Inventory controlling system for Comfortwear (Pvt) Ltd at Wathupitiwala Export Processing Zone.

By

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01/AS/061

Declaration

I certified that another one or neither for any diploma or degree in another university have not previously submitted this dissertation. Also it does not contain any material previously published or written in any discipline except where the references made in the text.

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Courteously dedicated to my loving parents and my sister.

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Abstract

Comfortwear (Pvt) Ltd was established at Wathupitiwala E.P.Z. and producing garments for export market without aid of garment quota scheme since 1999. It's operated at a 45,000-sq.ft fully air-conditioned state-of-the-art factory with top of the range sewing equipment. It's capable of producing 250,000 pieces per month, using 500 machines and with aid of 700 employees.

First I was done feasibility study to get understand what are the areas that need developments. Then I was gathered user requirement by careful interviewing, discovering formal documents and formal/informal discussions. Then I was analyzed what I have gathered and prepare software definition. Then I was created the detailed software requirement specification. After that I was moved to design phase after completion of first phase. Depending upon the function oriented or object oriented, I was decided to use DFD's or Class diagrams. I was decided to use object oriented programming while using Visual Basic 6.0 Enterprise edition to create user interface. I was used MS-project 2000 to guide my project.

I was implemented the Crystal Report concept. So they won't rush to the system administrator to have any report. Then company could save the working ours of employees. I was designed my interface in GUI basis. So User Interface will get more user friendly. Also I was designed and implemented my helping system. Then any new comer can grasp the total inventory controlling system activity just after small time.

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Abbreviations

Term	Usage
BOM	Bill of material
CPL	Comfortwear (Pvt) Ltd.
CT	Cutting Ticket.
CRD	Cutting report.
Carton	A container to hold all raw materials need to. Produce a garment.
CCR	Color continuation report
CE	Cutting executive
DS	Delivery schedule
DN	Dispatch Note.
DPR	Daily packing report.
DEO	Data entry report.
FGRR	Finished garments return report.
FC	Fabric card.
FIR	Fabric Inspection report.
GDN	Goods dispatch note.
IS	Inspection summary
MRR	Material returns report.
MRN	Material requisition note
MCL	Material checking list
MI	Material inspector
PPS	Production planning schedule
PI	Packing instructions
PO	Purchase order
PLE	Planning executive
PE	Packing executive
PTL	Production team leader
PTOR	Production team output report

PL	Packing list
RRN	Residual return note
SLR	Stock lots report
SPL	Suppliers packing list
SR	Sundry receipt
SDR	Shade detail report
SA	Stores Assistant
SI	Suppliers invoice
TCL	Trims checking list
TC	Trim card
WHE	Warehouse executive

CHAPTER 1

Introduction

1.1 Company Profile:

Comfortwear (Pvt) Ltd was established at Wathupitiwala E.P.Z. and producing garments for export market without aid of garment quota scheme since 1999. It's operated at a 45,000-sq.ft fully air-conditioned state-of-the-art factory with top of the range sewing equipment. It's capable of producing 250,000 pieces per month, using 500 machines and with aid of 700 employees. They have several clients that participate for selling their products. They are Marks & Spencer, BHS, George, Tesco, Lerner and Lane Bryant. Because of their strong marketing and producing background, they maintain a highly interactive inventory system under their ERP (Enterprise Resource Planning).

In the company structure can see several departments. They are commercial, planning, finance, sales, marketing etc. But only stores, planning, merchandising, cutting and accounting departments responsible for stock movements. We can see several authorized personnel that conduct stock movements. There are many stock movements carried out by the existing system. They are receipt of fabric and all over laces, receipt of trims and other accessories, issues for production purposes, handling sub contracts and handling finished goods. (IBM, 2003).

1.2 Existing system overview:

Company is running using a complete ERP solution. It's consisting of several modules. They are inventory management, supply chain, cutting etc. They all have some independent processes as well as dependable processes. Each module is consisting with several activities. In inventory management module, we can find out six separate activities. They are carried out by separate procedures. As I mentioned before, inventory management module is not an independent one. It's interacting with merchandising department, cutting department, financial department and planning department.

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There are several divisions of responsibility through out the premises. In each department, specific person stands for to communicate with inventory management module. In warehouses, there are several people involving with inventory process handling. They are WHE, WH clerk, SA, SK and MI. Other than the process handling, we can see several reports flowing to the management. By periodic processing of stock details, reports will be generating. The reports are, Stock valuation report, MRR, FGRR etc.

