

DEVELOPMENT, TESTING AND IMPLEMENTATION
OF THE SOFTWARE PACKAGE
FOR THE AUTOMATION OF
KRIBHCO, STATE MARKETING OFFICE
(VOL. I)

The Project Report Submitted to
THAPAR INSTITUTE OF ENGG. & TECH, PATIALA
in partial fulfilment of the requirements
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MASTER OF COMPUTER APPLICATION

Submitted by :
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This is to certify that the project report entitled

DEVELOPMENT, TESTING AND IMPLEMENTATION OF THE
SOFTWARE PACKAGE FOR THE AUTOMATION OF
KRIBHCO, STATE MARKETING OFFICES

contains the work done by

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This work has not been submitted to any other
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THE ORGANISATION

Tata Consultancy Services (T.C.S) ,a division of TATA SONS LIMITED is the largest computer and management consultancy firm in South Asia. Established in 1968 , TCS has pioneered and successfully executed a number of prestigious management and computer projects both in India and abroad. These projects cover a wide spectrum of business and industry. TCS professionals , numbering about 2800 , of which 2300 are computer professionals , hold highly impressive academic records from leading universities in India and abroad and are handling a variety of management and computer assignments.

TCS provides a wide spectrum of professional services in Information Technology, Management Consultancy and Training. These services cover all aspects of systems and software engineering including Information Needs Analysis, Computer Hardware Planning and Selection, User and EDP Staff Training, Systems Analysis and Design, System Conversion, Customised Application Software Development and implementation and System Software Development. In addition, expertise in Data Base Management System, Specialised System Software and Computer Graphics acquired through successful execution of a variety of sophisticated foreign projects is offered to the Indian market.

The range of services offered by TCS also include Capacity Planning for Computer Systems, Quality Assurance, Computer-Aided Instructions, Computer-Aided Engineering and Design, Office Automation and Computer Communication Networks.

TCS has developed ready-to-use, interactive, menu driven and user-friendly packages for minicomputers and microprocessor based systems. Apart from these applications software products, TCS offers a number of tools for productivity, software development and system conversion.

TCS recognises that while Information Technology plays a vital role in enhancing the effectiveness and efficiency of systems in an organisation, these systems are a part of a larger management process. In recognition of this needs, it offers Management consultancy in the areas of Corporate Strategy, Organisation Design and Development, Human Resource Development, Management Planning and control systems, Financial and Materials Management, Productivity Enhancement and Project Management. These services are characterised by a multi disciplinary approach, commitment to implementation and the use of the latest approaches to problem solving such as Systems Engineering and Cybernetics. TCS has also set up a center for Systems Engineering and Cybernetics to enable its consultants to use these techniques in the analysis and solution of complex organisational and social problems.

While training is an integral part of the process of implementation and transfer of skills to the client organisation, TCS also conducts public training workshops in the state of art information technology and management disciplines as well as in company programmes tailored to specific needs both in India and abroad.

Being in the knowledge industry, TCS lays a major corporate emphasis on the development of its human resources ranging from intensive initial training for new entrants to a wide array of continuing education programmes and experience sharing sessions in the state of the art information technology.

TCS is committed to the development of fellow professionals and organises training programmes. These programmes cover technical areas of relevance to the computer professionals as well as management and personnel development areas. The programmes are periodically offered to the employees according to the requirements. These programmes are conducted by experienced TCS consultants, guest faculty from institutes of higher learning

In India, TCS clientele includes the Government of India, State Government Departments, large Public and Private Sector organisations as well as small and medium sized companies.

In the overseas market, TCS has undertaken and successfully completed over 400 assignments in about 250 organisations spread all over the world. Over 4500 man years of consultancy have been provided on these assignments. To support project sites the world over, TCS has established representative offices in Sydney, Bahrain, Melbourne, Japan, Kuwait, Arnhem(the Netherlands), London, Singapore, Hong Kong, Zug(Switzerland), Edinburgh, Dallas, New York, Chicago, Boston, California, Washington, Florida, Germany and Paris.

EXISTING SYSTEM

2.1 Krishak Bharati Cooperative Ltd.

KRIBHCO is a co-operative sector fertilizer company with its manufacturing plant located at Hazira in Gujarat.

For effective marketing and distribution of the fertilisers KRIBHCO has a network of State Marketing Offices (SMO), Area Offices (AO), Krishak Bharati Seva Kendras (KBSK) and Field Representatives (FR).

KRIBHCO had decided to set up a computerised information system for its state marketing offices. In this connection, Tata Consultancy Services (TCS) were retained as consultants to study the various functional areas of specified state marketing offices, design and develop the software required to achieve the objectives of computerisation.

2.2 SCOPE OF THE PROJECT.

The functional areas identified for computerisation are as under :

- Payroll
- Invoicing
- Sales Analysis
- General Ledger
- Accounts Receivable

The computerised system is to be initially provided for the SMOs in the states of Gujarat, Maharashtra, Uttar Pradesh, Punjab and Rajasthan. The author has been associated with only invoicing, sales analysis, general ledger and accounts receivable module. The major chunk of the developmental activity has been done for the accounts receivables and general ledger modules. For the rest two modules testing has been done. The author has also been associated with the modification/development of invoicing module for Gujarat.

2.3 Existing system

Presently, the billing, invoicing, sales analysis and financial accounting in KRIBHCO SMO is done manually. The main focus in the company is on marketing and sale of fertilisers. The various type of sale is described below along with the documents used in the company for information flow :

- RO (Release Order) based sale/Federation Sale/Credit Sale
- ROCIR (Release Order cum Invoice cum Receipt) based sale
/ Direct Sale
- Seva Kendra Sale
- Other types of sales

RO BASED SALE (FEDERATION SALE / CREDIT SALE) :

This type of sale is primarily made by the SMO to the various state co-operative societies (apex bodies). This type of sale is basically a credit sale and the sale document is a release order. ROs can also be issued by the FRs and the Area

Offices. The concerned society approaches the SMO with its requirement of fertilisers. The SMO prepares release orders for the fertilisers required, copies of which are given to the customer and the concerned warehouse. Release order is for a single customer, single product and single warehouse.

If the actual details of fertiliser lifted is different from that on the RO, a RO change/cancellation document is initiated. Based on the change/cancellation, credit or debit notes are issued to the customer.

Payments are received from the customers through cheques or DDs corresponding to which there is a bank receipt voucher. The payment details are used to update the customer balance.

When the customer lifts material, the warehouse issues a Material Lifting Certificate (MLC), a copy of which is sent to the SMO. MLCs will be used by the system for inventory and stock accounting.

ROCIR BASED SALES (DIRECT SALES) :

In this type of sale, fertilisers are sold directly to individual co-operative societies. Direct sales are carried out mainly by Field Representatives (FRs). The FRs issue a Release Order Cum Invoice cum Receipt to the customer on receiving a cheque or DD for the material required.

The warehouse issues a challan/MLC, countersigned by the customer for the material lifted, to the FR.

The ROCIRs are sent to the SMO where they are used for accounting and sales analysis. ROCIRs are considered as receipts for accounts receivable purposes.

The FRs deposit the cheques/DDs along with the challans at the local co-operative bank. Depending on the product sold and the prevailing terms and conditions with the banks, there is a maturity period associated with the cheques/DDs. When the amounts mature the local co-operative banks transfer the amount to the state co-operative bank and send an advice to the SMO. The state co-operative banks transfer the amounts to the bank of the SMO. Alternatively, the FR sends the cheques/DDs directly to the SMO. The FR maintains a payment register (passbook) of his remittances which will be either in the form of a bank deposit register or pay-in slip register.

During the monthly meetings at the Area Offices, the FR submits copies of the ROCIRs, MLCs and the passbook.

If any changes are required to be made to the original ROCIR when lifting details differ from that on the original, a ROCIR change/ cancellation document will be used. A clearance certificate from either the warehouse or the FR will be used to certify the lifted and unlifted details before issue of the ROCIR change document. The ROCIR change document along with the clearance certificate will be sent to the SMO where it will be input to the system.

SEVA KENDRA SALES :

Seva Kendra sales are retail sales to small farmers across counters. It is essentially a cash sale and the person in-charge of the Seva Kendra issues cash memos for the sale of fertilisers. The Seva Kendras send summary sales reports to the SMO where it is used for purposes of financial, inventory and sales accounting.

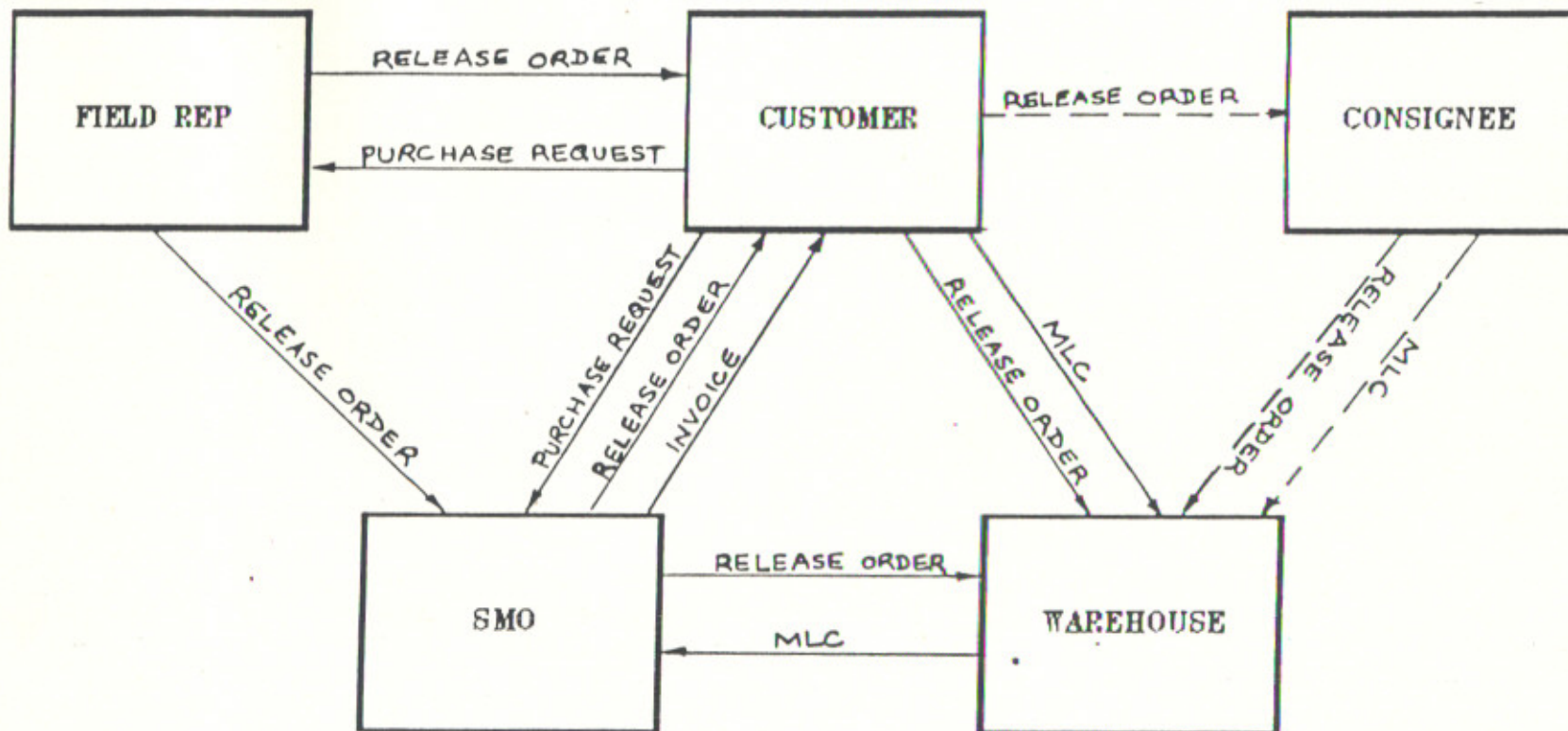
OTHER TYPES OF SALES:

GUJARAT

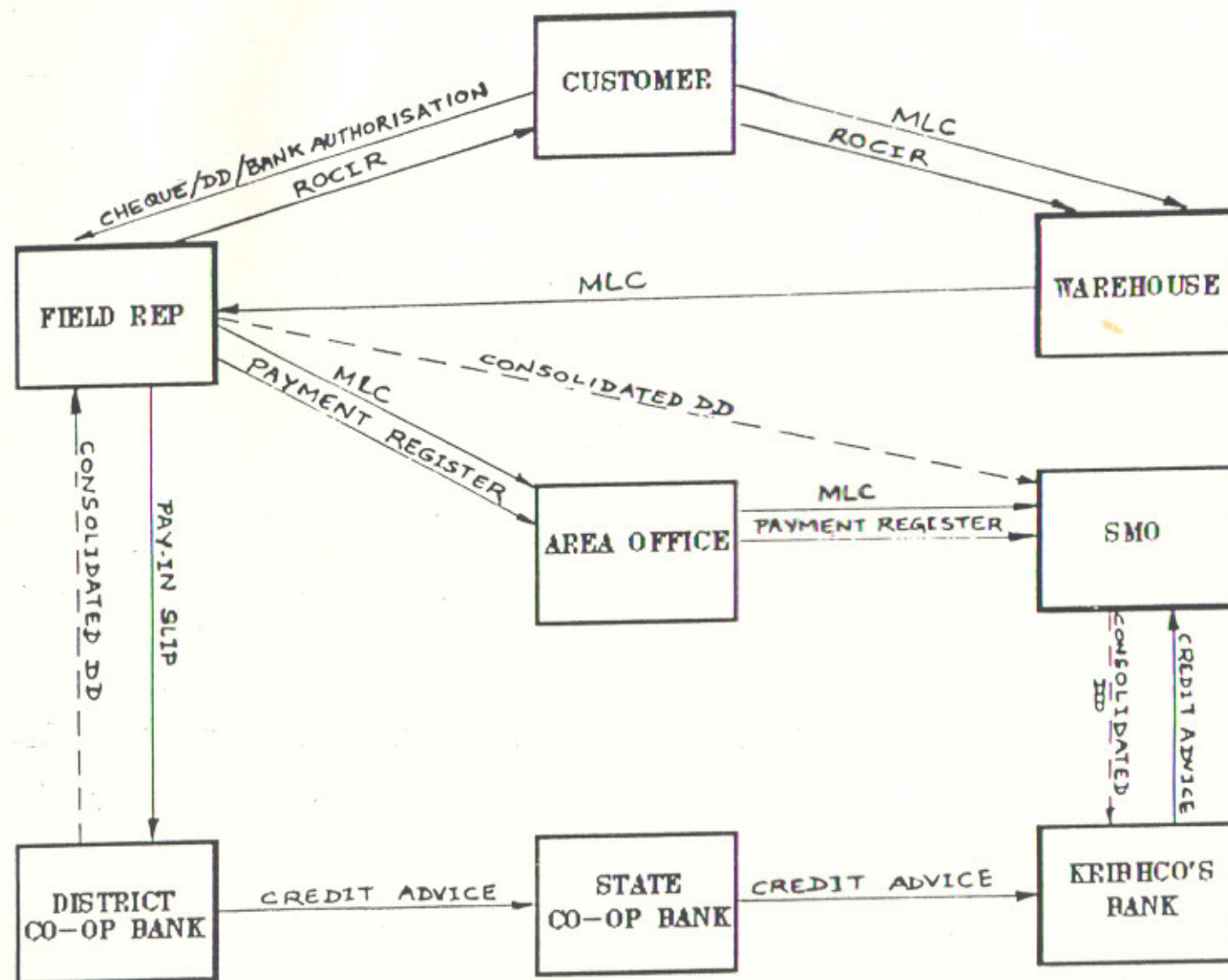
In the state of Gujarat, there is only one apex body, GUJCOMASOL. For all accounting purposes, GUJCOMASOL is the only customer. The sale of materials is based on Material Despatch Advices (MDAs) rather than on ROs. MDAs are prepared at the plant and the material is despatched directly to the individual co-operative societies. Instead of MLCs, Consignment Receipt Reports (CRRs) are used to indicate the receipt of material. A copy of the MDA is sent to the SMO. A consolidated invoice for all MDAs processed in a day is generated and sent to the customer.

