

# **MODERN MERCHANDISING MANAGEMENT TECHNIQUES**

A dissertation

by

**Prashant Kumar**

In partial fulfillment of the requirements for the degree of  
**Master of Fashion Technology (Apparel Production-Strategy)**

Under the Guidance of

**Mr Pranav Vora**

**Mr. Ruhul Amin**

**Mr. Md Jamal Uddin**

Submitted to the  
Department of Fashion Technology  
National Institute of Fashion Technology,  
(Ministry of Textiles, Govt. of India)  
Gandhinagar, India 382007

May 2012

# **MODERN MERCHANDISING MANAGEMENT TECHNIQUES**

A dissertation

by

Prashant Kumar

Submitted to the Department of Fashion Technology

National Institute of Fashion Technology, India

The project work entitled Modern Merchandising Management Techniques carried out by Mr. Prashant Kumar, Enroll No 71090600041, a bonafied student of National Institute of Fashion Technology, India in partial fulfillment for the award of Master of Fashion Technology in Apparel Production-Strategy during the year 2010-12. it is certified that, he has completed the project satisfactorily.

Mr Ruhul Amin

Industry Mentor

Manager(Merchandising & Marketing)

J M Fabrics Ltd.

Mr Md.Jamal Uddin

Associate Professor

Department of Knitwear Manufacture & Technology

BGMEA University of Fashion & Technology

Mr Ziaul Islam Chowdhury

Director,

J.M Fabrics Ltd.

May 2012

## PROJECT SPONSOR CERTIFICATE

TO WHOM SO EVER MAY CONCERN

This is to certify that Prashant Kumar pursuing his Masters in Fashion Technology at National Institute of Fashion Technology, India did his Research project with us at J M Fabrics Limited from Feb 2012 to May 2012. His project was "Modern Merchandising Management Techniques" with our factory at Gazipur, Dhaka.

Prashant kumar is as studious and intelligent person and He carried out the project given to him with diligence and to our satisfaction.

His conduct was exemplary and He maintained good discipline in attending to the work Allotted and presenting weekly reports.

We wish all success in his career.

For J M Fabrics Ltd.

---

Managing Director

## ABSTRACT

In the young world of Modernization in Apparel Industry, Management still looks for the right way of Merchandising Management Techniques. Managing Merchandising in Apparel Industry Enterprise Resource Planning (ERP) is a modern Way. While implementing Enterprise Resource Planning (ERP), there is a general issue of mismatch with ERP System and Garment Factory Business Processes and how to manage customization with appropriately with both the ERP system and Garment Factory.

The purpose of this research is to develop a framework to support management decision making about ERP Implementation and capabilities to manage merchandising. Various ways of customization and techniques has been identified for ERP and Garment Business Processes with the Real Implementation Experience. Capabilities to change system and process, change capabilities with combining customization has also been identified required for customization of ERP system and process

Modern merchandising Management involves a variety of principles and techniques, all of which have the same ultimate goal: to establish better Understanding with Vendor and The Organization, to reduce Delay and non-value added activities at every service process in order to bring the most satisfaction to the User.

Feasible way for managers to identify customization options for ERP implementation has been developed. This type of framework helps managers to recognize the gap between desired customization options and change capabilities. A case study of a Garment Industry is used to illustrate the application of the framework.

**KEYWORDS-** Enterprise Resource Planning (ERP), Lead Time, Merchandising

## DECLARATION

This is to certify that this Project Report titled “Modern Merchandising Management Techniques” at J M Fabrics Dhaka is based on my (Prashant Kumar) original research work, conducted under the guidance of Mr Pranav Vora, Mr Rahul Amin, Mr. Md Jamal Uddin, towards partial fulfillment of the requirement for award of the Master’s Degree in Fashion Technology (Apparel Production-Strategy), at National Institute of Fashion Technology, Gandhinagar.

No part of this work has been copied from any other source. Material, wherever borrowed has been duly acknowledged.

Signature

(Prashant Kumar)

## ACKNOWLEDGEMENTS

In the development of this dissertation, it seems that an infinite number of people have provided immeasurable amount of guidance, idea and assistance. While the writer gratitude goes out to all those that had assisted me, I could only mention a few of many benefactors here.

Special thanks to the Center Coordinator Mr.Pawan Godiwala and author's mentors Mr Pranav Vora (NIFT Mentor), Mr Rahul Amin (Industry Mentor), Md Jamal Uddin (BUFT Mentor) for guiding the writer on producing this project report. Despite of that, the highest appreciation is also conveyed to the all expert panels and respondents which had significantly contributed their time and patience in helping the author to collect the required data. At the same time, a distinct appreciation is also conveyed to Mr A Matin Chowdhury(Chairman),Mr Azizur R.Chowdhury (Managing Director) and Mr Ziaul Islam Chowdhury (Director), J M Fabrics Ltd and for willing to participate their time and also helping guiding, helping the Author to collect the required data.

Finally, getting this dissertation into a complete form was a team effort; the writer, the Mentor, friends and the one who had help indirectly. Though most of the parts were done individually, advice and guidance from the college mentor, Industry mentor and BUFT mentor is considered seriously in order to ensure that the best outcome for this report is achieved. Lastly to author's parents who supported me in everything I have done.

## ABBREVIATIONS

ERP	Enterprise Resource Planning
MRP	Manufacturing resource planning
MIS	Management information system
TQM	Total Quality Management.
VAT	Value added time
NVAT	Non-Value added time
NNVAT	Necessary Non-Value added time
VSM	Value Stream Mapping
IS	Information System

## CONTENTS

ABSTRACT .....	v
DECLARATION.....	vi
ACKNOWLEDGEMENTS .....	vii
ABBREVIATIONS .....	viii
LIST OF TABLES .....	xii
LIST OF FIGURES .....	xiii
COMPANY PROFILE.....	xv
ERP Details .....	xvii
Machineries Details .....	xviii
CHAPTER 1.....	xxix
INTRODUCTION .....	xxix
1.1 Background of the research .....	xxx
1.2 Problem statement .....	xxxii
1.3 Research Gap.....	xxxii
1.4 Objective.....	xxxii
1.5 Scope .....	xxxii
1.6 Research Methodology.....	xxxiii
1.6.1 Analysis of the Current System.....	xxxiii
1.6.2 Select Best Customization Option.....	xxxiv
1.6.3 Match Customization Option with Capability.....	xxxviii
1.6.4 Simulation.....	xl
1.6.5 Implementation & Evaluation .....	xli
CHAPTER 2.....	xlii
LITERATURE REVIEW .....	xlii
2.1 Merchandising .....	xliii
2.2 ERP Systems Definition .....	xliii
2.3 Characteristics of ERP systems .....	xliii
2.4 History of ERP .....	xliv
2.5 Benefits of ERP .....	xliv
2.6 Future of ERP .....	xlv

2.7 ERP Vendor .....	.xlv
2.8. ERP Vendor Selection .....	.xlvi
2.9 ERP Vendor Evaluation .....	.xlvi
2.10 ERP Implementation .....	.xlvi
2.11 ERP Implementation Strategies.....	.xlvii
2.12 ERP Implementation Process .....	.xlvii
2.13 ERP Implementation Checklist .....	.xlvii
2.14. ERP Implementation Issues.....	.xlviii
2.15 ERP assessment .....	.li
2.16 Factors lead to ERP implementation successes .....	.li
2.17 Lead Time .....	.lii
CHAPTER 3 .....	.liii
PROJECT EXECUTION .....	.liii
3.1 Framework Applied For ERP Implementation: A Case Study.....	.liv
3.2 Merchandising Module.....	.lvi
3.2.1 Analysis of the current system.....	.lvi
3.2.2 Select Best Customization Option.....	.clv
3.2.3 Match Customization Option with Capability .....	.clvi
3.2.4 Simulation.....	.clvii
3.2.5 Implementation.....	.clviii
3.2.6 Evaluation.....	.clix
3.3 TNA Module .....	.clx
3.3.1 Analysis of the current system.....	.clx
3.3.2 Select Best Customization Option.....	.clxxii
3.3.3 Match Customization Option with Capability .....	.clxxiii
3.3.4 Simulation.....	.clxxiv
3.3.5 Implementation and Evaluation.....	.clxxv
3.4 Human Resource Module .....	.clxxvi
3.4.1 Analysis of the current system.....	.clxxvi
3.4.2 Select Best Customization Option.....	.clxxxi
3.4.3 Match Customization Option with Capability .....	.clxxxii
3.4.4     Simulation.....	.clxxxiii

3.4.5 Implementation and Evaluation.....	clxxxiv
3.5 System and capacity Analysis of Other Modules .....	clxxxvi
3.5.1 Commercial Module .....	clxxxvi
3.5.2 Production Module .....	clxxxviii
LIMITATION AND SCOPE OF THE FURTHER STUDY.....	cciv
CONCLUSION .....	ccv
BIBLIOGRAPHY .....	ccvii
VITA .....	ccix
APPENDIX-A .....	ccx
APPENDIX B.....	ccxiv
APPENDIX-C .....	ccxix

## LIST OF TABLES

TABLE 1 KNITTING SECTION (CIRCULAR) .....	XVIII
TABLE 2 DYEING .....	XX
TABLE 3 FINISHING (UNDER DYEING).....	XXI
TABLE 4 INSPECTION.....	XXI
TABLE 5 SEWING.....	XXII
TABLE 6 CUTTING.....	XXIII
TABLE 7 IRONING .....	XXIII
TABLE 8 LABORATORY EQUIPMENT.....	XXIV
TABLE 9 UTILITIES .....	XXV
TABLE 10- CH-1 CUSTOMIZATION MATRIX FOR MANAGERIAL DECISION. ....	XXXVII
TABLE 11-CH-1 CAPABILITY ASSESSMENT.....	XXXIX
TABLE 12-CH-1 SIMULATION .....	XL
TABLE 13-CH-3 ANALYSIS OF DEFECTS.....	LXXXVIII
TABLE 14-CH-3 LABELS SHOULD BE AGAINST THE PURCHASE ORDER INFORMATION.....	CVI
TABLE 15-CH-3 COTTON YARN PRICE LIST .....	CXV
TABLE 16-CH-3 BLENDED YARN PRICE (POLYESTER COTTON).....	CXVI
TABLE 17-CH-3 MÉLANGE (COTTON VISCOSÉ).....	CXVI
TABLE 18-CH-3 KNITTING PRICE OF CIRCULAR KNIT FABRIC.....	CXVII
TABLE 19 -CH-3 PRICE BREAK DOWN OF FLEECE FABRIC.....	CXX
TABLE 20 -CH-3 CURRENT TNA USED BY FACTORY.....	CLX
TABLE 21-CH-3 GENERAL OBSERVED DELAY FOUND IN THE PROCESS.....	CLXII
TABLE 22-CH-3 DELAY IN PRODUCTION PROCESS.....	CLXIII
TABLE 23-CH-3 TNA OUTCOMES.....	CLXV
TABLE 24-CH-3 REPEAT ORDER.....	CLXVII
TABLE 25-CH-3 NORMAL ORDER.....	CLXVIII
TABLE 26 -CH-3 SAMPLES .....	CLXIX
TABLE 27-CH-3 SUPPLIER PERFORMANCE EVOLUTION FORMAT USED. ....	CLXXVII

## LIST OF FIGURES

FIGURE 1 ORGANIZATIONAL STRUCTURE .....	XXVI
FIGURE 2-CH-2 EVOLUTION OF ERP .....	XLIV
FIGURE 3-CH-2 DESCRIPTION OF ERP II .....	XLV
FIGURE 4-CH-2 LEAD-TIME AND FABRICS IMPORTING PROCESS.....	LII
FIGURE 5-CH-3 INTERNAL COMMUNICATION IN MERCHANTISING DEPARTMENT .....	LVI
FIGURE 6-CH-3 PROCESS FLOW CHART OF MERCHANTISING .....	LVII
FIGURE 7-CH-3 CURRENT SAMPLING PROCESS .....	LXVIII
FIGURE 8-CH-3 THE TWO MOST COMMON DEFECTS.....	CIII
FIGURE 9-CH-3 LOGIC (TO FILL THE LEAD TIME IN TNA CALCULATOR.) .....	CLXX

## LIST OF APPENDIX

- A      Process flow in merchandising department
- B      New Merchandising Work Process Suggested.
- C      Terminology Guide-Commercial

## COMPANY PROFILE

JM Fabrics LTD is one of the new generation manufacturer and exporter of knitwear garments. Its product range includes almost all Inner & Outerwear in Knits. It started exporting from 2007 and since then, have expanded our business to various regions in North America (US, Canada etc.), EU Countries (UK, Germany, Norway etc.) and south Asian Countries. Some of associate industries include JM Ship-Breaking, JM Rolling Mills and Fashion Universal. Turnover of the company is US\$ 20.00 million (RMG + Intimate).

To turn over volume order, JMFL expanded its capacity continuously and now has reached around 29 thousand pieces per day in garments manufacturing and around 15 tons of fabrics per day.

Their readymade garment Product includes Polo Shirt (Basic/ Fancy) , T-Shirt (Basic/ Fancy) ,Sweat Shirt & Sweat Pant ,Ladies Wear ,Children Wear ,Sports Wear , Intimate. The various type of fabric they are dealing Like Single Jersey (S/J) , S/J with Lycra Alternate/Full Feeder ,Heavy Jersey ,Auto man Jersey, Honeycomb Pique ,Lycra Pique,Diamond Pique ,Single Lacoste , Double Lacoste ,1 X 1 RIB,2 X 2 RIB,1 X 1 RIB With Lycra, 2 X 2 RIB With Lycra,Flat Back RIB ,Irregular RIB ,Interlock ,Interlock Double Lacoste ,Fleece, Frence Terry, Herringbone ,Thermal/ Or Waffle ,Yarn Dyed., Slub Yarn ,Nappy Yarn, Viscose, Cotton Modal,Poly Cotton,CVC.

Production Capacity of Garments , Knitting , Dyeing, Finishing, Intimate are 29,000 Pcs. per day (with 24 lines) , 08 Tons per day,08 Tons per day,15 Tons per day,29,000 Pcs. Per day (with 16 lines) respectively. Total Manpower of the company is 2365 Nos with Management Personnel (130 Nos).

Major Clients are Mark & Spencer (UK),Addidas(Australia),FILA(Canada),FW-Sportswear(Canada),Sainsbury(UK),AmericanEagle(USA),Centerbury(Newzealand),Esprit(Germany),Amerella-Wal-mart(Canada),Tesco(UK),George(UK),KMart(Australia),Justic (USA).

They place great emphasis on giving special attention to each of their client to accurately determine their individual requirements. Their products and services are customized to meet the needs of each client

## ERP Details

Logic Software Limited (logicsoftbd) is a local software development organization. logicsoftbd started development from the very beginning of 2008. logicsoftbd is fully focused on providing ERP solution to textile and RMG sectors.

Their web based ERP solution has tried to cover policies & practices as applied in different local organizations. The company has three layer of expertise like business process analyst, software developers and implementers. All the team members are equipped with related academic qualification and vast experience from different organizations.

NKD, H&M & others buyer already have appreciated our software after viewing our electronic production progress report from our clients. [A]

Details of ERP.

### **Language/ Tools**

XML, XHTML, VB, PHP, Oracle, MySQL, Joomla, Java, Javascript, JSP, Flash, DHTML, Cfusion, CSS, Ajax, ASP, .NET

### **Platform**

MAC, Linux/Unix, Windows

### **Product Information**

Product Category	Name	Is the name registered or IP claimed	Platform & technology	Marketing material attached	Intended domain
Enterprise Resource Planning (ERP)	Platform	No	PHP, mysql	yes	03
HRM	Logic HR & Payroll	No	PHP, mysql		

### Machineries Details

**Table 1 Knitting Section (Circular)**

SL#	DESCRIPTION OF MACHINE	Details	UNIT	ORIGIN	BRAND
1	UBX 22" 24G 66F -3SK	With 100% Lycra provision 50% MER2	2	Singapore	Unitex
2	UBX 24" 24G 72F -3SK		3		
3	UBX 26" 24G 78F -3SK		3		
4	UBX 30" 24G 90F -3SK		5		
5	UBX 30" 24G 90F -3SK	With Cylinder 28G, With Needle & Sinkers With 100% Lycra provision, With 50% MER2 ,With folding Take up System	2		

6	UDX 30" 18G 62F - 21DE	With Extra Cylinder 24 G for interlock ,With 100% Lycra provision, With 50% MER2	2		
<b>Knitting Section(Flat)</b>					
7	SFF152-T 14g	Double System Computerized, Semi Jacquard Flat M/C	5	Japan	Shima Seiki

Table 2 Dyeing

SL#	DESCRIPTION OF MACHINE			UNIT	ORIGIN	BRAND
8	Model: All fit -10 Medium Batch Dyeing Machine	Type : 1T Liquor ratio (approx) : 1 : 6 Fabric Speed : 15 ~45 M/min Capacity : 8 ~ 12 Kg		1	CHINA	FONG's
9	Model: All fit - 30 Medium Batch Dyeing Machine	Type : 1T Liquor ratio (approx); 1 : 6 Fabric Speed : 50 ~100 M/min Capacity : 20 ~ 30 Kg		1	CHINA	FONG's
10	Model: All fit -60 Medium Batch Dyeing Machine	Type : 1T Liquor ratio (approx); 1 : 6 Fabric Speed : 75 ~150 M/min Capacity : 40 ~ 60 Kg		1	CHINA	FONG's
11	Sclavos athena TM, Type 250H	High Temperature fabric Dyeing		1	GREECE	SCLAVOS
12	Sclavos athena TM, Type 500H	Machine, complete with continuous WISDOMTM rinsing, 2nd additional Tank and Full automation by Sedomat 5000, Dry salt (R) additional and Dosing System, SHR Heat recovery.		1	GREECE	SCLAVOS
13	Sclavos athena TM, Type 1000H.			2	GREECE	SCLAVOS
**	Sclavos Central Control System (Sedomaster) for Slavos Dyeing Machine	-		1	GREECE	SCLAVOS

Table 3Finishing (Under Dyeing)

SL#	DESCRIPTION OF MACHINE		UNIT	ORIGIN	BRAND
14	Rope Opening & Slitting Line	-	2	TURKEY	ACC MAKINE VE MAKINE PARCALARI
15	Acc Turbo Professional Line Stenter 2600/8	Gas Heater, 2 Padder, Weft Straightener of Weftmatic, Selvedge Cutting Of Easycutt, Invertor Of Delta, Selvedge Glueing Device, 8 Chamber.	1	TURKEY	ACC MAKINE VE MAKINE PARCALARI
16	Ferraro Compacting Machine.	For Open Knitting Fabrics	1	ITALY	FERRARO COMPTEX REVOLUTION

Table 4 Inspection

SL	MACHINE NAME	DESCRIPTION	UNIT	ORIGIN	BRAND
17	Fabric Inspection Report	UZ F Series	2	Thailand	UZU

Table 5 Sewing

SL#	DESCRIPTION OF MACHINE	MODEL NO	UNIT	ORIGIN	BRAND
18	Flat Lock (Cylinder Bed) - 3 Needles	W664-01GB	30	Japan	PEGASUS
19	Flat Lock (Hemming) - 3 Needles	W664-35BC	15	Japan	PEGASUS
20	Flat Lock (Piping) - 3 Needles	W562-02GB	45	Japan	PEGASUS
21	Flat Lock (Flat Bed) - 3 Needles	W562-01GB	20	Japan	PEGASUS
22	Overlock- 4 Needles	MX5214-03	111	Japan	PEGASUS
23	Plain Machine - Single Needle	DDL8700-7	279	Japan	JUKI
24	Plain Machine DLM - Single Needle	DLM5200N	30	Japan	JUKI
25	Plain Machine - Double Needles	LH-35685	02	Japan	JUKI
26	Button Attach Machine - Single Needle	LK-1903ASS	12	Japan	JUKI
27	Button Hole - Single Needle	LBH-781	12	Japan	JUKI
28	Button Hole - Single Needle(Computerized)	HE-800A-3	02	China	BROTHER
29	Needle(Computerized)				

SL#	DESCRIPTION OF MACHINE	MODEL NO	UNIT	ORIGIN	BRAND
30	PMD KANSA Special-Pecoding	PX302-4W	01	Japan	KANSA
31	PMD KANSA Special- 11 Needles	DFB1404-PMD	02	Japan	KANSA
32	RIB Cutter	LU-922	04	China	JUKI
33	Heat Seal Machine	MAX-38-38	04	China	MAX
34	Snap Button	MAX-818	02	China	MAX
35	Fusing Machine	HP450-CS	02	Japan	HASHIMA
36	Thread Trimmer	THO-5-12	02	Japan	HASHIMA
37	Metal Detector	OA-688C-D	02	China	OSHIMA
38	Plain Machine - Double Needles	LH168SF	01	Japan	JUKI
39	Overlock - 6 Needles	MX3244-03/333	06	Japan	PEGASUS
40	Overlock - 4 Needles	MX5214-53/6332X7/TK1A	12	Japan	PEGASUS

Table 6 Cutting

SL#	DESCRIPTION OF MACHINE	MODEL NO	UNIT	ORIGIN	BRAND
41	Cutting Machine 10"	KS-AU	06	Japan	KM
42	Cutting Machine 8"	KS-AU	01	Japan	KM

Table 7 Ironing

SL#	MODEL NO	DESCRIPTION OF MACHINE	UNIT	ORIGIN	BRAND
43	Iron Table	OPB-777 - OPB-777A	36	China	OSHIMA
44	PP Belt machine		1	China	

