancements depending upon the requirements. The design of the software is modeled in order to present strong and clear foundation for the expansions to be made.

- **Adaptability**

  The developed software is more generic in nature. This software can be customized for the user's requirements and will adapt to the cause precisely.

- **Stability**

  The software is designed to be stable under testing conditions. The testing tools suggest the stability of the software is near 100%. Special provisions such as FIDS, provided by the IBM, were used to ensure the stability of the software from the earlier design stages.

- **Security**

  The software secures the data it crates and uses. Various user authority levels are created during the implementation time of the software, clearly specifying the limits of usage to the users concerned. Users cannot manipulate unauthorized data and objects making the software secure. The application rates 85% - 90% secure for operations with privileged users and 95% - 100% secure for the operations with the restricted users.

1.2 Project Scope

The scope of the services offered by the project is as follows

- Creation, Maintenance of Customers
- Handling Customer Inquiries
- Creation of Quotations
- Generation and Maintenance of Sales Order
- Handling of Sales Return
- Picknote Generation
- Invoice Generation
- Transportation and Package Managing of the product delivery

1.3 Project Definitions, Acronyms and Abbreviations

IBM AS/400

International Business Machines Application Server/400

IBM DB2/400

International Business Machines DataBase ver. 2/400

OS/400

Operating System / 400

RPG/400

Report Program Generator /400

CL/400

Control Language /400

SDA

Screen Design Aid

SEU

Source Entry Utility

DFU

Data File Utility

PDM

Program Development Manager

FIDS

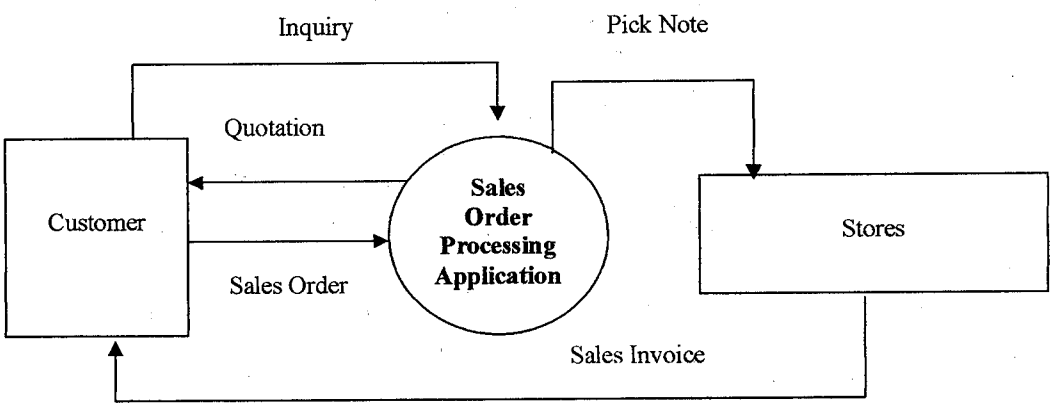
1.4 Project Overview

The project takes care of the various stages that a sale undergoes until the product is delivered to the customer, in an attempt to automate the sales order processing completely. The software developed for IBM AS/400 machines, is using the programming language RPG/400 and CL/400. The application development adhered to the software engineering concepts, which helped to improve the efficiency of the working software. The project makes extensive usage of the various tools provided with the machine for software development such as SEU, SDA, RLU, QUERY/400 and DFU. Adding to the facilities offered by AS/400, the application has provisions for future expansions. Making the future development easy, the application has well documented code and additional documentation manual describing the design and facilities of various portions of the application.

2. General Description:

2.1 Product Perspective

The following diagram pictorially depicts the overall functionality of the software in dictating the various functional parts of the software. The modules present in the software have distinct functional boundaries and predefined operations. The various operational areas of the application are interconnected in order to have shared data flow between them and common storage and retrieval of data from the database.



2.2 Product Function

The Sales Order processing application can be classified into the following modules with respect to their following functionality.

- **Customer Management Module**

The customer management module is where the entire **customer related activities** are to be handled. A customer can perform various acts such as **inquiry**, can request for a **quotation** and can present a **sales order**. The above can occur individually and in sequence. Every operation that involves customer interaction with the organization including **customer identification**, **customer address management**, **customer type management**, and **customer requirement management** are performed in this module.

- **Sales order and Invoice Management Module**

The sales order management module is where the entire **sales order and invoice related activities** are to be handled. The customer can place a sales order directly or can place the same after a quotation or an inquiry. Such facilitation should be available in the application. Various activities such as **sales order acceptance**, **sales order reference**, **sales order tracking**, and **sales order maintenance** is to be performed by this module. Additionally it is expected to instruct the inventory for stock manipulation by issuing picknote and invoice for each sale. Invoice is a document that accompanies the delivered

product to the customer. This document generally details about the transactions taken place in the sale. This invoice is used for the identification of sale completion and the future tracking of the sale, if any necessary. The **invoice generation** and **maintenance** is to be handled in this module. **Picknote** generation is also handled in this module.

- **Inventory Management Module**

Items are the products that the organization offers for sale to the customers. The details of the items are managed by a separate inventory process and purchase management system, which excludes itself from sales order processing. The application uses the data created and maintained by the inventory management. The item details are used in various functional modules of the application such as during **inquiry, quotation, sales order processing, and picknote**.

- **Inquiry and Quotation Management Module**

Inquiry is the operation performed by the customer to obtain the details about their requirements from the supplier. Inquiry is about various products that are available with the supplier for sale, required by the user for their **availability, cost, delivery details** etc. Quotation is the document; customers receive from the suppliers for deciding upon their sale with the supplier. A quotation states the supplier's price, terms and conditions for the supply of the required products to the customer. A

quotation will have the details about the products that customers require and a prepared to buy. This module corresponds to the **generation and management of quotations** to customers from suppliers.

- **Transportation and Packaging Module**

At the completion of the sale, the product has to be delivered to the customer. This module is for the transportation and packaging of the products that are to be delivered. The packaging and delivery are performed according to the customer's requests. During the sales order acceptance from the customer, the packaging type and transportation mode preferred by the customer is obtained and maintained.