Problems with the Manual System

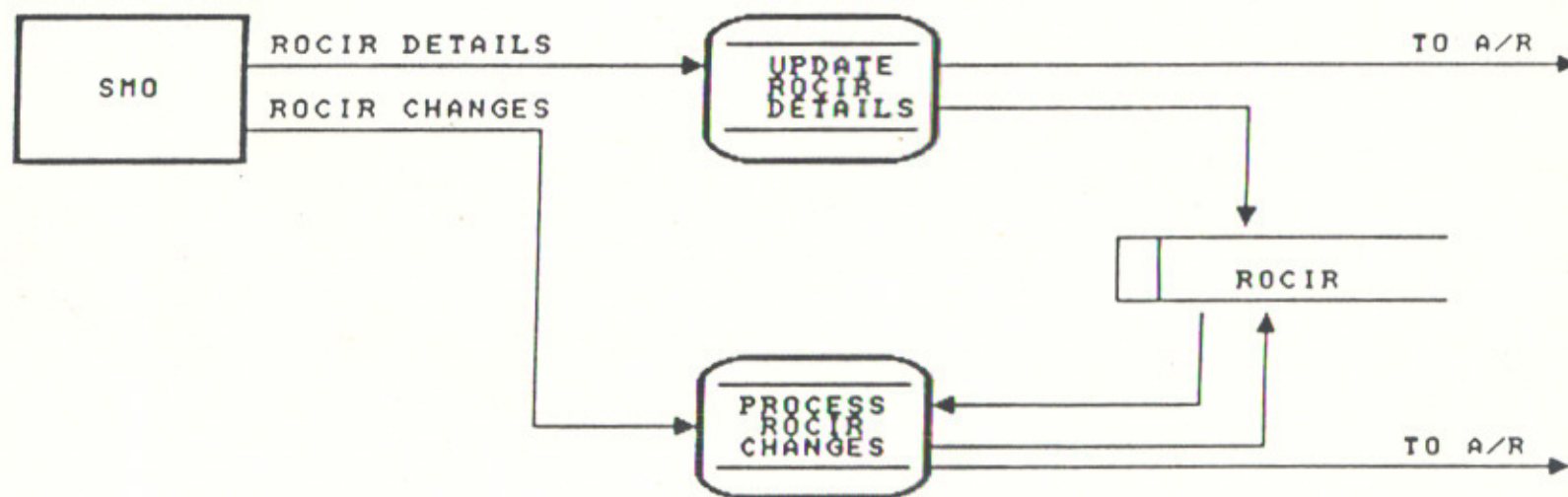
- Lack of Accuracy
- Less efficient
- Laborious due to massive data requirements
- Man Dependent
- Time consuming



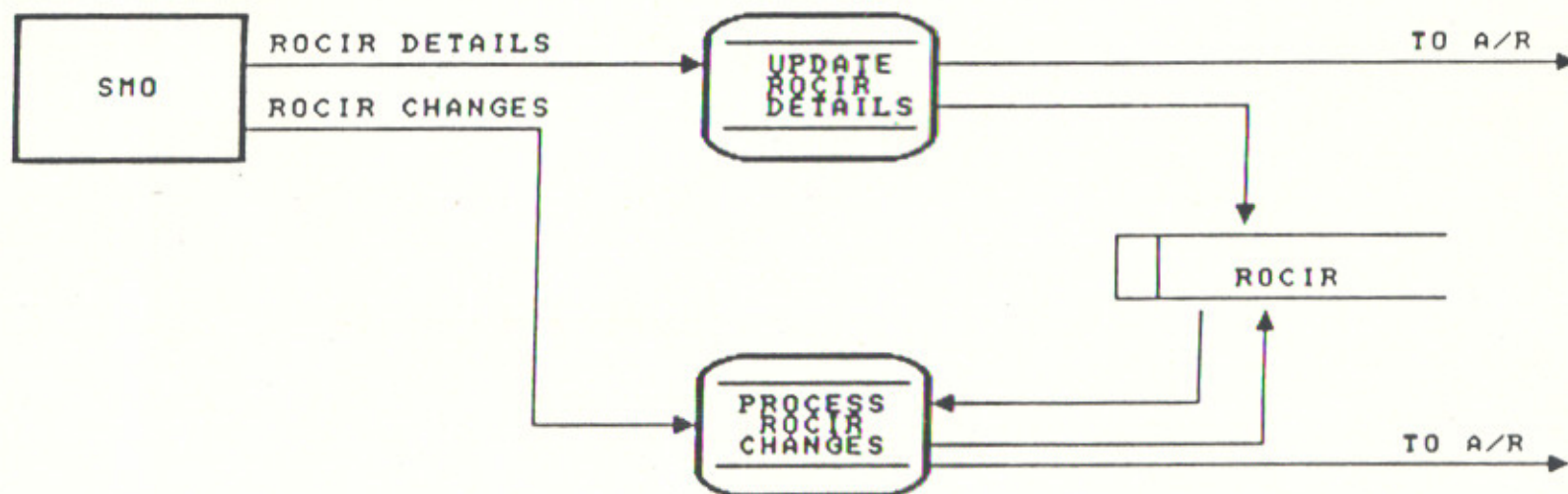
DOCUMENT FLOW
RO BASED SALES



DOCUMENT FLOW
ROCIR BASED SALES



INFORMATION FLOW - ROCIR BASED SALES



INFORMATION FLOW - ROCIR BASED SALES

DESIGN

3.1 System Objectives

- Ease in data handling and maintenance
- Fast and Accurate report generation
- Ease in computations
- Invoice Generation

3.2 System Modules

The system has four main modules besides the housekeeping and master maintenance module .These are :-

1. INVOICING MODULE
2. GENERAL LEDGER
3. ACCOUNTS RECEIVABLES
4. SALES ANALYSIS

INVOICING

The invoicing module generates invoices based on the release orders input to the system. The release orders which are prepared manually at the SMO are input to the system using screens provided. Invoices will be generated using various sales terms parameters stored in the system like octroi, discounts, sales tax, commissions, transport subsidy etc., and the information on the release order for which the invoice is being generated.

The module will also allow entry of RO changes and cancellations. This information is used for manual updating the customer's balance. ROCIRs will also be input to the system for updating the customer's balance and sales figures for sales analysis. ROCIR changes / cancellations would also be input to the system to update customer balances and sales figures.

Invoicing Inputs

Release Order/Material Despatch Advice (RO/MDA).

- on screen entry in invoicing
- for credit based sale
- is for a single customer, single warehouse
and a single product
- input in system for generation of invoices
- automatic updation of sales analysis figures

Release Order Change / cancellation

- on screen entry in invoicing
- issued against a single RO
- Debit/Credit Note issued , if required
- automatic updation of sales analysis figures

Release Order Cum Invoice cum Receipt (ROCIR).

- on screen entry in invoicing
- cheques/ DD sent to SMO directly
or pay_in slip register sent monthly
- automatic updation of sales analysis figures

ROCIR change / cancellation

- on screen entry in invoicing
- automatic updation of sales analysis figures
- against a single ROCIR

Seva Kendra Summary

- on screen entry in invoicing
- monthly sales summary for on the counter cash sales
- automatic updation of sales analysis figures

Invoicing Outputs

1. Invoices on pre-printed stationery
2. Master/transaction checklists
3. Status Reports

List of invoices/ committed/cancelled/not committed

RO/ROCIR Status Report

List of ROs pending for invoicing

List of MDAs invoiced (for Gujarat)

Productwise Sales register

FR Wise MDA/ROCIR list

Warehouse wise MDA list

S.K Summary - List of Differences

4. Period End Reports

RO based Sales Day Book

ROCIR Based Sales Day Book

SK Summary Sales Day Book

Processing

The ROs prepared manually by the SMOs will be entered into the system using a screen. Once the details of a release order have been entered into the system, an invoice can be generated for it using a pre-defined set of parameters. Invoice can be generated in any one of the following ways.

- a) Automatically generated by Invoicing module on basis of RO entered into system. The details are made available to AF module.
- b) Prepared manually by SMO and entered through appropriate screens.

The system will maintain two different series of invoice numbers based on seasons, viz Rabi and Kharif seasons. The invoice number will be generated by the system.

The invoice contains the customer, product and quantity details as per the RO. The amount details are split into issue price, pre-tax amount, taxes, and post-tax amounts based on the predefined invoice parameters.

A request for printing the invoice can then be submitted to the system which will cause the invoice to be printed on pre-printed stationery.

The posting of an invoice/ROCIR/SK Summary will also cause the balance of the customer to be updated.

SALES ANALYSIS

The sales analysis module will perform the following functions :

1. Compare actual area office sales Vs plan.
2. Compare actual district sales Vs plan.
3. Compare actual FR sales Vs plan.

Sales Analysis Inputs

The following inputs will be provided to the system:

1. Area office/District office/ FR Sales plan.

Screens will be provided for the entry of the sales plan. The sales plan will contain monthly targetted sales figures for each of the areas, districts, field representatives and the state as a whole.

Sales Analysis Outputs

The following outputs will be available from the system:

1. Sales performance reports.
2. Sales Target lists

Sales Performance reports

The sales performance report lists the targetted , actual and deviation from targets of the sales figures for each month, product wise. The report can be produced for each of State , Area , District and Field representative levels. The report is printed in the order of product code.

Sales Target Lists

Through this report, the user can see the target set for each month for a particular SMO and for a particular product. The report is listed for a particular date. The report is ordered by target level, Level Code & Product in the same hierarchical order.

Processing

The field representative, district and area masters should first be input to the system using the screens provided for the purpose. This will be an one-time activity after which the masters will need to be updated only if there are any changes to be made to the information in the masters using maintenance screens.

Once the master data is ready the sales plan is input to the system using screens provided by entering the month-wise targeted sales figures for each area, district and field representative. Information is to be entered separately for each of the products.

The values of the actual sales figures for any month for each product will be updated automatically by the system using the information from the invoicing module (Invoices and ROCIRs) and the accounts receivable module (Seva Kendra sales summaries).

The actual sales achieved against targets can be compared using the sales performance reports which will be printed monthly.

ACCOUNTS RECEIVABLES

The AR module of the system maintains the ledgers of all customers. It keeps track of amounts due and received from customers. It also enables the SMO to get various analysis from the ledgers. In addition to this, this module will provide facilities for tallying the amount realisable from banks against cheques received by the Field Representatives. This will help in credit reconciliation.

Accounts Receivables Inputs

Credit Notes

- onscreen entry in AR module
- prepared manually to adjust the balance of customer

Debit Notes

- onscreen entry in AR module
- prepared manually to adjust the balance of customer

Pay-in-slips

- onscreen entry in AR module
- maintained by the FRs for all the cheques and DDs deposited in the bank

Pre-paid advices

- onscreen entry in AR module
- prepared against DDs received by FR for the material to be lifted from seva kendras
- sent to SMO along with monthly sales summary

Posted Invoice/ROCIR/SK Summary Details

- obtained from invoicing module

Posted Payment/Receipts/Journal Vouchers

- Obtained from GL module

Accounts Receivables Outputs

1. Master/Transaction Checklists

2. Status Report

Customer Outstanding Statement

Productwise customer Outstanding statement

Agewise Analysis of Outstanding

Agewise Analysis of Overdue

Statement of Delayed Payments

3. Day Book

Credit Notes Day Book

Debit Notes Day Book

4. Period End Report

Customer Ledger

Customer Trial Balance

5. Reconciliation Report

Cheques Received & not deposited

Processing

The various input documents are entered into the system using transaction screens. These transactions are to be "posted" using a separate action. An unposted transaction can be maintained thru transaction screens. On posting each transaction updates the customer balances and the transaction becomes O/S if any voucher amount is still non-zero.

O/S documents can be referred to by new documents to adjust the amounts outstanding. Payments could be specific to one or more invoices with the matching logic either specific or on account. Similarly Invoices, Cr notes and Dr notes could be specific to one reference document.

For Direct Sales, the amount received is computed based on Bank deposit Register/Pay-in-slip/ROCIR details. When Credit advices from Co-operative banks are entered, amount actually realised is computed. Based on this, credit reconciliation report is generated giving details of amount realisable against amount realised at district level. Further reconciliation is possible on the availability of credit transfers from various cooperative banks.

GENERAL LEDGER

This module will provide facilities to permit entry of all documents required for GL. Provision for establishing, maintaining and posting vouchers to subsidiary ledgers will exist.

General Ledger Inputs

Journal Voucher

- prepared manually for adjustment of accounts
- on screen entry in GL

Bank Payment Voucher

- prepared manually by SMO when cheque/DD is given to a party or an employee
- on screen entry in GL

Bank Receipt Voucher

- prepared manually by SMO when cheque/DD is received from a party or an employee
- on screen entry in GL

Cash Payment Voucher

- prepared manually by SMO when cash is given to a party or an employee
- on screen entry in GL

Cash Receipt Voucher

- prepared manually by SMO when cash is received from a party or an employee
- on screen entry in GL

Posted AR Module transactions

Posted Invoicing module transactions

General Ledger Outputs

1. Master/Transaction Checklists

2. Period End reports

Journal Book

Bank Book

Cash Book

General Ledger

Subsidiary Ledger

Trial Balance (General ledger)

Trial Balance (Subsidiary Ledger)

P & L statement - Summarised
- Detailed

Balance Sheet - Summarised
- Detailed

Processing

The system allows entry of various vouchers thru a generalised entry screen. Transaction once entered can be verified and changed thru maintenance screens. After 'posting' thru a separate option, no change will be allowed. Posting will update the account balances.

HOUSEKEEPING

Housekeeping plays a very vital role in the day-to-day operations of the SMO system and also for successful maintenance of the system. The access to this function is given only to the Database Administrator, who will be identified at the beginning of implementation. The individual functions are explained below.

Backup Procedure : In order to maintain the system data it is essential to take daily backups. This will ensure the data integrity of the system whenever there is a failure of hard disk or machine. maximum data loss will be upto a single day.

The backup procedure will be implemented as follows:

On a daily basis, the database files and before image files will be copied onto another media which can be either cartridge tape or the normal tape drive. This will ensure that the image of the entire database is backed up. This backup will be labelled with the date and preserved by the Database Administrator. Once in three days, the tapes can be rotated.