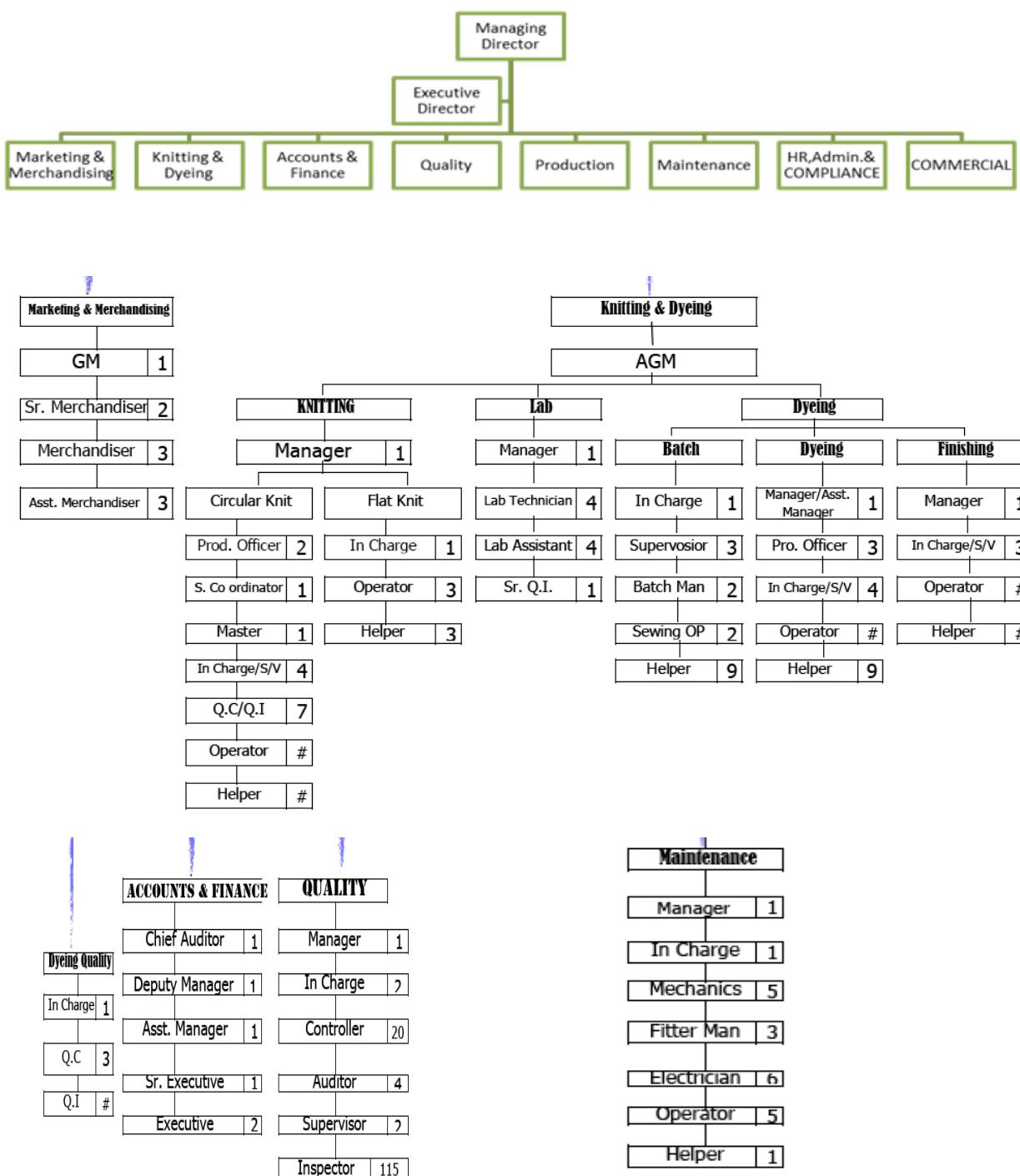
Table 8 Laboratory Equipment

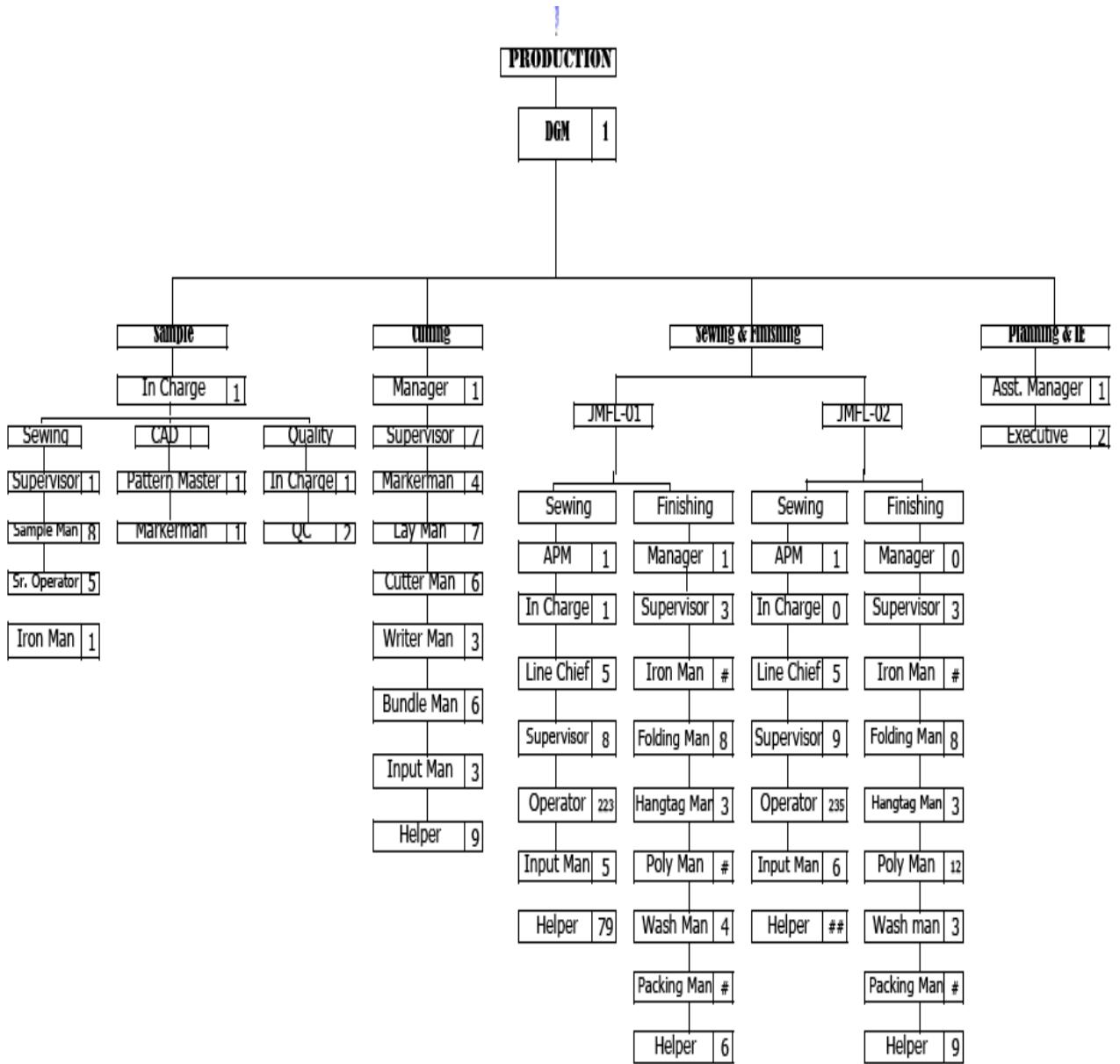
SL#	DESCRIPTION OF MACHINE	ORIGIN	UNIT
45	AATCC Crockmeter/Rubbing Fastness Tester Type M238AA	UK	1
46	Rotawash color fastness Tester Type M228A	Do	1
47	SDL "ECO" Infa Red Lab Dyeing System Type D400IR/2	Do	2
48	Knit Shrinkage Tester Wascator from 71 CLS LABWASHER- Extractor	Do	1
49	Color Matching Cabinet Type G210A5	Do	1
50	Digital PH/ temp Meter Type G202	Do	1
51	ICI Pilling tester Type M227A	Do	1
52	Perspirometer Type M231	Do	1
53	Wrap Reel Electronic Type Y219BM	Do	1
54	Twist Tester Electronic Type Y220B	Do	1
55	Yarn Examining Machine Type 221	Do	1
56	Single End Yarn Strength Tester Type Y263	Do	1
57	Navigator Portable Electronic Balance TypeG20 4VI	Do	1
58	Fabric Yield Package System Type 236/1	Do	2
59	Adventurer Electronic Balance TypeG204/1A	Do	1
60	Quick wash Plus Fabric testing system Model EC300	Do	1

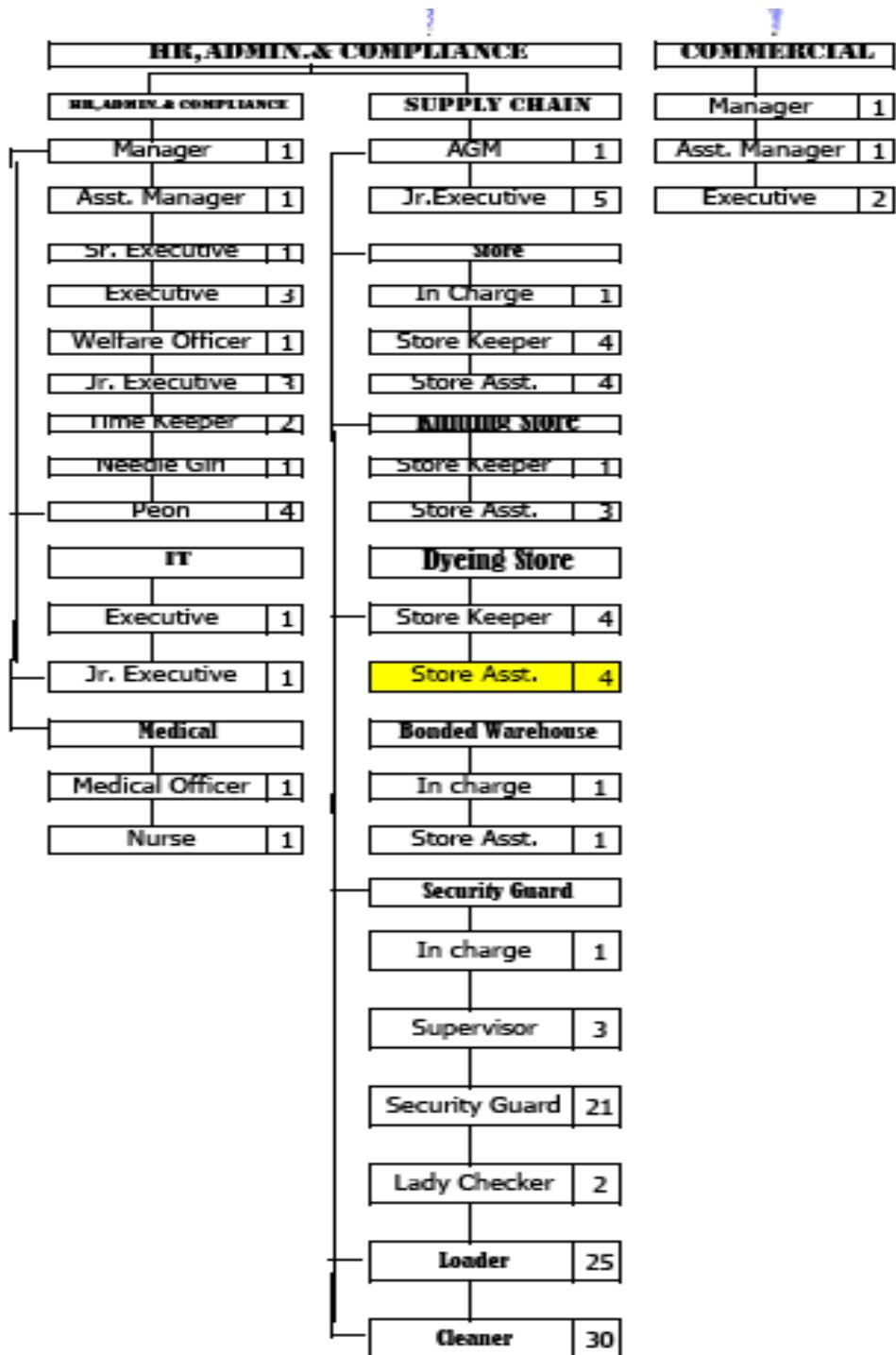
Table 9 Utilities

SL#	DESCRIPTION OF MACHINE		UNIT	ORIGIN	BRAND
61	<b>Gas Generator</b> Model: TCG 2020UV16K	Output 1344 Kwe rating at ISO condition 400Volts, 0.8 PF, 1680 KVA 50 Hz, 1500 rpm including heat exchanger, gas pre-regulator and gas regulator unit.	1	GERMANY	DEUTZ
62	<b>Diesel Generator</b>	Output 150 KVA 50 Hz, 1500 rpm,	1	SWEDEN	SCANIA
63	<b>Gas Fired Boiler</b> Model: Se-G-400-150	Capacity: 400BHP (13,800 LBS/Hr) Fuel: Natural Gas Working Pressure: 150 PSI Voltage: 400V±5% / 50Hz/3 ph	1	USA	HURST
64	<b>Gas Fired Boiler</b> Model: Se-G-500-150	Capacity: 500BHP (17,250 LBS/Hr) Fuel: Natural Gas Working Pressure: 150 PSI Voltage: 400V±5% / 50Hz/3 ph	1	USA	HURST
65	<b>Screw Type Compressor</b> Model: S 50 -2	Noise reduced motor IP 55 Air Flow Rate 6.35 m <sup>3</sup> / min	3	GERMANY	BOGE
66	<b>Atlas Capco Compressor</b>	Model: GA-15 Air Flow Rate 2.27 m <sup>3</sup> / min	1	BELGIUM	ATLAS CAPCO
67	<b>Pump</b>	Submersible Pump (41 Hp) Water Flow Rate 130 m <sup>3</sup> / hr	1	INDIA	SIGMA
68	<b>Water Treatment Plant</b>	Capacity: 100 M <sup>3</sup> /hr	1	INDIA	-
69	<b>ETP</b>	Capacity: 60 M <sup>3</sup> /Hour	1	INDIA	-
70	<b>Pump</b> (For Drinking Water)	Submersible Pump (3 Hp) Water Flow Rate 10 m <sup>3</sup> / hr	1	ITALY	PEDROLLO

Figure 1Organizational structure







## CHAPTER 1

### INTRODUCTION ON

#### “MODERN MERCHANDISING MANAGEMENT TECHNIQUES”

(This Chapter includes on “Modern Merchandising Management Techniques”. It includes Background of the Research, Problem Identification, Research gap, Objective, Research Methodology)

### 1.1 Background of the research

Merchandising is the methods, practices, and operations used to promote and sustain certain categories of commercial activity.<sup>[B]</sup>

Garments merchandising means buying raw materials & accessories, producing required garments, maintaining required quality level and exporting the garments within time frame. [c]

There are various techniques like 5S Visual Workplace, Standardized Work Instructions, VSM Value Stream Mapping, TPM Total Productive Maintenance, Kaizen, Error & Mistake-Proofing, Self-Directed Work Teams, Mixed/Level-Loaded Production, SMED Setup Reduction, Inventory & Lead Time Reduction, Lean Visioning, TOC Constraint Management, 2-Bin Auto-Replenishment System, Quality System Certification, Kanban Implementation, Lean Six Sigma, ERP ,many more used for enhance merchandising .the Enterprise Resource Planning is now the demandable approach to maintain merchandising management as we can observe with some research reports.

Enterprise Resource Planning (ERP) is one of the most significant business software investments being made in this new era (Beard and Sumner, 2004). [d]According to a report by Forrester, The ERP market size has been griping steadily over the couple of years with \$43bn in 2010 and \$40.6bn in 2009.The report stated that after the mid recession activity levels of 2009, the ERP market recovered fairly well in 2010 [e] The main reason for enormous growth can be attributed to the inability of order system to manage the conversion to year 2000. There are also other factors such as industry best practices, easy and faster implementation and good cost predictions. Another Factor behind the growth is that already existing clients acquire more licenses and modules. The number of employees using the ERP system is increasing and the ERP clients who have started with the basic modules are going for subsequent applications [f]

There are various challenges for MIS Managers When Implementing ERP for the First Time like The selection problem, Technical issues, Data quality issues, Business philosophy changes, Psychological issues.[g]

ERP implementation failures inflict a great deal of pain on organizations. Whether its implementation cost overruns, software that doesn't support the business, or lack of employee acceptance. Various trends like Lack of software fit, Unrealistic implementation expectations, Lack of executive buy-in and support, Propensity to customize software rather than leverage standard functionality, Lack of ERP implementation expertise has been observed in most troubled enterprise software implementations [h]

Nike a leading Footwear and Apparel company was failed to implement SCM software implementation .then they fix the issue and emerge successful with the SAP implementation, a part of the Nike Supply Chain Project. [i]

Garment Companies must take some key steps to ensure ERP system implementation produces positive changes and long-term benefits. Like Understand the true significance of the implementation experience, fully commit the right resources to the project, Be prepared to manage the changes fully and effectively, Plan to manage and measure the benefits. , Fully embrace integration, Plan for the end of the project before you start [j]

ERP is package software and not custom made software for a specific Garment Factory. It understands the needs of any organization within a specific segment. Many of the processes implemented in an ERP software are core processes such as order Tracking, Inventory Process, and Commercial record etc., that are common to Apparel industry segments.so the assumption and procedures seldom match with Garment Process Existing Process.

Basically, an ERP combines several traditional management functions into a logical integrated system and facilitate flow of information across these functions. It is designed to model and automate basic processes across the organization over a

centralized database and eliminates the need of disparate systems maintained by various units of the organization. [k] So it is difficult to completely change the ERP system to fit existing business processes. It's better, easier, less costly to change business processes to ERP systems rather than vice versa.

Organizational fit and adaptation are important to implementation of modern large-scale enterprise systems that are built with pre-determined business process methodology. As a result, customization is a crucial, lengthy, and costly aspect in the successful implementation of ERP System [l]

### **1.2 Problem statement**

Consequently, implementing Enterprise Resource Planning (ERP), there is an issue of mismatch with ERP System and Garment Factory Business Processes and how to manage customization with appropriately with both the ERP system and Garment Factory.

### **1.3 Research Gap.**

The previous study concentrate on Business process Re-engineering, benchmarking in the apparel industry. This study would mainly concentrate Framework Proposed and its application in real life environment.

### **1.4 Objective**

To plan, Control, manage and Implement the Modern merchandising Management System through ERP Implementation with a Framework, aiming to reduce the delays, support to enhance services and Capabilities to manage merchandising.

### **1.5 Scope**

- To Develop a Framework For ERP Implementation
- To Identify Merchandisers Problems
- To set up the Enterprise resource Planning.
- To Control Quality Related Issues.
- To Provide Trainings For merchandising Techniques Awareness

## 1.6 Research Methodology.

- Analysis of the Current System
- Select Best Customization Option.
- Match Customization Option with Capability.
- Simulation
- Implementation
- Evaluation.

### 1.6.1 Analysis of the Current System.

Analysis of Current Work processes, systems and performance against pre-defined well established norms, It helps to support management decision making about ERP Implementation and capabilities to manage them. And also help to benchmark their operations and find out where they stand and to identify areas where there exists potential for improvement.

#### Need of Analysis.

To get clear picture of ERP System and Organization work process that shows the trends quickly and clearly. That helps in the Following manners.

- Clear picture of Organization efficiency.
- To improve Organization performance.
- Getting the best possible quality.
- To fulfill aim for "total quality management".
- To insure work process being planned properly.
- To check using the appropriate methods and technology.
- ERP introduced efficiently.
- Provide ways to improve the management Decisions.

To control expenditure and improve efficiency with Implementation of ERP, it is essential for an Organization to Measure its activities regularly. This measurement allows progress or Opposite to be monitored and compared with the company's budget targets and with general benchmarks. The measures are also the basis for sound Planning and Costing systems, and should be the spotlight for Directors and Managers those areas of the business that most urgently require their attention.

### 1.6.2 Select Best Customization Option.

The main aim of customization of ERP system is to provide match between ERP System and the factory Process that the ERP system supports.so the ERP system and the factory process can be modified or customize to achieve the aim.

The Two Type of Customization can be done to achieve the match.

- System Customization
- Process Customization.

#### System Customization.

When the ERP system is customized to match with the factory process. It is referred as System customization.it can also be named as technical customization. On the time of ERP installations vendors provide various way of modifications and customize the ERP package. Most Apparel ERP is developed in modular format and each module have specific functionality and configuration option. Sometimes ERP Vendors provide programming Environment to their customer to modify the system e.g. SAP.

They consider system customization as an evolving process where they continuously Add modules, extend configuration tables, and improve tools for Source code modification to meet the needs of adopting Garment Factories. Their aim is to reduce the costs and risks of customization so that adopting organizations can restrict their customization efforts to module customization and Database Configuration.

There are mainly three Types of System customizations Can be done.

- Module Customization
- Database Configuration.
- Source Code Modifications.

#### Module Customization

Generally ERP vendors provide default configuration option to implement one or more modules in ERP System.so system customization takes place to implement the module and its takes minimum modification in the system. The costs and risks are less in respect of other system customization.

#### Database Configuration.

ERP Systems contains Back End support with database like oracle; sql etc. database configuration can be done to match with the organizational need. It's made up with large no interdependent tables so it is very complex and time consuming task. And while configuration various tables and modules need to be considered. This type of system customization provides way to modify the system without coding and provide ease of Future Upgrades. The costs and risks are less in respect of Source code Modification.

#### Source Code Modifications.

The Source code of ERP System can be changed with need of functionality, integration of new interface to interact with other system like RFID, Barcode etc. It allows integrating the ERP System with any existing production System With the high level programming languages like Java, C++, VB, C# etc. Technical staff or consultants who perform the code customization are expensive. And there is high risk of failures and budget overruns. Sometimes code customization leads to incompatibility with newer versions and it creates difficulties in future Upgrades. With the code customizations sometimes loose the integration benefits that come with Original ERP Package. The costs and risks are higher in respect of other system customization.

### Process Customization.

When the factory Process is customized to match with the ERP System.it is referred as Process Customization. Matching with the ERP system can also be achieved with changing of Factory process to get Organizational goal. Garment Factories process Consist of Tasks, Resources, Outcomes, Relationship between tasks, Relationship between Resources and tasks. The change depends on technology how it matches with the Existing production process

Process Customization is categorized in to three ways based on garment Factories process.