The problems with the system were, it hasn't online helping system, effective timing in report generating and difficulties when interacting with the Command Line Interface (CLI).

CHAPTER 2

Literature Revive

2.1 Requirement Analysis phase:

I was noticed that system is flowing according to the system manual at most of the time. But some times it may be modified according to the system user needs. All the transactions were recording within the system and in the proper documents.

So according to those facts, I was decided to gather requirements using site visits and going through the formal documents. (Igor, 1992).

2.2 Designing phase:

After completion of requirement gathering phase, I was analyzed those gathered information. Then I was started our designing phase.

I was integrated our gathered data into ER diagrams and then into DFD diagrams. Then only we can give a better visual representation to the existing system. So I was invented new functionalities to the existing system and was created enhanced system with new features. At this phase I was designed database and it's tables. Also I was designed the user interface, which is facilitating the potential users.

2.3 Implementation phase:

After designing the database, new system and the user interface, I was implemented those scene using a programming language, database server and report generator. The programming language selection is more important when we concern the performance of the software. I was concentrated on user friendliness of our interfaces. Because the potential user will directly communicate with graphical user interface than do via command line interface. So I was moved to the Microsoft Visual Basic 6 Enterprise edition. Because it can produce nice interfaces and perform object oriented programming in a high degree.

Also I was chosen to design reports using crystal reports version 9.0. Because I was created nicely integrated reports while searching the database.

CHAPTER 3

Methodology

3.1 Requirement Analysis:

First I was done feasibility study to get understand what are the areas that need developments. Then I was a gathered required user requirement, by careful interviewing, discovering formal documents and formal/informal discussions. Then I was analyzed what we have gathered and was prepared software definition. Then I was created the detailed software requirement specification. I was moved design phase after completion of first phase.

3.1.1 DSRS (Detailed System Requirement Specification):

1.Receipt for Fabric and all over laces.

Procedure

Sourcing department will raise the PO in the system.

The commercial department will inform the stores about the arrival of goods, at least 24 hours in advance, by sending the Suppliers Invoice and Packing List.

If a consignment arrives, unload the boxes in the unloading bay.

The number on each carton will be read out and ticked off with the number on the Packing List before the carton is opened.

Open the carton and take roll by roll. Cartons should not be brought inside the stores.

The stores assistant (SA) who is unloading the roll should read out the description (Lot number, Yardage and Color) on each roll.

Store keeper (SK) should note down this description on the Material Checking List. At the same time WHE should keep a track of the rolls by marking on the Suppliers Packing List.

WH clerk should prepare the GRN based on the quantity in the Material Checking List and goods should be entered to the Inward Location in the System.

WHE will instruct the SA to arrange the rolls as per the dyelot number when unloading the rolls. (To enable an easy sampling for Material Inspection)

SA should cut 6"*6" swatch from each roll and paste large sticker on the roll will have an additional space to enter the CPL Shade No. At this point SA should enter the Export no, Lot no, Roll no and Yardage. Roll no should be given for all the rolls in the numerical order at the same time WH clerk should transfer goods from inward location to Inspection location in the system.

All the swatches should be issued to Material Inspector (MI).

All the rolls should be kept within the Quarantine area until MI approves for quality.

MI will issue the following reports along with an Inspection summary.

    Fabric Inspection Report.

    Shade Detail Report.

    Color Continuation Report.

Once MI accepts the quality; WHE should mark the relevant CPL shade no on each roll. (In the large sticker mark it with different ink) and WH clerk should transfer raw material from Inspection location to stores location in the system.

Paste the Fabric card in the Fabric bin and enter the relevant details.

Arrange the rolls in the bin as per Export no and Item code. At the same time fill in the stock location column in the material-checking list.

WHE should check the generated GRN with the Material Checking list.

WHE should prepare a Material Received report (MRR).

Copies of MRR should be sending to commercial executive, merchandising division.

A sample of the consignment should be send to merchandising division along with the MRR.

2.Receipt for Trims and other accessories.

Procedure

Sourcing department will raise the PO in the system.

The commercial department will inform the stores about the arrival of goods, at least 24 hours in advance, by sending the Suppliers Invoice and Packing List.

If a consignment arrives, unload the boxes in the unloading bay.