Restoration/Recovery : Restoration of data is required when there is loss of data due to hardware failure or errors due to any procedural or operational mistakes committed. This is exactly the reverse process of backup. The backup files will be copied from the backup media onto hard disk and the database state will be restored to the last stage before the backup. In order to bring the system to the current state, all the operations which were carried out after the last backup should be repeated.

Addition of user : A new user can be added or some old password may be changed through this file.

Master Maintenance

Through this module , various masters can be updated or deleted .The master listings can also be obtained through this module. The master files in the system are :-

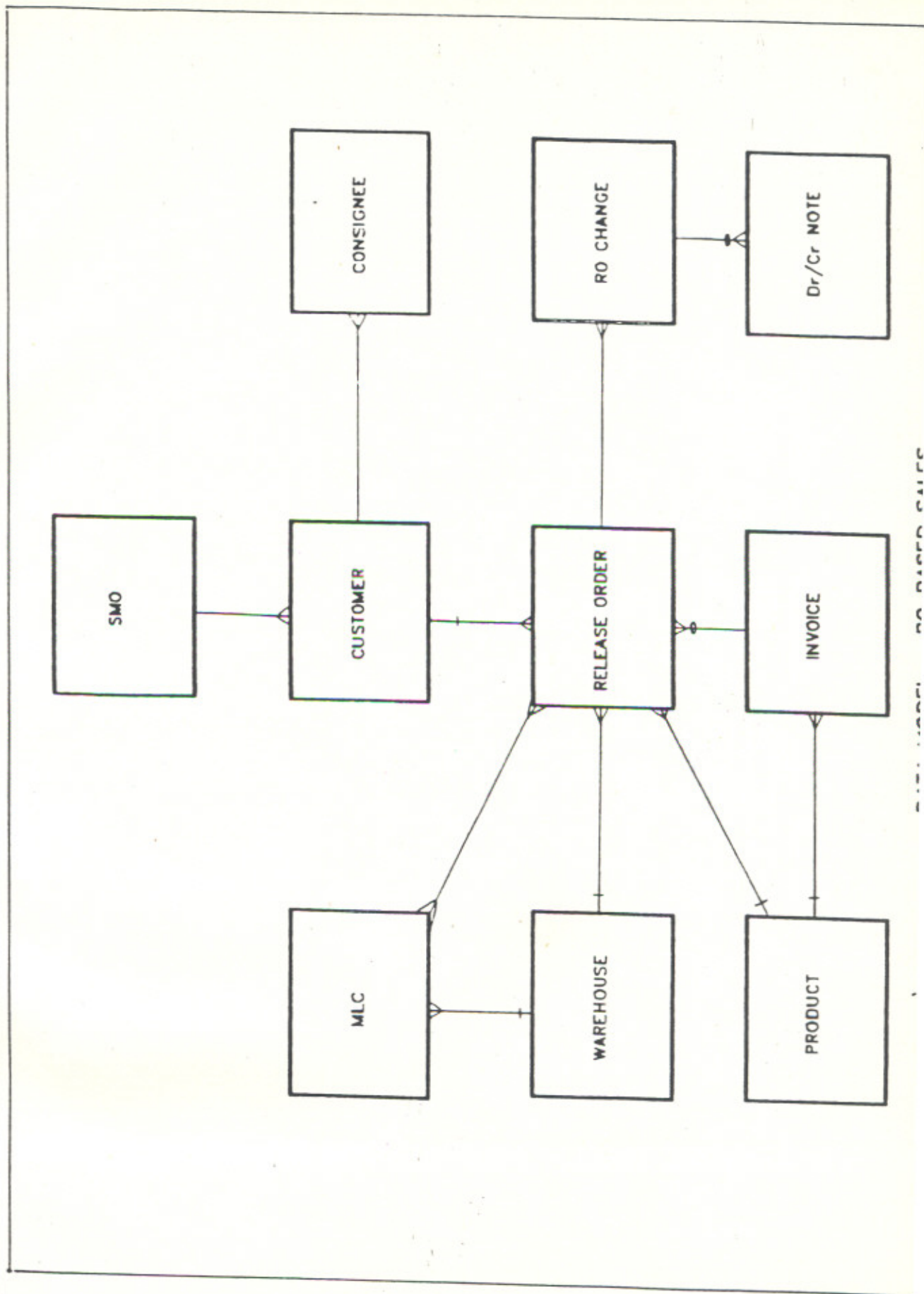
1. Customer
2. Product
3. Warehouse
4. Account
5. Seva Kendra
6. Subsidiary Ledger
7. Employee Master
8. SL type

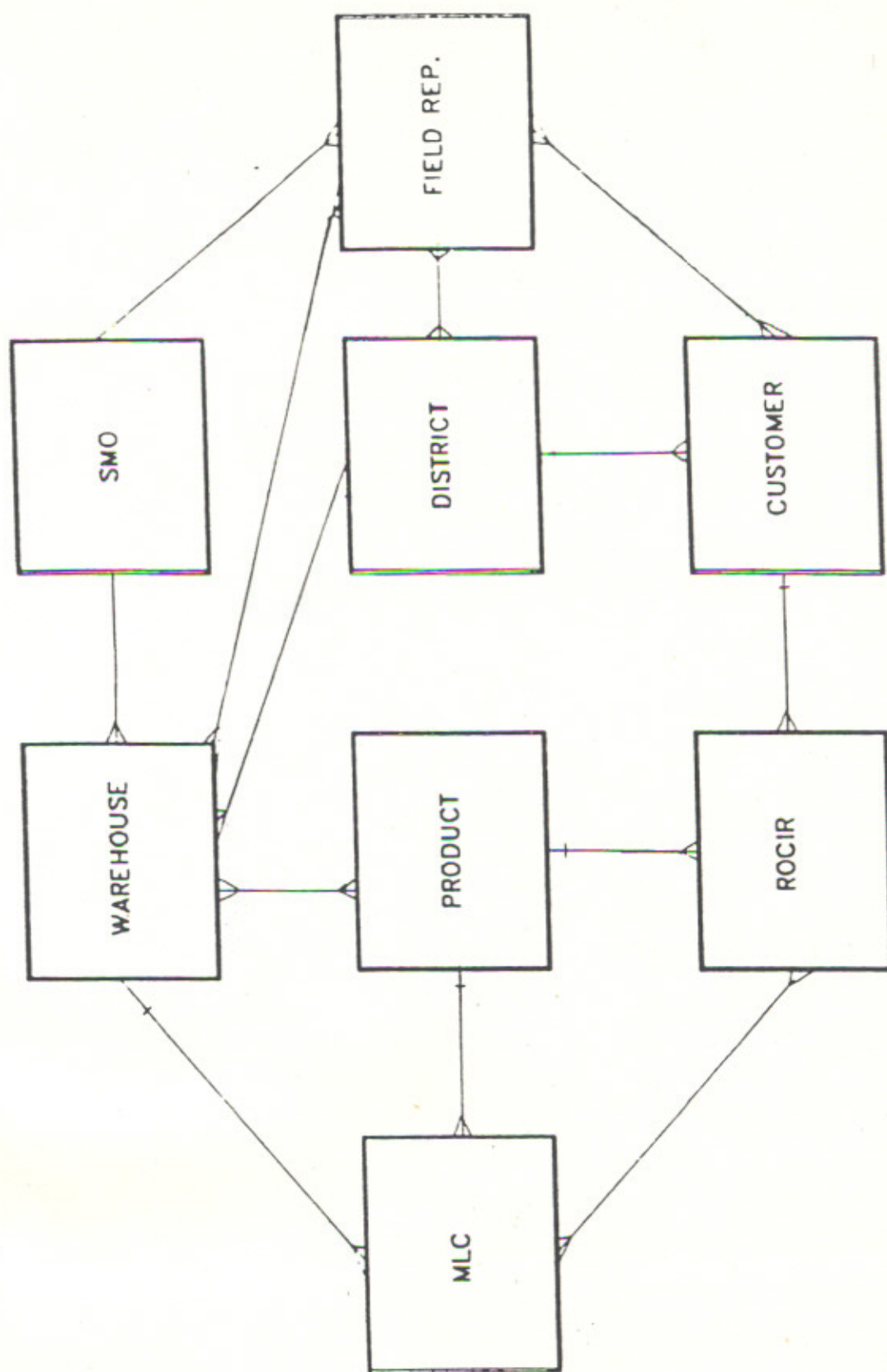
Besides the various codes maintained in the system are also updated through this module. These are

1. Abbreviated Account Codes
2. Codes and descriptions(FR/AREA/DISTRICT)
3. Document Codes (Codes of all transaction vouchers)

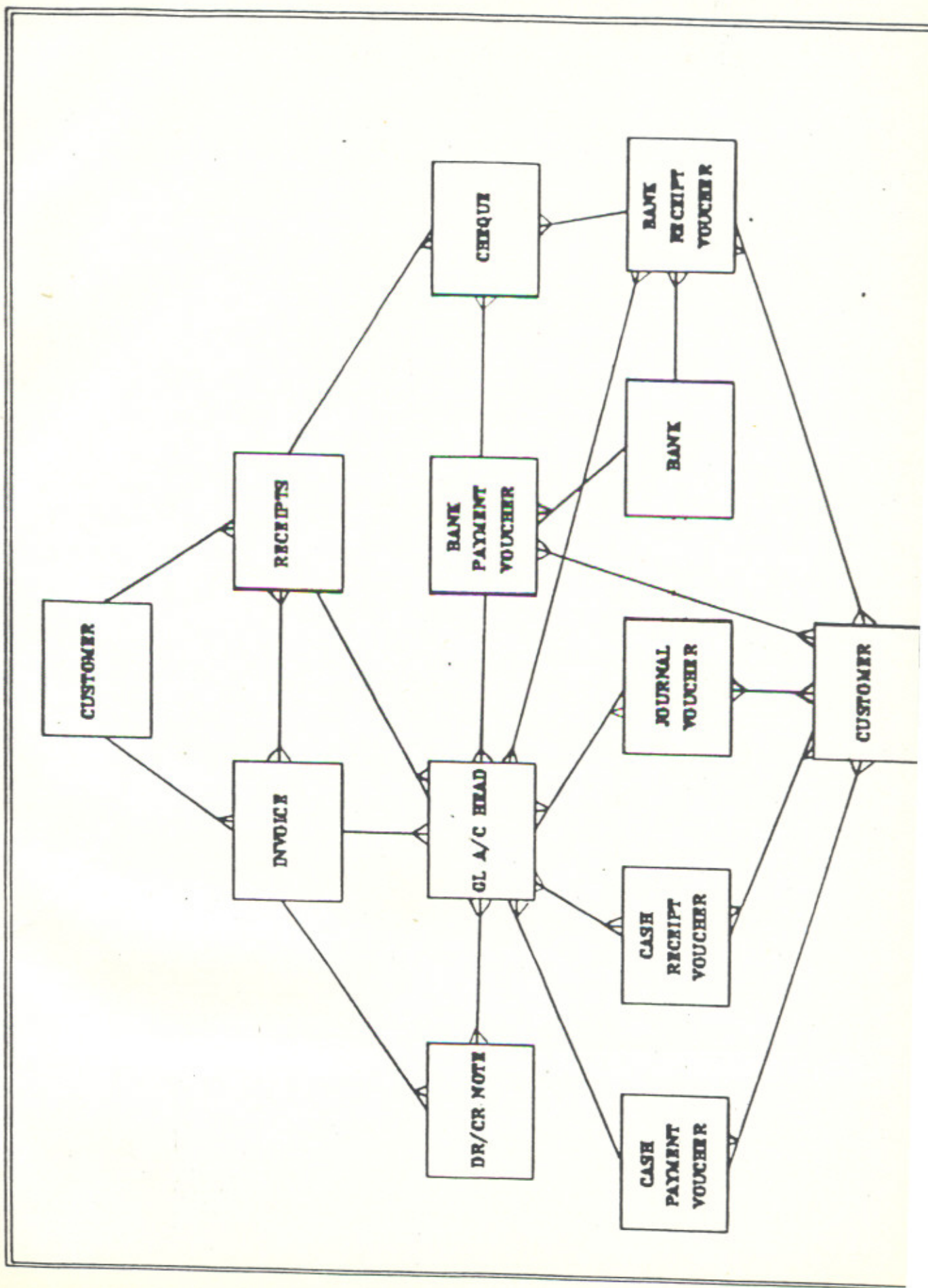
3.3 Database

The various database tables have been described with their contents in the appendix I along with their key fields. Various data models have been used to depict the data for the various modules of the system, namely Invoicing, Sales Analysis and Financial Accounting in the next few pages.





DATA MODEL ROCIR BASED SALES



INPUT/OUTPUT FORMATS

In the SMO system screens form the basic and only interface between the user and the system. All the functions available in the system will be accessed through menus and parameter screens. Thus all the inputs and outputs to the system are done through the screens.

Screens are designed based on the functionality within each module. The types of screens can be as follows :-

- Menu Screens
- Data entry/query/update screens
- Report generation screens
- Process initiating screens

Menu Screens provide access to different functions within the system. There are upto 3 levels of menu which are hierarchical in design. The last level of menus are the screens, reports etc.

Data Entry/Query/Update Screens These screens provide means of storing and retrieving information on-line. These screens are normally based on the input document formats in order to make data entry efficient.

Report Generation Screens These are at the same level as data entry screens. There may be an additional screen to take in report parameters before generating the reports.

Process Initiating Screens These are basically functions provided in the menus which call a batch program for execution and control is passed back to the calling menus.

INPUT FORMATS

The input screens for the various modules number over 70 screens. Thus only sample screens for GL module are shown. GL module has been shown here as sample because the author was associated with the development of screens for this module. The hierarchical pattern of screens for all other modules is similar. Some of the screens are self explanatory. For them no description has been given. For others, the insert, query, update and delete modes have been explained briefly.

FORM NO : 200

MAIN MENU

- 1. INVOICING
- 2. GENERAL LEDGER
- 3. ACCOUNTS RECEIVABLE
- 4. SALES ANALYSIS
- 5. PAYROLL
- 6. HOUSEKEEPING
- 7. MASTER MAINTENANCE
- X. EXIT

SELECT OPTION _

FORM NO : 300

GENERAL LEDGER MAIN MENU

- 1. TRANSACTION
- 2. REPORTS
- 3. PARAMETERS
- 4. PERIOD END PROCESSES
- X. EXIT

SELECT OPTION _

FORM NO : 301

GENERAL LEDGER TRANSACTIONS MENU

1. CASH RECEIPTS
2. BANK RECEIPTS
3. CASH PAYMENTS
4. BANK PAYMENTS
5. JOURNAL VOUCHERS
- X. EXIT

SELECT OPTION

FORM NO : 311

CASH RECEIPTS

ARC CODE DOC CODE DOC DATE DOC NO
CASH CODE AMOUNT

ABRV CODE	A/C NO.	SLC	DR/CR	AMOUNT	REFERENCE TYPE NO.	DATE
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DEBIT TOTAL CREDIT TOTAL CONFIRM DELETION

4.1.1.1 CASH RECEIPTS

FORM NO. : S311(CASH RECEIPTS) | TYPE DATA ENTRY

FUNCTION : THIS FORM IS USED TO ENTER, QUERY AND UPDATE
CASH RECEIPT VOUCHERS.