- Ideal
- Incremental change
- Complete change

#### Ideal

In Ideal, Customization is done with task and resources except Relationship and configuration.e.g. Performing order tracking by ERP instead of manual.

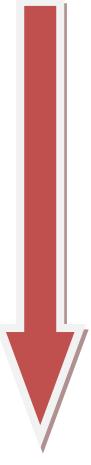
#### Incremental change

In Incremental change, Improvement is done in Tasks, resources with relationships except nature of process and its outcome measures. Main focus is to solve problem found in process e.g. TQM

#### Complete change

The Reengineering of garment production process takes place in this category.it involves re-thinking and Re-design including measures of Performance for the process customization.

Table 10- Ch-1 Customization Matrix for Managerial Decision.

		System Customization Options.			
Risk & Cost	Process Customization Option	Module Customization	Database Configuration.	Source Code Modifications	
Low 	Ideal	No Customization Needed Production Process Match with the ERP System	Match System to Production process Production Process change Not Necessary	System Conversion Customize system process to production Process.	
	Incremental change	Process Adaptation Necessary Production process close to ERP System	Mutual Adaptation necessary ERP System and production process are close. Minor change is needed to both of them	System conversion and process Adaptation necessary Minor Production process change is desirable, Customize system process to production process.	
	Complete change	Process conversion needed Production process should match the ERP system.	Match Process to ERP system Minor System process change, Redesign production process to ERP System Process	ERP System And Production Process Reengineering Redesign of production Process and ERP System.	

### 1.6.3 Match Customization Option with Capability.

Best Customization option depends on resource of the factory and also on factory capability to make necessary process and system changes. Capability involves System change capability, Process change capability.

#### System Change Capability

It refers to factory's overall ability to customize ERP Systems.it includes the following points.

- Understanding of Complete Default ERP System because recognition of assumptions and management principles made by vendor is Difficult. Proper Understanding helps to make right planning and appropriate changes to the system
- Expertise to develop and modify large-scale software in a networked database environment.it provides Extent to make desired system changes. The various software application tools provide broader scope of system change capability.
- Ability to manage large-scale systems development projects with coordinate and integrate multiple interconnected projects.

#### Process Change Capability

It refers to factory's overall ability to customize Apparel Production Process.it includes the following points.

- Understanding of existing/Historical production processes and their production environment.
- Ability to design new or changed business processes, as well as implement these designs.
- Capacity to manage and coordinate large-scale business process changes.

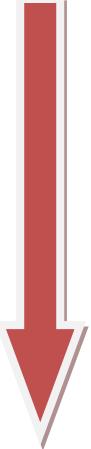
Table 11-Ch-1 Capability Assessment

		Process Change Capability	
System Change capability		Low	High
Low	Novice factory (Severe Constraints)	Organizer factory (To take advantage of process improvement associated with ERP System.)	
High	Technician Factory (Guard against Over Customization)	Expert Factory (guard against the temptation to use all available expertise)	

#### 1.6.4 Simulation

After Matching with the capability the simulation is done with the following matrix.to check the factory can proceed for the implementation or not.

Table 12-Ch-1 Simulation

		System Customization Options.			
Risk & Cost	Process Customization Option	Module Customization	Database Configuration.	Source Code Modifications	
Low 	Ideal	No Customization Needed	Match System to Production process	System Conversion	
		Novice factory	Novice factory	Technician Factory	
		Organizer factory	Organizer factory	Expert Factory	
High	Incremental change	Technician Factory	Technician Factory	Technician Factory	
		Expert Factory	Expert Factory	Expert Factory	
		Process Adaptation Necessary	Mutual Adaptation necessary	System conversion and process Adaptation necessary	
		Novice factory	Novice factory	Technician Factory	
		Organizer factory	Organizer factory	Expert Factory	
Complete change		Technician Factory	Technician Factory	Technician Factory	
		Expert Factory	Expert Factory	Expert Factory	
		Process conversion	Match Process to ERP system	ERP System And Production Process	
		Organizer factory	Organizer factory	Reengineering	
		Expert Factory	Expert Factory	Expert Factory	

### 1.6.5 Implementation & Evaluation

#### Implementation

After success of simulation we can proceed for final implementation.

#### Evaluation.

At last Evaluate the project is how much successful so that in future it help to take decision.

The data collection has been conducted as follows.

- The study is based on primary data and secondary data (for the reference).
- The secondary data have been collected through the discussion with the key persons of different departments.
- Relevant information will be collected from some reports, articles, & various stuffs that were provided by the company.
- Secondary data were also collected literature; data and information have been analyzed in line with the objectives of the study.
- Qualitative research method and various statistical tools like averages, percentages, growth rate etc. will be used in this study to interpret and analyze the collected data in the descriptive way.
- Desk research i.e. collecting data from various sources including internet, books and research done by others.

#### Primary research:

- Primary data collection through observation, interview and survey among the various departments. Data collected through this method help to understand where the mis-coordination of the departments takes place.

## CHAPTER 2

### LITERATURE REVIEW ON “MODERN MERCHANDISING MANAGEMENT TECHNIQUES”

(This Chapter includes on “Modern Merchandising Management Techniques” It includes Literature Review)

## LITERATURE REVIEW

### 2.1 Merchandising

Merchandising is the methods, practices, and operations used to promote and sustain certain categories of commercial activity. [B]

Garments merchandising means buying raw materials & accessories, producing required garments, maintaining required quality level and exporting the garments within time frame.

When an export order is given to a merchandiser, he has to schedule the following main function to execute the export order perfectly in time. are Fabric requirement calculations, Accessories requirement calculations (e.g. -Thread, Button, Interlining Label Poly bag, Main label, Woven label, Fit label, Carton etc.), Source of Fabrics & trims, Possible date of arrival of fabrics & trims in the garments factory, Costing, Garments production planning, Pre shipment inspection schedule, Shipment documents, Have to make proper & Action plan[c]

### 2.2 ERP Systems Definition

Enterprise resource planning (ERP) is a term used to describe the processes and software systems providing the necessary tools to run a business in the areas of Financial Management, Logistics, Manufacturing, Human Resources and extended Supply Chain operations [M]

### 2.3 Characteristics of ERP systems

According to Davenport (2000) ERP systems have several characteristics, such as a modular Construction (contains a selection of application modules), which are based on a client/server Architecture, allow configuration (tables can be configured according to business needs), use a Common (usually relational) central database, and have variable interfaces (e.g. different languages and currencies used by a company). ERP systems are distinguished from “ordinary” IS by the fact that ERP systems have a high degree of integration and information commonality. [N]

## 2.4 History of ERP

MRP evolved from the 1960's need to manage demand and ordering. It did not look at timing, only need. MRP II was developed in the 1970's to bring both demand and time phasing of the demand into the planning process. At the same time, Accounting Management solutions were gaining strength. ERP, developed from earlier MRPII systems, were also integrated with financial applications to provide a complete solution to a company for managing their inventory, cash and people resources [o].



Figure 2-Ch-2 Evolution of ERP.

## 2.5 Benefits of ERP

An enterprise resource planning (ERP) software package can dramatically improve the way a company runs its entire back office, enabling it to enhance planning, execution, management, and control of a wide range of critical processes. Most of the ERP software suites on the market today offer a wide variety of modules and applications that are designed to streamline and automate activities and tasks in virtually every back-office department, such as: Manufacturing, Supply Chain Management, Financial Management, Project Management, Human Capital Management/Human Resources [P]

## 2.6 Future of ERP

ERP II is an application and deployment strategy that expands out from ERP functions to achieve integration of an enterprise's key domain-specific, internal and external collaborative, operational and financial processes [Q]

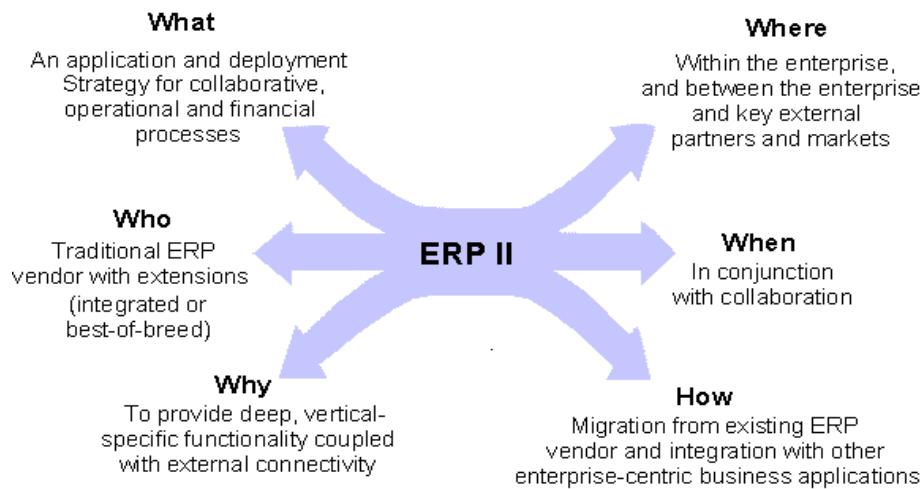


Figure 3-Ch-2 Description of ERP II

## 2.7 ERP Vendor

The role of the vendor does not end with the training. The vendor also plays an important project support function and must exercise quality control with respect to how the product is implemented. It is the vendors who understand the finer details and functions of the product and can make valuable suggestions and improvements that could improve the performance of the system. [R]

## 2.8. ERP Vendor Selection

The Company must initially choose few Vendors from Vendor List .Before selecting The ERP Vendor things to be Considered Properly. Such as Vendor's Stake in the market, Vendor's background, previous Experiences, Client to analyze suitable Vendor for Your Organization, Cost of Implementation, acquisition, support, and upgrade should not be Very high, are business unit heads expected to contribute in the implementation initiative? Past implementation record of the vendor, especially in similar vertical with same software, what is the Technology they are using? What is their experience in your vertical, will they good enough to understand your

business processes? What are profiles of their consultants, analysts or technical specialist who they will send for implementation? Check their past track record in project Delivery, what kind of risk mitigation plans and business continuity assurances do they offer? Their range of services and nature of services offered by implementation partner, financial strength and long term goal of the vendor, integrated software quality Criteria. [s]

## 2.9 ERP Vendor Evaluation

Seldom, Vendors are evaluated on their Functionality of their Application Only, the selection process should take into account their ability to help transform Business processes in order to achieve the customer's objective.in order to appraise a Vendor's ability to assist in executing a business transformation three condition should be checked.

They are .The vendor's sales Approach and their interest in helping to achieve the defined objectives, the vendor's References, the Vendor's Implementation Methodology. [T]

## 2.10 ERP Implementation

ERP (Enterprise Resource Planning) implementation can be defined as the installation of a software package that integrates all data and processes of an organization into a unified system. The time needed for implementation depends on the size of the business in large ERP projects; there are three levels - system, architecture, business process consulting and technical consulting.

While undergoing ERP implementation it is important to remember certain points. It is essential to have in-house technical expertise because ERP software in the organization implies complicated computer networking and its security, Internet connection line and its support system, etc. Moreover, there should be one dedicated ERP administrator to handle new users, set up security roles for them, modify reports, making customs reports, set up printers, etc. [U]

## 2.11 ERP Implementation Strategies

The three most widely discussed ERP implementation strategies are Big bang, Phased rollout, Parallel adoption. In Big bang Implementation happens in a single instance. All users move to the new system on a given date. In Phased rollout, Changeover occurs in phases over an extended period of time. Users move onto new system in a series of steps. In Parallel adoption - Both the legacy and new ERP system run at the same time. Users learn the new system while working on the old.

[V]

## 2.12 ERP Implementation Process

The process of ERP implementation is actually referred to as life cycle. Selection of an ERP package needs a thorough analysis of the various aspects. There are different stages in which the ERP system is implemented. The ERP life cycle process involves the various stages which are Pre-screening of the chosen packages ,Preparing for the venture, Project Planning, GAP analysis, Designing the System,Reengineering,Team training,Testing,Post implementation. The organizations should ensure that the ERP implementation process should be smooth and safe. [U]

## 2.13 ERP Implementation Checklist

An organization must comprehend the business problems before taking up ERP, and prepare a plan how is ERP going to solve the problem. The effect of implementing ERP should also be judged. It should be decided who is going to coordinate the ERP operations. The accountability and transparency of ERP operations must be assessed beforehand an important component of planning for ERP is making projections should be carefully observed.

Major Points for checklist such as Functionality - Specific Environment, Functional Spread - Mfg./ Finance / Sales/ HR , Implementation Ease, Ease of Customization, Product Support & Upgrade, Future Technology Compatibility ,Standard Open Interfaces (for integrating legacy systems), Similar Reference Sites, Vendor Strength & Stability, ROI,Global Trend.[U]

## 2.14. ERP Implementation Issues

Apparently, no single point of failure can be attributed to unsuccessful ERP implementations. Some of the causes cited for failed ERP projects include: Inherent complexity of ERP implementation , Outside consultant issues , Inadequate training , Process risk and process barriers , Corporate culture , Unrealistic expectations , Over-customization of software , Using IT to solve the problem , Timeline flexibility , Infrastructure issues .

### Inherent complexity of ERP implementation

ERP Systems are complex, and implementing one can be a difficult, time-consuming, and expensive project for a company. The technology is tightly integrated and requires a commitment from all divisions and often a change in the way a company does business to make it work.<sup>[w]</sup> It can take years to complete and cost as much as \$500 million for a large company. Moreover, there is no guarantee of the outcome.<sup>[X]</sup>

### Outside Consultant Issues

An Atlanta-based forestry products manufacturer used four consulting firms in various phases of its SAP implementation project. According to the CIO, the consultants “bickered among themselves over how to approach the project”. Rather than partnering with the manufacturer, they were fighting for control and overstaffing the project, which the company eventually shelved.<sup>[Y]</sup>

### Inadequate Training

Increasing reports point to poor training as a major cause behind failed ERP projects. Not just education of the technical staff, but of the user community who are supposed to actually work with the system. ERP changes the way companies do business but, instead of training everyone in the company on how to do business differently, they are trained on new computer software.<sup>[Z]</sup>

Companies must find the right person or organization to conduct the training. At Purina Mills, the company contracted with a third party consultant to conduct the training, but users complained almost immediately that they needed a translator to help them understand the training. The company needed someone to train the users that understood the current process and could relate it to the new one. They fired the third party trainers and developed the training course internally.<sup>[AA]</sup>

### Process Risk and Process Barriers

“Process Risk” is the risk that a business will suffer significant financial losses or harm to its reputation as a result of significant changes in the way the company does things. According to Barry Calogero, “the real culprit is the process.”

Three process barriers cited as contributing to ERP failure are:

- Focusing on technology – software alone will not solve business problems
- Ignoring requirements definition – processes are adopted to fit the software or legacy processes are forced into software that’s not designed to handle them
- Skipping the implementation plan phase – jumping from requirements definition to development phase<sup>[BB]</sup>

### Corporate Culture

Corporate culture refers both to the leadership sponsors’ involvement and accessibility in the project and the recognition of the role the employees play in a successful implementation. Many ERP projects fail because the employees do not realize the needs and benefits of the project and will be resistant to change.

Additionally, the users do not take ownership of the project.

The forestry products manufacturer mentioned above didn’t consider the effect of an ERP implementation project on its divisional VPs. In an attempt to centralize operations and integrate back-office systems, the company elected to implement SAP across all divisions. The Vice Presidents of the 12 major divisions were unaware of the company’s long-term strategies and how those strategies would cause them to

lose some of their autonomy. When they finally realized this, 11 months into the project, they balked and the project was scrapped.<sup>[y]</sup>

#### Unrealistic Expectations

At an unidentified company, the user community wanted a Business Intelligence application installed in conjunction with the implementation of an ERP system in order to facilitate information from the ERP system. By the time an outside consulting firm was selected to implement the project, months had passed. However, the project go-live date had already been communicated to the users and the company was unwilling to change it. The consulting firm, recognizing that user expectations would be impossible to meet, declined the project. The firm that was hired failed to meet user expectations and the project was shelved.<sup>[CC]</sup>

#### Over-customization of Software

A technological mistake often made in SAP implementations, says Graham McFarlane, director of Western Management Consultants, is that organizations modify the software more than they should, rather than modifying their business processes. [DD]

#### Using IT to solve the problem

Most companies are discovering that a quantified business need is a prerequisite for a high level of satisfaction with enterprise resource planning initiatives. Many ERP initiatives are still system driven and these are more likely to fail than those that are business led.<sup>[EE]</sup>

FoxMeyer Drug declared bankruptcy and cited a failed ERP implementation as the cause. They jumped on the ERP bandwagon early, when the software was designed specifically for manufacturing, not distribution, companies. The software was unable to handle processing demands.<sup>[FF]</sup>

### Timeline flexibility

Whirlpool suffered delays in shipping product after it went live with an SAP system implementation. Even though red flags had been raised late in the testing phase, Whirlpool elected to stick to their schedule. The decision resulted in a crippled shipping system that left appliances sitting in warehouses and stores with six- to eight-week delays for shipping orders. [GG]

### Infrastructure

When Bio-Rad Laboratories implemented an ERP system, the WAN was brought to a crawl by conflicts between ERP and email traffic. It was determined that email alone was using up the entire bandwidth between locations. As a result, mission-critical data in the ERP system's distribution and financial modules would languish at the various sites. This stalled order taking and the shipment of product. [HH]

### 2.15 ERP assessment

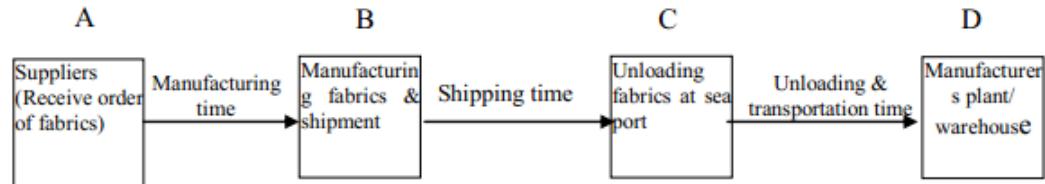
An ERP assessment is a set of activities to determine how the organization is utilizing their ERP solution and identify opportunities for generating additional value from the investment. It is also a chance for the customer's IT organization to develop objectives. There are four Steps to perform an ERP assessment respectively. Conduct an ERP software assessment; perform a Business Process assessment Step, Conduct a People assessment, Conduct a Helpdesk request assessment. [II]

### 2.16 Factors lead to ERP implementation successes

The strengths that consistently came out on top included such as Consensus on the Need to Change , Knowledgeable, Experienced, and Dedicated Staff ,Supportive and Aligned Leadership ,Technical Capabilities and Support, Institutional Teamwork, each of these factors will contribute to the success of a large project or major change initiative. Collectively, these factors create an environment ready for success. [JJ]

## 2.17 Lead Time

Lead-time refers to the time lag between placing an order and receiving it (Li, 2000). At present, the average lead time is 90-120 days in Bangladesh industry. Total lead-time is made up of time devoted to processing orders, to procuring and manufacturing items, and to transporting items between the various stages of the supply chain. Lead-time typically includes two components: Information lead times (i.e., the time it takes to process an order) and Order lead times (i.e., the time it takes to produce and ship the item). [KK]



**Source:** Nuruzzaman, 2007

Figure 4-Ch-2 Lead-time and fabrics importing process

## CHAPTER 3

### PROJECT EXECUTION OF

#### “MODERN MERCHANDISING MANAGEMENT TECHNIQUES”

(This Chapter includes on “Modern Merchandising Management Techniques”. It includes Framework Applied for ERP Implementation: A Case Study, Suggestions.)

### 3.1 Framework Applied For ERP Implementation: A Case Study.

The Framework is made for supporting management decision making .its provide better way to implement ERP based on system and process capability of the factory.it also suggest which type of customization will best suit with the factory.it helps understand to change or enhance the system or process capability like Offering Training to existing Employees, deploying Agents, obtaining Consultant.

ERP implementation is a modular approach so framework can be used to plan the modules implementation by anticipating and facilitating the growth of system and process change capabilities and choosing modules and options that allow for capabilities growth over time. Before implementing the module the factory can enhance their capabilities of difficult area of customization.

This Framework is used through proposed methodology at a garment factory named as J M Fabric, Dhaka the frame work is applied when the implementation of modules started. Analysis shows the system and process customization with real Implementation issues. How these issues change overtime and capabilities were built through customization process.

J.M fabric, Dhaka has a complete knit production unit. They uses traditional methods of electronic mail for their communication with the Buyer, supplier and inter organizational work. For distinguish this factory from other garment factories in Bangladesh and enhance their production process they introduced Platform ERP in their Unit. Platform ERP is designed for specifically for apparel industry. As such platform has modules for HRM, Order Tracking, Production, Commercial, Inventory, Subcontract Bill, TNA.Over 10 garment factories have adopted Platform ERP system in Bangladesh, Implementation of platform ERP is little complicated because it involves hundreds of users from various Department including Management, Merchandisers, managers, staffs and administrators.

Many garment factories has switch over the computer systems for their production process but it never be integrated. Every garment factories have their own strategy of production process that distinguishes with their competitors and changing buyer rules and regulations decides how garment factories will operate.

Implementation of platform ERP has same general characteristics as I found in SAP, NOW. J M Fabric selected platform ERP due to its common database and its user friendliness. The merchandising module started functioning on March 2012 and implementation of the HR, Commercial, Production module is Under Process.

The general process of each module Implementation is as follows

- Selection of Department
- Decide Re-engineering or redesign of the process by department members and Vendors team.
- Configuration or code change to match with the redesigned process.

The factory uses the module functionality with process customization and makes changes with the ERP system to achieve match with the production process.

Each Module is implemented with co-relating with the framework.

### 3.2 Merchandising Module

Merchandising module included improvement of buyer–supplier relationships, reduction of Production costs through resource and work synchronization and balancing of acquisition and carrying costs in inventory management. Web linkage to merchandising module is provides standardized platforms for data transfer and sharing, among departments. With the application of this framework, the methodology has been applied and we can get some conclusion after that.