The number on each carton will be read out and ticked off with the number on the Packing List before the carton is opened.

Unload all the cartons and keep it with in quarantine area.

SA and WHE by using a weighing scale, counting mode scale or doing a physical count should fill the trims checking list.

WH clerk should prepare the GRN and goods should be entered to the Inward Location in the System.

All the cartons should be kept within the quarantine area until MI approves for quality.

MI will issue the following.

1. Inspection report.
2. Color continuation report.

Once MI accepts the quality of trims and other accessories, WHE should paste the accessories card in the accessories bin and enter the relevant details and location should be changed from inspection to raw material stores in the system.

The item should be arranged in the accessories bin as per export number and item code at the same time fill the stock location column in the checking list.

WHE should prepare a MRR by referring to the supplier's invoice and PO.

Copies of MRR should be send to commercial executive, merchandising division, planning and MI.

A sample of the consignment should be send to merchandising division along with the MRR.

3. Issues for production purposes.

Procedure (Initializing)

Merchandising department will issue the bill of material (BOM) and the trim card to the WHE.

Planning department will issue the production-planning schedule on a weekly basis.

WHE should compare the BOM with the available stocks for fulfillment.

Copies of the trim card should be prepared by WHE. (Based on the merchandiser trim card and issued to the cutting). Quality assurance and the relevant team. (By referring to the production-planning schedule).

Procedure (Issuing fabric and all over laces)

Planning department will issue the cutting ticket to the WHE.

The cutting department sends a Material Requisition / issue Note (MRN) to the stores.

WHE should compare the cutting ticket and the MRN.

The merchandising manager should give an approval in case the requirement at fabric as per MRN exceeds the cutting ticket fabric requirement.

Fabric is issued according to the MRN. (Reference should be made to the shade detail report and the trim card to ensure that the appropriate fabric is issued) After entering commission number, style number and style name on the fabric roll sticker.

System should be updated with the material issue note.

Procedure (Issuing trims and other accessories)

Cutting department will issue the cut report (CRD) to the WHE.

MRN should be prepared by the WHE with reference CRD of main fabric component and relevant issue are made to the respective line. (Reference should be made to the color continuation report and the trim card to ensure that the appropriate items are issued).

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System should be update with the quantity issued with reference to the MRN.

Procedure (Issuing for packing)

Packing department sends a MRN to the stores.

WHE should compare the BOM and the MRN.

Relevant issues are made as per MRN.

MRN should be recorded in the system and the stockroom should be update with the new issued.

4.Material Returns.
Procedure

At the end of the export order, all the balance fabric, trims and other accessories should be returned to stores along with the residual return note (RRN).

The entire defect should be recorded in the rejected raw material stock room. (RR)

5.Sub Contract.
Procedure

Planning department will issue a memo regarding the sub contract and cutting ticket to stores.

The cutting department will send a MRN to stores.

WHE should compare the cutting ticket and MRN.

The merchandising manager should give an approval in case the requirement of fabric as per MRN exceeds the cutting ticket fabric requirement.

Fabric is issued according to the MRN. (Reference should be made to the shade detail report and the trim card to ensure that the appropriate fabric is issued).

Cut components trims and other accessories are packed in the carton as per the memo and a packing list is prepare. This packing list should be send to the commercial department to get BOI approval.

WHE with the help of HR should arrange a vehicle to dispatch these goods.

Copies of GDN are given to sub contractor, Accounts Division and Planning department.

Details of the dispatched goods should be entered in the sub contractor reconciliation form. A separate form should be maintained for each export number and for each sub contractor.

Once the sub contracted goods arrived, WHE should enter these details into the system and Goods Received note for sub contractor. (GRN) is generated. An entry also should be made to the sub contractor reconciliation form and in the Finished Garment Received Report (FGRR).

Procedure

Planning department will issue a Memo regarding the sub contract.

Necessary Goods are packed in the cartons as per the memo and a packing list is prepared. This packing list should be send to the commercial department.

WHE, with the help of HRD should arrange a vehicle to dispatch these goods.

SA will prepare the goods dispatch note for sub contract (GDN) and get the authorization from the factory manager. Original is given to the accounts division. Book copy is kept with the stores. A photocopy of the GDN should be given to the planning department.

Details of the dispatched goods should be entered in the sub contractor reconciliation form. A separate form should be maintained for each export number and for each sub contractor.