SCREEN DESCRIPTION :

ENTRY MODE : Voucher level details are accepted and are validated so that the document number is unique within doc. code, within the current year. The voucher level GLC will be copied as cash code. At the end of the amount field, cursor moves to second block and accounting details are accepted with proper validations.

Reference details are accepted and validated , debit and credit totals are dynamically displayed in the third block depending on voucher amount and transaction amount(CASH code is DEBITED in this case). COMMIT is allowed only if debit and credit totals tally.

QUERY/UPDATE MODE : In this mode, KEY details are taken from first block(Voucher Level) and the details are retrieved in both the blocks. Modifications are allowed for NON KEY fields. Totals are displayed accordingly.

Account description and other display fields are also decoded in this mode, as in entry mode.

DELETE PROCESS : Deletion is available in QUERY mode where the records to be deleted are first retrieved in query mode by giving key values in the first block. If the entire voucher is to be deleted, delete key will be pressed in first block which will trigger the following:

- Confirm deletion (Y/N)
 - Delete corresponding records in gl_txn_dtl
 - delete header record from gl_txn_hdr
 - commit deletion process
-

FORM NO : 312							
BANK RECEIPTS							
ARC CODE		DOC CODE		DOC DATE		DOC NO	
BANK CODE		GLC CODE		AMOUNT			
ABRV	A/C				REFERENCE		
CODE	NO.	SLC	DR/CR	AMOUNT	TYPE	NO.	DATE
DEBIT TOTAL		CREDIT TOTAL		CONFIRM DELETION			

FORM NO : 313							
CASH PAYMENTS							
ARC CODE		DOC CODE		DOC DATE		DOC NO	
CASH CODE				AMOUNT			
ABRV	A/C				REFERENCE		
CODE	NO.	SLC	DR/CR	AMOUNT	TYPE	NO.	DATE
DEBIT TOTAL		CREDIT TOTAL		CONFIRM DELETION			

4.1.1.2 BANK RECEIPTS

FORM NO. : S312(BANK RECEIPTS) : TYPE DATA ENTRY

FUNCTION : THIS FORM IS USED TO ENTER, QUERY AND UPDATE
BANK RECEIPT VOUCHERS.

SCREEN DESCRIPTION :

ENTRY MODE : Voucher level details are accepted and are validated so that the document number is unique within doc. code, within the current year. In this case bank code is entered which is validated from the ABRV_AC_CODES and the account number against this is brought to the next field. The bank code, account no. and amount of the header is copied to the first line of the next block with DC_IND as 'D' and the cursor is brought to the REF_DOC_NO of the first record in the next block.

Reference details are accepted and validated, debit and credit totals are dynamically displayed in the third block depending on voucher amount and transaction amount(CASH code is DEBITED in this case). COMMIT is allowed only if debit, credit totals as well as the header amt tally.

QUERY/UPDATE MODE : In this mode, KEY details are taken from first block(Voucher Level) and the details are retrieved in both the blocks. Modifications are allowed for NON KEY fields. Totals are displayed accordingly.

Account description and other display fields are also decoded in this mode, as in entry mode.

DELETE PROCESS : Deletion is available in QUERY mode where the records to be deleted are first retrieved in query mode by giving key values in the first block. If the entire voucher is to be deleted, delete key will be pressed in first block which will trigger the following:

- Confirm deletion (Y/N)
 - Delete all detail records in second block
 - delete header record
 - commit deletion process
-

4.1.1.3 CASH PAYMENTS

FORM NO. : S313(CASH PAYMENTS) | TYPE DATA ENTRY

FUNCTION : THIS FORM IS USED TO ENTER, QUERY AND UPDATE
CASH PAYMENT VOUCHERS.

SCREEN DESCRIPTION :

ENTRY MODE : Voucher level details are accepted and are validated so that the document number is unique within doc. code, within the current year. The voucher level GLC will be copied as cash code. At the end of the amount field, cursor moves to second block and accounting details are accepted with proper validations. The header amount is taken to the credit total of the last block.

Reference details are accepted and validated, debit and credit totals are dynamically displayed in the third block depending on voucher amount and transaction amount(CASH code is CREDIT in this case). COMMIT is allowed only if debit and credit totals tally.

QUERY/UPDATE MODE : In this mode, KEY details are taken from first block(Voucher Level) and the details are retrieved in both the blocks. Modifications are allowed for NON KEY fields. Totals are displayed accordingly.

Account description and other display fields are also decoded in this mode, as in entry mode.

DELETE PROCESS : Deletion is available in QUERY mode where the records to be deleted are first retrieved in query mode by giving key values in the first block. If the entire voucher is to be deleted, delete key will be pressed in first block which will trigger the following:

- Confirm deletion (Y/N)
- Delete all detail records in second block from gl_txn_dtl
- delete header record from gl_txn_hdr
- commit deletion process

FORM NO : 314							
BANK PAYMENTS							
ARC CODE		DOC CODE		DOC DATE		DOC NO	
BANK CODE		GLC CD		AMOUNT			
ABRV	A/C					REFERENCE	
CODE	NO.	SLC	DR/CR	AMOUNT	TYPE	NO.	DATE
DEBIT TOTAL		CREDIT TOTAL		CONFIRM DELETION			

FORM NO : 315							
JOURNAL VOUCHERS							
ARC CODE		DOC CODE		DOC DATE		DOC NO	
				AMOUNT			
ABRV	A/C					REFERENCE	
CODE	NO.	SLC	DR/CR	AMOUNT	TYPE	NO.	DATE
DEBIT TOTAL		CREDIT TOTAL		CONFIRM DELETION			

4.1.1.4 BANK PAYMENTS

FORM NO. : S314(BANK PAYMENTS) | TYPE DATA ENTRY

FUNCTION : THIS FORM IS USED TO ENTER, QUERY AND UPDATE
BANK PAYMENT VOUCHERS.

SCREEN DESCRIPTION :

ENTRY MODE : Voucher level details are accepted and are validated so that the document number is unique within doc. code, within the current year. In this case bank code is entered which is validated from the ABRV_AC_CODES and the account number against this is brought to the next field. The bank code, account no. and amount of the header is copied to the first line of the next block with DC_IND as 'C' and the cursor is brought to the REF_DOC_NO of the first record in the next block.

Reference details are accepted and validated, debit and credit totals are dynamically displayed in the third block depending on voucher amount and transaction amount(CASH code is DEBITED in this case). COMMIT is allowed only if debit, credit totals as well as the header amt tally

QUERY/UPDATE MODE : In this mode, KEY details are taken from first block(Voucher Level) and the details are retrieved in both the blocks. Modifications are allowed for NON KEY fields. Totals are displayed accordingly.

Account description and other display fields are also decoded in this mode, as in entry mode.

DELETE PROCESS : Deletion is available in QUERY mode where the records to be deleted are first retrieved in query mode by giving key values in the first block. If the entire voucher is to be deleted, delete key will be pressed in first block which will trigger the following:

- Confirm deletion (Y/N)
- Delete all corres records from GL_TXN_DTL table
- delete header record from GL_TXN_HDR
- commit deletion process

FORM NO : 302

GENERAL LEDGER REPORTS

1. G L MASTER LIST
2. G L TRANSACTION LIST
3. G L PERIOD END REPORTS
- X. EXIT

SELECT OPTION

FORM NO : 321

GENERAL LEDGER MASTER LIST

1. SUBSIDIARY LEDGER MASTER LIST
2. ACCOUNT MASTER LIST
3. ARC MASTER LIST
4. ACCOUNT BALANCES
5. ABBREVIATED CODE MASTER LIST
- X. EXIT

SELECT OPTION

FORM NO : 304

G L PERIOD END PROCESSING

1. POST G L TRANSACTIONS

Y. EXIT

SELECT OPTION

FORM NO : 330

GL PERIOD END PROCESSING PARAMTERS

POSTING OF : CASH RECEIPTS/PAYMENTS
BANK RECEIPTS/PAYMENTS
DEBIT/CREDIT NOTES

START DATE

END DATE

PROCEED Y/N

FORM NO : 323

GENERAL LEDGER PERIOD END REPORTS

1. CASH BOOK
2. BANK BOOK
3. JOURNAL
4. GENERAL LEDGER
5. SUBSIDIARY LEDGER
6. TRIAL BALANCE (G L)
7. TRIAL BALANCE (SLC)
- X. EXIT

SELECT OPTION

4.5 HOUSEKEEPING - USER CODE MAINTENANCE

FORM NO. : 505 USERCODE MAINTENANCE : TYPE MENU

FUNCTION : THIS IS THE SCREEN FOR VARIOUS USER
USING THE SYSTEM

SCREEN DESCRIPTION :

This is the screen for granting previlleges to different user with different password for using the system. A user with access level 3 has access to all screen where as menu option 2 gives the user access to a particualr module of the SMO's system.

QUERY/UPDATE : The screen when brought to the user gets all the record from the table. Updation is allowed.

DELETION: A user can be deleted. The screen asks fro confirm-
ation before a user is removed.

FORM NO : 500	
HOUSEKEEPING	
1. DATABASE BACKUP	7. ADD A ORDINARY USER
2. DATABASE RESTORE	8. ADD A SPECIAL USER
3. CLEANUP PRINT BACKUP FILES	9. YEAR ENDING
4. REMOVE RECORD MARKED FOR DELETION	X. EXIT
5. USERCODE MAINTENANCE	
6. SYSTEM PARAMETERS	
SELECT OPTION	

FORM NO : 505			
USERCODE MAINTENANCE			
USERCODE	PASSWORD	MENU OPTION	ACCESS LEVEL

FORM NO : SYS01

KBL - SMO
SYSTEM PARAMETERS

CURRENT ARC _____ SYSTEM START DATE _____

CURRENT SMO _____ CUSTOMER ACCOUNT _____

COMPANY NAME _____

MAX CREDIT PERIOD _____ S.K. CONTROL ACCT. _____
ROUNDING OFF AMOUNT _____

FINANCIAL YEAR BEG. _____ (YYYYMM) INTEREST RATE _____

FINANCIAL YEAR ENG _____ (YYYYMM) CURRENT DATE _____

CURRENT MONTH _____ (YYYYMM)

FORM NO.: 624		COMPANY NAME X (40)		PAGE :	
RUN DATE:		STATE NAME X (40)			
LIST OF MDA'S INVOICED					
INVOICE NUMBER:		DATED: -			
MDA NUMBER	DATE	W/H CONSIGNEE NAME	PRODUCT NAME	NO OF BAGS	LR No & Date Truck No. REMARKS
PURPOSE : SUPPORTING DOCUMENT TO BE SENT TO THE CUSTOMER ALONGWITH THE INVOICE FOR GUJRAT					REPORT TYPE: STATUS
FREQUENCY: DAILY	PART NO.	DESTINATION	REPORTING ORDER	PG/LN SKIP	TOTALS: TOTALS LINE DESCRIPTION
STATIONARY: BL; 132; 1+2	1.	CUSTOMER	INVOICE NUMBER	1P	
	2.	JR.AC MGE-SMO	MDA NUMBER	1L	Y TOTAL QUANTITY
	3.	EXTRA COPY	SNO		
REPORTS OPTIONS: INVOICE NUMBER RANGE					
REMARKS:					

FORM NO.: 625		COMPANY NAME X (40)		PAGE :	
RUN DATE:		STATE NAME X (40)			
		FR WISE MDA LIST			
FIELD REPRESENTATIVE CD		FIELD REP NAME:			
MDA	INVOICE	W/H	CONSIGNEE	PROD	QUANTITY
NUMBER	DATE	NUMBER	DATE	CODE	NO OF
					LR NO & DATE
					TRUCK NO. REMARKS
					BAGS
PURPOSE : TO FACILITATE THE FR IN FOLLOWING UP WITH THE CONSIGNEE/WAREHOUSE AND					REPORT TYPE:
OBTAINING ACKNOWLEDGEMENT FOR RECEIPTS OF MATERIAL					STATUS
FREQUENCY: AS & WHEN REQD.	PART NO.	DESTINATION	REPORTING ORDER	PG/LN SKIP	TOTALS
STATIONARY: 3L; 132; 1+0			FIELD REP	IP	Y
			MDA NUMBER	IL	Y
REPORTS OPTIONS: MDA DATE RANGE (FROM, TO)					TOTALS LINE DESCRIPTION
REMARKS: FIELD REPRESENTATIVE					
FIELD REPRESENTATIVE NAME					

FORM NO.: 626	COMPANY NAME Y (40)	PAGE :
RUN DATE:	STATE NAME Y (40)	
	WAREHOUSE WISE MDA LIST	

WAREHOUSE											
CD NAME											
MDA		INVOICE		FIELD	CONSIGNEE	PROD	QUANTITY	NO OF	LR NO.	DATE	TRUCK REM
NUMBER	DATE	NUMBER	DATE	REP		CD NAME		BAGS			NO.

PURPOSE : TO FACILITATE THE FR IN FOLLOWING UP RECEIPTS AND DISBURSEMENTS OF MATERIAL AT WAREHOUSES	REPORT TYPE:
	STATUS

FREQUENCY: AS & WHEN REQD.	PART NO.	DESTINATION	REPORTING ORDER	PG/LN	SKIP	TOTALS	TOTALS LINE DESCRIPTION
STATIONARY:BL; 132; 1+0	1.	FR	WAREHOUSE CODE	1P			
			PRODUCT	2L	Y		TOTALS
			MDA NUMBER	1L			
REPORTS OPTIONS: MDA DATE RANGE (FROM, TO)							
REMARKS:							

FORM NO.: 674		COMPANY NAME X (40)		PAGE :	
RUN DATE:		STATE NAME X (40)			
		GENERAL LEDGER FOR THE PERIOD		TO	

ACCOUNT DESCRIPTION					
DOCUMENT	REFERENCE	DETAILS	SHORT NARRATION	*DEBIT	*CREDIT
CODE DATE NO	TYPE	NO. DATE		AMOUNT	AMOUNT

PURPOSE : 1. STATUTORY REQUIREMENT	REPORT TYPE:
------------------------------------	--------------

FREQUENCY:	PART NO.	DESTINATION	REPORTING ORDER	PG/LN SKIP	TOTALS	TOTALS LINE DESCRIPTION
STATIONARY: BL; 132; 1+0	1.		A/C NUMBER	2L	Y	TRANSACTION TOTALS
			DOCUMENT DATE	1L		
			DOCUMENT NUMBER			
REPORTS OPTIONS: DATE RANGE, ACCOUNT RANGE						
REMARKS: OPENING BALANCE, TRANSACTION AND CLOSING BALANCE ARE PRINTED FOR EACH ACCOUNT (ON MONTHLY BASIS FOR PERD, OVER ONR MONTH) INVOICE, ROCIR, MS SUMMARY, Dr/Cr NOTE & RELATED DOCUMENTS ARE TO BE POSTED TO GL BASED ON THE ABOVE REFFERED MONTHLY DAY BOOK SUMMARY. WHENEVER SL ARE PROVIDED AGAINST A GL, TRANSACTION TOTAL FOR A PERIOD AS PER SL MAY APPEAR IN GL.						