#### 3.2.1 Analysis of the current system.

The three type of analysis has been done.

- Merchandising Process Analysis
- Capability Analysis
- Merchandising Module Analysis

#### Merchandising Process Analysis

- A. Process flow in merchandising department:
- B. Sampling Process Analysis
- C. Order Analysis.

#### A.Process flow in merchandising department:

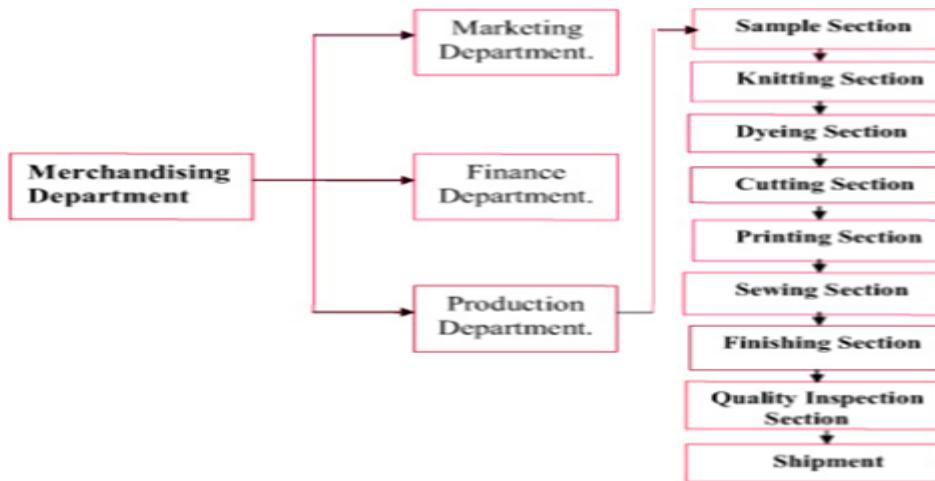


Figure 5-Ch-3 Internal Communication in Merchandising Department

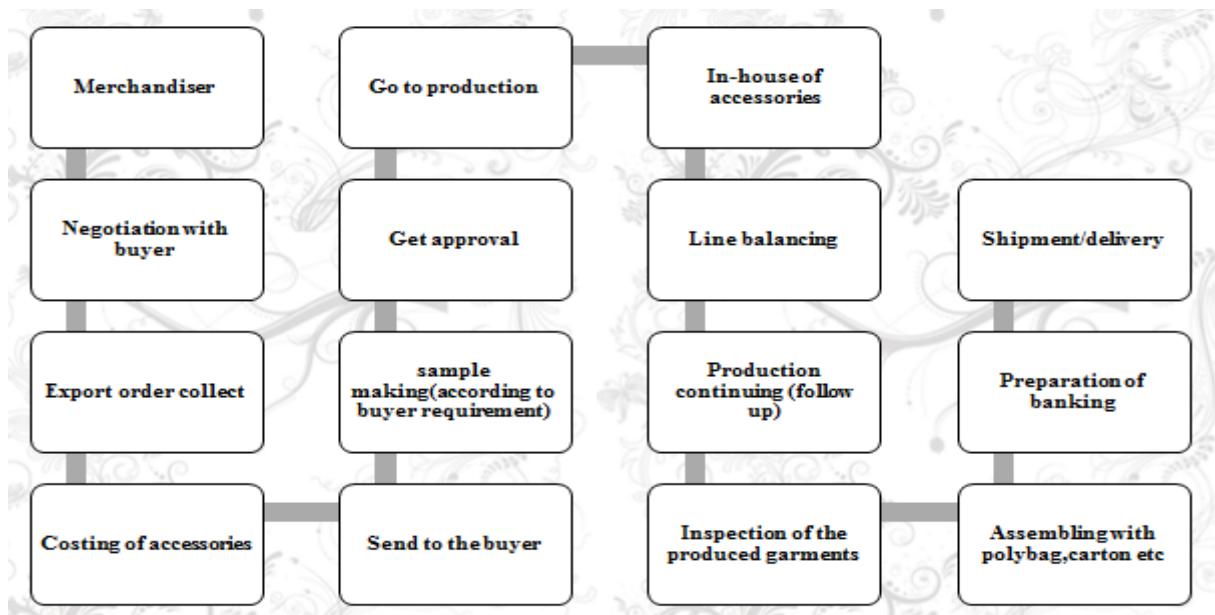


Figure 6-Ch-3 Process flow chart of merchandising

#### Job List of a Merchandiser

##### Inquires

1. On receiving an inquiry(s) the merchandiser must prepare a checklist and immediately forward all information to factories from the approved factory list for pricing.
2. The merchandiser must make sure that the factory specializes in the item being priced and has worked with the client before. Selection of supplier should be based on their previous performance, efficiency, delivery, etc.
3. If it is a new client then the merchandiser must discuss the inquiry(s) with the dept. head before sending out the inquiry(s). In case of a new factory, a factory evaluation should be conducted as per the set standards.

## Quoting Prices

1. Prices must be sent within 1-2 days of receiving the inquiry.
2. All enquires must be entered in to the new development sheet.
3. Based on the lowest price the merchandiser must order proto sample. Min. 2 pieces must be ordered. One sample for the customer and one office sample.
4. Before quoting any prices to the customer. The merchandiser should get all prices approved by the Head of Merchandising or Managing Director.
5. If renegotiation is required then involve the dept. head, Head of Merchandising and Managing Director so that the best prices are finalized with the factories.
6. Final quoted price must be updated on the new development sheet.

## Proto Sample:

1. Upon receipt of buyer's specification, a thorough check should be conducted for precision. Obtain explanation from customer for anything considered vague.
2. Forward the specification sheets/Pattern to the selected supplier with all the explanation of specifications & technicalities on as & when received basis & update records.
3. Ensure timely availability of fabric.
4. Follow-up with the supplier to provide the sample latest within 2 days for local accessories & fabrics, in case of imported items maximum 12 days.
5. Upon receipt of the sample from the supplier thoroughly check the followings
  - Styling
  - Measurement (if any)
  - Stitching
  - Quality of the fabric
  - Fabric construction/GSM
  - Hand feel of the fabric

- Washing standard
  - Finishing of the sample & accessories if any
  - Ensure compliance of the samples as per customer's specifications.
6. At least 3 pieces of each sample should be developed. One for merchandisers, one for the Customer & one for the suppliers for future references.
  7. Prepare Proto Sample Checking Sheet
  8. Put duly filled sample card on the sample.
  9. Forward the samples as & when received basis & advice customer accordingly with all the Details of dispatch.
  10. Follow with the customers for approvals/comments.
  11. Once approved, advice supplier as well as Head of Quality Control.
  12. Update Order Checklist (if any) otherwise make checklist based on the style.

#### Order Placement

1. Once an order is placed the merchandise manager should fill out a PO checklist.
2. All missing information with regards to the PO will be forwarded to the customer within 1 day of receiving the PO.
3. A complete PO package must be prepared and sent to the factory within 24 hours of receipt of order from customer with a copy of P.O. to Commercial Department.
4. Prepare a projected production plan & forward the same to the Head of Quality Control & to the related supplier.
5. Prepare a projected sample plan & forward the same to the related supplier with a copy to the Head of department.

A new PO package for the factory must include the following:

- Original PO sheet.
- Spec. Sketch and workman sheet.
- Color print artwork, lab dip, original fabric swatch and original trim card.
- Original sample (If available)

Within 1 day of receipt of a new order the merchandise manager must call for a pre-production internal meeting. The following people must attend this meeting:

- Head of Operation.
- Merchandise Manager.
- Acct. Related Merchandiser.
- Head of QA Dept.
- QA Personal.
- Internal QA Personal.

At the meeting the merchandiser will issue all information with regards to the order.

This information includes:

1. PO sheet copy.
2. Spec sheet with all related information.
3. Lab dip card, print artwork, trims card, etc.
4. Original fabric swatch (If available)
5. Proto sample.

## Lab Dip/Print Strike Off

1. Follow up with our customer for lab dips if necessary.
2. Upon receipt of the lab dips from the customer, immediately send a replica to the supplier.
3. Follow-up with the supplier for prompt delivery of lab dips latest within 5 days.
4. Obtain maximum numbers of lab dips from the supplier's minimum 3 per color.
5. Upon receipt of lab dips from the supplier, match lab dips against customer specifications via visual test or if required by the customer via lab test.
6. Head of department will give the final approval prior sending the samples to the buyers.
7. Forward the lab dips to the customer along with the lab test report on as & when received basis. Make sure the buyer receives the lab dips as per their requirement.
8. Follow with the customers for approvals/comments.
9. On approval inform supplier.
10. Update Order Checklist.

## Sample Accessories

1. Follow up with the customer for sample accessories, if required.
2. Upon receipt of buyer's accessories, a thorough check should be conducted for precision. Obtain explanation from customer for anything considered vague.
3. Upon receipt of the accessories from the customer, forward the same to the supplier on as & when received basis.
4. Factories will be responsible for the selection of accessories supplier. they should forward no such recommendations to the factories.

5. Follow-up with the supplier and quality control for prompt delivery of accessories for local max 4 days for imported max 12 days.
6. Obtain 4 sets of samples of all accessories with at least 3 different options from the supplier. One for merchandisers, one for the customer, one for the quality control, & one for the suppliers for future references.
7. Upon receipt of samples from the supplier, match these against customer specifications.
8. Thoroughly check with the original/instructions received from the buyer, artwork, color, quality, sewing allowance, bar code, price tags etc.
9. Prepare accessories format sheet, format attached.
10. Head of department will give the final approval prior sending the samples to the buyers.
11. Prepare at least 2 trim/accessories cards. One for buyer & one for merchandiser.
12. Forward the accessories to the customer's on as & when received basis.
13. Ensure that buyer receives the samples as per their precise requirement.
14. Follow with the customers for approvals/comments.
15. After approval advise the supplier accordingly.
16. Update Order Checklist.

### Pre-Production Samples

1. Follow-up with the supplier for prompt delivery of pre-production sample maximum 2 days.
2. Obtain 4 sets of pre-production samples from the supplier. One for merchandisers, one for the customer, one for the quality control, & one for the suppliers for future references.
3. Pre-production sample in all size sets should be available to the merchandisers at least 5 days before the start of actual production.
4. Upon receipt of samples from the supplier, match these against customer specifications.

5. Thoroughly check the styling, measurement, stitching, quality of the fabric, fabric construction/GSM, hand feel, washing standard, finishing of the sample & accessories.
6. Prepare PP sample format sheet
7. Head of department will give the final approval prior sending the samples to the buyers.
8. Forward the pre-production sample to the customer's on as & when received basis.
9. Ensure that buyer receives the samples as per their precise requirement.
10. Follow with the customers for approvals/comments.
11. Once approved advised the supplier.
12. Update Order Checklist.

#### Dye Lots

1. Follow-up with the supplier and quality control for the delivery of dye lot.
2. Dye Lot should be available (6 X 6, for every roll) to the merchandisers at least 5 days before the start of actual production.
3. Upon receipt of samples from the supplier forward the same to lab for lab test & match these against customer specifications.
4. Thoroughly see the color standard, color fastness, shrinkage, GSM/construction, hang feel, fabric quality, knitting tension, Lycra etc.
5. Head of department will give the final approval prior sending the samples to the buyers.
6. Update Order Checklist

## Bulk Accessories

1. Follow-up with the supplier for the delivery of bulk accessories.
2. These accessories should be available to the merchandisers at least 5 days before the start of actual production.
3. Upon receipt match these against customer specifications.
4. Thoroughly check the accessories color & quality of trim against buyer's comments.
5. Prepare Bulk Accessories format sheet, format attached.
6. Head of department will give the final approval prior sending the samples to the buyers.
7. Update Order Checklist

## Production

1. Once sampling is completed Head of concern Merchandiser forwards the order file to the Head of Quality Control along with the approved sample & a copy of projected production schedule. Make sure the file is forwarded at least 5 days before start of actual production.
2. A meeting should be conducted between the Head of Merchandising Department, Concern Merchandiser, Head of Quality Control & Quality Control Officer (Production) discussing all the details of order.
3. Obtain an instruction sheet covering all the required information from the quality control officer & approve.
4. Make sure any new comments are added into the instruction sheet.
5. Regular follow up should be made with the suppliers & Quality Control regarding the status of production.
6. Make sure the Quality Control Department conducts all the required inspections i.e. Fabric Quality Testing, for every order.
7. Obtain reports of all the inspection conducted i.e. Fabric Quality Testing for every order from quality control & keep a copy for record.
8. Visit the supplier at least during one inspection.

9. Once all things are OK, inform buyer.
10. Update Order Checklist.

#### Shipment/Salesman Samples

1. Inform Head of Quality Control for Shipment Sample.
2. Obtain 2 sets of shipment samples from the Quality Control Department of all sizes covering all colors or as specified by the Customer. One or two pieces to be provided to concerned Merchandiser & all remaining to Manager Administration. In case where buyer requires shipment samples receive one complete set from Quality Control.
3. Shipment samples should be available to the merchandisers
4. Upon receipt of samples, conduct a thorough check & match these against customer specifications.
5. Thoroughly check the getup, styling, stitching, fabric quality, fabric construction/GSM, hand feel, washing standard, finishing, & accessories.
6. Prepare Shipment sample format sheet.
7. Head of department will give the final approval.
8. If required, forward the shipment sample to the customer's on as & when received basis.
9. Ensure that buyer receives the samples as per their precise requirement.
10. Forward one set of shipment samples to administration department.
11. Keep remaining samples in the department for future use & maintain a register.
12. Update Order Checklist

## Delivery & Commercial Department

Regular follow-up is essential to:

- Ensure goods are handed over to the forwarder.
- Ensure the forwarder books space/flight for timely delivery of goods.
- Ensure staffing of goods is conducted.
- Ensure the date of departure is as per the booking.
- Obtain vessel/flight details from commercial department & advise buyer.
- Receive acknowledgement of goods from buyer.
- Update Order Checklist

### Documentation

Conduct regular follow up with commercial department & supplier for the timely delivery of all the below mentioned documents to the buyer.

- (a) Packing List
- (b) Commercial Invoice
- (c) GSP
- (d) Country of Origin Certificate
- (e) Bill of Lading/Master Airway Bill is sent from supplier's bank to buyer's bank only.
- (f) Inspection Certificate

all these documents are required to be sent to the buyer first via email or fax & then original via courier. Receive acknowledgement of documents from buyer.

## B. Sampling Process Analysis

The objective of Analysis of sampling process is to produce less or no sampling waste with a good quality product, no redundancy activities, good sampling management and good monitoring and controlling construction process. Sampling work process usually is associated with problems and limitations.

### Current Sampling Process

#### Submission of Trimming

Before apparel production begins, it is critical that the buyer approves all components that will comprise the finished product. Some buyers will require review of all trimming and others will require the approval of major trim components only. Before submission of trims, understanding of what the buying company wishes to review prior to production and Merchandiser should submit trim submissions on an appropriate form

Items that need to be submitted for Review are Lab dips, strike offs (screen printed swatches), reeling of yarn in all colors, Production fabric, knit downs, handlooms, etc. Most often required in a large enough size to containing full pattern repeat, Care labels & main labels ,Clothing Components: Buttons, lace, zippers, interlinings, shoulder pads, elastics, hangers, hangtags, price tickets, etc,Packaging: labels, chip board, jet clips, tissue paper, polybags, etc.

In addition to trimming, they might have to submit Fit Samples, pre-production garment samples, testing samples etc.

### Other Related works in Sampling

#### Fit Testing:

In order to ensure proper fit, steps must be taken to evaluate the garments comfort. This process is to monitor the manufacturer, but also to make sure the original size spec developed was proper. Even if the manufacturer follows the spec file perfectly, during the fit process the fit technician may discover that adjustments may be needed. After the fit testing is complete, the final spec file will be issued.

## Performance Testing

Normal practice is to have both fabric and garments tested before product is delivered. The testing is done at a third party testing facility such as TUV, SGS, ITS, BV etc. Testing is be done prior to production and after final production is complete

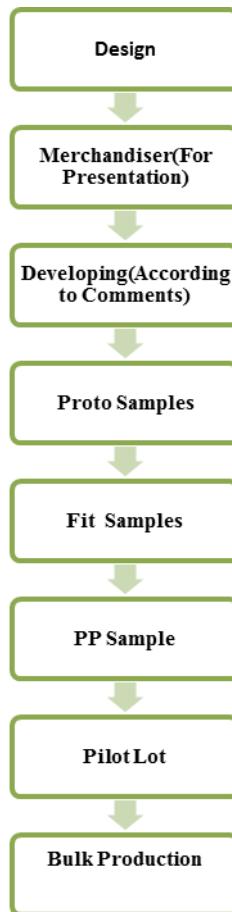


Figure 7-Ch-3 Current Sampling Process

## Inefficiencies in Sampling Process.

There are many factors contributed to the inefficiencies in sampling Process. Such as Poor Time Management, Sampling waste, Communication breakdown, Lack of control and monitor, Uncertainty handling approaches. There are various strategies that can be used to achieve efficiency in sampling process such as Lean Concept, Supply Chain Management, Materials Management, Kaizen Philosophy, JIT (Just in Time) Method, and Controlling Work Flow.

## Things to consider being in Sampling Process

### Systems approach.

People, processes, and technology are fully integrated, aligned and designed to be mutually supportive.

### Customer approach

Sample development must deliver a sample design that both meets customer needs and is capable of efficient manufacture.

### Built-in learning and continuous improvement

Learning and continuous improvement should be embodied in a problem solving process that creates multiple potential solutions and focuses on root cause countermeasures designed to stop future recurrence.

### Synchronize processes for simultaneous execution

Development teams must do the most they can with only that portion of the design data that is not likely to change. Otherwise, working with early data will result in tremendous waste and actually require a longer duration than a linear process.

### Create strategic flexibility

This includes concepts and tools such as reusability, common architecture, and standard processes.

## Interviews

There is an urgent need for the industry to reconsider the effectiveness of current work process which mainly based on current sampling work process due to its efficiency. Therefore this interview is conducted to gather the information about limitation on current work process and the need to improve efficiency.

Interview sessions are held based on interviewees who had experience in managing sampling.

In this interview I tried to get the opinion and information on the delay, quality and waste that associated with the practice of current sampling work process. The main objective to analyze the need to improve efficiency, major causes to delay in sampling management process, problems and limitation associated with current sampling process, how waste in sampling affects, how it satisfy and meet the customer/end user expectation.

The Total no of interview conducted is 24 .Scale is used on the time of interview for grading for Questions such as Least, less,Moderately,More,Mostly and mark them as 1,2,3,4,5 respectively. Data obtain from the feedback is analyzed using Frequency Analysis and Average Index.

## Frequency Analysis

Frequency Analysis depends on the percentage of respondents giving the same answers.