Once the sub contracted goods arrived, WHE should enter these details into the system and Goods Received note for sub contractor. (GRN) is generated. An entry also should be made to the sub contractor reconciliation form and in the Finished Garment Received Report (FGRR).

6.Finished goods.

Procedure

Each team will issue the finished goods to the packing department and get the signature in the Production Team Output Report (PTOR).

SA should check the issued finished goods with the PTOR and accept the goods.

Received goods details should be entered in the system using the Sundry receipt option.

Merchandising department will issue the packing instruction (Through E-mail) and buyers purchase order to the packing department.

Planning department will issue the delivery schedule to the packing department.

Goods are packed and the relevant details are marked in the cartons. These carton are arranged as per export No. PE should prepare the packing list and send the commercial department. A copy should be giving to the wharf clerk local forwarder / cargo collecting agent. (References should be made to packing instruction, buyer purchase order and the delivery schedule while packing the goods).

Daily Packing Report (DPR) should be prepared by PE and sent to the planning department.

Merchandising department will inform the buyers inspection date and / or the dispatch dates to the packing department through an E-mail.

Packing note in the system based on these details commercial department will prepare the Dispatch Note and invoice will be automated original is giving to the forwarder and a copy is giving to the account division. Book copy is kept with the packing department.

At the end of the production or an export order excess and rejected garments should be giving to the packing department. The Production Team Output Report (PTOR) should accompany this with the authorized from the factory manager. PE should sign in the PTOR and accept the goods.

Received goods details should be entered in the system.

These goods are packed and the relevant details are marked in the cartons. PE should prepare a packing list and send the packed goods and the packing list to the store.

Based on these details PE should prepare the Stock Lots Report.

3.2 Software and System Design:

Depending upon the function oriented or object oriented, we have to decide to use DFD's or Class diagrams. I have decided to use object oriented programming while using Visual Basic 6.0 Enterprise edition to create user interface. I have used MS-project 2000 to guide my project.

Design of the new system begins by elaborating the statement of requirements in terms of more detailed objectives. Such objectives can be specified in terms of improvements to the organization's processes and functions and what is to be done to realize these improvements. The objectives are,

1. Functional objectives (ex: new or changed output reports)
2. Process improvements
3. Operational improvements
4. Personal and job satisfaction needs.

Other than redesign the system, we can use alternatives. They are,

1. Adding a new system process.
2. Creating a new data flow
3. Changing the sequence of operations on information
4. Eliminating redundant or unnecessary process
5. Combining two or more process and
6. Adding new data and changing processes to use this data.

(Igor, 1992)

3.3 Implementation:

During implementation, the components built during development were put into operational use. Usually this means that the new and old systems are run in parallel for some time. To complete the changeover, users must be trained in system operation and any existing procedures converted to the new system.

3.4 Testing:

All the testing phases were carried out by manual, because of the unavailability of the automated testing system tools in the local software market.

At each step I have minded to check the validity of the requirements. So have fully cared to undergo validation objectives. They are,

1. Validation of the system against requirements.
2. Checking for errors in design documents and in the system itself.
3. Checking for qualitative features such as portability and flexibility and
4. Checking for usability. (Igor, 1992)

3.5 Operation and maintenance:

I was implemented my invented software in a restricted surroundings. Because the company background was more secured to preventing from implementing new systems that aren't compatible with existing system. There are always some errors detected that must be corrected. Often small system deficiencies are found as a system is brought into operation, and changes are made to remove these deficiencies. Information system planners must plan for resource availability to carry out these maintenance functions.

CHAPTER 4

Enhancements

4.1 Help system:

I have decided to add an online helping system to facilitate the new users and as well as potential users. Total enhanced system is consisting of several sub processes that helping to the parent system to activate smoothly. New users can't figure out all these processes without clear documentation. So other than using more paper work user can directly search what he need from the keyword searching technique that I have added to the system.

Experienced potential users can use this online helping system to get a detailed view of the newly installed system. So they can train new user successfully.

4.2 Auditing capabilities:

I have suggested two more reports that generated by the system. They are so important to the company management to view the true and detailed sketch of the stock situation. Those reports are CCR and SMR, which CCR stands for the Count Creation Report and SMR stands for Stock Management Report. Both reports are generating through the WHE and will flow up to proper management state.