PAGE :

SUBSIDIARY LEDGER FOR THE PERIOD TO

GL A/C CD:		GL A/C NAME:		SLC CODE:		SLC DESCRIPTION:	
DOCUMENT		REFERENCE DETAILS		SHORT NARRATION		*DEBIT	*CREDIT
CODE	DATE NO	TYPE	NO.	DATE		AMOUNT	AMOUNT

```

PURPOSE : 1. STATUTORY REQUIREMENT
          2. RECONCILIATION

```

REPORT TYPE:

FREQUENCY: SPECIFIED PERIOD	PART NO.	DESTINATION	REPORTING ORDER	PG/LN SKIP	TOTALS	TOTALS LINE DESCRIPTION
-----------------------------	----------	-------------	-----------------	------------	--------	-------------------------

STATIONARY: 9L; 132; 1+0

1.

IGL A/C NUMBER

12



:GRAND TOTAL

SLC CODE

21



TRANSACTION TOTALS

REPORTS OPTIONS:DATE RANGE,ACCOUNT RANGE

DOC. DATE

DOC. NO.

```
REMARKS:OPENING BALANCE,TRANSACTION TOTALS
        & CLOSING BALANCE ARE PRINTED FOR EACH A/C
        ON MONTHLY BASIS IF OUTPUT IF FOR PERIOD OF
        OVER ONE MONTH
```

[illegible]

FORM NO.:712		COMPANY NAME X (40)		PAGE :		
RUN DATE:		STATE NAME X (40)				
		PRODUCT WISE CUSTOMER OUTSTANDING AS ON				
PRODUCT CODE & NAME :						
ROCIR/INVOICE	ORIGINAL	NET BALANCE	DUE DATE	AGE		
CODE DATE NO.	AMOUNT	OUTSTANDING				
CUSTOMER CODE & NAME :						
PURPOSE :				REPORT TYPE		
				CHECK LIST		
FREQUENCY:	PART NO.	DESTINATION	REPORTING ORDER	PG/LN SKIP	TOTALS	TOTALS LINE DESCRIPTION
STATIONARY:			PRODUCT	1P	Y	PRODUCT TOTAL
			CUSTOMER	2L	Y	CUSTOMER TOTAL
REPORTS OPTIONS:			INVOICE/ROCIR			
			DATE			
REMARKS:						

FORM NO.:713

COMPANY NAME X (40)

PAGE :

RUN DATE:

STATE NAME X (40)

AGE ANALYSIS OF OUTSTANDING AS ON

CUST.	PRODUCT	<1	1-2	2-3	3-4	4-5	5-6	6-9
CODE	NAME	9-12	12-24	24-36	<36	IN MONTHS		TOTAL DUE:
3-8	10-24	26-40	42-56	58-72	74-88	90-104	106-120	121-132

PURPOSE : MIS REPORTING

REPORT TYPE

STATUS

FREQUENCY:	PART NO.	DESTINATION	REPORTING ORDER	PG/LN	SKIP	TOTALS	TOTALS LINE DESCRIPTION
STATIONARY:BL ; 132 ; 1+0	1.		CUSTOMER	2L	Y		CUSTOMER TOTALS
			PRODUCT	1L			
			END OF REPORT	1P	Y		GRAND TOTAL (PRODUCT & AGEWISE)

REPORTS OPTIONS:1. AGEWISE ANALYSIS FOR OUTSTANDING

REMARKS:

FORM NO.: 714		COMPANY NAME X (40)				PAGE :			
RUN DATE:		STATE NAME X (40)							
STATEMENT OF DELAYED PAYMENTS AND INTEREST AS ON									
INVOICE	ORIGINAL	ADJUST.			DUE	PAID	O/S	NO OF	PRODUCT
TYPE DATE NO.	AMOUNT	AMOUNT	#DOC.	#DOC.	DATE	AMOUNT/	AMOUNT	DAYS	
			TYPE	NO.		ADJ			
PURPOSE : 1. CALCULATION OF INTEREST (ACTION REPORT)								REPORT TYPE	
2. MIS PURPOSE									
								CHECK LIST	
FREQUENCY: ADHOC/MONTHLY	PART NO.	DESTINATION	REPORTING ORDER	PG/LN SKIP	TOTALS	TOTALS	LINE DESCRIPTION		
STATIONARY: BL; 132 ; 1+0	1.								
			CUSTOMER	2L			CUSTOMER TOTAL		
			INVOICE DATE	1L					
REPORTS OPTIONS: RANGE OF CUST. CODE			INVOICE NO.						
			DOC. DATE						
REMARKS: 1. FOR EACH OUTSTANDING INVOICE THE INTEREST									
DUE TO DELAYED PAYMENT IS CALCULATED. 2. UNADJUSTED									
CREDITS & INTEREST PAYABLE IS ALSO CALCULATED.									
3. NET INT. IS DERIVED ACCORDINGLY.									

FORM NO.: 721		COMPANY NAME X (40)				PAGE :				
RUN DATE:		STATE NAME X (40)								
CUSTOMER LEDGER FOR THE PERIOD										
DOC	DOC	DOC	ACC.	REF	REF	REF	SHORT	ALLOCN.	DEBIT	CREDIT
TYPE	DATE	NO.	DESC.	TYPE	NO.	DATE	NARR.	AMT.		
PURPOSE :									REPORT TYPE	
									CHECK LIST	
FREQUENCY:		PART NO.	DESTINATION	REPORTING ORDER	PG/LN SKIP	TOTALS	TOTALS LINE DESCRIPTION			
STATIONARY:										
REPORTS OPTIONS: RANGE OF CUSTOMER CODE										
REMARKS:										

FORM NO.: 722

COMPANY NAME X (40)

PAGE :

RUN DATE:

STATE NAME X (40)

CUSTOMER ACCOUNT TRIAL BALANCE AS ON

CUST
CODECUST
NAMEDEBIT
AMOUNTCREDIT
AMOUNT

TOTAL

PURPOSE : 1. STATUS REPORT
2. RECONCILIATION OF BALANCES

REPORT TYPE:

STATUS

FREQUENCY:MONTHLY/ADHOC

PART NO.

DESTINATION

REPORTING ORDER

PG/LN SKIP

TOTALS

TOTALS LINE DESCRIPTION

STATIONARY:BL; 132; 1+0

1.

CUSTOMER CODE
END OF REPORT

1L

Y

GRAND TOTAL

REPORTS OPTIONS:PROCESS MONTH/REPORT DATE

REMARKS:ACCOUNT WITH ZERO BALANCES SHOULD NOT
APPEAR.

DEVELOPMENT

5.1 SYSTEM ENVIRONMENT

Hardware

Central Processing Unit - Operations Research Group (ORG)
SUPERMAX XL (68030 based), Single CPU.

Memory - 8 MB

Cache Memory - 128 KB

Fixed Disk - 300 MB

Disk Controller Cache - 256 KB

Cartridge Tape Drive - 60 MB

Floppy Disk Drive - 360 KB

I/O(Disk I/O Controller)- 80286 based

Terminals - VT100 (6 nos. + 1 console)

Printers - L&T dot matrix (2 nos.)

Operating System

SMOS (AT&T UNIX Ver. V.3 compatible)

Software

ORACLE RDBMS Version 5.1.17.4

SQLFORMS

SQLPLUS

SQLREPORT

ORACLE UTILITIES (EXPORT, IMPORT)

5.2 INVOICING MODULE (For Gujarat State)

The invoice generation process is different for Gujarat state , because basically , there is a single customer in this state. Thus, whereas there is one invoice per Release Order in other states, in Gujarat there can be a single invoice for a couple of Material Despatch Advices (RO for Gujarat is known as MDA). These MDAs should have same customer, same product, same MDA date and same Warehouse.

Thus, a major change in concept has taken from one RO to one invoice in other states TO many MDAs to one invoice in Gujarat. Due to this, quite a few changes had to be made in the existing programs of the invoicing module and many new ones had to be written. The reports with which the author was associated have been given in detail in the ensuing pages.

1. Invoice Printing for MDAs on preprinted stationery

Process: To print invoice on pre-printed stationery for MDAs		Process ID 600GJ
Run Freq: Daily		
Procedure summary:		
- The process picks up details of the invoices to be printed and prints it on pre-printed stationery - Invoice number , date , due date , LC number and LC date RO number and RO date are picked up from the INVOICE table - Customer , consignee , product , warehouse , district and quantity are picked up from SALE_DOC - Amount particulars are obtained from SALE_AMTS		
Input Parameters		Reference REP_PARAMS
Table	Description	
INVOICE	Invoice header	
SALE_DOC	Release Order details	
SALE_AMTS	Sale amount details	
CUSTOMER	Customer master	
CR_DAYS	Lifting period, Credit Days	
Common Tables SYS_PARAMS		
Outputs Outputs on pre-printed stationery		
Options 1. Invoice range 2.Cancelled invoice range		
Notes		

2. List of MDAs invoiced

This is the supporting document to be attached with each invoice for the information of the customer.

Process: To print the list of material despatch advice in an invoice	Process ID 624
---	-------------------

Run Freq: Daily

Procedure summary:

- The user specifies the invoice number for which he wants the report
- The process picks up release orders for that invoice from the SALE_DOC table to produce the report
- The field representative name is obtained from the CODE_DESC table, the warehouse name from the warehouse master and the product name from the product master
- At the end of the report the total quantity invoiced is printed

Input Parameters	Reference
Invoice number range	

Table	Description
SALE_DOC	Release order details
CODE_DESC	Code description table
WAREHOUSE	Warehouse master
PRODUCT	Product master

Common Tables SYS_PARAMS

Outputs List of MDAs invoiced

Options

Notes Release orders are considered as MDAs for this report

3. List of FR Wise MDA list

This report is sent to the FR for informing him about the MDAs reached to the SMO. Thus, if some MDAs are missing, he can take appropriate action.

Process: To print the field representative wise material despatch advice list | Process ID R625

Run Freq: Monthly

Procedure summary:

- The user specifies the period for which he wants the list
- The release orders for that period are picked up for each field representative in the CODE_DESC table from the SALE_DOC table and the list produced
- The warehouse name is picked up from the WAREHOUSE table, and the product name from the PRODUCT table

Input Parameters	Reference
MDA date range (from, to)	

Table	Description	Index
CODE_DESC	Code description table	
SALE_DOC	Release order details	
WAREHOUSE	Warehouse master	
PRODUCT	Product master	

Common Tables

Outputs

Options

Notes Release orders are considered as MDAs for this report

4. Warehouse Wise MDA list

This report is generated to help the Field Representative in following up the receipts and disbursement of material from the various warehouses.

Process: To print the warehouse-wise Material Despatch Advice list		Process ID 626
Run Freq: Monthly		
Procedure summary:		
- The user specifies the period for which he wants the list - For each warehouse in the WAREHOUSE table , the release order falling in the period are picked up from the SALE_DOC table and listed - The field representative name is obtained from the CODE_DESC table and the product name from the PRODUCT table for producing the report		
Input Parameters		Reference
MDA date range(from,to)		
Table	Description	Index
WAREHOUSE	Warehouse master	
SALE_DOC	Release order details	
CODE_DESC	Code description table	
PRODUCT	Product master	
Common Tables SYS_PARAMS		
Outputs Warehouse wise MDA list		
Options		
Notes Release orders are treated as MDAs for producing this report		

5.3 General Ledger Module

1. General Ledger

It is a statutory report giving a consolidated information about each account - its opening balance , its closing balance and all the transactions pertaining to that account during the specified accounting period. This report program should be initiated after the transaction for the month are posted.

For general ledger accounts which have subsidiary accounts and for cash and bank accounts, only summary totals of transactions are printed, since the details are already available in other reports.

Process: Report program for printing
General Ledger

Process ID R674

Run Freq: Monthly/Adhoc

Procedure summary:

- Opening balances are derived from Account balances for each account .For other transactions whose consolidated totals are not available in account_bal, the details are picked from voucher_dtl
- The transaction for the period are listed
- closing balance for the month is calculated
- only accounts which have transactions for the month printed.

Input Parameters

- | | |
|-----------------|---------------|
| 1. Start date | 2. End date |
| 3. A/C no. from | 4. A/C no. to |

Reference

Table

Description

Index

ACCOUNT_MASTER	Account details
ACCOUNT_BAL	Account balances
SUB_LEDGER	SL details
VOUCHER_DTL	Transaction details

Common Tables SYS_PARAMS

Outputs General Ledger

Options

Notes

If the end date is set to null it will be equated to the start date. Date input is to be in DD-MON-YY form.

2. Subsidiary Ledger

This report is required for statutory reporting. The details of each account in GL having subsidiary ledger account is available from this report. For each subsidiary ledger account under the GL account, opening balance, closing balance and transactions are printed for the given period.

This report program should be initiated after the transactions for the month are posted.

Process: Report program for printing Subsidiary Ledger	Process ID R675
--	------------------------

Run Freq: Monthly/Adhoc

Procedure summary:

- This program prints subsidiary ledger for the given period.
 - Opening balances are derived from Account balances for each subsidiary ledger account under a general ledger account.
 - Transaction details are picked from voucher_dtls
 - Closing balance is calculated from above two and printed
-

Input Parameters		Reference
1. Start date	2. End date	
3. A/C no. from	4. A/C no. to	

Table	Description	Index
ACCOUNT_MASTER	Account details	
ACCOUNT_BAL	Account balances	
SUB_LEDGER	SL details	
VOUCHER_DTL	Transaction details	

Common Tables SYS_PARAMS

Options

Notes

If the end date is put as null then it is equated with the start date. Date input should be in DD-MON-YY form

3. General Ledger Trial Balance

The main pupose of printing trial balance is reconcili-
ation. The debit and credit balances for all the accounts must
tally in the double entry system. If they do not tally then some
problem is there ,which can be found by verifying the opening and
closing balances with the corresponding general ledger.

This report program should be initiated after the
transaction for the month are posted. Opening balance, debit and
credit totals related to the period and closing balance are
printed.

Process: Report program for printing Trial Balance	Process ID R676
---	-----------------

Run Freq: Monthly/Adhoc

Procedure summary:

- This program prints trial balance for the given period.
- Credit and Debit balances for all transactions between th
financial year beginning and report date are taken from
Account_bal table for each general ledger account.
- Net balance for each account is derived from
the difference of credit and debit balances

Input Parameters	Reference
1. upto date	

Outputs TRIAL BALANCE(GL)

Table	Description	Index
ACCOUNT_MASTER	ACCOUNT DETAILS	
ACCOUNT_BAL	Account Balances (CONSOLIDATED for month year)	

Common Tables	SYS_PARAMS
---------------	------------

Outputs	General Ledger Trial Balance
---------	------------------------------

Options

Notes

If the end date is put as null then it is equated
with the start date. Date input should be in DD-MON-YY form

4. Subsidiary Ledger Trial Balance

This program prints the subsidiary account trial balance for the specified period. The report is used for reconciliation and statutory reporting. It is similar to the GL trial balance in every aspect.

Process: Report program for printing Process ID R677
Trial Balance for SLC accounts

Run Freq: Monthly/Adhoc

Procedure summary: This program prints Subsidiary account trial balance for the given period. Balances are taken from Account_bal for each subsidiary ledger account. Only accounts having non zero balances will be printed.

Report format, contents are exactly the same as the GL trial balance except that this report has SLC accounts.