The formula of Frequency Analysis is as below:

$$\text{Percentage (\%)} = (n/N) \times 100\%$$

Where:

n = Number of respondents

N = Total number of respondents received

### Average Index Analysis

The average index analysis for each variable was calculated by using the similar classification of the rating scale.

$$\text{Average Index (AI)} = \frac{\sum ai \cdot xi}{\sum xi}$$

Where:

$xi$  = Number of respondents x rating scale

$ai$  = Rating scale

$x$  = Number of respondents

“Not Important”  $1.00 < \text{Average Index (I)} < 1.50$

“Less Important”  $1.50 \leq \text{Average Index (I)} < 2.50$

“Moderately Important”  $2.50 \leq \text{Average Index (I)} < 3.50$

“Very Important”  $3.50 \leq \text{Average Index (I)} < 4.50$

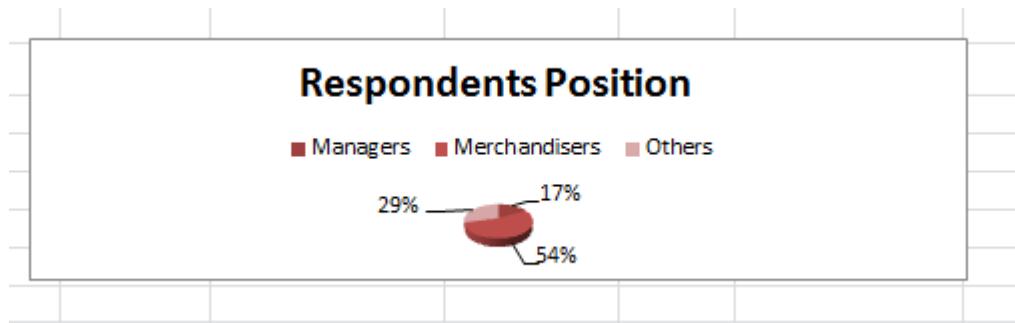
“Extremely Important”  $4.50 \leq \text{Average Index (I)} < 5.00$

## Interview Analysis.

**Total No Of Interviews: 24**

**Table 1:** Respondents Position

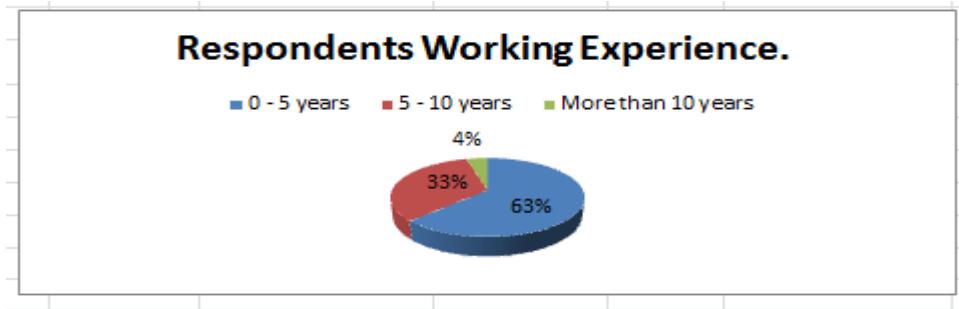
Responded Questionnaires	Quantity	Percentage (%)
Managers	4	16.67
Merchandisers	13	54.17
Others	7	29.17
<b>Total</b>	<b>24</b>	<b>100</b>



## Respondent's Working Experience

**Table 2:** Respondents' Working Experience

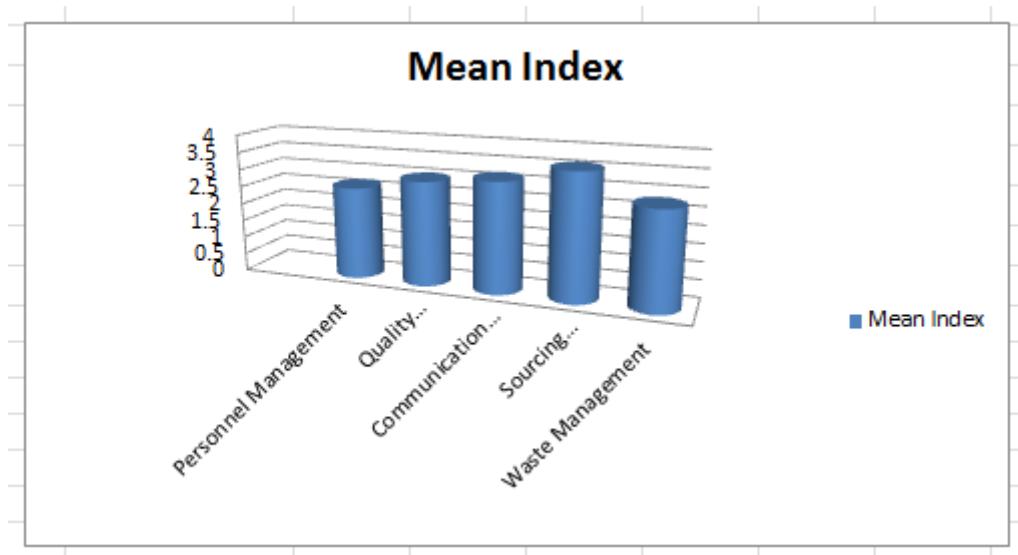
Responded Working Experience	Quantity	Percentage (%)
0 - 5 years	15	62.5
5 - 10 years	8	33.34
More than 10 years	1	4.17
<b>Total</b>	<b>24</b>	<b>100</b>



### Major Causes to Sampling Delay

**Table 3: Factors that contribute to project delay**

Causes	Scores					Mean Index
	1	2	3	4	5	
Personnel Management	4	10	4	3	3	2.62
Quality Management(defects)	1	5	7	8	3	2.96
Communication Management	4	5	5	4	6	3.12
Sourcing Management(resources & materials)	1	1	11	6	5	3.54
Waste Management	5	6	5	6	2	2.75

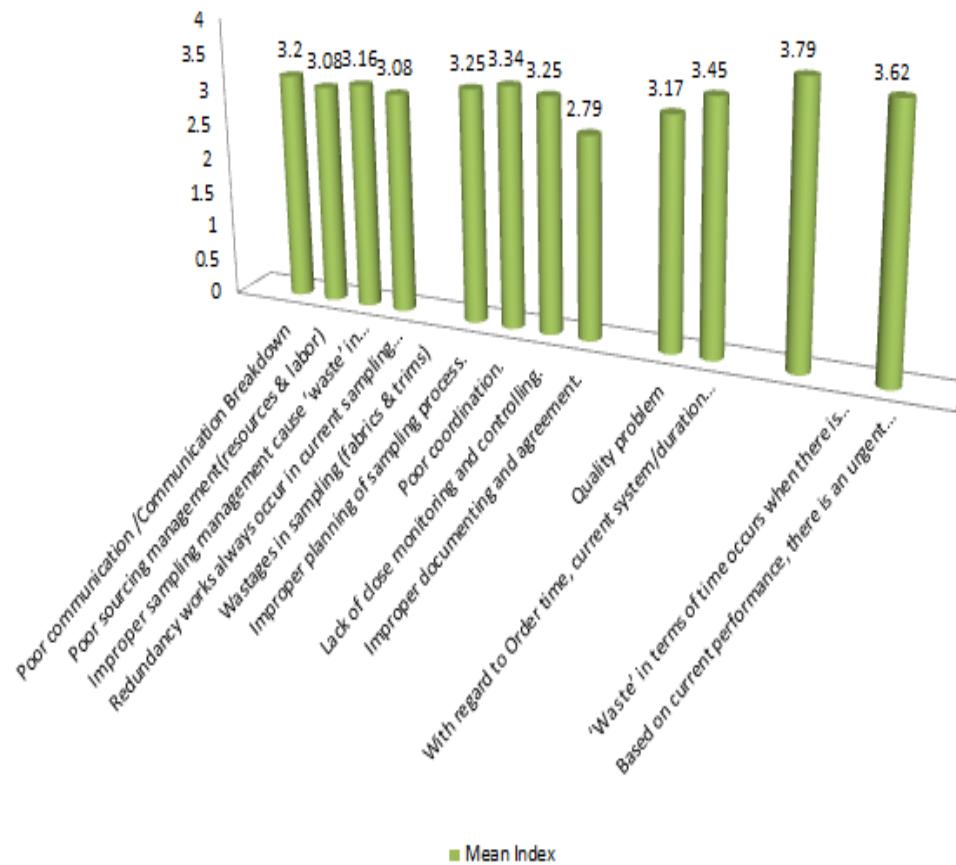


According to the average index analysis above, showed respondents agree that - Sourcing Management is the most causes due to project delay and in terms of time.

## Problems and Limitation in Current Sampling Work Process

**Table 4:the factors of problems and limitation associated with traditional work process.**

Factors	Scores					Mean Index
	1	2	3	4	5	
Poor communication /Communication Breakdown	2	5	9	2	6	3.2
Poor sourcing management(resources & labor)	2	6	8	4	4	3.08
Improper sampling management cause 'waste' in terms of time	3	5	5	7	4	3.16
Redundancy works always occur in current sampling process.		9	7	5	3	
Wastages in sampling (fabrics & trims)						3.08
Improper planning of sampling process.	1	7	4	9	3	3.25
Poor coordination.	2	3	10	3	6	3.34
Lack of close monitoring and controlling.	1	8	4	6	5	3.25
Improper documenting and agreement.	5	8	3	3	5	2.79
Quality problem	2	4	8	8	2	3.17
With regard to Order time, current system/duration of Order should be made more efficient.		5	7	8	4	
						3.45
'Waste' in terms of time occurs when there is sudden decision change by buyer or there is variation in orders/design changes.		3	5	10	6	
						3.79
Based on current performance, there is an urgent need for us to be improved to meet customer/end user expectations.	1	4	5	7	7	
						3.62



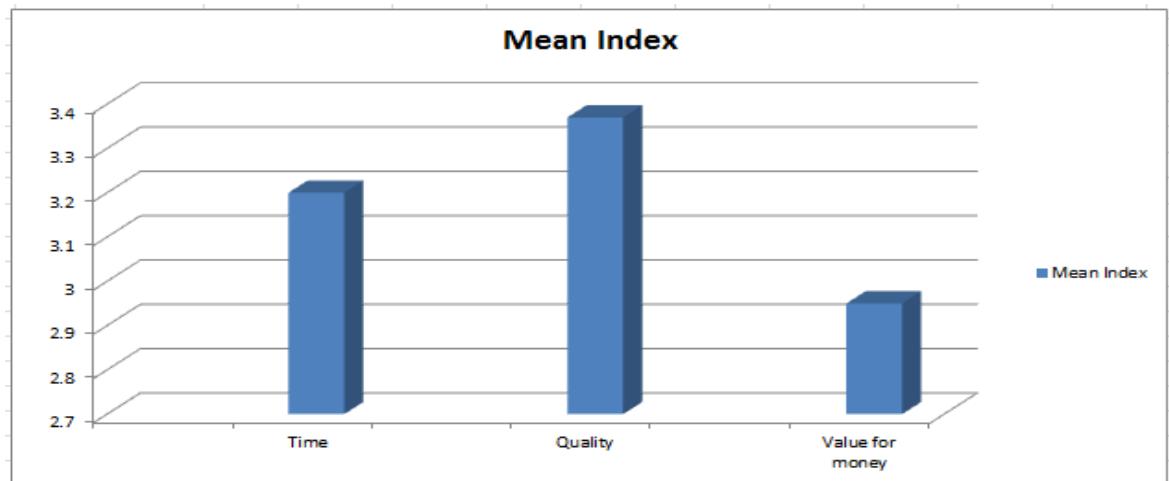
According to the average index analysis above, showed respondents agree that 'Waste' in terms of time occurs when there is sudden decision change by buyer or there is variation in orders/design changes is major the factors of problems and limitation associated with traditional work process.

Needs to improve current sampling process

There is needs to Improve and enhance current sampling process effectiveness. So question Asked related to find out their urgent needs to improve in order to meet clients and end user expectation.

Table 5: Factory is not able to meet Customer and end user expectation in sampling. In general terms of following Factors

factors	Scores					Mean Index
	1	2	3	4	5	
Time	1	9	4	4	6	3.2
Quality	2	3	9	4	6	3.37
Value for money	6	3	5	6	4	2.95



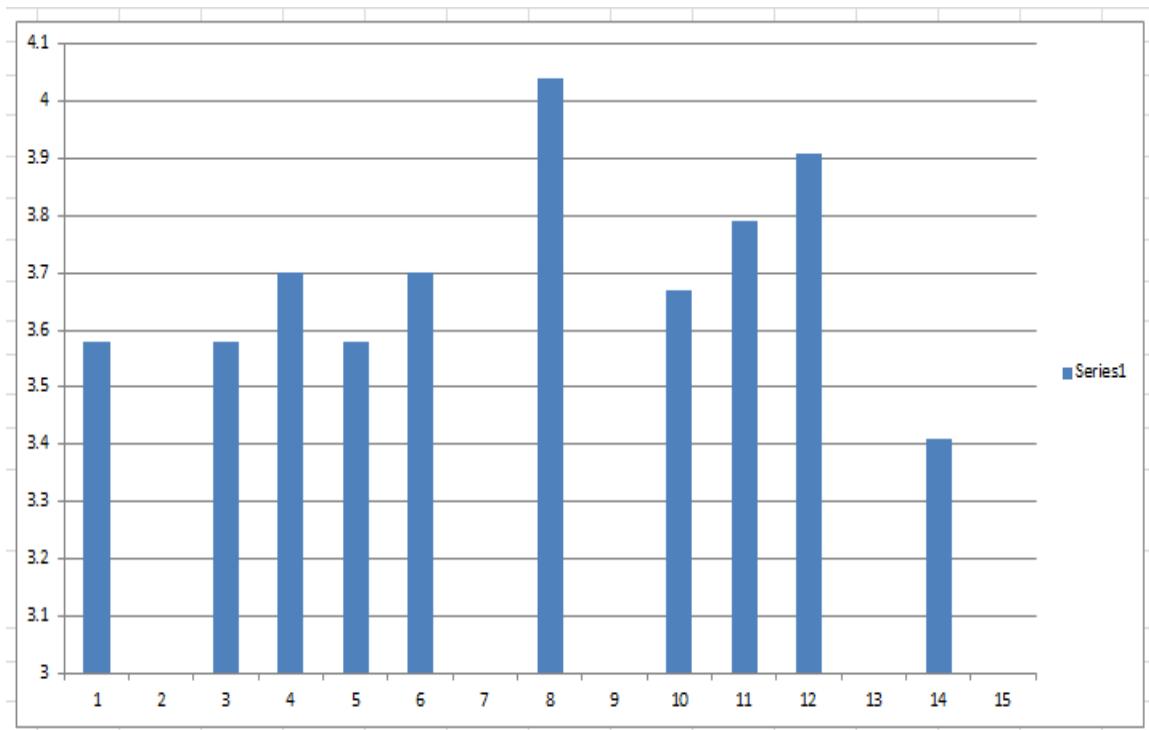
According to the average index analysis above, showed respondents agree that Quality is major the factors so Factory is not able to meet Customer and end user expectation.

### Strategies to improve Current Sampling Process

Perception on strategies that can be used to improve sampling performance.

Table 6: Current strategies that widely applied and practical in garment industry.

Factors		Scores					Mean Index
		1	2	3	4	5	
By applying Lean Philosophy we can	Reduce Waste	2	7	2	1	12	3.58
	Reduce Time Used	1	4	7	4	8	3.58
	Control Quality		6	5	3	10	3.7
	Eliminating waste & redundancy	2	3	5	7	7	3.58
Systematic approach to integrated product development that emphasizes the response to customer expectation.		1	4	4	7	8	3.7
Create teamwork for quality control & sampling improvement(Kaizen philosophy)		2		5	5	12	4.04
Ordering resources (Fabric & Trims) on time may	Reduce Waste	1	4	5	6	8	3.67
	Reduce Time Used	2	3	4	4	11	3.79
	Control Quality(less Fabric & Trims defect)	1	1	6	7	9	3.91
Integrate all organization & functions to focus on customer needs & other organizational objectives		4	2	4	8	6	3.41

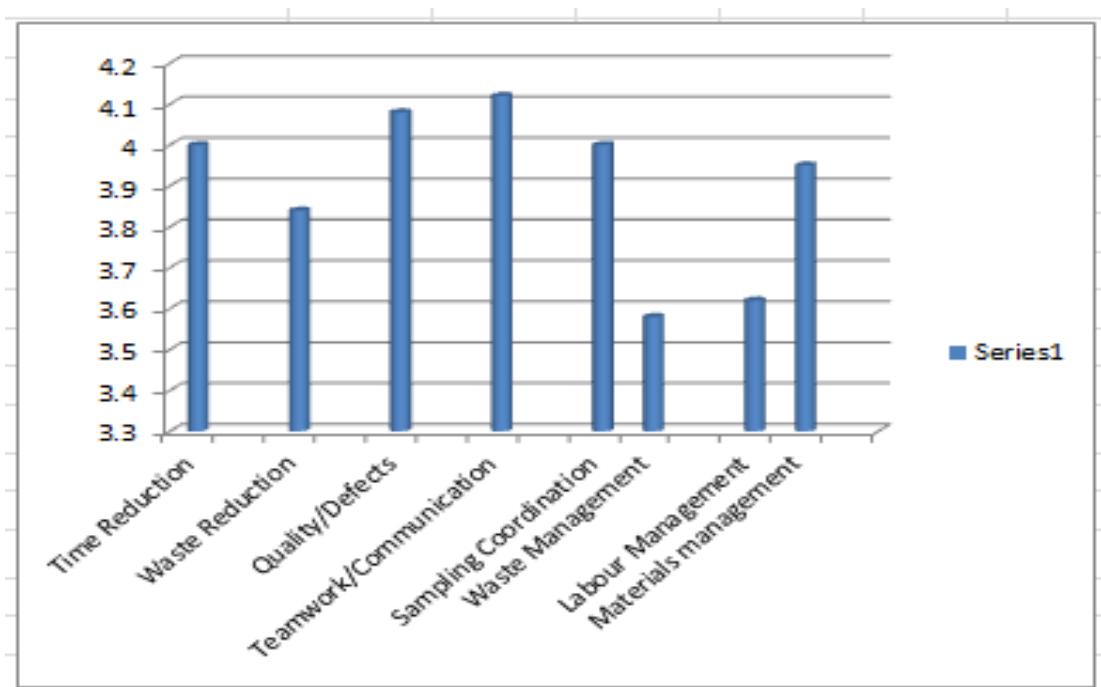


According to the average index analysis above, showed respondents agree that Create teamwork for quality control & sampling improvement (Kaizen philosophy) should applied.

### Element of Improvement in Enhancing Sampling Improvement

Table 7: the most important element of improvement in current sampling process

factors	Scores					Mean Index
	1	2	3	4	5	
Time Reduction	1	3	2	7	11	4
Waste Reduction	1	3	4	7	9	3.84
Quality/Defects	2		3	8	11	4.08
Teamwork/Communication	1	2	3	5	13	4.12
Sampling Coordination	1	2	1	12	8	4
Waste Management	2	2	6	8	6	3.58
Labour Management	1	3	6	8	6	3.62
Materials management	2	2	3	5	12	3.95



According to the average index analysis above, showed respondents agree that Teamwork/Communication is the most important element of improvement in current sampling process.

#### Limitation of Interview

There are a few limitations in this Interview such as Accuracy (response may be according to respondent public profile rather than underlying the corporate reality), No control over respondents (Some questions may wrongly answered).

#### Discussion of the Results.

Current sampling work process faced a lot of problems and limitations. There is need of sampling waste identification, Reduction of waste. Etc. They should follow criteria such as Proper Meetings, Team work, Merchandiser was consulted before the start of Order to avoid confusion/queries regarding sample during the process, and Requirements were gathered before the start of Order thereby avoiding waiting time. Benefits to follow the criteria are significant increase in value creating time per day Avoids waste due to turbulence, Enables team members to plan and execute logical work packages.

### An approach For Solution

As per Interview Result Quality is the Major Problem in the merchandising department. There are various orders referred for Solving Quality related issues.

There are two majors Problems such as Quality People are not responsible, Awareness of Quality issues.

### Job Responsibility of Quality People

Store

Trim Inspector:

1. Inspect accessories as per 2.5 AQL.
2. If lot is fail as per AQL, inform to concerned Q.A Manager/ Merchandiser.
3. 10% of metal button/snap button/zipper/label and embroidery goods taken to the needle detector machine and checked whether pass or fail and maintain the record.
4. If above is not pass through the needle detector machine inform to Q.A. Manager.
5. Ensure that all accessories are ok as per approval Trim card.

Fabric Q.C:

1. J M Fabrics inspect fabric as per 4 point system.
2. If lot is failed inspect 100% fabric.
3. If 100% lot fails as per AQL, inform to Q.A. Manager/Concerned Merchandiser.
4. They make three set met/blanket. We sent two set for wash. After wash make shade band.
5. They cut 50cm by 50cm fabric from 10% of rolls for shrinkage check. If stretch fabric then they cut 50cm X 50cm from all rolls for shrinkage check.
6. They storage as per shade and shrinkage wise.
7. They make Shade band chart.

## Cutting

### Spreading Q.C:

They are responsible of Lay table marks, Ends, Narrow goods, Joint/Splice label side, Tension, any fabric flows, Number of lay placement of marker etc.

### Marker Q.C:

1. Before start they check big parts by the hard pattern.
2. They check size ratio.
3. They are fully responsible for marker.

### Cutting Inspection Q.C:

1. Their responsibilities include assisting the cutting supervisor to identify cutting problems and take corrective actions.
2. They have adopted AQL 2.5 system to inspect randomly following cutting operations.
  - a) Pattern Check: Against the marker pattern to ensure that the maker pattern was correct.
  - b) Notches: Check the notch location by placing pattern over the top and bottom ply notch should not be more than 1/8 inch if so talk to cutting supervisor.
  - c) Matching Ply: Against top and bottom ply them both on hard paper pattern to ensure cutting accuracy, maximum tolerance is + 1/8 inch.
  - d) Miss-cut: To ensure cutter must split the marker line to avoid further problems maximum tolerance is allowed + 1/8 inch.
  - e) After cutting big panel, the inspector takes top middle and bottom layers for checking with the hard pattern. If find any discrepancies report to Q.A. Manager

#### 100% Cut Panel Inspection Q.C/Q.I:

1. They will ensure all panels after cutting and before issuing to sewing is ok.
2. If find any defect then return to the cutting supervisor.
3. They again check the replacing parts, which is cutting supervisor hand over them.
4. They are fully responsible for cutting panel is ok.

#### Cutting Q.C In-charge:

1. They are responsible for all cutting goods.
2. Such as shade maintain/lot maintain.
3. They ensure the cutting assurance department (CAD) supplies the actual marker as per shrinkage wise.
4. They ensure that storage fabric is shrinkage and shade wise.

Note: they are responsible for all cutting pieces are zero defects.

#### Cutting/Store Q.A. Manager:

1. They ensure all accessory /Trim/Fabric is ok as per approved trim card.
2. They ensure about fabric inspection/shade band/fabric shrinkage check and storage with bin card.
3. They ensure all fabric issue from store to cutting as per shade wise and shrinkage wise to cutting.
4. They are responsible for marker check/pattern check /shrinkage wise marker check.
5. Before issuing in the sewing line they ensure that all over cutting goods is ok.

Note: They are responsible for all over the cutting goods as per ratio, shade, shrinkage all over etc.

## Sewing

### In line Process Checker (Garment part):

1. When first input they check parts all over trim as per approved trim card.
2. They check S.P.I. and maintain the stitch monitoring record.
3. They check measurements of their operation area.
4. They check styling
5. They check all over parts defects and maintain the record.
6. They are responsible for parts quality.

### End Line Check Q.I:

#### End line inside/ outside checker:-

1. At First output they ensure check garment part all over trim as per approved trim card.
2. They check S.P.I. and maintain the stitch monitoring record.
3. They check measurements of operation area.
4. They check styling.
5. They check main/size/care label is in correct placement
6. They check pocket placement.
7. They check all defects.
8. They check all over inside/outside of the goods and maintain the record.
9. They are responsible for all over inside/outside quality.

### Line Q.C:

1. Before start the any style Q.A. Manager Supply approved trim card/ approved sample and approved order sheet.
2. They ensure the all parts S.P.I are ok.
3. They check styling/spec sheet/approved trim and label is as per approved sample.
4. They check measurement before and after wash.
5. They are responsible for their lines quality up to carton.

**Auditor:**

1. They audit every two hour after sewing finished goods as per 1.5 AQL.
2. If the audit fails they return the goods for re-check.
3. After re-check finish they re-audit if goods are ok then send to the washing /finishing.
4. They maintain the records of every line/style.
5. They are fully responsible for finished goods.

**Q.A. Manager (Sewing):**

1. Before start any style as per the spec they have graded pattern (from the base pattern) and go for size set to check the measurements and appearance of the garments.
2. After checking the measurements, if find any discrepancy then they advise for adjustment in the pattern.
3. Before input any style in sewing floor they collect the approved order sheet/approved sample and approved trim card from merchandiser.
4. They arrange the P.P Meeting with all section head.
5. In sewing line they check all color combination/styling/S.P.I/trims/label/thread etc.
6. They check before and after wash measurements (if wash required).
7. They check ratio wise input is ok.
8. Especially they check styling of every style.
9. Actually, they are responsible for all over, ware house to goods shipment.