Entity – Relationship Diagrams

Entity Relationship Diagram for Sales Order Processing

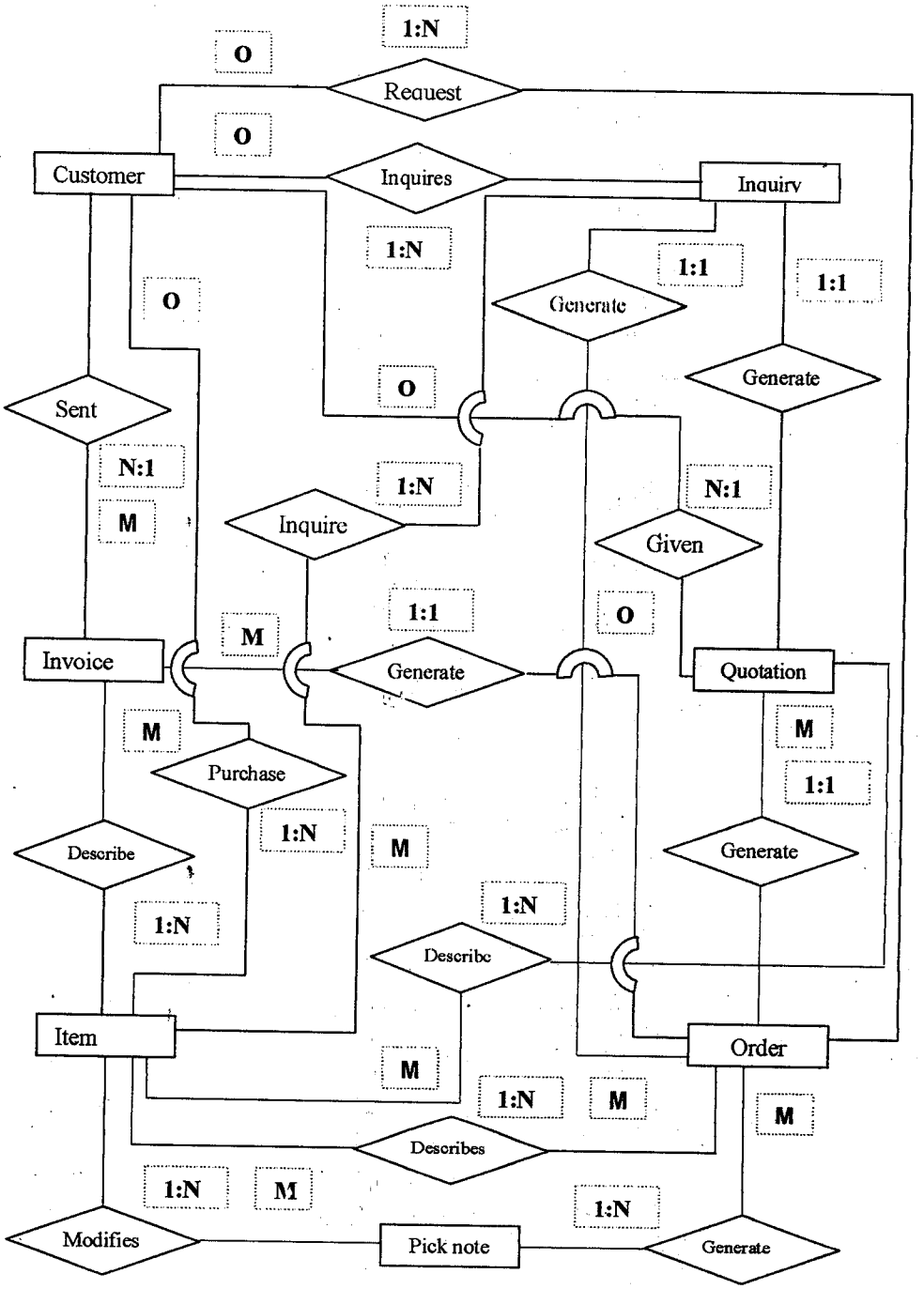
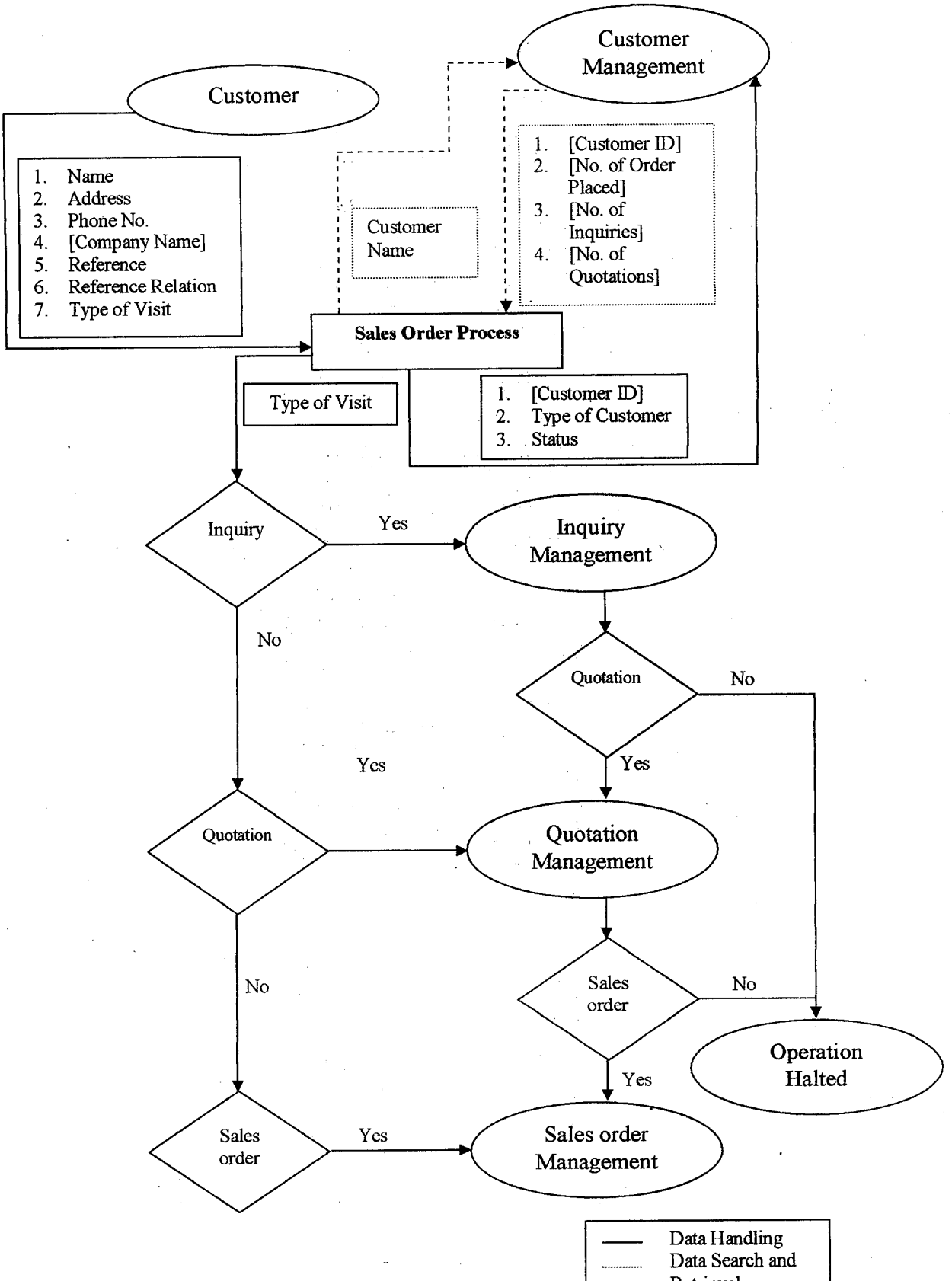


Diagram for Customer Management Module



➢ Customer Management Module

The customer management module is where the entire **customer related activities** are to be handled. A customer can perform various acts such as **inquiry**, can ask for a **quotation** and can present a **sales order**. The above can occur individually and in sequence. Every operation that involves customer interaction with the organization including **customer identification**, **customer address management**, **customer type management**, and **customer requirement management** are performed in this module. This module accesses several data locations simultaneously in order to perform a single operation. Invoice is a document that accompanies the delivered product to the customer. This document generally details about the transactions taken place in the sale. This invoice is used for the identification of sale completion and the future tracking of the sale, if any necessary. The various data locations are

- **Customer master table,**
- **Item master table,**
- **Delivery terms master table,**
- **Payment master table,**
- **Tax master table,**
- **Inquiry master table,**
- **Inquiry transaction table,**
- **Quotation master table,**
- **Quotation transaction table,**
- **Transaction control table.**

- A customer is identified by a unique customer code.
- For every customer details such as name, address, state, zipcode, and telephone number are stored along with the customer code.

- Every customer has an assigned status and type, which are not disclosed to the customer.

Operations performed on this module

The **Addition, Deletion, Updation** operations are to be performed in this module upon the following tables.

- **Customer master table**,
- **Inquiry master table**,
- **Inquiry transaction table**,
- **Quotation master table**,
- **Quotation transaction table**.

- Upon the arrival of a new customer, considering the values present in the **transaction control master table**, a new *customer code* along with a new entry in the customer master table is created. The other details such as *customer name, address, state, zipcode, and telephone number* are stored in the **customer master table**.

- Depending upon the customer's previous transactions a *status* is assigned to the customer, indicating whether the customer is a bulk purchaser or fleet purchaser etc.

- Depending upon the customer's previous payment status, we provide certain *type codes* for the customer indicating whether the customer is an excellent or good, fair, poor, or black listed customer.

- Depending upon the availability of the customer code in the customer master table, we proceed with the customer's requests.

- If an entry is present for a customer in the customer master table, it indicates that the customer is an old customer, also provides us all the necessary details about the concerned person.

- The previous transactions of a customer can be tracked and retrieved from the sales order, quotation or inquiry header and transaction tables for an existing customer.

- For a new customer only the customer master table is updated with the necessary fields.

- Depending upon the *type of visit* that the customer has opted for, an inquiry or a quotation or a sales order is generated after reception of the required details from the customer.

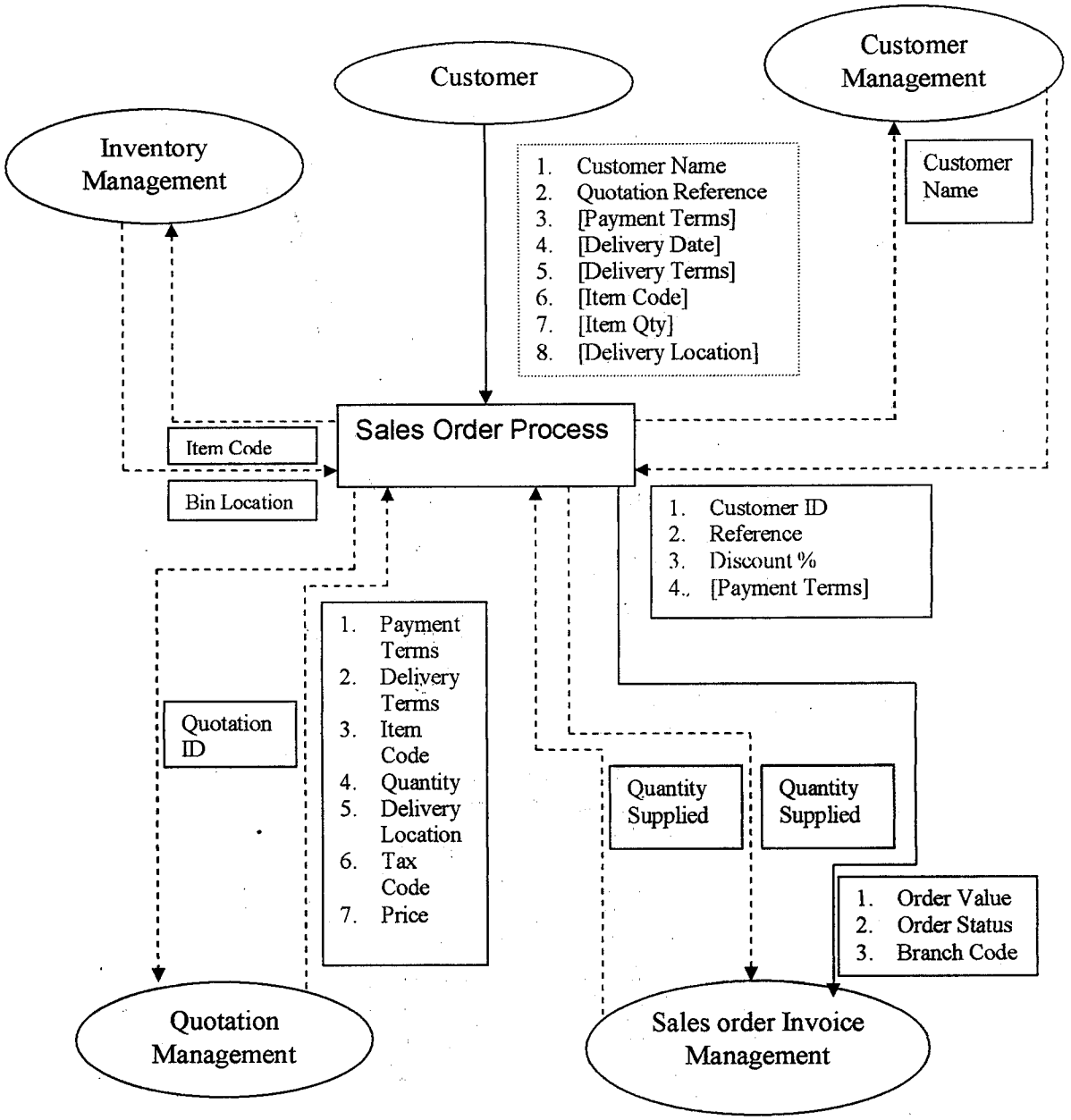
- If a customer opts for inquiry, the **inquiry master** and **inquiry transaction** tables are updated with the details such as *customer code*, unique *inquiry code* that is generated automatically for every inquiry, *inquiry date*, *inquired item*, *inquired quantity* and details about the *referenced media* as applicable.