Input Parameters
1. upto date

Reference

Table	Description	Index
ACCOUNT_MASTER	Account details	
ACCOUNT_BAL	Account balances	
SUB_LEDGER	SL details	

Common Tables SYS_PARAMS

Options

Outputs TRIAL BALANCE(SLC)

Notes This report program should be initiated after the transaction for the month are posted. This report should be verified with subsidiary ledger.

If the end date is put as null then it is equated with the start date. Date input should be in DD-MON-YY form

5.4 Account Receivables

1. Customer Trial Balance

This program generates customer trial balance giving customer wise balances as on date. Only customer having non zero balances will be printed.

Process: Report pros. for printing customer trial balances	Process ID R711
---	--------------------

Run Freq: Monthly/Adhoc

Procedure summary:

- Debit and Credit totals for all transactions between the financial date and report date are calculated from customer_bal for each customer
- The difference of the two gives the net balance

Input Parameters 1. Processing month 2. Report date	Reference
--	-----------

Table	Description	Index
CUSTOMER CUSTOMER_BAL	Customer name Balances	

Common Tables SYS_PARAM

Outputs Customer trial balance

Options

Notes This report reflects the status of customer balance as on date and provides useful information. Customer transaction have to be posted before this report is processed.

Process: Report program for printing
Customer Ledger

Process ID R721

Run Freq: Monthly/Adhoc

Procedure summary:

- Opening balances are derived from Customer_bal for each customer .For other transactions whose consolidated totals are not available in customer_bal, the details are picked from voucher_dtl
- The transaction for the period are listed from voucher_dtl
- closing balance for the month is calculated
- only customers which have transactions for the month printed.

Input Parameters

- | | |
|-----------------|---------------|
| 1. Start date | 2. End date |
| 3. A/C no. from | 4. A/C no. to |

Reference

Table

Description

Index

CUSTOMER	Account details	
CUSTOMER_BAL	Account balances	
VOUCHER_DTL	Transaction details	

Common Tables SYS_PARAMS

Outputs Customer Ledger

Options

Notes

If the end date is set to null it will be equated to the start date. Date input is to be in DD-MON-YY form.

2. Customer Outstanding statement

This report is generated after reconciling the customer wise invoices with the respective receipts, debit and credit notes. The basis of reconciliation will be the reference details provided in each of the transaction which link the receipts and other documents to the invoice/ROCIRs. Balance outstanding against each invoice alongwith age and due date is printed for each customer. Transaction of the customer which are unlocked are also reported as unadjusted credits and net balance is calculated.

Process: Report for printing customer outstanding statement **Process ID**

Run Freq: Adhoc

Procedure summary:

- Select a posted transaction - invoice, ROCIR, pre paid advice
- Select all the debit notes, credit notes, ROCIR, receipt, etc which refer to the above selected document
- Select all the documents for the same customer having null or wrong references. Consider them as on account totals
- Print all the details if outstanding not zero.

Input Parameters 1. Report date **Reference**

Table	Description	Index
CUSTOMER_MASTER	Decode customer name	
VOUCHER_DTL	Document details	
ROCIR_ALLOC	Allocation details for ROCIR	
ROCIR_RCPT	Amount received the ROCIR	

Common Tables SYS_PARAMS

Outputs Customer outstanding statement

Options One customer
Range of customer, All customer accounts

Notes Using this report, customer balances can be reconciled with customer ledger or customer trial balance.

3. Productwise customer outstanding

This report lists the customer outstanding as in previous report except that it is ordered by product. Within a product, the customer and for a customer all the outstanding documents against it are printed.

Process: Report program for printing customer outstanding (product wise)	Process ID R712
---	---------------------------

Run Freq: Adhoc

Procedure summary: This program generates productwise customer outstanding report in a summerised way giving for each product, details of customer outstanding documentwise. The transactions are picked as in case of customer outstanding and printed. However, instead of using voucher_dtl for picking the transactions, various other tables are used GL_TXN_DTL for picking the general ledger transaction details PAY_SLIP_DTL to pick up the pay in slip details SALE_AMTS to pick up the Invoice/ROCIR details

Input Parameters	1. Report date	Reference
-------------------------	-----------------------	------------------

Table	Description	Index
GL_TXN_DTL	GL txn details	
PRODUCT	Product details	
CUSTOMER	Customer name	
PAY_SLIP_DTL	Pay in slip dtl	
SALE_AMTS	Invoice/ROCIR dtl	

Common Tables SYS_PARMS

Outputs Customer outstanding statement

Options

Notes

4. Agewise analysis of outstanding

This is a control report which, along with the outstanding amount lists the the number of months for which the payment is pending. This also reflects the unadjusted credits for a customer for the unlinked transactions.

Process: Report program for printing
Agewise Analysis of Outstanding

Process ID

Run Freq: Adhoc

Procedure summary: This program generates agewise analysis statement which gives for each customer productwise age analysis of outstanding and overdues.

The logic for picking the various transaction details is same as in the case of customerwise outstanding. However, to calculate the age, the difference between the the upto date and due date is taken.

The tables used are gl_txn_dtl, pay_slip_dtl, sale_amts instead of voucher_dtl

Input Parameters 1. Report date

Reference

Table

Description

Index

CUSTOMER

Decode name

GL_TXN_DTL

Transaction detail

PRODUCT

Prod. Desc.

PAY_SLIP_DTL

Pay in slip dtl

SALE_AMTS

Invoice/ROCIR

Common Tables SYS_PARAMS

Outputs Agewise analysis of outstanding/overdues

Options

Notes

Process: To print the field representative wise ROCIR list Process ID R991

Run Freq: Monthly

Procedure summary:

- The user specifies the month for which the report is required
- For each field representative in the CODE_DESC table the ROCIRs falling in the desired period are picked up from the SALE_DOC table
- The correct amount received against each ROCIR is picked from SALE_AMTS table . The difference between the correct amount and the rocir amount is taken as amount due
- The ROCIR details are printed alongwith the amount due

Input Parameters

Reference

Date Range

Table

Description

Index

SALE_DOC

ROCIR sales detail

SALE_AMTS

Correct amount

CUSTOMER

Customer master

Common Tables SYS_PARAMS

Outputs Field-representative-wise ROCIR list
 with balances due

Options

Notes

Following forms have been done by the author . The trigger listing of these forms has been given in volume II

Cash Receipts(S311)
Bank Receipts(S312)
Cash Payments(S313)
Bank Payments(S314)
Journal Voucher(S315)
Year Ending(S506)
Invoice Regeneration(S262R)

Besides these , the author was involved in the modifications of various reports and forms.

TESTING

In the initial contract signed between KRIBHCO and TCS for the analysis, design and development of the SMO package, a special clause was laid down for the test phase. According to this, once the user tests, verifies and accepts the system, TCS will not be associated for any modification/enhancement of the system except its implementation. Thus, the user group were quite keen to debug the system completely to avoid any problems at a later stage. A special test team consisting of two marketing accounts personnel Mr Lakshmikant Dhingriwala, Asst. Manager Accounts and Mr P. Armugaswamy, Dy. Mgr Accounts was assigned from KRIBHCO to test the system completely. A comprehensive test strategy was used by the test team to carry out destructive testing of the system. The development team was actively associated in this phase and any problems encountered were immediately cleared.

TEST DATA

The test data was designed by the user test team. It consisted of a mix of sample live data and some specially designed data which when run on the system, could highlight potential problems in the system. The data was designed for three months of April, June and July, 1990.

TESTING METHODOLOGY

The data for all the master files was fed in the first phase of testing because existence checks and other validations are carried against the masters in the transaction data entry screens. After this the user team entered the transaction data entry for each month one by one so that any problem in the entry forms could be detected and removed. This hands on endeavour by the user also resulted in some new requirements for the existing entities. All such points were noted, and after discussion, the importance of such requirements were ascertained, and if found useful were incorporated in the system.

In the next phase, various transaction checklists were generated and manually compared with the test data. Not many problems were encountered at this juncture. After this, the posting for various transactions was done.

The physical concept of posting in the system involves setting up of the posting status field for each transaction, equal to 1, for all transaction lying in the posting period. For all the invoicing transactions, the corresponding entries update the sale_amts table alongwith the corres. account and customer balances. The Accounts Receivable module's transaction posting involves updating the customer balance figures, apart from setting the posting status flag to 1. Similarly, for GL transaction posting, account balances are updated. After posting, consolidated data for a particular month and year is available in these two tables for all transactions relating to a particular account.

After this, all the period end reports and status reports were generated. Then, a main report, say general ledger was compared to all the checklists. Once, it was established for accuracy, all the related reports were compared with this report. This minimised the effort required on the part of the test team. After, all the problems were debugged and verified, the module was cleared and acceptance given. The same approach was followed for each module.

Problems encountered in the test phase

In the testing phase, it was noticed that complex reports which were accessing the details of a large number of transaction vouchers like outstanding reports and ledgers, were quite slow. This was so because for each entity that is, a transaction voucher, a separate table was used. Though this was good in a way since the design became very simple and easy to understand, problems arose because accessing such a large number of tables was a time consuming task.

Thus, to overcome this problem, the concept of centralised database was used. Thus, all the transactions from different tables were posted to a single table (Voucher_dtl) using a posting program written in Pro* C. The posting status flag for all transactions posted through this program was set to 2. Posting status of 0 indicates unposted transaction and that of 1 indicates ordinarily posted transaction.

All the major time consuming reports like customer outstanding, general ledger, subsidiary ledger, customer ledger were rewritten using this table. The CPU execution time for each such report was reduced to half.

Invoice Regeneration in case of MDAs

In case of invoice generation for Material Despatch Advice, the key used was combination of MDA date, Product code, Warehouse code and invoice group code. Later a user requirement came through which required that the warehouse code should be made optional in the key combination. This was done basically to allow the user to pick the material from various warehouses. If against an MDA of 100 MT, 50 MT were picked from Warehouse1 and 50 from Warehouse2 then by taking warehouse as a key, invoice will be generated against Warehouse1. The customer may not entertain such an invoice so in such cases warehouse should not be taken as a key.

If an invoice was regenerated for such cases, two invoices may be made for the same MDA - one with warehouse as a key and other without it. Thus, regeneration was disallowed on the same screen. A separate screen was designed for regeneration purposes. The trigger listing for this form S262 R is given in volume 2.

FORM : 262 R

REGENERATION OF INVOICE

MDA's DATE : _____

INVOICE
NO. DATE

MDA NO. CUST CD PROD WH CD INV GRP QTY MT QTY EG

PRESS 'F3' TO SELECT

INVOICE NUMBER

INVOICE DATE

PROCEED (Y/N) _____

SYSTEM HIGHLIGHTS

System Overview

The SMO system uses screens to capture information centrally from documents prepared manually at various locations.

The documents of sale are prepared manually at the field, area office and at the SMO . These documents are collected at the SMO and input to the system which is located at the SMO . The system provides for the following :

- Generation and printing of invoices
- Analysis of actual sales vs targetted sales
- Financial accounting
- Accounting for receipt of payments from customer .

System Highlights

On-Line functions

- Maintenance of master data and parameters
- Entry and validation of transactions
- Enquiries on input data .
- Printing of checklists of master / transaction data
- Printing of invoice and reports
- Posting of the transactions

On-line routine system maintenance

- Addition and deletion of auser
- Archiving and re-loading

System integrity

Whenever possible the system will check for integrity using cross-validations , existence checks , domain checks and edit checks on the data being entered and processed .

Date fields

Where Year-month fields are used the format will be YYYY-MM i.e. the century is included in the year number .

Ease in data entry

Query can be done against some fields which lists all enterable values for that field. This facilitates ease in data entry since relevant values can be viewed onscreen. Wherever possible, when a code is entered on the screen, its corresponding description would be displayed.

User Interface

In the SMO system screens form the basic and only interface between the user and the system. All the functions available in the system will be accessed through menus and parameter screens.

Screens are designed based on the functionality within each module. The types of screens can be as follows :-

- Menu Screens
- Data entry/query/update screens
- Report generation screens
- Process initiating screens

Interface between modules

- Sales analysis figures will be updated on-line from information on RO , ROCIR , RO change and ROCIR change transactions
- Manual interface to produce Dr/Cr notes based on RO change and ROCIR change information
- Posting done in the different modules makes this data available for generation of ledgers and outstanding statements in the accounts receivables and general ledger modules.

Flexibility

The system is highly parameterised lending itself to easy adaption to changes in business practices.

Functionality

Screens are grouped according to the business functionality making it easier for the user to operate.

Security

To ensure security of important data, the SECURITY feature is built into the SMO system. Security in system ensures that only the authorized persons can access the SMO system. Organisation of users in SMO is in the form of groups which corresponds to the functional module of the system. Furthermore, the users are also organised in terms of the duties they perform, the levels of duties can be understood as the access level if the

user. A user whose job is to enter the daily data should not be allowed to do period end processing as a precautionary measure against inadvertant mistakes. For each user group, a notified authority at each SMO will control issue of usercodes and passwords.

The system allows the DBA to enter/modify new usercode/password combination through housekeeping menu .

Security Levels

For each usercode/password the system maintains an access level associated with usercode. There are three levels available in the SMO System :-

1. LEVEL 3 - This is the highest level and is allotted to only one notified authority at the SMO who will act as the database administor (DBA). DBA will be responsible for creation/deletion of new usercode in the SMO system besides other housekeeping jobs.

2. LEVEL 2 - This is the next lower level and the users with access level '2' can perform all the functions within this module. They cannot access any module other than for which they have been allowed by the DBA.

3. LEVEL 1 - This is the lowest level. Users with access level '1' can perform only routine jobs within their module like transactions data entry, checklist reports, etc. They will not be allowed to delete the records or to initiate batch processes like posting of transactions.