## Finishing

### Finish Goods inside/ outside Check:

1. They check measurements of their operation area.
2. They check styling.
3. They check main/size/care label is in correct placement.
4. They check all defects.
5. They check all over inside/outside of the goods and maintain the record.
6. They are responsible for all over inside/outside quality.

### Measurements Q.C:

1. They check measurement is ok as per label each and every piece.
2. They check inseam measurement each and every piece.
3. They ensure all their passes goods size is ok.

### Two Hours Audit (in the finishing):

1. Every two hours they audit finished goods and keep the records.
2. If audit fails it goes for re-check.
3. After re-check they re-audit, if it pass then goes to the poly.
4. They are fully responsible for styling labeling and all over the quality

### Quality In-charge:

1. They inspect packing garments every lot/ PO /Country wise Pre Final Inspection before the final Audit.
2. They check styling/ratio/shade/carton size/weight and all kinds of alteration as per AQL.
3. If lot fail goes for re-check.
4. After re-check complete they re-inspect it pass then go for final audit.
5. They are fully responsible for quality of garments.

#### **Q.A. Manager (Finishing)**

1. They don't have any production responsibilities.
2. They determine whether the specific lot is accepted or must be rejected with corrective action.
3. If necessary to improve the lot to the acceptable level.
4. they use AQL system to control the pre-final inspection
5. Auditing samples will be selected on random basis from the packed identifiable lot.
6. If defective level is more than the acceptable quality level, the lot will be failed for 100% re-inspection.
7. After 100% re-checking re-audit will be conducted, on the same rejected lot to ensure the noted problems are corrected.
8. They ensure packed goods ratio/shade/measurement/hand tag/price tag/all trims as per approved sample and approved swatch card.
9. They check carton measurement, carton play and carton weight etc.
10. They are responsible for goods ware house to shipment.

#### **G.P.Q In-charge:**

1. They are independent and they don't have any production responsibilities.
2. They do final audit before and give the final inspection to concern buyer.
3. They don't give the final audit without their final inspection
4. They determine whether the specific lot is accepted or must be rejected with corrective action.
5. If necessary to improve the lot to the acceptable level.
6. They use AQL system to control this audit.
7. Auditing samples will be selected on random basis from the packed identifiable lot.
8. If defective level is more than the acceptable quality level, the lot will be failed for 100% re-inspection.
9. After 100% re-checking re-audit will be conducted, on the same rejected lot to ensure the noted problems are corrected.

10. They ensure packed goods ratio/shade/measurement/hand tag / price tag / all trims as per approved sample and approved swatch card.
11. They check carton measurement, carton play and carton weight etc.
12. They are responsible for goods ware house to shipment.

Awareness of Quality issues.

Table 13-Ch-3 Analysis of Defects

Fabric	Slub/knot, Barre, Hole, fabric Run, yarn Contamination, snag, torque/skew, Bleeding/color Migration, shading, Dyeing/finishing streaks, yellowing of white fabric, Miscellaneous fabric defects.
Construction	Broken/Drop/Skin Stitch, raw Edge/Frayed Seam, Open Seam, Overrun stitch, Incorrect tension, Uneven/Wavy stitching, Missing/Insecure component, Trim or label, puckering/pleating, Needle Hole, Needle Chew, Twisted, Roping or Uneven Hem, Conspicuous repair, shading-within garment, incorrect color combination, high/low pocket or shoulder, construction not as specified, Untrimmed thread, incorrect/inconsistent stitch count, incorrect placement, miscellaneous construction Defects.
Trims	Trims broken, Trims Inoperable, Incorrect color, incorrect Size, Trim not as specified, Trim Bleeding/color Migration, Miscellaneous trim Defects.
Embellishments	Unraveling, peeling/cracking, poor coverage, poor Registration, not Cured, incorrect color, incorrect size, incorrect placement, poor adhesion, improper backing removal, untrimmed thread,Hoop,Screen or plate marks, ink smear, Embellishment Missing, Embellishment not as specified. Miscellaneous embellishment defects.
Wash/Finish/Dye	Poor pressing(including shine,Moire,color change,scorching,etc),Damp(bag,condensation,mildew),offensive odor, Excessive Fraying/Pilling, Excessive Residual debris(Stones,

	sand),garment wash/Dye shading, garment wash/dye not within color standard(see shade band),Miscellaneous wash/finish defects,
cleanliness	Soil, Oil, Unattached or Loose Threads, Foreign objects (Pin, Needles, staples, stickers etc. not removed), Miscellaneous cleanliness defects.
Packaging	Missing/incorrect information on polybag, Incorrect Polybag Size, carton contents incorrect, Incorrect Carton Count,Overpacked Under packed carton,Mising/Incorrect UPC labels, price tickets, hang tag,etc,Mixed Sizes,Forgein Objects(staples,Pins,needle bugs, etc.),Damaged or open Polybag, miscellaneous packing Defects
Measurements	Waist, Hip Width, Front /Back Rise,Outseam/Inseam, Liner Rise, Body length, Body width, Body sweep, Sleeve length, Neck opening, Neck Minimum Stretch, logo placement, Miscellaneous Measurement Defects.

## Needle Control Procedures

The aim is to prevent used or broken needle or other metal contamination embedded in the garment being sold to customers, causing bodily harm to them.

### 1. Used Needle Control Procedures

- The supervisor must check all machine needles regularly to ensure they are in good working condition.
- This procedure must be strictly implemented by setting a routine to check the condition of the needle tip. The numbers of needle changes per shift depends on the types of fabrication and needles in use in production.
- No sewing operator should be in the possession of any spare sewing Needles, used or new, other than the needle installed on the sewing Machine. All replacement / spare sewing needles must be secured in a locked Cabinet accessible only by the plant supervisor, mechanic, or other Authorized personnel.
- All new sewing needles may only be replaced by the plant supervisor, Mechanic or authorized personnel. Replacement by the sewing operator is not permitted.
- All needles must be accounted for i.e. the numbers of used and broken Needles must reflect the daily issued quantity. This is done by doing a tally of the numbers of needles used against issued quantity at the end of each shift.
- Used sewing needles must be disposed of in a sealed container in a separate area from the sewing floor and recorded in the used needle disposal log. The QA staff will check the records and ensure all used needles are to be placed in the sealed container.

## 2. Broken Needle Control Procedures

When a needle is broken during sewing, every effort must be made to locate ALL fragments of the broken needle in the garment(s);

- Machinery must be checked, including such areas as the sewing machine throat plate, feed dogs and bobbin case.
- Use of magnet to locate / search all fragments of the broken needle is recommended.
- Any breakage must be recorded in the broken needle log immediately and the broken fragments attached (kept) in the Log; entries into the Log must be completed in full. This log should be kept in the plant Supervisor's office.
- If all fragments cannot be found, then the bundle of garments on which the operator is sewing, and any bundles in close proximity must be taken to a separate bin in the plant for further examination.
- A metal Detection unit can be used to help locate the needle fragments.
- Unauthorized access to the bin must be forbidden.
- The bin may be painted in RED for identification.
- Under management supervision. All garments in the bin should be re passed again through the needle detector. Garments not rejected again may be accepted. Garments rejected again must be searched for metal contamination. If nothing is found, pass the garment bundles once more through the needle detector. If no contamination is detected, the garment bundle May be returned to the sewing floor.
- All needles must be accounted for at the end of each shift by tallying used quantity against issued quantity.

### 3. Needle Detection Control Log

- A needle detector must be kept in a permanent location.
- The equipment must be re-calibrated by the equipment supplier if the detector is moved to another location.
- The equipment is preferably located in the finishing area such that the only access to the packing section is via the needle detector. This ensures that all garments, including repaired or re-inspected garments are passed through the needle detector to the packing section. This process also ensures rejected garments stay in the finishing area.
- The operator must ensure that the machine is checked and is in proper working condition before performing the process of Garments/parts detection. It is critical that the operator does not fiddle or try to adjust the settings on the needle detector unless he is authorized and train to do so.
- Any garments/parts checked and to be returned to the sewing floor must be kept separately from the unchecked ones, in a clearly marked trolley to prevent mix up.
- After a needle fragment is found, the same garment/parts of a Garment must be put through the needle detector once more. If it is not rejected, then the said item is returned to the sewing floor.
- Garments passing through needle detector must tally with the shipped quantity by style. This is made possible with the installation of a counter on the needle detector.

#### 4. Metal Contamination Control Procedures

Sources of Metal contamination are Broken Needle Fragments, Straight Pins, Scissors/Clippers, Razor Blades / Utility Knives, Bundling Wire, Staples, Metal paper clips

Also includes mechanic tools like screw drivers, hammer and etc.

- No metal pins, wires or staples may be used in any part of the production process for bundling, tacking, securing components or packaging of any product.
- Metal pins must be excluded from all sampling and production Areas, alternatives should be sought (e.g. tape, adhesives, and clamps).
- This includes pins used for notice boards in sewing room.
- If metal pins must be used in specific garment manufacturing process, such as fabric laying and cutting, the factory must maintain a record to control the use of these pins.
- Scissors and clippers should be secured to prevent them from being accidentally packed with the garments. For big scissors at the cutting tables, the factory must maintain a log to whom has been issued with these scissors.
- Sewing operators should only be issued with trimmers and not scissors.
- Where hand-sewn needles are used, they must be accounted for and the numbers of needles issued must tally with the numbers of used and returned needles. A tally must be conducted by appointed personnel at operators' lunch break and at the end of every shift.

## 5. Needle Detector Calibration Procedures

The detector must be checked periodically using the 1.2-mm diameter test card supplied with the unit. The card should be mounted onto a non-detectable block (plastic or another inert material) such that it passes through the center of the aperture where the point is of least sensitivity. The sensitivity check should be carried out at least three times each day, at the beginning, middle and end of a working shift. If the detector fails a sensitivity check, all products coming after the previous calibration must be re-checked once the detector is rectified.

Rectification of the unit should be carried out with the guidance of the Detector supplier. Only products inspected between confirmed checks can be cleared for packing. Designated zone must be assigned for rejected products, those Products waiting to be cleared and fully cleared products must be Identified and avoid mixing these products.

Designated zone may be trolley marked as follow:

- 1) Needle calibration “Rejected” for re-check
- 2) Needle calibration “Awaiting Clearance”
- 3) Needle calibration “Cleared – Move back to production”.

## 6. Needle Detector Maintenance Procedures

All personnel involved in the use of the metal detection unit must be trained by supplier to understand the metal detection system, the operation procedures and how to make or correct minor adjustments.

Operators must be made aware that only authorized staff trained for the operation may operate the needle detector. Person/s authorized to handle the machine must be identified to ensure proper accountability. The detection unit must be serviced at regular intervals according to maintenance requirements from suppliers. Records must be kept of these services. The needle detector must be covered to protect it from dust and grime when not in use.

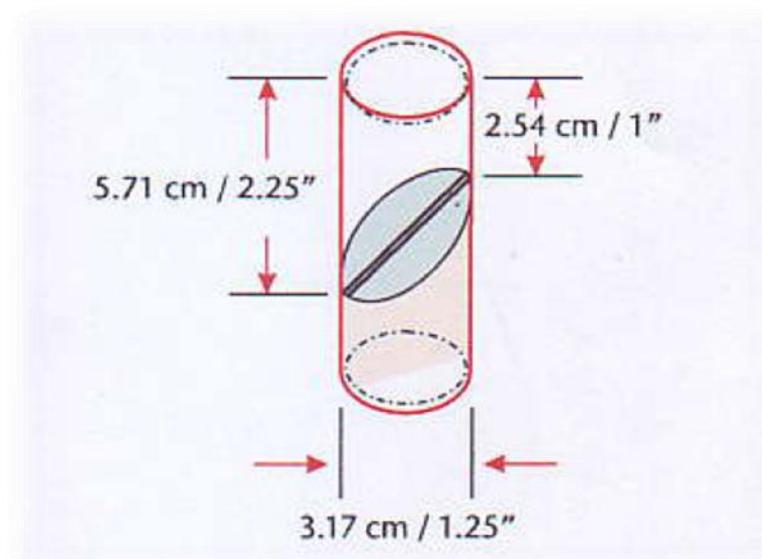
## Safety Consideration- Wal-Mart USA

### SMALL PARTS :Choking Hazards

Children aged 3 years and Under are particularly Susceptible to choking, asphyxiation And ingestion hazards caused by small objects. All components that could become Detached children's clothing are examples of small parts, and therefore choking Hazards.

Some Examples of small parts are listed Below.

- Snaps/Studs/Rivets
- Zipper components
- Dungaree clasp(hasps) & Slider
- Belt fastenings
- Decorative labels
- Buttons
- Appliques
- Bows and Rosettes
- Toggles



If the trim or component can fit within the small parts cylinder shown above, then the item considered a potential choking hazard. It is therefore, Walmart/George's policy for a All parts intended for children 3 years and Under to withstand a 90N/20.2lb pull force.

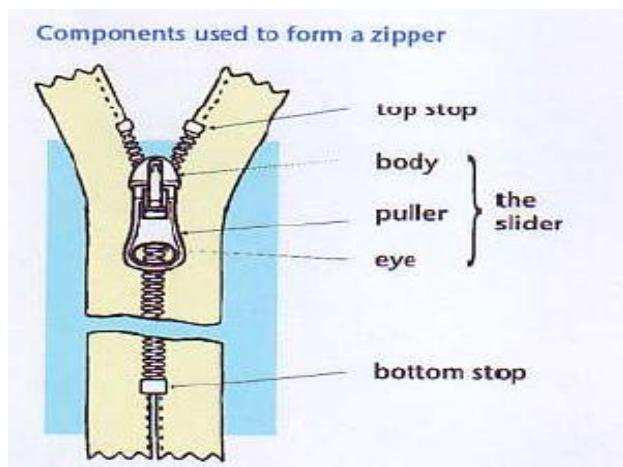
#### Small Part Labeling

Product that is being manufactured for the US and Canada with Small part trims and embellishments may need to have an Additional hangtag attached to the garments.

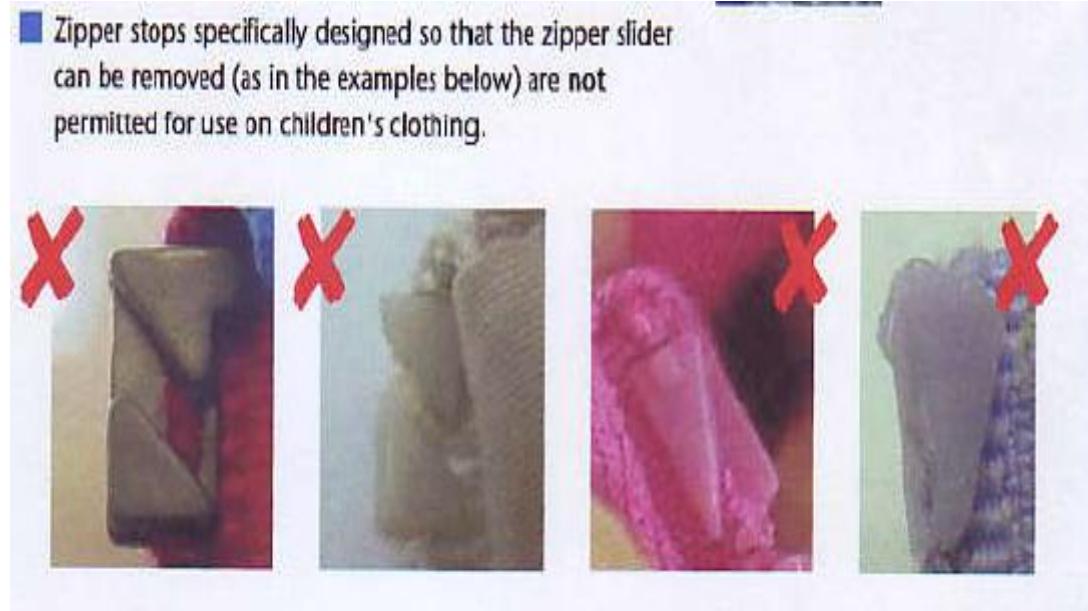


## Zippers

The basic construction of the zipper is given Below.

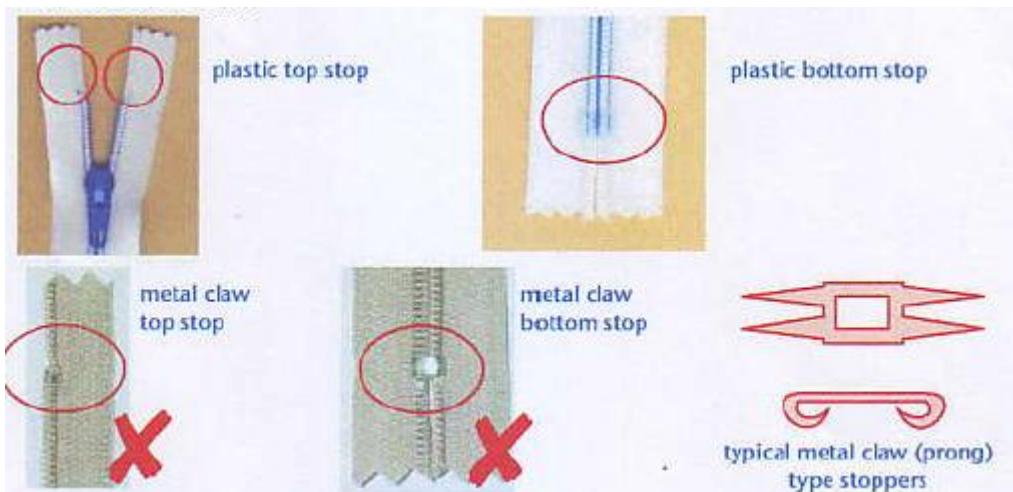


Problem Related to Zipper.



## Coil Zippers

Coil zippers for children's clothing must have molded plastic top and bottom stops.



## Metal zipper pulls (Childrenswears)

One Piece ring pulls or other open type Designs can be used on children's clothing for 4 years and above,

Providing the inside diameter of the ring (measured at widest point) does not exceed 2.5 c.m/1" .



Fabric and Elastic Zipper Pulls (Children swear)



D-rings (Children)

The D-Ring must be designed so that it cannot become detached from the garment.



*Please note the age groups and size ranges relate to the way in which product is sold across different departments within each market. Although this means that ages/sizes overlap within some of the groupings, this was intentional and has been set up in this way in order to help apply the rule to the whole department.*



measuring dimension of a D-Ring

The chart shows the maximum inside diameter of a D-ring allowed for the following age/size groups:

	-	P-GG	12–36 months	4–10 years	10–16 years
	-	P-GG	12–36 months	4–10 years	10–16 years
	0–12 months	6–18 months	1–2 years	4–10 years	10–16 years
	-	0–18 months	18–48 months	5–15 years	-
	-	0–2 years	3–5 years	6–12 years	13–15 & 16–18 years
	-	0–1½ years	1½ – 7 years	7–13+ years	-
	-	0–24 months	1–3X	4–18 years	-
	-	0–24 months	2–3X	4–6X	7–16
	0–9 months	12–24 months	2T–5T	Girls: 4–6X Boys: 4–7	Girls: 7–16 Boys: 8–18
	0–9 months	0–18 months	1–5 years	4–12 years	9–16 years
Inside diameter	not permitted	not permitted	1.5 cm ½"	2.5 cm 1"	3.75 cm 1½"

## Drawstrings

- The free ends of all drawstring and cords/ties must not be secured with a *knot or equivalent* ie. bead, toggle, pom-pom for childrens clothing.



Lockstitch  
double turn



Heatseal or  
laser cut



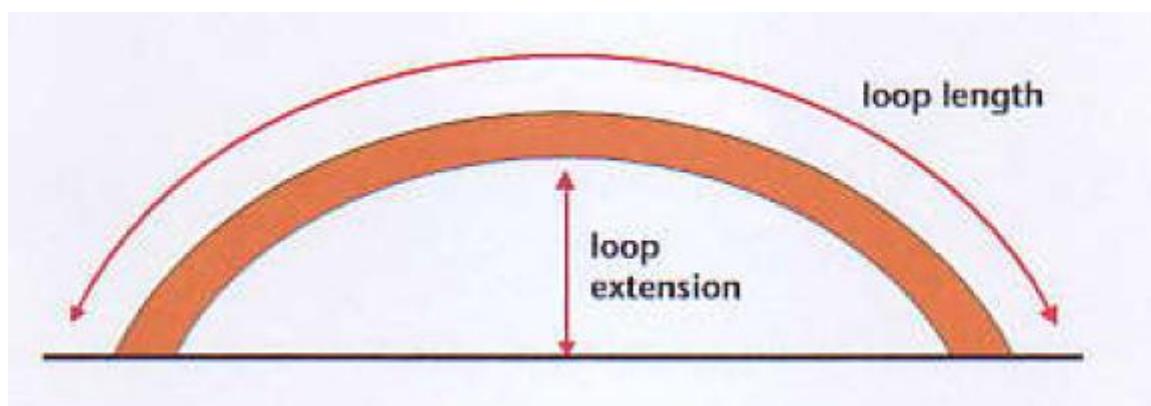
Plastic sleeve



Knot  
(do not use)

## Functional and Decorative Loops

Any Loops must not more than 7.5 cm (3") in total loop length.