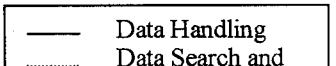
- As with every table, the audit fields such as
  - *last created by* i.e., having the user id of the table creator,
  - *last created date* i.e., having the date on which it was created,
  - *last update by* i.e., having the user id who recently updated the table,

- *last updated date* i.e., having the date on which the table was recently updated.

Are to be maintained for referential purposes.

Diagram for Sales order module





➢ Sales order and Invoice Management Module

The sales order management module is where the sales order related activities are performed. The customer can place a sales order directly or can place after a quotation or an inquiry. Various activities such as **sales order acceptance**, **sales order reference**, **sales order tracking**, and **sales order maintenance** are performed in this module. This module accesses several data locations simultaneously in order to perform a single operation. The various data locations are

- **Customer master table**,
- **Item master table**,
- **Delivery terms master table**,
- **Delivery date transaction table**,
- **Payment master table**,
- **Tax master table**,
- **Sales order master table**,
- **Sales order transaction table**,
- **Quotation master table**,
- **Quotation transaction table**,
- **Transaction control table**.

- A sales order is identified by a unique sales order code.

- For every sales order entry the following details are expected to be filled
  - *sales order code*,
  - *sales order date*,
  - *sales order reference*,
  - *customer code*,
  - *quotation reference*,

- *payment code*,
- *delivery code*,
- *delivery date*,
- *item code*,
- *quantity ordered*,
- *quantity supplied*,
- *tax code*,
- *price*,
- *order value* and
- *order status*.

- A sales order can have different delivery types for example, bulk delivery or delivery by parts. The module handles deliveries requested by the customer by referencing the **delivery terms master table** for such types of customized delivery options.

- The *quantity ordered* and the *quantity supplied* and the *order status* keeps track of the successful completion of the sales order and the delivery of the product.

- Various details about the items required by the customer such as
  - *item description*
  - *item code*,
  - *item price*,
  - *tax code*

  can be obtained from the **item master table** and the **tax code table**.

- A customer can have different payment modes that could be handled by the **payment terms master table**.

- A *sales order reference* field is required inorder to refer to a previous sales order of the organization for repeating the sales order.

- A quotation reference field is available to refer to a quotation that is transformed into the current

- A sales order might include different delivery dates and different quantities to be delivered. Such details are maintained in the **delivery date transaction table**.

- Based upon the product of item and its quantity the *order value* is computed after taking care of the *discount* given to the customer, if any.

- The module takes care of the generation of the invoice indicating the completion of the sale and sends it along with the product.

- Invoice is generated only after the picknote status has been positively set.

- This module interacts with the
  - **branch master table**,
  - **warehouse master table**,
  - **sales order master table**,
  - **sales order transaction table**,
  - **item master table,**
  - **invoice master table,**
  - **invoice transaction table,**
  - **picknote master table,**
  - **picknote transaction table,**

- The *item code, quantity* i.e., obtained from the **sales order transaction table** is used to refer the ordered items in the **invoice transaction table**, which is used in a picknote.

- For an invoice generation, the **invoice master table** and **invoice transaction table** are updated with the details such as
  - unique *invoice code* that is generated automatically for every invoice,
  - *invoice date*,
  - *sales order code*,
  - *picknote reference*,
  - *item code*,
  - *quantity*,
  - *invoice value.*

Operations performed on this module

The **Addition, Deletion, Updation** operations are to be performed in this module upon the following tables.

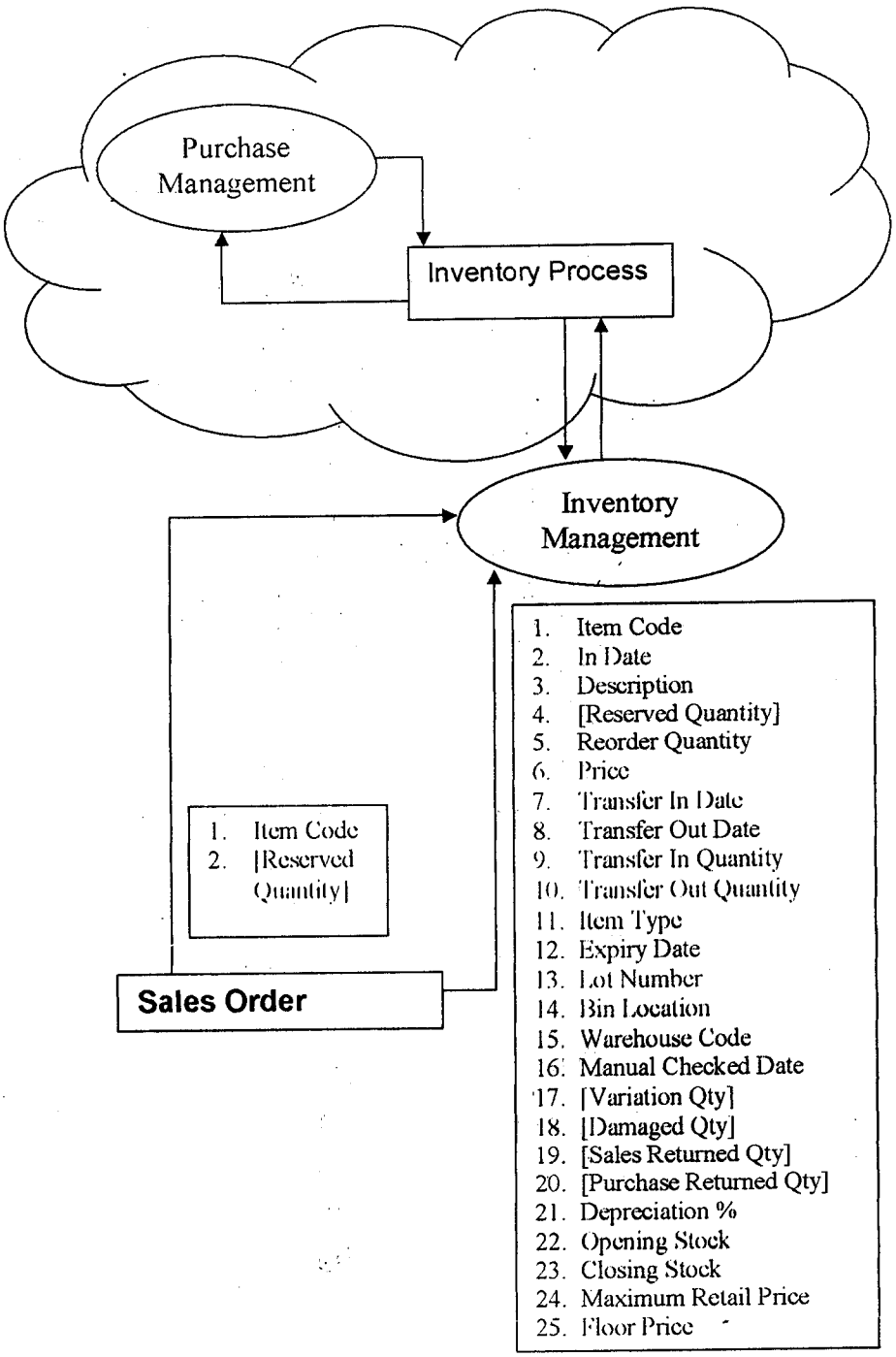
- **Sales order and invoice master table,**
- **Sales order and invoice transaction table,**
- **Picknote master table.**
- **Picknote transaction table.**

- As with every table, the audit fields such as
  - *last created by* i.e., having the user id of the table creator,
  - *last created date* i.e., having the date on which it was created,
  - *last update by* i.e., having the user id who recently updated the table,

- *last updated date* i.e., having the date on which the table was recently updated.