ENTITY NAME : CODE DESCRIPTION
 TABLE NAME : CODE_DESC : TYPE NAME-DESC
 DESCRIPTION : CODE Vs DESCRIPTION TABLE FOR AREA DISTRICT
 AND FR CODES

DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
CODE_TYPE *	N	2	01 - Area 02 - District
CODE *	C	6	03 - FR 00 - Code
SHT_DESC	C	15	
LONG_DESC	C	40	
SUB_CODE	C	6	Area Code for CODE TYPE 02 records

NOTES: '*' MEANS KEY-FIELDS

ENTITY NAME	:	SALE DOCUMENT		
TABLE NAME	:	SALE_DOC	:	TYPE TRANSACTION
DESCRIPTION	:	RELEASE ORDER (RO) AND RELEASE ORDER CUM INVOICE CUM RECEIPT (ROCIR) SALES DETAILS		
DATA ELEMENT		TYPE	SIZE	REMARKS
STATUS_CD		N	1	
OP_ID		C	14	
TSTMP		D	7	
POSTING_STATUS		N	1	
POSTING_TSTMP		D	7	
SMO_CD	*	C	2	
DOC_CD	*	N	2	32 - RO ; 82 - ROCIR RO/ROCIR Number
DOC_NO	*	N	6	
DOC_DATE		D	7	
WH_CD		N	4	Warehouse Code
CUST_CD		N	6	
DISTT_CD		N	2	
FR_CD		N	6	
CONS_NAME		C	40	Consignee Name
CONS_ADDR_LINE_1		C	30	Consignee Address
CONS_ADDR_LINE_2		C	30	
CONS_ADDR_LINE_3		C	30	
CONS_PIN_CD		N	6	
NOTES:				

ENTITY NAME :			
TABLE NAME : SALE_DOC (sheet - 2)			
DESCRIPTION :			
DATA ELEMENT	TYPE	SIZE	REMARKS
PROD_CD	N	4	
QTY_MT	N	4	
QTY_KG	N	3	
NO_OF_BAGS	N	6	
AMT	N	14 (12+2)	ROCIR Amount
RMK	C	50	
INV_NO	N	6	For ROs to link with consolidated invoices.
INV_DATE	D	7	
AMT_PAID	N	14 (12+2)	For ROCIR only
CORRECT_AMT	N	14 (12+2)	For ROCIR only
INV_GRP_CD	N	2	
AMT_REC'D	N	14 (12+2)	
AMT_ADJUSTED	N	14 (12+2)	
ADJUST_SIGN	N	1	
UNIT_RATE	N	14 (12+2)	

ENTITY NAME : INVOICE

TABLE NAME : INVOICE TYPE TRANSACTION

DESCRIPTION : FOR INFORMATION PERTAINING TO INVOICES
GENERATED FROM RO

DATA ELEMENT		TYPE	SIZE	REMARKS
STATUS_CD		N	1	
OP_ID		C	14	
TSTMP		D	7	
POSTING_STATUS		N	1	
POSTING_TSTMP		D	7	
SMO_CD		C	2	
DOC_CD	*	N	2	81 for Invoice
DOC_NO	*	N	6	Invoice number
DOC_DATE	*	D	7	Invoice date
DUE_DATE		D	7	
RO_NO		N	6	
RO_DATE		D	7	
LC_NO		N	6	
LC_DATE		D	7	
INV_AMT		N	14 (12+2)	
AMT_PAID		N	14 (12+2)	
COMMIT_STATUS		C	1	
SYS_MANUAL		C	1	
OVERIDE_CD		N	1	

NOTES:

TABLE NAME	:	SALE_AMTS		:	TYPE TRANSACTION	
DESCRIPTION	:	SALE AMOUNT INFORMATION FOR INVOICE AND ROCIR AND SEVA KENDRA SUMMARY				
DATA ELEMENT		TYPE	SIZE	REMARKS		
STATUS_CD		N	1			
OP_ID		C	14			
TSTMP		D	7			
POSTING_STATUS		N	1			
POSTING_TSTMP		D	7			
SMO_CD		C	2			
DOC_CD		N	2	81 - INVOICE 82 -ROCIR		
DOC_NO		N	6	84 - SK SUMMARY		
DOC_DATE		D	7			
ABBR_CD		C	4			
ACCT_NO		N	6			
SUB_ACCT_NO		N	4			
SL_CD		N	6			
DR_CR_IND		C	1			
AMT.		N	14			
			(12+2)			
SHORT_NARR		C	25	AMOUNT DESC. (GLC DESC)		
REF_DOC_CD		N	2			
REF_DOC_NO		N	6			
REF_DOC_DATE		D	7			
AMT_TYPE		N	2	01-Issue price 02-pre tax		
				03-Taxes 04-post tax		
RATE		N	14			
			(12+2)			
SIGN		C	1	'+' OR '-'		
RATE_IND		N	1	0 - AMOUNT 1 - PERCENTAGE		
OVERRIDE_CD		N	1			
NOTES:						

ENTITY NAME : SALE CHANGE
 TABLE NAME : SALE_CHANGE TYPE TRANSACTION
 DESCRIPTION : INFORMATION FOR RO CHANGES AND ROCIR CHANGES

DATA ELEMENT		TYPE	SIZE	REMARKS
STATUS_CD		N	1	
OP_ID		C	14	
TSTMP		D	7	
POSTING_STATUS		N	1	
POSTING_TSTMP		D	7	
SMO_CD		C	2	
DOC_CD	*	N	2	38-RO CHANGE 83-ROCIR CHANGE
DOC_NO	*	N	6	
DOC_DATE	*	D	7	
NEW_DISTT_CD		N	2	
REF_DOC_CD		N	2	DOC CODE OF ORIGINAL DOC
REF_DOC_NO		N	6	32-RO; 82-ROCIR
REF_DOC_DATE		D	7	
LST_CHG_NO		N	6	
LST_CHG_DATE		D	7	
CLR_CERT_NO		N	6	
CLR_CERT_DATE		D	7	
DOC_TYPE		C	2	'CH' FOR CHANGE 'CN' FOR CANCELLATION.
NEW_WH_CODE		N	4	
NEW_PROD_CD		N	4	
NEW_QTY_MT		N	4	
NEW_QTY_KG		N	3	
NEW_NO_OF_BAGS		N	6	
NEW_AMT		N	14	
			(12+2)	
RMK		C	50	REMARKS

NOTES:

ENTITY NAME : ROCIR RECEIPTS

TABLE NAME : ROCIR_RCPT TYPE TRANSACTION

DESCRIPTION : RECEIPT INFORMATION OF ROCIR

DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
POSTING_STATUS	N	1	
POSTING_TSTMP	D	7	
SMO_CD	C	2	
DOC_CD *	N	2	82 - ROCIR
DOC_NO *	N	6	
DOC_DATE *	D	7	
ABBR_CD	C	4	
ACCT_NO	N	6	
SUB_ACCT_NO	N	4	
SL_CD	N	6	CUSTOMER CODE
DR_CR_IND	C	1	
AMT	N	14	
		(12+2)	
SHORT_NARR	C	25	
REF_DOC_CD	C	2	CH-CHEQUE DD-DRAFT
REF_DOC_NO	N	6	CHEQUE/DD NUMBER
REF_DOC_DATE	D	7	CHEQUE/DD DATE

NOTES:

ENTITY NAME : ROCIR ALLOCATION

TABLE NAME : ROCIR_ALLOC TYPE TRANSACTION

DESCRIPTION : ROCIR ALLOCATED AMOUNT INFORMATION

DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
POSTING_STATUS	N	1	
POSTING_TSTMP	D	7	
SMO_CD	C	2	
DOC_CD *	N	2	82 ROCIR
DOC_NO *	N	6	
DOC_DATE *	D	7	
REF_DOC_CD	C	2	CHEQUE/DD ETC.
REF_DOC_NO	N	6	CHEQUE/DD NUMBER
REF_DOC_DATE	D	7	CHEQUE/DD NUMBER
AMT	N	14 (12+2)	
DR_CR_IND	C	1	
FLAG	N	1	

NOTES:

ENTITY NAME : SEVA KENDRA SUMMARY

TABLE NAME : SK_SUMRY TYPE TRANSACTION

DESCRIPTION : INFORMATION PERTAINING TO SEVA KENDRA
SUMMARY

DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
POSTING_STATUS	N	1	
POSTING_TSTMP	D	7	
SMO_CD	C	2	
DOC_CD	N	2	
DOC_NO	N	6	SK SUMMARY NO.
DOC_DATE	D	7	
SK_CD	N	4	SEVA KENDRA CODE
YR_MTH	N	6	(YYYYMM) FORMAT
TOT_SALES_VAL	N	14 (12+2)	
DISTT_CD	N	2	
PROD_CD	N	4	
ACCT_CD	N	6	
QTY_SALES	N	10 (7+3)	
RATE	N	14 (12+2)	
AMT	N	14 (12+2)	
CORRECT_AMT	N	14 (12+2)	
CASHMEMO_FROM	N	6	
CASHMEMO_TO	N	6	

NOTES:

ENTITY NAME : SEVA KENDRA SUMMARY
 TABLE NAME : SK_SUMRY (PAGE-2) TYPE TRANSACTION
 DESCRIPTION : INFORMATION PERTAINING TO SEVA KENDRA
 SUMMARY.

DATA ELEMENT	TYPE	SIZE	REMARKS
TOT_PAY_REC'D	N	14 (12+2)	
AMT_REC'D	N	14 (12+2)	
INV_GRP_CD	N	2	

NOTES:

ENTITY NAME : CUSTOMER MASTER

TABLE NAME : CUSTOMER TYPE MASTER

DESCRIPTION : CUSTOMER MASTER

DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
LST_UPDT_TSTMP	D	7	
SL_TYPE	N	2	
CUST_CD *	N	6	
CUST_NAME	C	40	
CUST_SHT_NAME	C	15	
ADDR_LINE_1	C	30	
ADDR_LINE_2	C	30	
ADDR_LINE_3	C	30	
PIN_CD	N	6	
ADDR2_LINE_1	C	30	
ADDR2_LINE_2	C	30	
ADDR2_LINE_3	C	30	
PIN2_CD	N	6	
TEL	C	20	
TLX	C	20	
FAX	C	20	
CR_DAYS_GRP_CD	N	2	For Invoice due date
INV_GRP_CD	N	2	For Invoice Parameters
CUR_BAL	N	14 (12+2)	CURRENT BALANCE
DISTT_CD	N	2	
DR_CR_IND	C	1	

NOTES:

ENTITY NAME		: CUSTOMER BALANCE		
TABLE NAME		: CUSTOMER_BAL	: TYPE MASTER	
DESCRIPTION		: CUSTOMER BALANCE AT START UP OF SYSTEM AND REGULAR UPDATION BY TRANSACTIONS		
DATA ELEMENT		TYPE	SIZE	REMARKS
STATUS_CD		N	1	
OP_ID		C	14	
TSTMP		D	7	
LST_UPDT_TSTMP		D	7	
ARC_CD		N	4	
ACCT_NO	*	N	6	
SL_CD	*	N	6	CUSTOMER CODE
REC_TYPE		N	1	0 OPENING BAL RECORD 1 NORMAL RECORD
ACCT_PERD		N	6	YYYYMM
DR_AMT		N	14 (12+2)	BALANCE FOR TYPE 0 REC.
CR_AMT		N	14 (12+2)	
NOTES:				

ENTITY NAME		: PRODUCT MASTER	
TABLE NAME		PRODUCT	: TYPE MASTER
DESCRIPTION		: PRODUCT MASTER	
DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
PROD_CD	N	4	
PROD_NAME	C	40	
PROD_SHT_NAME	C	15	
STD_UOM	C	3	STANDARD UNIT OF MEASURE
STOCK_UOM	C	3	
SALES_UOM	C	3	
CF_STOCK_UOM	N	7 (4+3)	CONVERSION FACTOR
CF_SALES_UOM	N	7 (4+3)	CONVERSION FACTOR
UNIT_DESC	C	6	
NOTES:			

ENTITY NAME	: WAREHOUSE MASTER
TABLE NAME	: WAREHOUSE TYPE MASTER
DESCRIPTION	: WAREHOUSE MASTER

DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
SL_TYPE	N	2	
WH_CD *	N	4	
WH_NAME	C	40	
WH_SHT-NAME	C	15	
ADDR_LINE_1	C	30	
ADDR_LINE_2	C	30	
ADDR_LINE_3	C	30	
PIN_CD	N	6	

NOTES:

ENTITY NAME		: DOCUMENT CONTROL	
TABLE NAME		: DOC_CONTROL	: TYPE MASTER
DESCRIPTION		: CONTAINS INFORMATION OF EVERY TYPE OF DOCUMENT ENTERED MAINLY USED FOR GENERATING INVOICE NUMBERS	
MAX REC SIZE :95 CHARS		MAX POP :40	: RETENTION
DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
LST_UPDT_TSTMP	D	7	
DOC_CD *	N	2	
SEASON_CD *	N	2	
ABBR_DESC	C	3	MNEMONIC DOCUMENT NAME
LONG_DESC	C	40	
LST_DOC_NO	N	6	
LST_DOC_DATE	D	7	
ACCT_NO	N	6	MAJOR ACCOUNT NO FOR DOCUMENT
ACCT_NO_2	N	6	
NOTES:			

ENTITY NAME		: SALES ANALYSIS		
TABLE NAME		: SALES_ ANALYSIS		: TYPE MASTER
DESCRIPTION		: SALES TARGETS FOR DISTRICTS, AREAS & FR's AND ACTUAL SALES		
DATA ELEMENT		TYPE	SIZE	REMARKS
STATUS_CD		N	1	
OP_ID		C	14	
TSTMP		D	7	
LST_UPDT_TSTMP		D	7	
CODE_TYPE	*	N	2	01-DIST 02-FR 03-ECA
CODE	*	N	6	DISTRICT/FR CODE
SUB_CODE	*	N	6	DIST CODE FOR CODE TYPE 02 REC.
PROD_CD	*	N	4	
YR_MTH	*	N	6	
TGT_SALES_QTY		N	10 (7+3)	
ACT_SALES_QTY		N	10 (7+3)	
NOTES:				

ENTITY NAME	:	CREDIT DAYS			
TABLE NAME	:	CR_DAYS	:	TYPE MASTER	
DESCRIPTION	:	INFORMATION ON CREDIT DAYS GROUPS AND PRODUCT WITH VALID FROM DATES			
DATA ELEMENT		TYPE	SIZE	REMARKS	
STATUS_CD		N	1		
OP_ID		C	14		
TSTMP		D	7		
CR_DAYS_GRP_CD	*	N	2		
PROD_CD	*	N	4		
VALID_FROM_DATE	*			D	7
CR_DAYS		N	4		
LIFTING_PERIOD		N	3		
NOTES:					

ENTITY NAME : SEASON MASTER
 TABLE NAME : SEASONS | TYPE MASTER
 DESCRIPTION : SEASONS START DATE AND END DATE

DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
SEASON_CD *	N	2	
SEASON_DESC	C	40	
SEASON_SHT_DESC	C	15	
START_DATE	D	7	
END_DATE	D	7	
START_DATE_2	D	7	
END_DATE_2	D	7	
START_DATE_3	D	7	
END_DATE_3	D	7	

NOTES:

ENTITY NAME		: ABBREVIATED ACCOUNT CODES	
TABLE NAME		: ABBR_AC_CODES	: TYPE MASTER
DESCRIPTION		: ABBREVIATED ACCOUNT CODES FOR MAIN ACCOUNT CODES & SUB ACCOUNT CODES	
DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
ABBR_CD	*	C	4
ACCT_NO		N	6
SUB_ACCT_NO		N	4
NOTES:			

ENTITY NAME : SYSTEM PARAMETERS			

TABLE NAME : SYS_PARAMS TYPE PARAMETERS			

DESCRIPTION : SYSTEM PARAMETERS			

DATA ELEMENT	TYPE	SIZE	REMARKS

STATUS_CD	N	1	COMPANY NAME
OP_ID	C	14	
TSTMP	D	7	
CO_NAME	C	40	
ARC_CD	N	4	
SMO_CD	C	2	
FIN_YR_BEG	N	6	YYYYMM
FIN_YR_END	N	6	YYYYMM
CURR_MTH	N	6	YYYYMM
SMO_NAME	C	40	
SMO_SHT_NAME	C	15	
MAX_CR_PERIOD	N	3	
ROUND_OFF_AMT	N	5 (3+2)	
SYS_START_DATE	D	7	
CUST_ACCT	N	6	

NOTES:Single record			

ENTITY NAME : REPORT PARAMTERS

TABLE NAME : REP_PARAMS TYPE PARAMETERS

DESCRIPTION : REPORT PARAMTERS

DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
REP_ID *	C	6	
REP_START_DATE *	D	7	
REP_END_DATE *	D	7	
ACCT_NO	N	6	
SUB_ACCT_NO	N	5	
DOC_CD	N	2	
START_CODE	C	6	
END_CODE	C	6	
REP_MONTH	N	6	
INVOICE_NO	N	6	
INV_DATE	D	7	