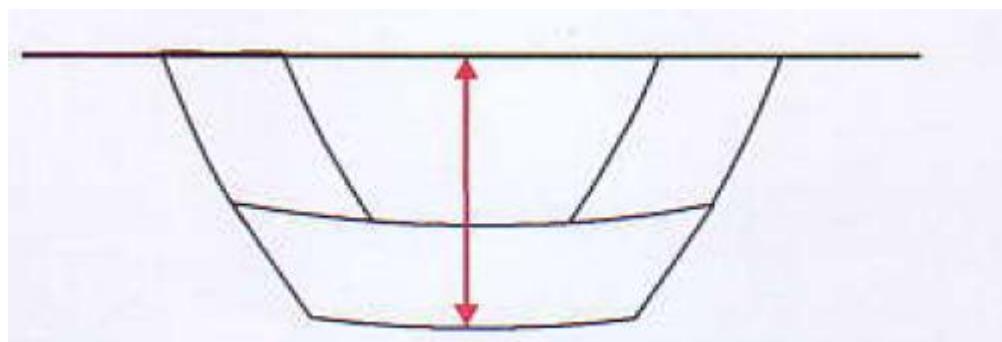


### Belt Loops.



### Back Neck (Locker) Loops

Back neck (locker) loops should be located in Centre back neck and positioned at the inside of garment only.



## Critical Defects

Any defect that poses a potential safety hazard to consumers will be classified as a critical defect (e.g., embedded objects, loose rivets, snaps, buttons, zipper slider, etc.).



**Leg Out**



**Leg Under**

Figure 8-Ch-3 the Two Most Common Defects

## Zipper Slider Common Defect



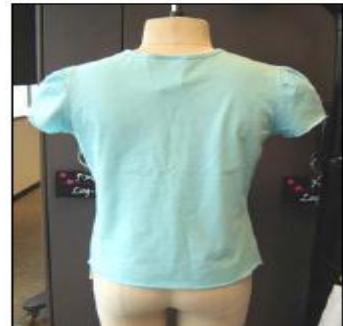
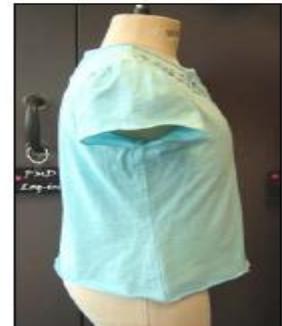
Gap greater than 1/8" between first zipper tooth and waistband bottom stitch line may allow slider to become detached.



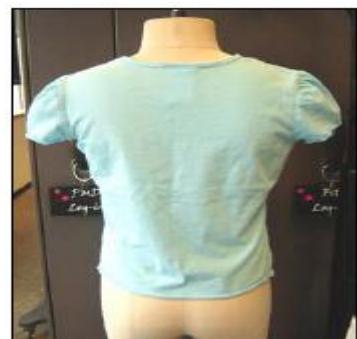
A zipper stop should be applied to one of the zipper sides that has excessive gap (greater than 1/8" between first zipper tooth and waistband bottom stitch line).

### Testing of Fabric before cutting Begins

**Shrinkage**  
Size 8 – Before washing



**Shrinkage**  
Size 8 – After washing



### Skew (caused by improper knitting/finishing process)

127357 Men's Holiday 3-Pk SS Tee Shirt  
Size M, fit 54/05

Fabric is very skewed, causing fit problems:  
 - Sides are overlapping  
 - pulling at underarm area  
 Please maintain fabric skew < 5%.



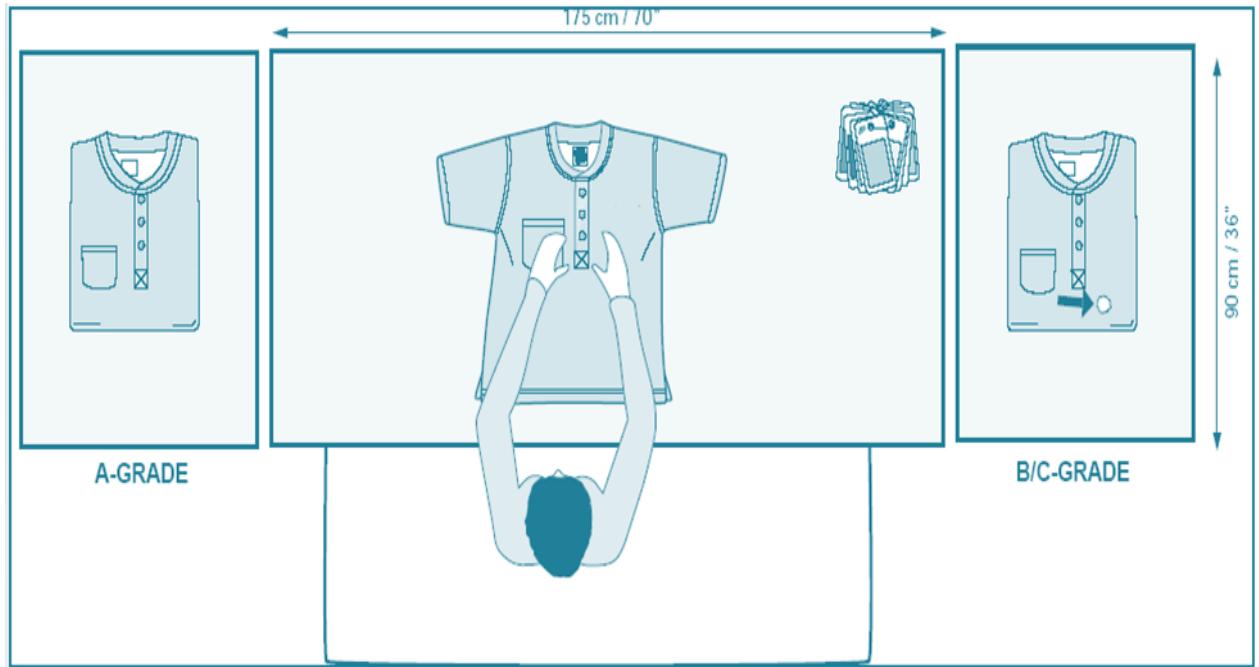
127357 Men's Holiday 3-Pk SS Tee Shirt  
Size M, fit 54/05

costing/fit fit submit



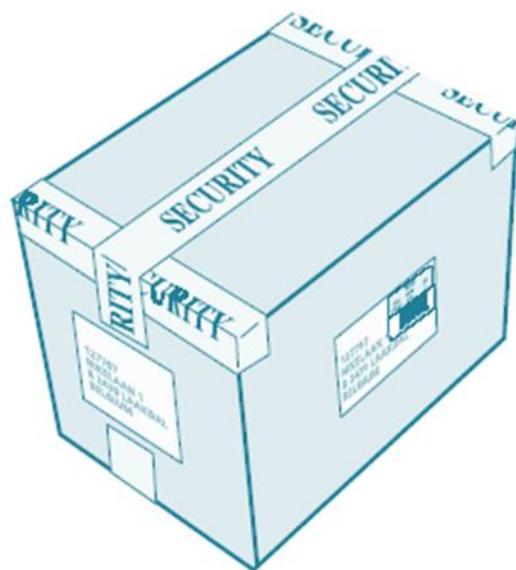
## Audit Work Area

The work area should be well organized at all times Environment-clean Dry and quiet.



## Checking packing and leveling

Carton must be: Properly Sealed.



Carton must not be.

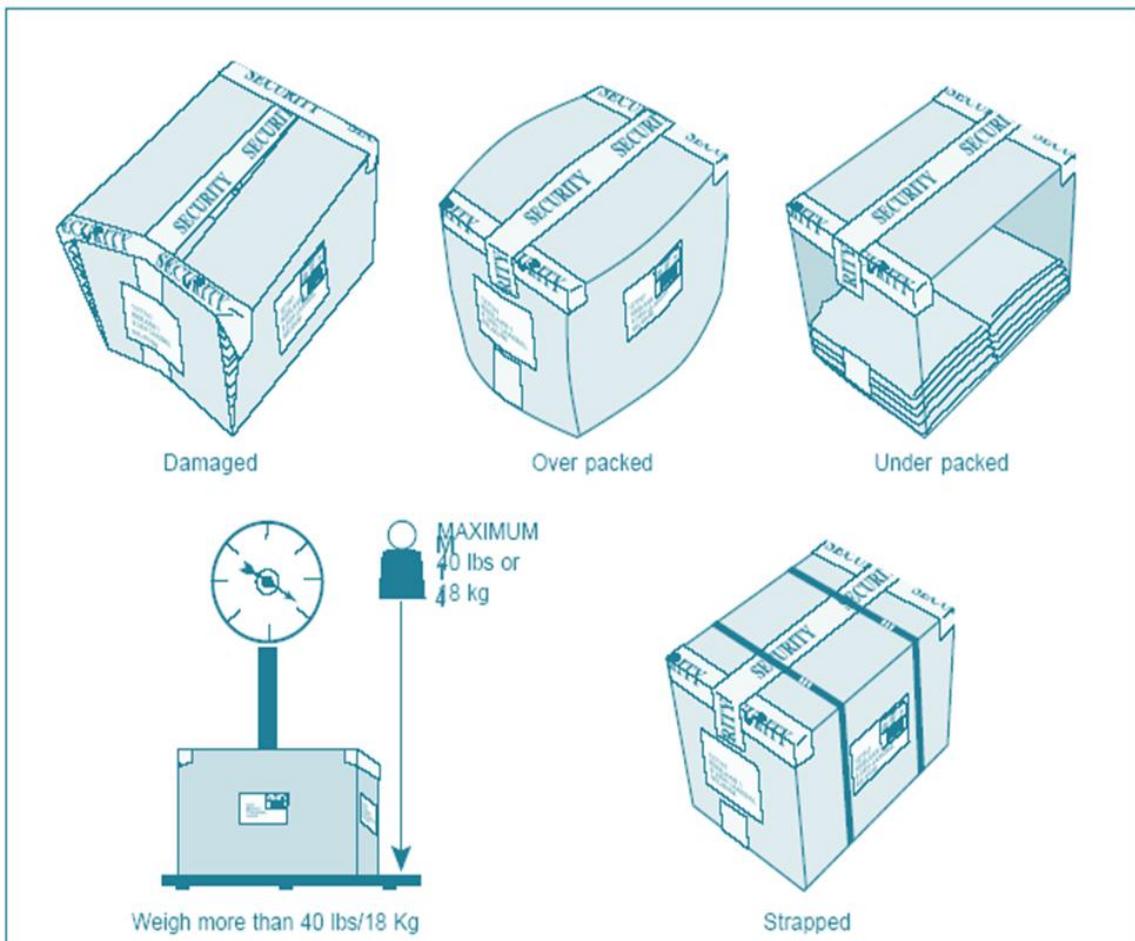


Table 14-Ch-3 Labels should be against the Purchase Order Information.

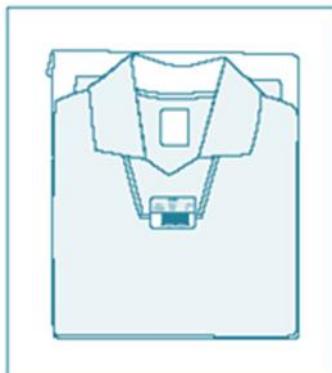
Style/Color	UPC Sticker
Size	Country of Origin
Purchase Order Number	Final Destination(Address only)
Quantity	Carton Number

## Polybag

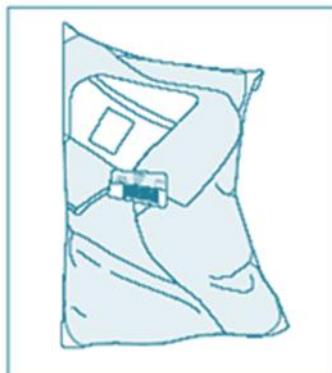
Polybag must have a suffocation warning and recycle symbol.



Polybag must be the correct Size for the folded article, check one carton per SKU (style size Color), and note any discrepancies or defects on the Audit form.



Polybag correct size



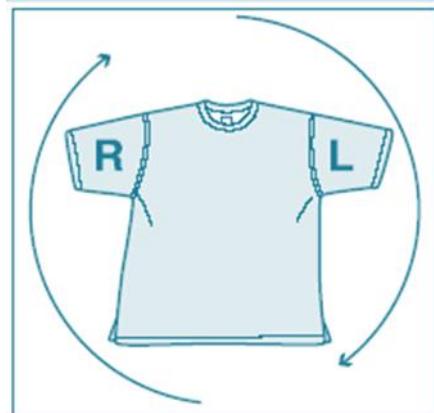
Polybag, size too small



Polybag, size too big

**Inspection method.-Knit Top**

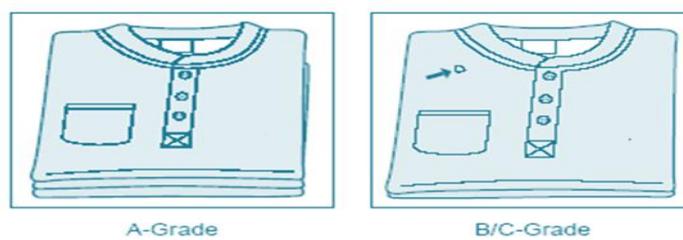
Inspect articles in a clockwise direction. All references to right and left are as worn and not as viewed.



Examine all seams by applying form, consistent tension to either side of the seam.



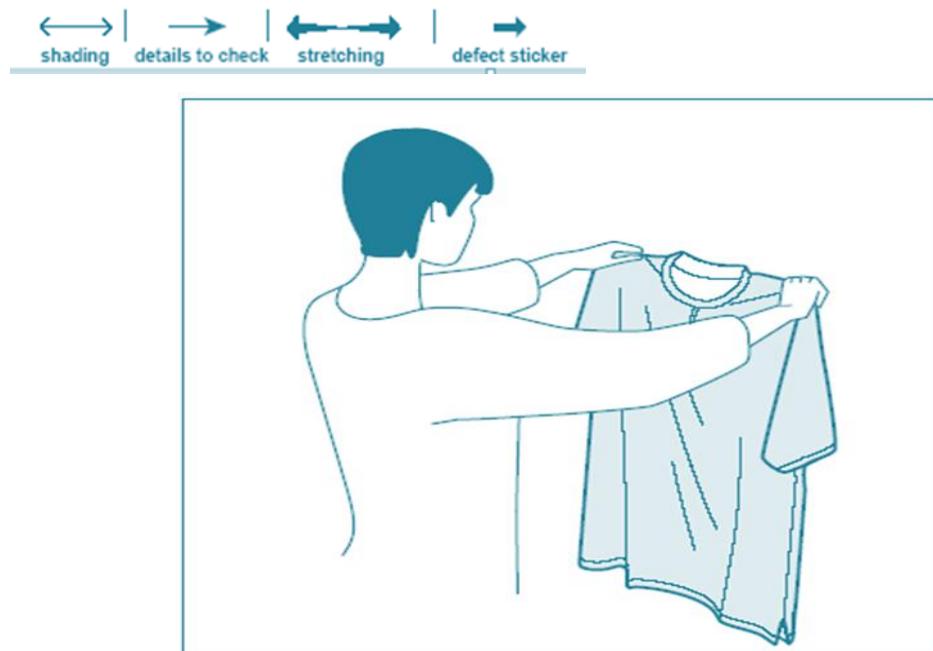
All major Defects should be marked with a sticker and placed to one side.



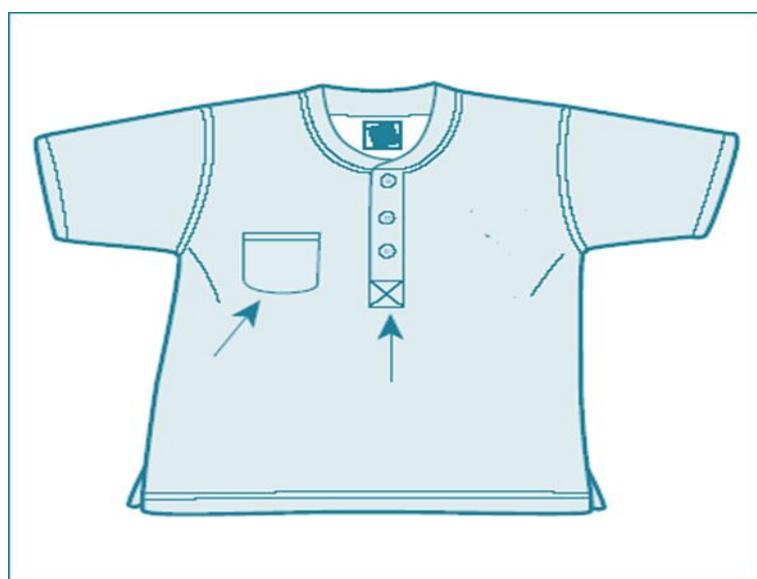
### Knit Top Inspection

Pick up shoulder Points. Check appearance and presentation are correct front and back.

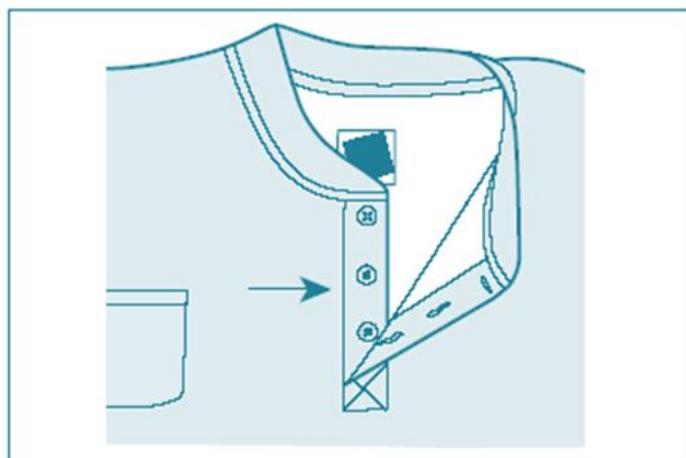
Refer:



Lie flat on table. Examine Styling details.



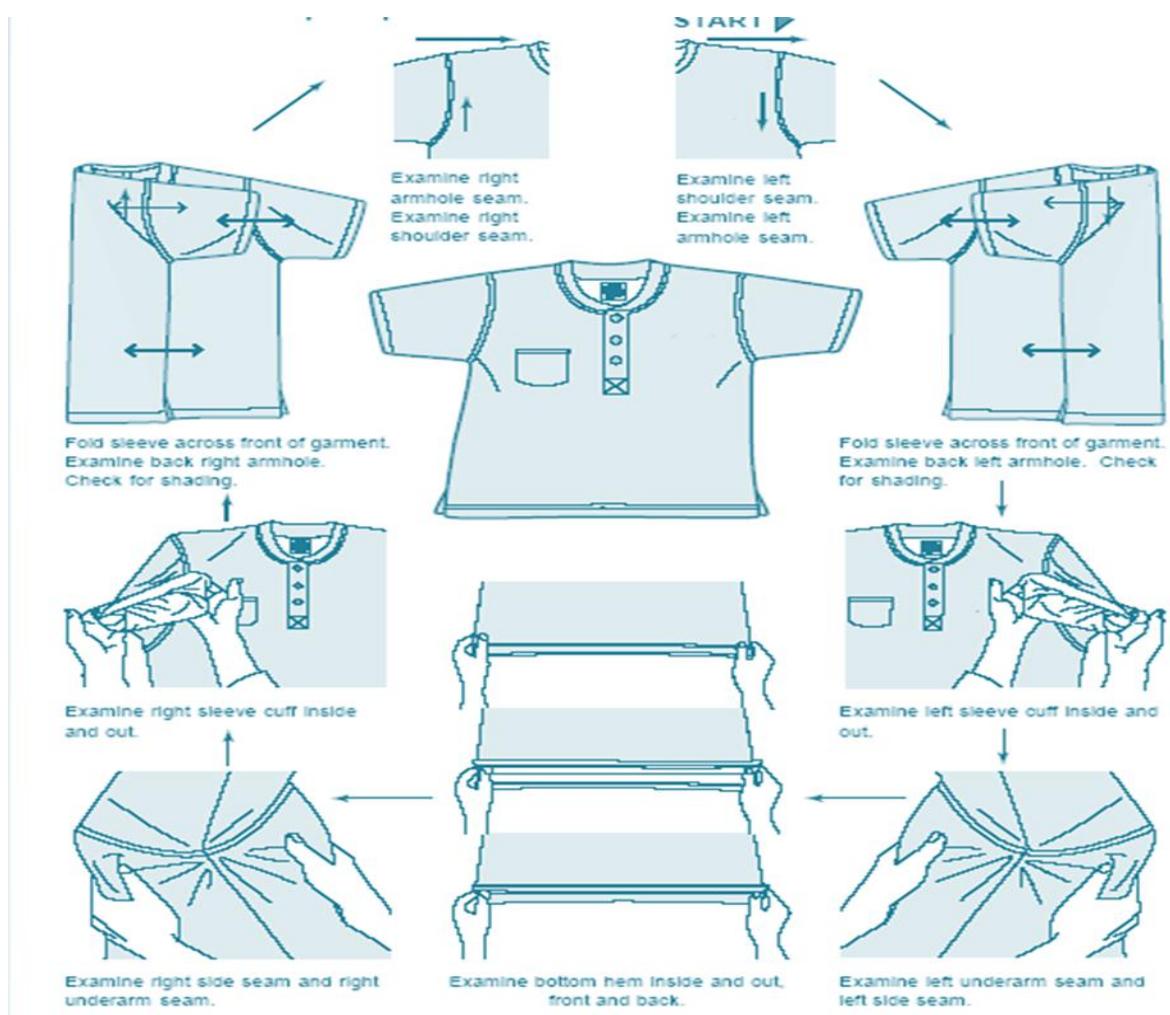
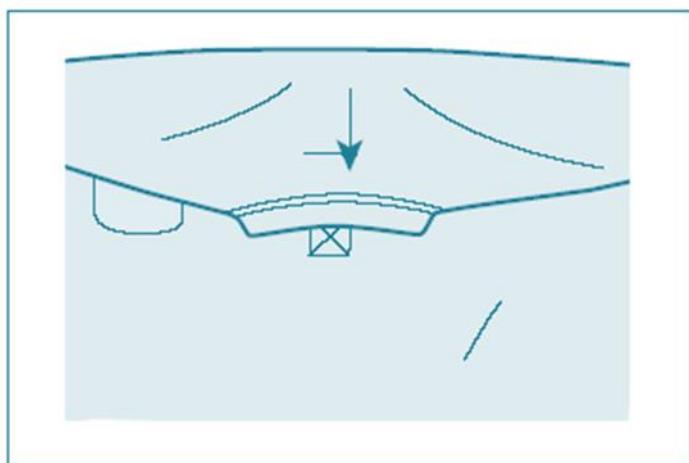
Open and check any center front opening



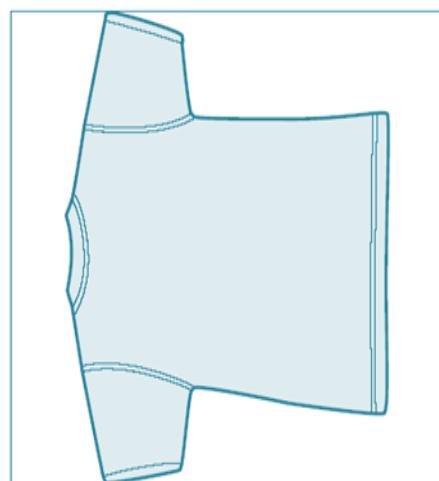
Examine outside and inside of collar/neck. Examine inside shoulder seam.