Are to be maintained for referential purposes.

Diagram for Inventory Management



➢ Inventory Management Module

Items are the products that an organization offers for sale to the customers. The details of the items are managed by a separate inventory process and purchase management system, which excludes itself from sales order processing. The sales order process uses the data created and maintained by the inventory management. The item details are used in various functional modules of the application such as during inquiry, quotation, sales order processing, and picknote management.

- This module during the sale completion and the quotation generation alters the item master table.
- During the quotation generation, the reserved quantity field of a stock is altered; the quantity available for sales is also altered.
- After a fixed period, if the quotation is not turned into the sales order, the reserved quantity is reallocated to the quantity available for sale.

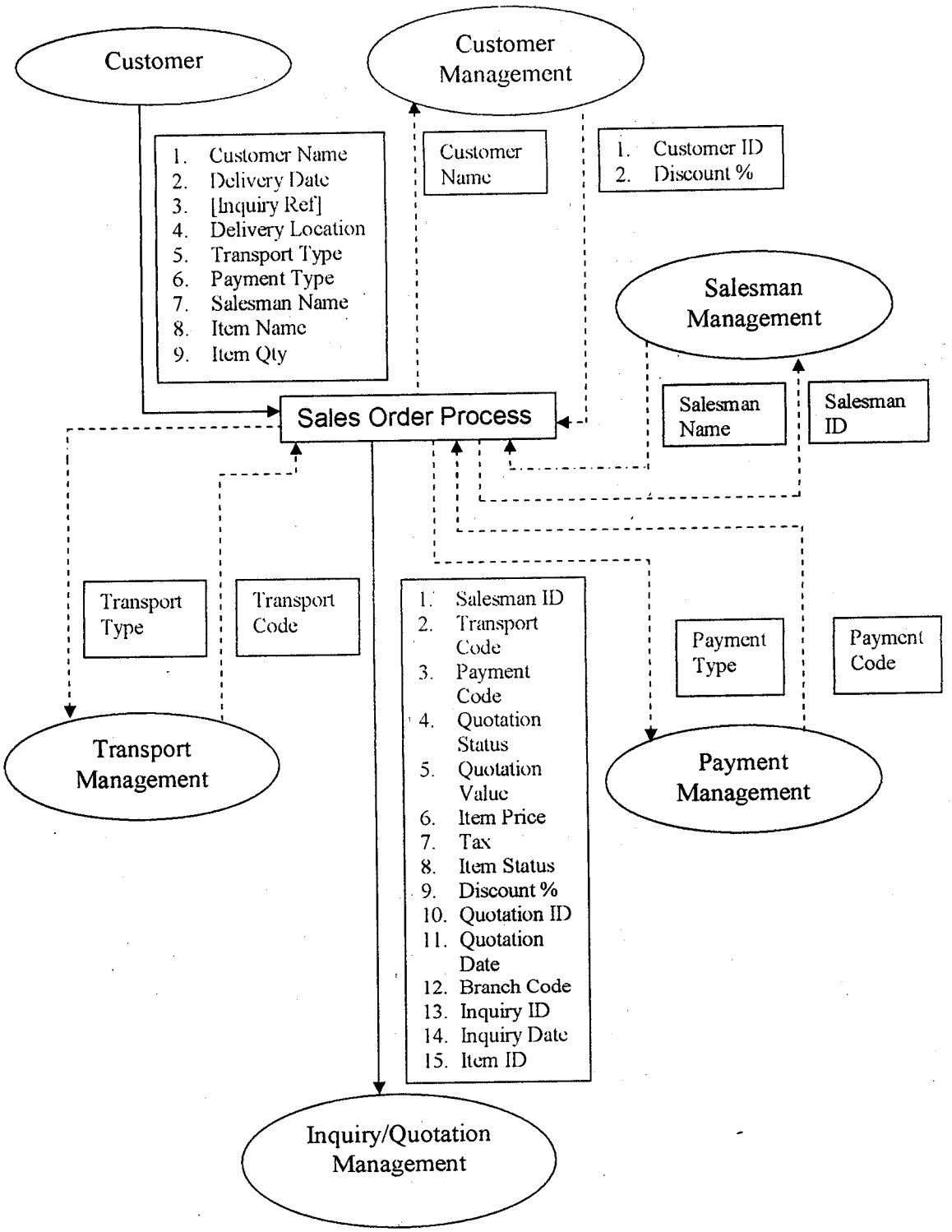
Operations performed on this module

The **Updation** operation will be performed in this module upon the following tables.

➢ **Item master table,**

- As with every table, the audit fields such as
  - *last update by* i.e., having the user id who recently updated the table,
  - *last updated date* i.e., having the date on which the table was recently updated.

Diagram for Inquiry and Quotation Management



➢ Inquiry and Quotation Management Module

This module handles both the customer's request for Inquiry and Quotation. Inquiry is the operation performed by the customer to obtain the details about their requirements from the supplier. Inquiry is about various products that are available with the supplier, required by the user for their **availability**, **cost, delivery details** etc.

Quotation is the document; customers receive from the suppliers for deciding upon their sale with the supplier. This module corresponds to the **generation and management of quotations** to customers from suppliers. A quotation will have the details about the products that customers require and a prepared to buy.

- This module interacts with the
  - **customer master table,**
  - **inquiry quotation master table,**
  - **inquiry quotation transaction table,**
  - **item master table.**
  - **transport master table,**
  - **payment master table,**
  - **salesman master table.**

- The *item name* obtained from the customer is used to retrieve the *item code* from the **item master table.**

- The *customer name* obtained form the customer is used to retrieve the *customer code* from the **customer master table** and to check whether the customer is an old customer or a new customer.

- If the customer is a new customer, the customer management module is required for creating a new customer entry in the **customer master table** and the process of customer inquiry is continued.

- The following details are obtained from the customer
  - *customer name*
  - *address*
  - *phone no*
  - *company name*
  - *reference*
  - *reference relation*
  - *want quotation*
  - *inquired by*
  - *relationship to customer (if not customer)*
  - *item name*
  - *reference medium*

- For a quotation generation, the **inquiry quotation master** and **inquiry quotation transaction** tables are updated with the details such as
  - unique *inquiry code* that is generated automatically for every inquiry,
  - *inquiry date*,
  - *customer code*,
  - *reference*
  - *reference relation*
  - *want quotation*
  - *inquired item code*,
  - *inquired quantity*,
  - *inquired by*

- *relationship to customer (if not customer)*
- *reference medium*

- By receiving the *customer name* from the customer, the *customer id*, *discount %* offered to the customer are obtained from the customer master table.

- The following details are obtained from the customer

  - *Customer name*
  - *Delivery date*
  - *Inquiry ref*
  - *Delivery location*
  - *Transport type*
  - *Payment type*
  - *Salesman name*
  - *Item name*
  - *Item quantity*

- By taking the *salesman code* from the customer, the **salesman master table** is used to retrieve the *salesman name*, which is included in the quotation.

- Using the *payment mode* details received from the customer, the **payment master table** is used to retrieve the *payment code.*

- Using the *transport type* details received from the customer, the **transport master table** is used to retrieve the *transport code.*

Operations performed on this module

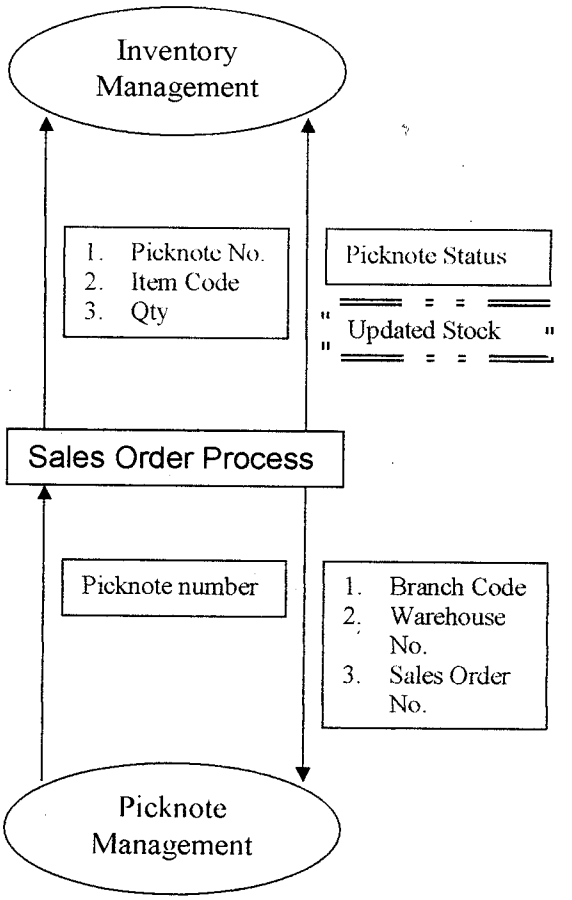
The **Addition**, **Deletion**, **Updation** operation will be performed in this module upon the following tables.

- **Inquiry quotation master table,**
- **Inquiry quotation transaction table,**
- **Item master table,**
- **Customer master table**

- As with every table, the audit fields such as
  - *last update by* i.e., having the user id who recently updated the table,
  - *last updated date* i.e., having the date on which the table was recently updated.

  are to be maintained for referential purposes.