4.3 Database accessibility:

I have implemented my database using SQL server 2000. It's one of most safer reliable data processing software now available in the industry. Any user that willing to log in to the server has to be an authorized user. Also administrators can create more users when the need arise. Each user can have user roles that can carry on when he was logged on to the server. Administrators can remove user accounts, add user accounts or give permission to do several user roles.

Results: I was invented a system that help to effectively manage newly joined employees, save employee working time by effective reporting system.

CHAPTER 5

Conclusion

The main objective of this project is to design an enhanced system to facilitate the company to increase profits by managing the stores with effective manner. So project has completed successfully within deadlines. It also providing a better user-friendly interface and easy navigating through the database. Also the development has completed by following the correct software development methodology, so most of the real world IT problems have being solved.

CHAPTER 6

References

Igor, H. (1992) system analysis and designing

    pp. 484.

IBM, (2003) system manual (Inventory controlling system)

    pp. 115

Norton, P. (1998) Guide to Visual Basic 6

    pp. 741

Appendix

Process flow

S&M	PD	Supply Chain	ISD	Finance

Rec Order — *receive order 21/7/21*

Prepare ERP Check list

Exp #

ERP Check List

ERP Check List

Sales order details

Finish Good Creation

Cus created — No / Yes

Sales Order Creation

Customer Creation

RM Item Creation — *Raw material (if)*

Sup created — Yes / No

Supplier Creation

Item Supplier profile Creation

Create BOM — *Bill of material*

Attached RM

Trim Sheet

Check Trim sheet — Yes / No

W/O Creation — *work order*

Run MRP — *Material requirement planning*

Swimlanes: PD | Supply Chain | ISD | Finance | Stores | Supplier

Minimum
Multiple
Price
Supplier
Delivery Date

purchase order

Changes

PO
Changes

PO
Authorisation

Printed
PO

PO
Creation

3

Requisition
confirmation

Create
Requisition

1

Confirm

Re - GRN

Match
Invoice

No

Yes

GRN Reverse

goods received

Log
Invoices

Create GRN

Invoice
GRN

A/C
Payable

Receive
Goods

Send
Goods

Items
Invoice

Printed
PO

GL

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Swimlanes: Commercial | Packing | Finance | Planning | ISU | Stores | Production | S&M

- A/Receivable
- Invoice
- GL
- Confirmation of Dispatch
- Check FOB — Yes / No
- Change the Sales order
- FOB Changes
- Picking Note
- Manual Allocation
- Sundry Receipt
- ProMIS
- Create GIN
- Raw material
- Create MRN
- Release W/O
- 3

Tables Structure

1. Carton Master File

Field	Data Type	Size
Carton_Code	Int	4
Description	Var Char	50

2. Color Master File

Field	Data Type	Size
Color_Id	Int	4
Description	Var Char	50

3. Company Profile File

Field	Data Type	Size
Company_Id	Int	4
EOQ	Var Char	30
OPC	Var Char	30
Stock_Carry_Rules	Var Char	80
IC	Int	4
ROP	Var Char	30

4. Login Details File

Field	Data Type	Size
User_Id	Int	4
Login_Time	Var Char	30
Logout_Time	Var Char	30

5. Movement Transaction File

Field	Data Type	Size
Item_Code	Int	4
Qty	Var Char	30
StockRoom1_Id	Int	4
StockRoom2_Id	Int	4
Emp_Id	Int	4

6. Product Master File

Field	Data Type	Size
Product_Id	Int	4
Fittings	Var Char	50

7. Size Mask File

Field	Data Type	Size
Product_Id	Int	4
Group_Details	Var Char	30

8. Stock Count Details File

Field	Data Type	Size
Item_Code	Int	4
Qty	Int	30

9. Stock Details File

Field	Data Type	Size
StockRoom_Id	Int	4
Item_Code	Int	4
Present_Capacity	Int	4
Full_Capacity	Int	4

10. Stock History File

Field	Data Type	Size
Item_Code	Int	4
Avg_Usage	Var Char	30

11. Stock Room File

Field	Data Type	Size
StockRoom_Id	Int	4
Location	Var Char	30
Capacity	Int	4

12. Style Size File

Field	Data Type	Size
Product_Id	Int	4
Size_Details	Var Char	50

13. User Account Details File

Field	Data Type	Size
User_Id	Int	4
Passwrd	Var Char	50

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