NOTES:

ENTITY NAME : INVOICE PARAMETERS

TABLE NAME : INV_PARAMS : TYPE PARAMETERS

DESCRIPTION : INVOICE PARAMETERS FOR GENERATING INVOICE

DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
DOC_CD	N	2	81 INV 82 ROCIR 84 SK SUM.
PROD_CD *	N	4	
INV_GRP_CD *	N	2	
VALID_FROM_DATE *	D	7	
AMT_TYPE	N	2	1 ISS. PRICE 2 PRE TAX 3 TAX 4 AFTER TAX
ACCT_NO	N	6	
AMT_DESC	C	35	
RATE_IND	N	1	0 AMOUNT 1 PERCENTAGE
UNIT_RATE	N	14 (12+2)	
SIGN	C	1	
SL_NO	N	2	
BASE_CD	N	2	
BASE_IND	C	1	

NOTES:

ENTITY NAME	:	ACCOUNT MASTER			
TABLE NAME	:	ACCOUNT_MASTER		TYPE	
DESCRIPTION	:	THIS HAS ACCOUNT CODES WITH DESCRIPTION AND ATTRIBUTES USED IN SMO SYSTEM. IT BASICALLY CONTAINS CHART OF ACCOUNTS OF KRIBHCO.			
DATA ELEMENT		TYPE	SIZE	REMARKS	
STATUS_CD		N	1		
OP_ID		C	14		
TSTMP		D	7		
ACCT_NO	*	N	6		ACCOUNT NUMBER
SUB_ACCT_NO	*	N	4		SUB ACCOUNT NUMBER (FOR FUTURE USE)
SHT_DESC		C	15		SHORT DESCRIPTION
LONG_DESC		C	40		LONG DESCRIPTION
SL_TYPE		N	2		SUB LEDGER TYPE
CASHBANK_IND		C	2		CASH/BANK INDICATOR (CA-CASH, BK-BANK)
ACCT_TYPE		C	2		ACCOUNT TYPE
NOTES: '*' MEANS KEY-FIELDS					

ENTITY NAME	:	ACCOUNT BALANCE			
TABLE NAME	:	ACCOUNT_BAL	:	TYPE	MASTER
DESCRIPTION	:	THIS TABLE CONTAINS MONTHWISE DEBIT/CREDIT TOTALS FOR EACH ACCOUNT			
DATA ELEMENT		TYPE	SIZE	REMARKS	
STATUS_CD		N	1		
OP_ID		C	14		
TSTMP		D	7		
ACCT_NO	*	N	6		
SUB_ACCT_NO	*	N	4		NOT USED CURRENTLY
SL_CD	*	N	6		SUB LEDGER CODE
REC_TYPE		N	1		1- OP. BAL, 2 - NORMAL
ACCT_PERD		N	6		YYYYMM
DR_AMT		N	14		DEBIT TOTAL(12,2)
					(BALANCE FOR 0 TYPE)
CR_AMT		N	14		CREDIT AMOUNT(12,2)
					(BALANCE FOR 0 TYPE)
NOTES: '*' MEANS KEY-FIELDS					

ENTITY NAME : SUBSIDIARY LEDGER CODES			
TABLE NAME : SUB_LEDGER TYPE MASTER			
DESCRIPTION : THIS TABLE CONTAINS CODES FOR EACH SUBSIDIARY LEDGER TYPE MENTIONED IN ACCOUNT MASTER			
DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
SL_TYPE *	N	2	TYPE OF SLC (EMPLOYEES) CODE TO IDENTIFY THE SUB LEDGER ACCOUNT
SL_CD *	N	6	
SHT_DESC	C	15	
LONG_DESC	C	40	
NOTES: '*' MEANS KEY-FIELDS			

ENTITY NAME		:	ABBREVIATED CODES		
TABLE NAME		:	ABRV_CODES		TYPE MASTER
DESCRIPTION		:	THIS TABLE CONTAINS ABBREVIATED CODE FOR ACCOUNT CODES(FREQUENTLY USED) FOR EASE OF DATA ENTRY		
DATA ELEMENT		:	TYPE	SIZE	REMARKS
STATUS_CD		:	N	1	
OP_ID		:	C	14	
TSTMP		:	D	7	
ABRV_CD *		:	C	4	
ACCT_NO *		:	N	6	ACCOUNT CODE
SUB_ACCT_NO		:	N	4	SUB ACCOUNT CODE (FOR FUTURE USE)
NOTES: '*' MEANS KEY-FIELDS					

ENTITY NAME : G L TRANSACTION HEADER			
TABLE NAME : GL_TXN_HDR TYPE TRANSACTION			
DESCRIPTION : STORES HEADER INFORMATION FOR ALL ACCOUNTING TRANSACTIONS (RECEIPT, PAYMENT, JV, DR/CR NOTES)			
DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
PSTG_STATUS	N	1	
PSTG_TSTMP	D	7	
DOC_CD *	N	2	IDENTIFIES TYPE OF DOC.
DOC_NO *	N	6	SERIAL NO. OF DOCUMENT
DOC_DATE *	D	7	DOC. DATE
DOC_GLC	C	4	ABBREV. CODE OF GL A/C LINKED TO THIS DOCUMENT
DOC_AMT	N	14 (12,2)	AMOUNT OF THE DOCUMENT
NARR	C	60	NARRATION OF THE DOC.
CODE	N	6	
NOTES: '*' MEANS KEY-FIELDS			

ENTITY NAME : G L TRANSACTION DETAIL

TABLE NAME : GL_TXN_DTL | TYPE TRANSACTION

DESCRIPTION : STORES DETAIL INFORMATION FOR ALL ACCOUNTING
TRANSACTIONS (RECEIPT, PAYMENT, JV, DR/CR NOTES)

DATA ELEMENT		TYPE	SIZE	REMARKS
STATUS_CD		N	1	
OP_ID		C	14	
TSTMP		D	7	
PSTG_STATUS		N	1	
PSTG_TSTMP		D	7	
DOC_CD	*	N	2	IDENTIFIES TYPE OF DOC.
DOC_NO	*	N	6	SERIAL NO. OF DOCUMENT
DOC_DATE	*	D	7	DOC. DATE
ABBR_CD		C	4	ABBREV. CODE OF GL A/C LINKED TO THIS DOCUMENT
ACCT_NO		N	6	ACCOUNT CODE TO BE DEBITED/CREDITED
SUB_ACCT_NO		N	4	SUB ACCOUNT NO.
SL_CD		N	6	SUB LEDGER CODE
DC_IND		C	1	DR/CR INDICATOR
AMT		N	14 (12,2)	TRANSACTION AMOUNT TO BE DEBITED/CREDITED
SHT_NARR		C	25	PARTICULARS
REF_DOC_CD		C	2	DOC CODE/CH/DD/AD/OA
REF_DOC_NO		N	6	
REF_DOC_DATE		D	7	

NOTES: '*' MEANS KEY-FIELDS

ENTITY NAME : PAY-IN-SLIP HEADER

TABLE NAME : PAY_SLIP_HDR : TYPE TRANSACTION

DESCRIPTION : STORES HEADER INFORMATION FOR
BANK PAY-IN-SLIP

DATA ELEMENT	TYPE	SIZE	REMARKS
STATUS_CD	N	1	
OP_ID	C	14	
TSTMP	D	7	
PSTG_STATUS	N	1	
PSTG_TSTMP	D	7	
DOC_CD *	N	2	IDENTIFIES TYPE OF DOC.
DOC_NO *	N	6	SERIAL NO. OF DOCUMENT
DOC_DATE *	D	7	DOC. DATE
CONS_DD_NO	C	8	CONSOLIDATED DD NUMBER
AMOUNT	N	14 (12,2)	CONSOLIDATED DD AMOUNT
DEP_BANK_CD	C	4	ABBREVIATED BANK CODE
FR_CODE	N	6	
CONS_DD_DATE	D	7	
DEP_BANK_AC_NO	C	6	

NOTES: '*' MEANS KEY-FIELDS

ENTITY NAME : PAY-IN-SLIP DETAIL

TABLE NAME : PAY_SLIP_DTL : TYPE TRANSACTION

DESCRIPTION : STORES DETAIL INFORMATION FOR
BANK PAY-IN-SLIPS

DATA ELEMENT		TYPE	SIZE	REMARKS
STATUS_CD		N	1	
OP_ID		C	14	
TSTMP		D	7	
PSTG_STATUS		N	1	
PSTG_TSTMP		D	7	
DOC_CD	*	N	2	IDENTIFIES TYPE OF DOC.
DOC_NO	*	N	6	SERIAL NO. OF DOCUMENT
DOC_DATE	*	D	7	DOC. DATE
CHQ_TYPE		C	2	
CHQ_NO		C	4	CHEQUE/PAY ORDER NO.
CHQ_DATE		D	7	CHEQUE/PAY ORDER DATE
CHQ_AMT		N	14	AMOUNT DEPOSITED
			(12,2)	
CUST_CD		N	6	CUSTOMER FROM WHOM THE CHEQUE HAS BEEN RECEIVED
REF_DOC_CD		C	2	REF. DOC.(ROCIR/INV.)
REF_DOC_NO		N	6	
REF_DOC_DATE		D	7	

NOTES: '*' MEANS KEY-FIELDS

ENTITY NAME : PRE-PAID ADVICE HEADER
 TABLE NAME : PRE_PAID_HDR | TYPE TRANSACTION
 DESCRIPTION : STORES HEADER INFORMATION FOR PRE-PAID ADV.

DATA ELEMENT		TYPE	SIZE	REMARKS
STATUS_CD		N	1	
OP_ID		C	14	
TSTMP		D	7	
PSTG_STATUS		N	1	
PSTG_TSTMP		D	7	
DOC_CD	*	N	2	IDENTIFIES TYPE OF DOC.
DOC_NO	*	N	6	SERIAL NO. OF DOCUMENT
DOC_DATE	*	D	7	DOC. DATE
PREPAID_AMT		N	14 (12,2)	
CUST_CD		N	6	CUSTOMER CODE
FR_CD		N	6	FR CODE
SK_CD		N	6	SEVA KENDRA CODE FROM WHERE MATERIAL IS ISSUED
DISTT_CD		N	2	
CHQ_NO		C	8	
CHQ_DATE		D	7	
REF_DOC_CD		N	2	(PAY-IN-SLIP)
REF_DOC_NO		N	6	
REF_DOC_DATE		D	7	

NOTES: '*' MEANS KEY-FIELDS

ENTITY NAME		:	PRE-PAID ADVICE DETAIL		
TABLE NAME		:	PRE_PAID_DTL	:	TYPE TRANSACTION
DESCRIPTION		:	STORES DETAIL INFORMATION FOR PRE-PAID ADV.		
MAX REC SIZE		:	MAX POP	:	RETENTION 24 MONTHS
DATA ELEMENT		:	TYPE	:	SIZE
		:		:	REMARKS
STATUS_CD		:	N	:	1
OP_ID		:	C	:	14
TSTMP		:	D	:	7
PSTG_STATUS		:	N	:	1
PSTG_TSTMP		:	D	:	7
DOC_CD		:	N	:	2
DOC_NO		:	N	:	6
DOC_DATE		:	D	:	7
CASHMEMO_NO		:	N	:	6
CASHMEMO_DATE		:	D	:	7
PROD_CD		:	N	:	4
QTY_SALE		:	N	:	10
VALUE_SALE		:	N	:	14
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ENTITY NAME	:	TRANSACTION DETAILS		
TABLE NAME	:	VOUCHER_DTL	:	TYPE TRANSACTION
DESCRIPTION	:	STORES DETAIL INFORMATION FOR ALL TRANSACTION (RO,ROCIR,RECEIPT,PAYMENT,JV,DR/CR NOTES, SK Summary,Pre paid,Pay in slip)		
DATA ELEMENT		TYPE	SIZE	REMARKS
STATUS_CD		N	1	
OP_ID		C	14	
TSTMP		D	7	
SMO_CD		C	2	
DOC_CD	*	N	2	IDENTIFIES TYPE OF DOC.
DOC_NO	*	N	6	SERIAL NO. OF DOCUMENT
DOC_DATE	*	D	7	DOC. DATE
FR_CD		N	6	
PROD_CD		N	4	
QTY_MT		N	4	
QTY_KG		N	3	
INV_GRP_CD		N	2	
ABBR_CD		C	4	ABBREV. CODE OF GL A/C LINKED TO THIS DOCUMENT
ACCT_NO		N	6	ACCOUNT CODE TO BE DEBITED/CREDITED
SUB_ACCT_NO		N	4	SUB ACCOUNT NO.
SL_CD		N	6	SUB LEDGER CODE
DR_CR_IND		C	1	DR/CR INDICATOR
AMT		N	14 (12,2)	TRANSACTION AMOUNT TO BE DEBITED/CREDITED
SHT_NARR		C	25	PARTICULARS
REF_DOC_CD		C	2	DOC CODE/CH/DD
REF_DOC_NO		N	6	
REF_DOC_DATE		D	7	
NOTES: '*' MEANS KEY-FIELDS				

Status Code updation in master and transaction files

The general guidelines for updating the status code in the tables is described below. The status codes are codified as follows :

- 0 - Active Record which is under use
- 1 - Suspended transaction or master record
(Eg: Customer transaction temporarily stopped)
- 2 - Cancelled (Cancelled Invoice, Release Order, etc.)
- 3 - Updated record
- 4 - Invoiced & not printed (for control purpose)
- 5 - Invoiced and printed (status check)
- 9 - Logically deleted

Every transaction screen or master screen updates the following information in the base tables or other tables accessed by the screen.

- Operator Id (OP_ID) - Usercode of the person initiating the screen
- Time Stamp (TSTMP) - date and time when the record was entered or updated(SYSDATE)
- Status Code(STATUS_CD) - As appropriate
- Last Update Time Stamp(LAST_UPDT_TSTMP)
- Posting Status(POST_STATUS) - for transaction files
(0 - unposted, 1 - posted)
- Posting Time stamp(POST_TSTMP) - Date and time of posting(SYSDATE)

CONCLUSION AND REMARKS

The analysis , design , development and testing of the KTRIBCO SMO Project involving the computerisation of invoicing,sales analysis, accounts receivables ,payroll and general ledger is complete.The invoicing,sales analysis and payroll modules of the system have gone live in the states of Punjab, Haryana and Maharashtra. The Accounts Receivables and General Ledger module have gone for implementation in Gujarat and Maharashtra. The last site for implementation will be Lucknow where preliminary preparations like master entry is still going on.

No performance problems have been encountered in these states so far and none are anticipated for the remaining modules in other states.This can be attributed to the thorough testing done in the test phase with the view of proving the system wrong than proving it right.

For the convenience of whosoever does the maintenance ,an effort has been done to provide a very thorough documentation for all the phases, namely analysis , design and development.

The author found the testing phase most fruitful in experience since appropriate exposure to client was available in this phase.Besides the problems faced in this phase provided a better insight to the sort of problems that can crop up in the development cycle of the system and their possible solutions.

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