Diagram for Picknote Management



—— Data Handling

Picknote Management Module

Picknote is a document that is used to interact with the warehouse to prepare the products that are ordered by the customer in a sales order. A picknote is used for internal referential purposes of the organization. A picknote is generated every time an invoice is generated. An invoice will have one picknote only.

- This module interacts with the
  - **branch master table**,
  - **warehouse master table**,
  - **sales order master table**,
  - **sales order transaction table**,
  - **item master table**.

- The *item code* i.e., obtained from the **sales order transaction table** is used to refer the ordered items in the **picknote transaction table**, which is used in a picknote.

- The *branch code* obtained from the **sales order transaction table** is used to retrieve the *branch name* from the **branch master table** to be included in the picknote.

- The *warehouse code* obtained from the **sales order transaction table** is used to retrieve the *warehouse name* from the **warehouse master table** for the use in picknote.

- The *quantity* obtained from the **sales order transaction table** is used to denote the supply of goods that is to be delivered to the customer based on the order. The same is updated in the **picknote transaction table**.

- The following details are obtained from the **sales order transaction table**
  - *sales order code,*
  - *branch code,*
  - *warehouse code.*

- For a quotation generation, the **picknote master table** and **picknote transaction table** are updated with the details such as

  - unique *picknote code* that is generated automatically for every inquiry,
  - *picknote date,*
  - *sales order code,*
  - *picknote status,*
  - *item code,*
  - *quantity,*
  - *warehouse code,*
  - *branch code.*

Operations performed on this module

The **Addition**, **Deletion**, **Updation** operation will be performed in this module upon the following tables.

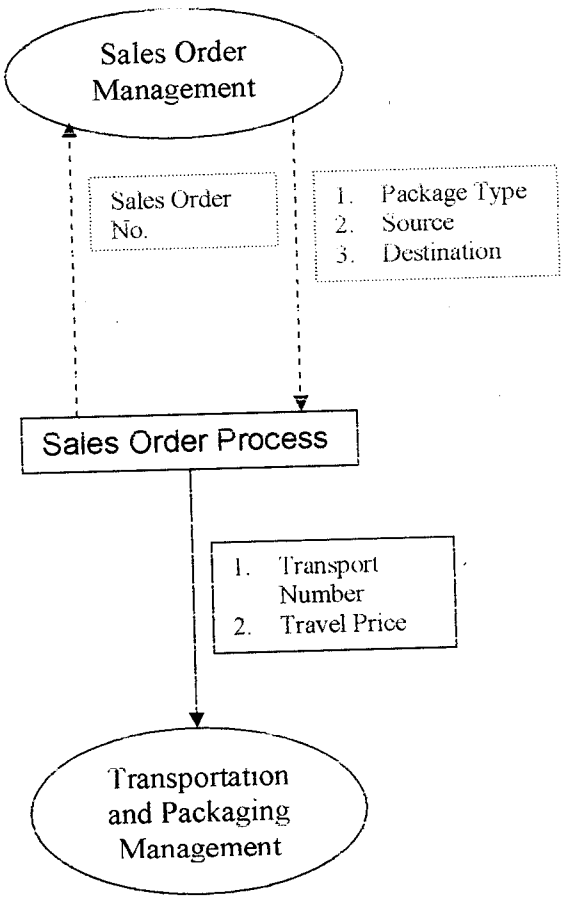
- **picknote master table,**
- **picknote transaction table.**

- As with every table, the audit fields such as

  - *last created by* i.e., having the user id of the table creator,
  - *last created date* i.e., having the date on which it was created,
  - *last update by* i.e., having the user id who recently updated the table,
  - *last updated date* i.e., having the date on which the table was recently updated.

  are to be maintained for referential purposes.

Diagram for Transportation and Packaging



➢ Transportation and Packaging Module

At the completion of the sale, the product has to be delivered to the customer. This module takes care of the transportation and packaging of the products that are to be delivered. The packaging and delivery are performed according to the customer's requests. During the sales order acceptance from the customer, the packaging type and transportation mode preferred by the customer is obtained and maintained.

- The module takes care of the packaging type and transportation type preferred by the customer.

- This module interacts with the
  - **branch master table**,
  - **warehouse master table**,
  - **sales order master table**,
  - **sales order transaction table**,
  - **item master table,**
  - **invoice master table,**
  - **picknote master table.**

- The *transport type, package type* i.e., obtained from the **sales order master table** is used to refer the *transport code, package code* respectively in **transportation and packaging master, transaction tables**.

Operations performed on this module

The **Addition**, **Deletion**, **Updation** operation will be performed in this module upon the following tables.

- **transport and packaging master table,**
- **transport and packaging transaction table.**

- As with every table, the audit fields such as

  - *last created by* i.e., having the user id of the table creator,
  - *last created date* i.e., having the date on which it was created,
  - *last update by* i.e., having the user id who recently updated the table,
  - *last updated date* i.e., having the date on which the table was recently updated.

  are to be maintained for referential purposes.

2.3 User Characteristics

The software is intended for the usage of the sales department, which is located at various locations separated geographically. All the processing is done synchronously and the software is developed to handle such traffic and loads of data. The users have up-to-date information whenever use the software. This makes the sales professionals job easier by allowing a larger flexibility over their job and provides platform wherein they can improve their productivity by large.

2.4 General Constraints

The software is compliant to the standards of the IBM software development standard for the AS/400. The software also encompasses the SEI-CMM LEVEL 5 development guidelines since the company (DSQ Software Ltd.) insists then to be followed strictly.

3 Specific Requirements:

3.1 Functional Requirements

3.1.1 Introduction

The software is expected to fully automate the sales order processing. The project should take care of the various stages that a sale undergoes till the product is delivered to the customer. All the necessary support documents should be generated automatically at the various phases. The software is aimed to be developed on the famous IBM AS/400 machines using the programming language RPG/400 and CL/400. The project should also make extensive usage of the various tools provided with the machine for software development. At the end of the project development, the integration of the project with various other modules would be done in order to accomplish the complete functionality of the supply chain management software. By developing the software in IBM AS/400 high security and stability to the software is expected to be achieved.

3.1.2 List of Inputs

- Customer's Enquiry
- Sales order
- Customers Miscellaneous Transactions.
- Product Arrival Confirmation.
- Product Internal Specifications.
- Management Specifications.

3.2 Performance Requirements

3.2.1 Security

The software is likely to secure the data it crates and uses. Various user authority levels would be created during the implementation time of the software, clearly specifying the limits of usage to the users concerned. Users cannot manipulate unauthorized data and objects making the software secure.

3.2.2 Availability

The software is planned to be available to a various groups of users based on their designation and usability levels. The features available to them will be restricted based on the portion of the software and data that is applicable for their usage.

3.2.3 Capacity

The software at testing phase is expected to be roughly around 10 MB and upon integration and customized installation the size of the software will vary.

3.2.4 Response time

Speed corresponds to the overall performance improvement of the software. Improving the data handling operations and providing results to the user maximize the overall speed of the software in order to minimize the response time.

3.3 Design Constraints

3.3.1 Hardware Limitations

The software developed is designed to be executed only on AS/400 machines. Thus the support for other forms of IBM and its compatibles are not supported.

3.3.2 External Interface Requirements

The application can be deployed to the clients directly using IBM AS/400 Client Access Software for various platforms. This is a standard software package that accompanies the IBM AS/400 servers to enable various workstations to connect to it and process on them. This software supports several networks such as TCP/IP etc.

3.3.3 Testing and Implementation

The software developed in the AS/400 machine will be tested using the tools available for the platform. The software is tested in order to reduce the possibilities of errors and exceptions. Once the software is successfully tested, it will be integrated and with the other tested modules in order to obtain the complete working software.

➢ Conclusion

Thus the software that is developed for the purpose of sales order processing. The software is expected to assist the users to a great extent for improving their business and earn more profits. The various attributes of the software are being stated in the document, which gives brief description about the complete project. The project is developed for the **DSQ Software Ltd., Chennai.**

Bibliography

Bibliography

- **IBM RPG/400 Users Guide**
- **IBM RPG/400 Reference Manual**
- **IBM CL/400 Reference Manual**
- **IBM AS/400 Users Guide**
- **IBM AS/400 Course Book of DSQ Software Ltd.,**

Appendix

Sample Table Design

Customer Module

1. Customer Master Table
2. Customer Transaction Table (History)
3. Customer Transaction Table (Daily)
4. Customer Relation Table
5. Customer Rating Table
6. Supplier Master Table
7. Country Master Table
8. Cash Discount Master Table
9. Credit Discount Master Table
10. Bank Master Table
11. Salesman Master Table
12. Salesman Transaction Table
13. Rating Master Table

Customer Master Table

Field Name	Field Type	Field Description
CMCCCD	Type (A) width (6)	company code
CMCBCD	Type (A) width (6)	branch code
CMCCD	Type (A) width (6)	customer code (k)
CMFNM	Type (A) width (25)	customer first name
CMMNM	Type (A) width (25)	customer middle name
CMLNM	Type (A) width (25)	customer last name
CMTITL	Type (A) width (5)	customer title
CMSEX	Type (A) width (1)	customer sex
CMPAD1	Type (A) width (35)	personal address1
CMPAD2	Type (A) width (35)	personal address2
CMPCNM	Type (A) width (25)	city name
CMPSNM	Type (A) width (25)	state name
CMPZIP	Type (P) width (8)	zip code
CMPCCD	Type (P) width (3)	country code
CMPPHN	Type (P) width (15)	telephone number
CMPFAX	Type (P) width (15)	fax number
CMPMBL	Type (P) width (12)	mobile number
CMPEID	Type (A) width (35)	email id
CMOAD1	Type (A) width (35)	office address1

CMOAD2	Type (A) width (35)	office address2
CMPHN	Type (P) width (15)	telephone number
CMFAX	Type (P) width (15)	fax number
CMMBL	Type (P) width (12)	mobile number
CMEID	Type (A) width (35)	email id
CMCNM	Type (A) width (25)	city name
CMSTNM	Type (A) width (25)	state name
CMCNCD	Type (P) width (3)	country code
CMZIP	Type (P) width (8)	zip code
CMDIFL	Type (A) width (1)	discount flag
CMCDCD	Type (A) width (6)	cash discount code
CMCRCD	Type (A) width (6)	credit discount code
CMCST	Type (A) width (8)	cst number
CMACNO	Type (A) width (8)	bank a/c no
CMBNCD	Type (A) width (6)	bank code
CMACT	Type (A) width (1)	activeness
CMMST	Type (A) width (1)	marital status
CMDOM	Type (P) width (7)	date of marriage
CMDOB	Type (P) width (7)	date of birth
CMFSDT	Type (P) width (7)	date of first service

Customer Transaction Daily Table

Field Name	Field Type	Field Description
CTCCCD	Type (A) width (6)	company code
CTCBCD	Type (A) width (6)	branch code
CTCCD	Type (A) width (6)	customer code (k)
CTTRCD	Type (A) width (6)	transaction code (inquiry, sales order, quotation codes)
CTTRDT	Type (P) width (7)	transaction date
CTIQCD	Type (A) width (1)	transaction type (inquiry, sales order, quotation)
CTTPCD	Type (A) width (6)	transacted person code
CTHUDT	Type (P) width (7)	history updation date
CTTAMT	Type (P) width (13,2)	transacted amount

Customer Transaction History Table

Field Name	Field Type	Field Description
CHCCCD	Type (A) width (6)	company code
CHCBCD	Type (A) width (6)	branch code
CHCCD	Type (A) width (6)	customer code (k)
CHTRCD	Type (A) width (6)	transaction code

		(inquiry, sales order, quotation codes)
CHTRDT	Type (P) width (7)	transaction date
CHIQCD	Type (A) width (1)	transaction type (inquiry, sales order, quotation)
CHTPCD	Type (A) width (6)	transacted person code
CHHUDT	Type (P) width (7)	history updation date
CHTAMT	Type (P) width (13,2)	transacted amount

Customer Relation Table

Field Name	Field Type	Field Description
CLCCCD	Type (A) width (6)	company code
CLCBCD	Type (A) width (6)	branch code
CLCCD	Type (A) width (6)	customer code (k)
CLRLCD	Type (A) width (6)	relation code
CLFNM	Type (A) width (25)	first name
CLMNM	Type (A) width (25)	middle name
CLLNM	Type (A) width (25)	last name
CLTITL	Type (A) width (5)	customer title
CLRDSC	Type (A) width (35)	relation description
CLRFCD	Type (A) width (6)	customer reference code
CLSEX	Type (A) width (1)	sex
CLPAD1	Type (A) width (35)	personal address1
CLPAD2	Type (A) width (35)	personal address2
CLPCNM	Type (A) width (25)	city name
CLPSNM	Type (A) width (25)	state name
CLPZIP	Type (P) width (8)	zip code
CLPCCD	Type (P) width (3)	country code
CLPPHN	Type (P) width (15)	telephone number
CLPFAX	Type (P) width (15)	fax number
CLPMBL	Type (P) width (12)	mobile number
CLPEID	Type (A) width (35)	email id
CLOAD1	Type (A) width (35)	office address1
CLOAD2	Type (A) width (35)	office address2
CLCNM	Type (A) width (25)	city name
CLSTNM	Type (A) width (25)	state name
CLZIP	Type (P) width (8)	zip code
CLPHN	Type (P) width (15)	telephone number
CLFAX	Type (P) width (15)	fax number
CLMBL	Type (P) width (12)	mobile number
CLEID	Type (A) width (35)	email id
CLCNCD	Type (P) width (3)	country code

Customer Rating Table

Field Name	Field Type	Field Description
CRCCCD	Type (A) width (6)	company code
CRCBCD	Type (A) width (6)	branch code
CRCCD	Type (A) width (6)	customer code (K)
CRRTCD	Type (A) width (6)	customer rating code
CRCRDA	Type (P) width (3)	credit days
CRCRPR	Type (P) width (3)	credit period
CRCRLT	Type (P) width (13,2)	credit limit
CRCDP	Type (P) width (5,2)	customer discount %
CRDLT	Type (P) width (13,2)	discount limit
CRDF	Type (A) width (1)	discount applicable flag
CRDAMF	Type (A) width (1)	discount amount applicable flag
CRACNO	Type (A) width (8)	bank a/c no
CRBNCD	Type (A) width (6)	bank code

Type Master Table

Field Name	Field Type	Field Description
TPCTY	Type (A) width (6)	customer type code (K)
TPDSC	Type (A) width (35)	customer type description

Supplier Master Table

Field Name	Field Type	Field Description
SPSCD	Type (A) width (6)	supplier code (K)
SPSDSC	Type (A) width (35)	supplier description
SPCOCD	Type (A) width (6)	company code
SPBCD	Type (A) width (6)	branch code
SPFNM	Type (A) width (25)	supplier first name
SPMNM	Type (A) width (25)	supplier middle name
SPLNM	Type (A) width (25)	supplier last name
SPTITL	Type (A) width (5)	supplier title
SPSEX	Type (A) width (1)	supplier sex
SPPAD1	Type (A) width (35)	personal address1
SPPAD2	Type (A) width (35)	personal address2
SPPCNM	Type (A) width (25)	city name
SPPSNM	Type (A) width (25)	state name
SPPZIP	Type (P) width (8)	zip code
SPPCCD	Type (P) width (3)	country code
SPPPHN	Type (P) width (15)	telephone number
SPPFAX	Type (P) width (15)	fax number
SPPMBL	Type (P) width (12)	mobile number

SPPEID	Type (A) width (35)	email id
SPOAD1	Type (A) width (35)	office address1
SPOAD2	Type (A) width (35)	office address2
SPCNM	Type (A) width (25)	city name
SPSTNM	Type (A) width (25)	state name
SPZIP	Type (P) width (8)	zip code
SPPHN	Type (P) width (15)	telephone number
SPFAX	Type (P) width (15)	fax number
SPMBL	Type (P) width (12)	mobile number
SPEID	Type (A) width (35)	email id
SPCNCD	Type (P) width (3)	country code
SPACNO	Type (A) width (8)	account no
SPBNCD	Type (A) width (6)	bank code
SPACT	Type (A) width (1)	activeness
SPFSDT	Type (P) width (7)	Date of first Service

Country Master Table

Field Name	Field Type	Field Description
COCNCD	type (P) width (3)	country code (K)
COCNNM	type (A) width (25)	country name

Cash Discount Master Table

Field Name	Field Type	Field Description
DSCDCD	type (A) width (6)	discount code (K)
DSCDP	type (P) width (5,2)	discount percentage
DSDDSC	type (A) width (35)	discount descreption

Credit Discount Master Table

Field Name	Field Type	Field Description
DCCRCD	type (A) width (6)	discount code (K)
DCCDP	type (P) width (5,2)	discount percentage
DCDDSC	type (A) width (35)	discount descreption

Bank Master Table

Field Name	Field Type	Field Description
BABNCD	type (A) width (6)	bank code (K)
BABNNM	type (A) width (35)	bank name

Salesman Master Table

Field Name	Field Type	Field Description
SMSMCD	type (A) width (6)	salesman code (K)
SMCOCD	type (A) width (6)	company code
SMBCD	type (A) width (6)	branch code
SMFNM	type (A) width (25)	salesmen first name
SMMNM	type (A) width (25)	salesmen middle name
SMLNM	type (A) width (25)	salesmen last name
SMTITL	type (A) width (5)	salesmen title
SMSEX	type (A) width (1)	salesmen sex
SMPAD1	type (A) width (35)	personal address1
SMPAD2	type (A) width (35)	personal address2
SMPCNM	type (A) width (25)	city name
SMPSNM	type (A) width (25)	state name
SMPZIP	type (P) width (8)	zip code
SMPCCD	type (P) width (3)	country code
SMPPHN	type (P) width (15)	telephone number
SMPFAX	type (P) width (15)	fax number
SMPMBL	type (P) width (12)	mobile number
SMPEID	type (A) width (35)	email id
SMOAD1	type (A) width (35)	office address1
SMOAD2	type (A) width (35)	office address2
SMCNM	type (A) width (25)	city name
SMSTNM	type (A) width (25)	state name
SMZIP	type (P) width (8)	zip code
SMPHN	type (P) width (15)	telephone number
SMFAX	type (P) width (15)	fax number
SMMBL	type (P) width (12)	mobile number
SMEID	type (A) width (35)	email id
SMCNCD	type (P) width (3)	country code
SMACNO	type (A) width (8)	bank a/c no
SMBNCD	type (A) width (6)	bank code
SMMST	type (A) width (1)	marital status
SMDOM	type (P) width (7)	date of marriage
SMDOB	type (P) width (7)	date of birth
SMDOR	type (P) width (7)	date of recruitment

Salesman Transaction Table

Field Name	Field Type	Field Description
STSMCD	type (A) width (6)	salesman code (K)
STSOCD	type (A) width (6)	sales order code

Rating Master Table

Field Name	Field Type	Field Description
MRRTCD	Type (A) width (6)	customer rating code (K)
MRVDSC	Type (A) width (35)	customer rating description

Sales Order Module

1. **Sales Order Master Table**
2. **Sales Order Transaction Table**
3. **Bank Account Master Table**
4. **Bank Account Branch Master Table**
5. **Pick note Master Table**
6. **Pick note Transaction Table**

Sales Order Master Table

Field Name	Field Type	Field Description
OMSOCD	Type (A) width (6)	sales order code, (K)
OMCOCD	Type (A) width (6)	company code,
OMBCD	Type (A) width (6)	branch code,
OMICD	Type (A) width (6)	invoice code,
OMITY	Type (A) width (6)	invoice type,
OMIDT	Type (P) width (7)	invoice date,
OMIAMT	Type (P) width (8,2)	invoice amount,
OMACNO	Type (A) width (8)	bank account number,
OMBACD	Type (A) width (6)	bank account branch code,
OMCTY	Type (A) width (6)	customer type,
OMCCD	Type (A) width (6)	customer code,
OMRFCD	Type (A) width (6)	customer reference code,
OMINCD	Type (A) width (6)	inquiry code,
OMQCD	Type (A) width (6)	quotation code,
OMSMCD	Type (A) width (6)	salesman code,
OMCDP	Type (P) width (5,2)	discount percentage,
OMCDA	Type (P) width (8,2)	discount amount,
OMIDP	Type (P) width (3)	item discount percentage,
OMPCD	Type (A) width (6)	Picknote code,

OMRDT	Type (P) width (7,0)	Return date,
OMTQTY	Type (P) width (8,0)	total quantity,
OMAMT	Type (P) width (13,2)	Amount
OMRRSN	Type (A) width (35)	Return reason,

Sales Order Transaction Table

Field Name	Field Type	Field Description
OTSOCD	Type (A) width (6)	sales order code, (K)
OTCOCD	Type (A) width (6)	company code,
OTBCD	Type (A) width (6)	branch code,
OTICD	Type (A) width (6)	invoice code,
OTITCD	Type (A) width (6)	item code,
OTIQTY	Type (P) width (8,0)	item quantity,
OTILP	Type (P) width (7,2)	line price,
OTAMT	Type (P) width (7,2)	Item amount,
OTSCD	Type (A) width (6)	supplier code,
OTWCD	Type (A) width (6)	warranty code,
OTPMCD	Type (A) width (6)	movement code,

Picknote Header Table

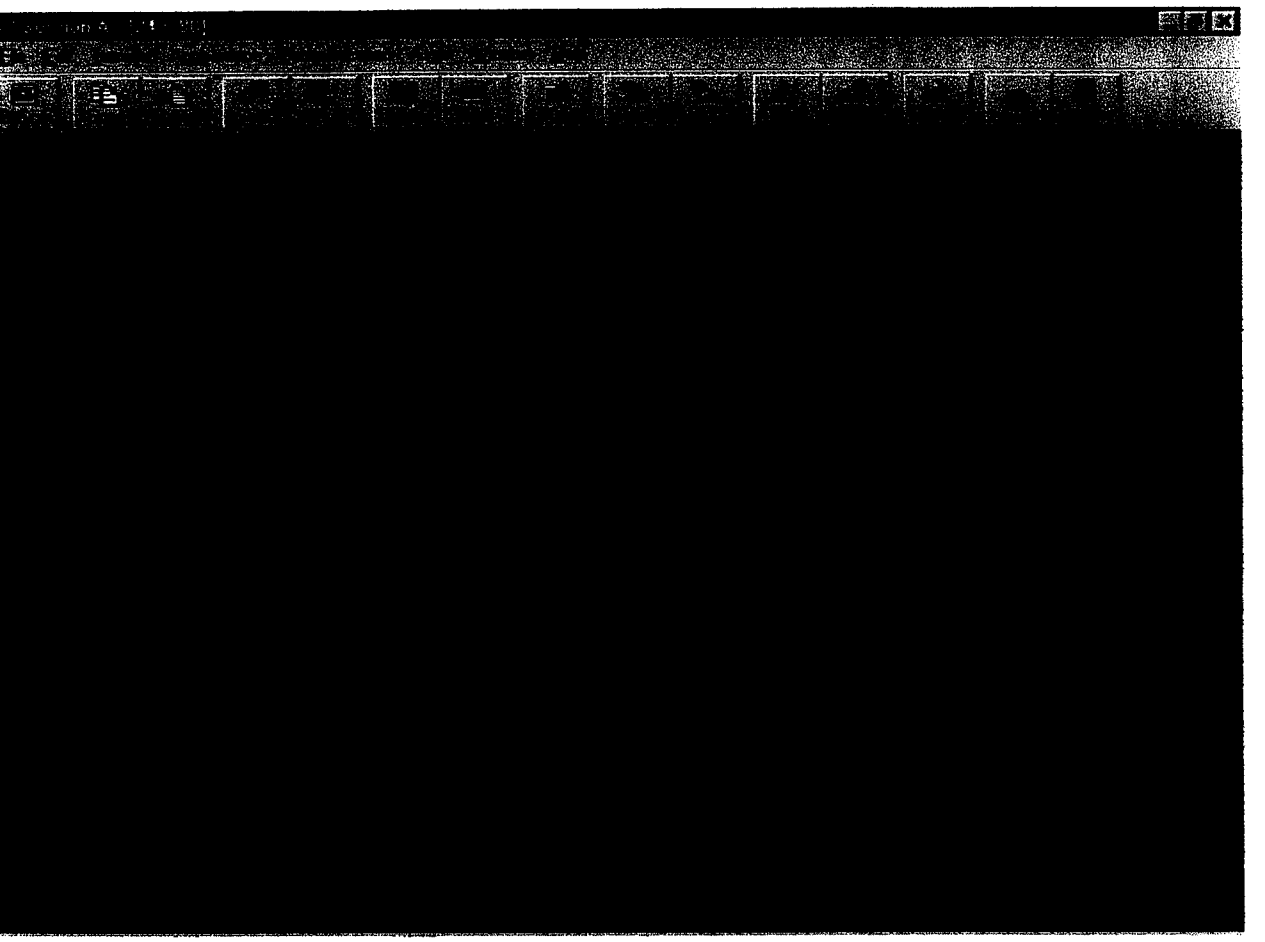
Field Name	Field Type	Field Description
PHPCD	Type (A) width (6)	picknote code, (K)
PHSOCD	Type (A) width (6)	sales order code,
PHPDT	Type (P) width (7,0)	picknote date,
PHSTS	Type (A) width (1)	picknote status,

Picknote Transaction Table

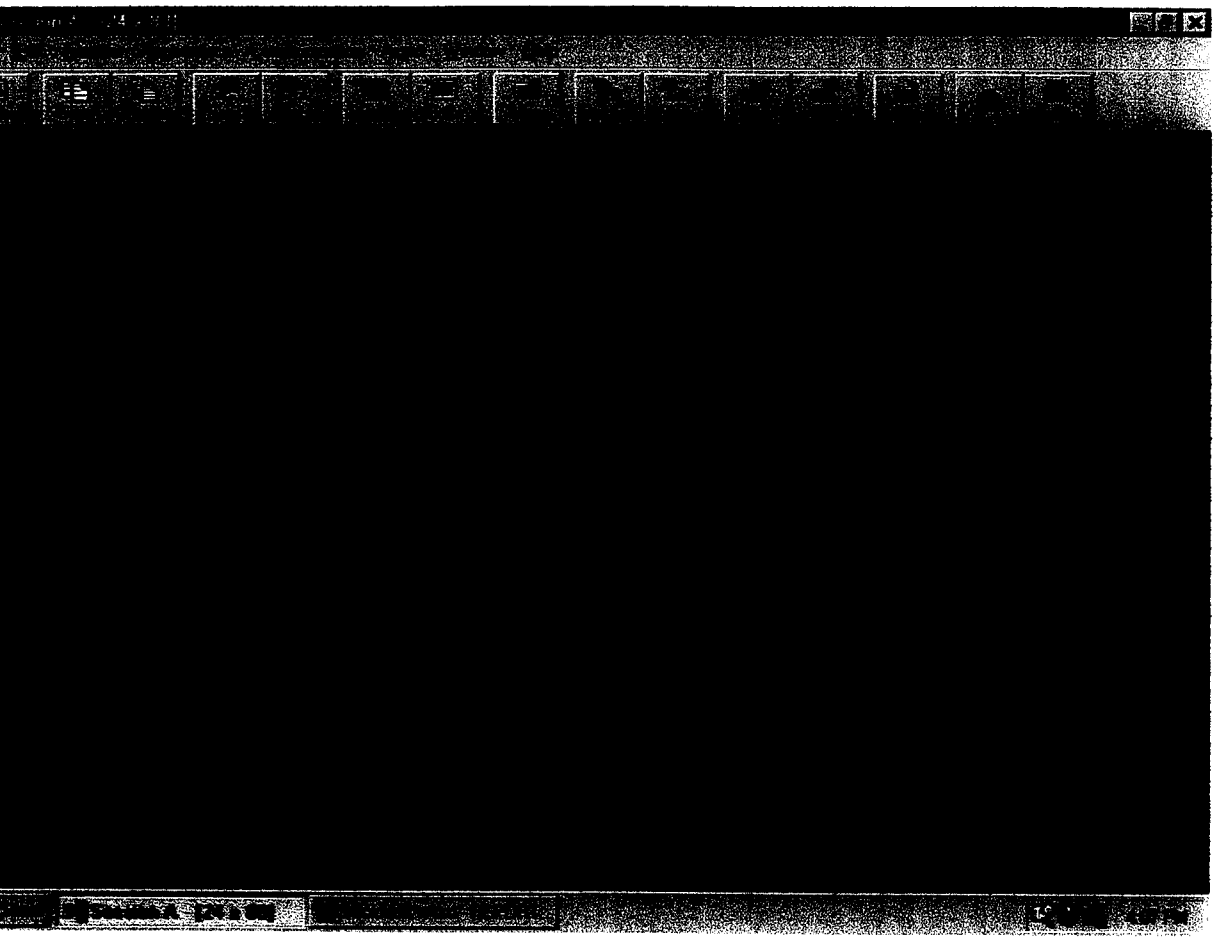
Field Name	Field Type	Field Description
PTPCD	Type (A) width (6)	picknote code, (K)
PTITCD	Type (P) width (7,0)	item code,
PTIQTY	Type (P) width (4,0)	item quantity.,

Sample Screen Shots

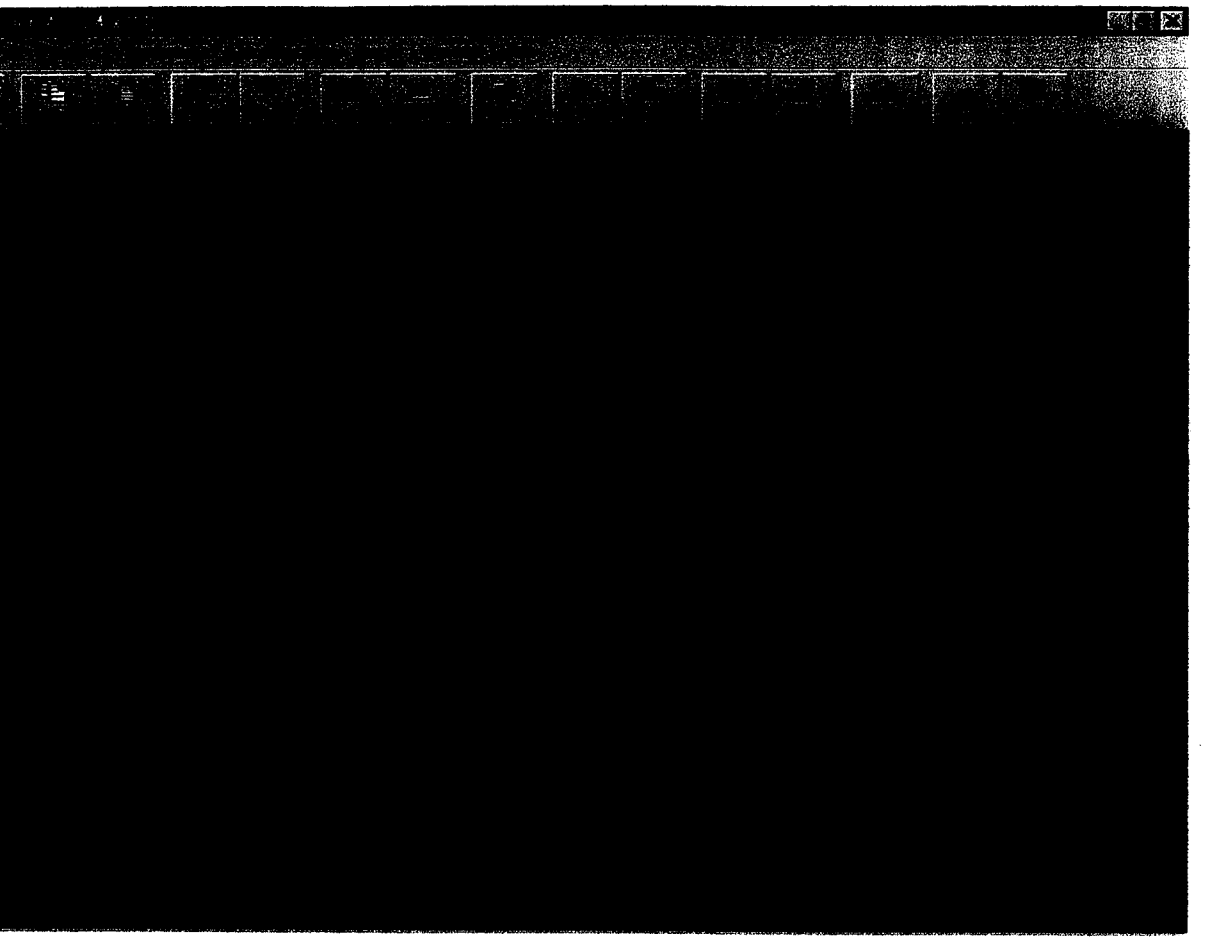
Sales Order Management (Add/Delete/Update/Search) – Screen 1



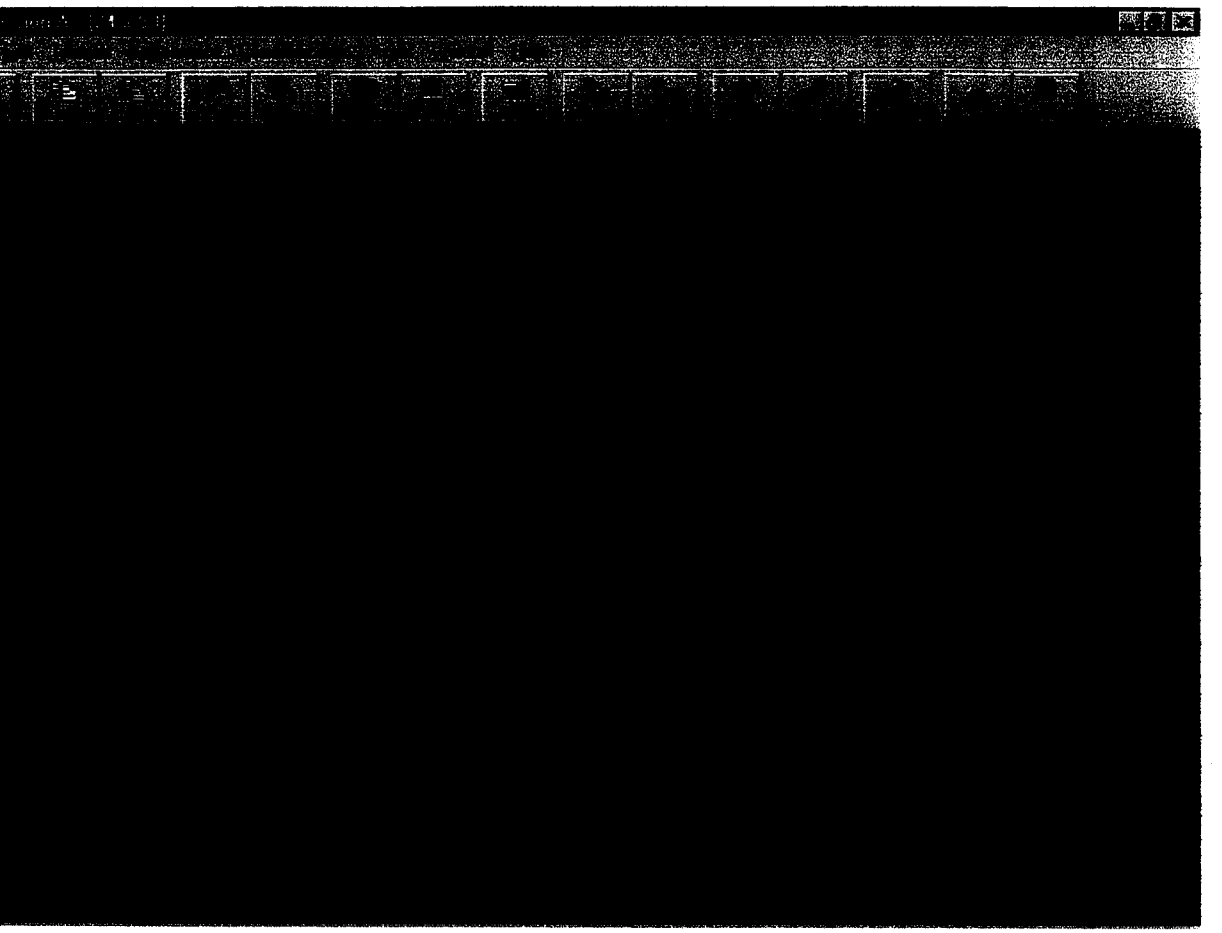
Sales Order Management (Add/Delete/Update/Search) – Screen 2



Customer Management (Add/Delete/Update/Search) – Screen 1



Customer Management (Add/Delete/Update/Search) – Screen 2



Customer Rating (Add/Delete/Update/Search)