Fold top Forward at shoulders. Examine back neck.



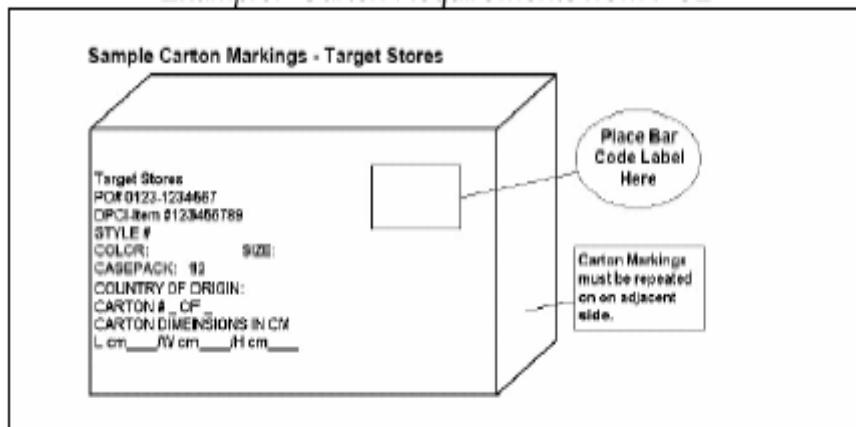
Turn Garment Over, Examine styling details and any unchecked seams on back.



Proper packing of Assortment Items

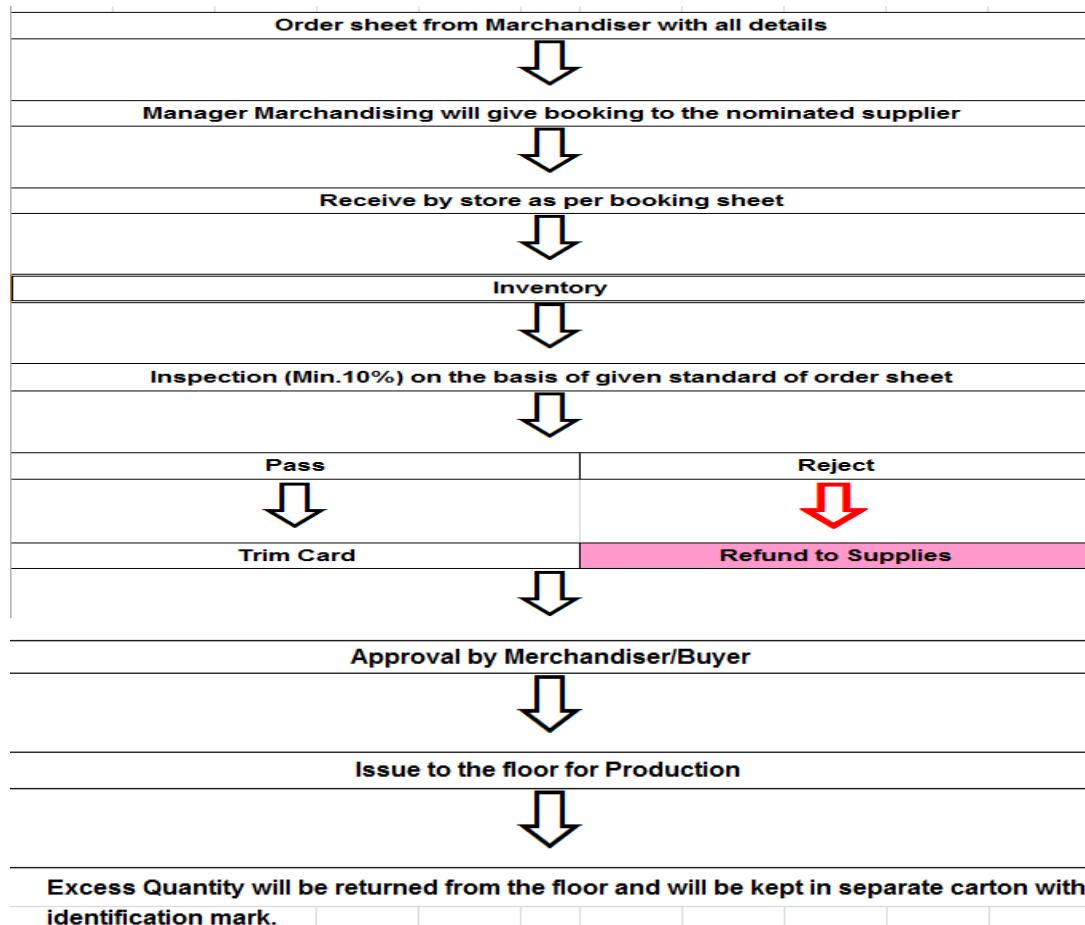
*Example: Correct Anchor*





### Proper Storage of Access Quantity Materials

After Production there is no proper storage or records. Available of the goods for excess quantity .it should be Stored properly. For Understanding excess quantity Refer below flow diagram.



## Suggestions

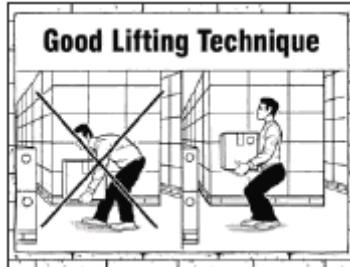
### 1. Displaying Line Sample and Pattern

This helps workers to see what the finished product should look like and to understand what the design, dimensions and quality of the finished product need to be.



### 2. Educational Posters

It is useful for garment factories include posters on lifting postures, proper mask wearing and reproductive health.



### 3. Emergency Plans and Equipment

Proper Training of Crucial emergency elements like alarms, evacuation plans, emergency lights and gathering areas.

### 4. Entrance Gate(clean with Company logo)

### 5. Establishing a Library

### 6. Use of Personal Protective Equipment

### 7. Provision of Cold Drinking Water

### 8. To mention the relaxation time on the relaxation fabric racks.

### C. Order Analysis

The order analysis has been done as follows

- Factory price analysis of Various Yarn, knitting
- Understanding of calculations in Merchandising
- Basic Understanding of Problems and their solutions

Market price analysis of Various Yarn, knitting price

Yarn Price List

Table 15-Ch-3 Cotton Yarn Price list

Yarn Count	Carded	Combed	Slub Yarn
40/1	4.25	4.65	4.90
36/1	4.05	4.45	4.70
34/1	3.95	4.35	4.60
32/1	3.85	4.25	4.50
30/1	3.75	4.15	4.40
28/1	3.75	4.15	4.40
26/1	3.70	4.10	4.35
24/1	3.70	4.10	4.35
22/1	3.65	4.05	4.30
20/1	3.65	4.05	4.30

Table 16-Ch-3 Blended yarn price (Polyester cotton)

Yarn Count	PC	CVC	
	65% Polyester 35% Cotton	60% Cotton 40% Polyester	80% Polyester 20% Cotton
40/1	4.00	4.10	4.25
36/1	3.80	3.90	4.05
34/1	3.70	3.80	3.95
32/1	3.60	3.70	3.85
30/1	3.65	3.70	3.75
28/1	3.50	3.60	3.75
26/1	3.45	3.55	3.70
24/1	3.45	3.55	3.70
22/1	3.40	3.50	3.65
20/1	3.40	3.50	3.65

Table 17-Ch-3 Mélange (Cotton Viscose)

Yarn Count	Grey Mélange		Ecru Mélange(lighter)
	90% Cotton 10% Viscose	85% Cotton 15% Viscose	98% Cotton 02% Viscose
40/1	4.55	4.55	4.55
36/1	4.35	4.35	4.35
34/1	4.25	4.25	4.25
32/1	4.15	4.15	4.15
30/1	4.05	4.15	4.05
28/1	4.05	4.15	4.05
26/1	4.00	4.10	4.00
24/1	4.00	4.10	4.00
22/1	3.95	4.00	3.95
20/1	3.95	4.00	3.95

Table 18-Ch-3 Knitting price of circular knit fabric

Fabric Type	Machine Gauge	Yarn Count	Knitting charge Per Kg in Taka
Single Jersey (M/C Dia 19-38)	24	20/s-30/s	10
Single Jersey	28	26/s-30/s	12
Single Jersey	24	34/s-40/s	14-16
Single Jersey Slub Yarn	24		12
Single Jersey Slub Yarn	20		18-20
S/J D/Yarn F/ Stripe(M/C Dia 18-40)	24		20-30
S/J D/Yarn F/ Stripe(M/C Dia 42-48)	24		28-30
S/J D/Yarn F/ Stripe(M/C Dia 18-40)	20		25-30
Heavy Jersey (2 ply)	20	40/2-26/2	15-18
Half Feeder Lycra S/Jersey	24	30/s-40/s	22-24
H.F.Lycra S/J Yarn Dyed Stripe (M/C Dia 18-40)	24		25-30
H.F.Lycra S/J Yarn Dyed Stripe (M/C Dia 42-48)	24		30-35
Full Feeder Lycra S/Jersey	24/28	30/s-34/s	28
Full Feeder Lycra S/Jersey	24/28	36/s-40/s	30
F.F.Lycra S/J Yarn Dyed Stripe (M/C Dia 18-40)	24		35-40
F.F.Lycra S/J Yarn Dyed Stripe (M/C Dia 42-48)	24		48-50
P.K / Lacost	24	30/s-24/s	15
P.K / Lacost	20	30/s-20/s	16
P.K / Lacost	28	34/s-26/s	18
P.K F/Stripe (M/C Dia 18-40)	24		25-30
P.K F/Stripe (M/C Dia 18-40)	20		30-35

P.K F/Stripe (M/C Dia 42-48)	24		30-40
P.K F/Stripe (M/C Dia 42-48)	20		45-50
1X1 Normal RIB	18	30/s-20/s	15
1X1 Normal RIB	18	32/s-36/s	18
Yarn Dyed (1X1) Stripe Rib	18	30/s-20/s	25-30
Lycra RIB (Half Feeder)	18	30/s-26/s	25-30
Lycra RIB (Full Feeder)	18	30/s-40/s	35-40
(2X1) RIB	18	30/s-20/s	20-22
(2X2) RIB	18	30/s-20/s	28-30
(2X1) H. Feeder Lycra Rib	18	30/s-24/s	30
(2X1) H. Feeder Lycra Rib	18	30/s-24/s	30
Plain Interlock	22/24	UP TO 32/s	18
Plain Interlock	22/24	34/s-40/s	20
Plain Interlock	28	40/s-50/s	28-36
Interlock Feeder Stripe	24		25-30
Interlock H.F Ly. Attachment	24		35-40
Interlock D / Needle	24	30/s-40/s	25-30
Mash/Flat Back Rib			30-35
Three Thread Fleece (French Terry)			20
Cross Terry			20-22
Three Thread Lycra Fleece ( French Terry)			30-35
Two Thread Fleece			20-22
Two Thread Lycra Terry			35-40
Engineering Stripe (4 Color) S/J	24		100-110
Engineering Stripe (6 Color) S/J	24		120-130
Engineering Stripe 2Ply	20		130-150
Engineering Stripe 2Ply	16		160-170
Engineering Stripe (4 Color) P.K/Lacost	24		120-125
Engineering Stripe (6 Color) P.K/Lacost	24		130-140
Eng. Stripe (4&6 Color) (H/ Feeder Lycra	24		180-200

S/J.P.K)			
Eng. Stripe (4&6 Color) (F/ Feeder Lycra S/J.P.K)	24		180-200
Eng. Stripe Flat Back Rib			300
Eng. Stripe Terry	24/20		180-220
Engineering Stripe (6 Color) RIB			170-180
Engineering Stripe (6 Color) Interlock			180-190
Engineering Stripe (6 Color) Lycra RIB / Interlock			250-300
Engineering Stripe 2X1 F. Feeder Lycra Rib			300-320
Engineering Stripe 2X1 H. Feeder Lycra Rib			350-300
Pointal Rib (Normal)			70-100

Price break down of Fleece Fabric

Fabric composition: 100% cotton, comb

GSM: 240/245

Quality: One side brushed 3 thread fleeces

For this 3 thread fleece we will need 02 type of yarn count, 34/S in two needles & 20/S in one needle.

Find below costing details in a table

Table 19 -Ch-3 Price break down of Fleece Fabric

Yarn count	Yarn price	% of yarn	Yarn Cost	Total yarn cost	Knitting cost/kg	Dyeing cost /kg	Brushing Cost/kg	Enzyme cost/kg	Fabric price /kg	Process loss	Finished fabric
34/s	\$5.20	35	\$1.82	\$4.84	\$0.30	\$1.50	\$0.15	\$0.08	\$7.23	\$1.08	\$8.31
34/s	\$5.20	35	\$1.82								
20/s	\$4.00	30	\$1.20								

From the above table now we know if the yarn & others price remain as above then the making cost of per (each) kg fleece fabric will be \$8.31

Specimen local price list

Accessories

Hanger : 1.65-2.50 dollar

Papers hang tag : 10 cent-1 dollar.

Price tag : 10 cent-60 cent

Poly bag : 30cent-1dollar (Depending on size & thickness)

Carton : 2.5 - 3 dollar

(Note: price is varying according to market price)

## Trims

Sewing thread : 85 cent - \$1.5 (per cone)

Button : \$12-\$20/gg

Rivet : 80 cents-1.5 dollar/grows

Hole button/chock button: 6 dollar- 8 dollar/gg (1728pcs=1gg; greater grows)

Zipper : 1.20dollar-3.50dollar/dozen (pant)

7 dollar-12 dollar (jacket)

(Note: the price depend on the basis of zipper quality that is cotton, nylon, polyester etc)

## Understanding of Calculations in Merchandising

a.Calculate the Cost of making (CM) of a Garment.

Cost of making (CM)

= {(Monthly total expenditure of the following factory / (No of Days of working month)) / (Quantity of running Machine of your factory of the following month) X (Number of machine to complete the layout)} / [{(Production capacity per hour from the existing layout, excluding alter & reject) X 8(hours)}] X 12(Dozen) / (Dollar conversion rate)

\$amount / dozen (this is the making cost (12 pcs) of the following items)

Practical Calculation

At present Production Cost= \$18/Machine

(Decided by Management, based on Price produce per day)

Let For an order machine used =24

Output per day=800 Pcs

Then Cost= (No of machine X \$18)/Output per day

$$= (24 \times 18) / 800 = \$0.52 \text{ per piece.}$$

Extra calculations=Till 50000 pcs (5% Extra), Above 50000(3%Extra)

b. Calculate the consumption of knit garments during the consumption used measurement of middle size for calculation or used the size which has most of the quantity.

- Body length of the garments in cm.
- Sleeve length of the garments in cm.
- Approximate sewing allowance at body hem, shoulder joint, sleeve hem & armhole joint (in cm).
- Chest width (1/2) in cm.
- Approximate sewing allowance at both side seams (in cm).
- Fabric GSM (finish).
- Approximate fabric wastage in various stages.

#### Rules

$$\{(B/\text{length} + S/\text{length} + \text{Sewing Allowance}) \times (\text{Chest} + \text{Sewing Allowance})\} \\ \times 2 \times \text{GSM} \times 12 / 10000000 + \text{Wastage}$$

Note: We multiply with  $10^7$  to convert GSM In to Kg and meter to Centimeter.

Additional addition By Company (For 100% Cotton 180gsm T-shirt)

Rejections=5%

Cutting Waste=3%

Process loss Till Dyeing=14%

c. Calculate the Price of a Carton.

Information needed

- Carton length, width, height in cm of your expected carton.
- Rate of per square meter liner in US\$.

In this regards please note that, in present market the liner rate is +/- \$0.75 to \$0.83 which may change any time. Also it is depend on the liner quality.

Example

The length of carton is = 60

The width of carton is = 40

The height of carton is = 30

Price for 7 ply liner rate = \$0.80/ Sqm (square meter)

Carton cost calculation rule

$$= [ \{ (Length + width + allowance) \times (Width + Height + allowance) \} \times 2 ] / 10000 \times$$

Per square liner rate

$$= [ \{ (60 + 40 + 6) \times (40 + 30 + 4) \} \times 2 ] / 10000 \times \$0.80$$

$$= [ \{ (106) \times (74) \} \times 2 ] / 10000 \times \$0.80$$

$$= \{ (7844 \times 2) \} / 10000 \times \$0.80$$

$$= 15688 / 10000 \times \$0.80$$

$$= 1.5688 \times \$0.80$$

$$= \$1.25504 / pc \text{ (Per carton rate)}$$

Note:

Rate for      7 PLY = .55 USD [For GMTS Export Natural 7 Ply Used]

                  5 PLY = .39 USD (.55X 5/7) (Less Weight Master Carton)

                  3 PLY = .23 USD (It is used as inner carton)

Sometime some buyer wants top & bottom inside in the carton. It should be in 3 Ply..

Carton is tested by carton bursting machine.

d. Applique consumption for knit garments.

Applique length = 25 cm

Applique width = 15 cm

Fabric Gsm = 160

Rules:

Length X Width X GSM X 12 / 10000000 + Wastage

= 25 X 15 X 160 X 12 / 10000000 + 25%

= 0.09 kg per dozen (consumption of the applique)

e. Calculate of embroidery thread consumption.

Number of Garments Qty – 10,000 pcs

Stitch qty in the followings embroidery design – 4,500 (stitch)

type of stitch – Satin

Length of thread in the cones – 3,000 meter

Stitch length – 6 mm or 7 mm (It's depend on stitch type, but don't worry because normally it will be 6 or 7, so use any one without any hesitation, for sating type stitch it will be 7 mm & 6 mm for tatami)

Rules:

= Number of Garments quantity X Number of stitch X 7(Stitch length) / 1000 (for converting to meter of Stitch length) / meter per cone.

$$= 10,000 \times 4,500 \times 7 / 1,000 / 3,000$$

$$= 315,000 / 3,000$$

= 105 cones (Regarding the wastage, please note that, the stitching of embroidery totally operate by machine and practically found the wastage is below 1%, however for safety you can booked 1% more thread for production.)

So, we will purchase 105 cones thread for complete the 10,000 pcs garments

#### f. Estimating Thread Consumption

- Measure the actual amount of thread consumed in a specific length of seam.
- Calculate the thread consumption using thread consumption estimates.

Measure the actual amount of thread consumed in a specific length of seam.

A specified length of the seam, for example 3 inches, is measured on the seam and then the thread is removed by carefully unraveling the stitch. You can then calculate the amount of thread consumed in one inch and multiply this factor times the total length of the seam measured in inches.

Example:

Length of seam is 42 inches or 1.17 yards.

Stitch and seam construction: 401 SSa-1.

Specified length of thread removed from a seam equals 3 inches.

Needle thread removed = 9 inches

Looper thread removed = 8 inches

Calculation:

Needle thread factor = 9 , 3 = 3 inches of needle thread per inch of seam.

Looper thread factor = 8 , 3 = 2.67 inches of looper thread per inch of seam.

Total needle thread consumed = factor 3 X 1.17yds = 3.51 yds

Total looper thread consumed = factor 2.67 X 1.17yds = 3.12 yds

Total Thread = 3.51 + 3.12 = 6.63 yards per seam.

Generally, a 15 to 20% waste factor is added due to chaining-off, thread breaks,repairs, etc.

If a waste factor of 15% is selected then: 6.63 yards/seam X 1.15 = 7.62 yards/seam including 15% waste factor.

Obviously, you must do this for each seam to determine the total amount of thread consumed in the finished product.

#### g. Estimating Thread Cost

The thread cost can be estimated by multiplying the thread consumed times the cost of thread in the same units. For example:

Men's Dress Shirt thread consumption with 25% waste factor = 131 yds.

Average Cost of T-24 Poly Wrapped Core Thread = \$4.50 / 6000 yard cone.

Cost per yard = \$4.50 / 6000 = \$.00075/yard

Calculation: 131 yds./shirt X \$.00075/yard = \$.09825/shirt

#### h. Price Break Down For Polo Shirt

Description: 100% cotton pique polo shirt with two buttons at front placket w/o any pocket.

At first calculate the consumption of body fabric from Size spec

i) The body fabric consumption is 4.05 kg / dozen

So, total yarn consumption will be =  $4.05 + 9\%$

$$= 4.05 + 0.3645$$

$$= 4.41 \text{ kg / dozen}$$

ii) The current yarn price is \$4.00/kg

iii) The current Pique knitting cost is \$0.20/kg (Knitted by circular knit S/J M/c)

iv) Average color dyeing cost is \$1.21 / kg

v) Normally Collar & cuff consumption is 60 gram/body

(1 pc collar & 2 pcs cuff)

So,

for 12 pcs it will be -  $0.06 \times 12 + 9\% = 0.78 \text{ kg / dozen}$

vi) Collar & cuff Knitting cost is \$0.05 (knitted by flat knitting m/c)

Now start costing

1st step

Body fabric cost calculation:

Yarn price / kg = \$4.00

Knitting cost /kg = \$0.20

Dyeing cost / kg = \$1.21

Finished fabric cost = \$5.41

2nd Step

Collar & cuff cost calculation:

Yarn cost/Doz =  $0.78 \times \$4.00 = \$3.12$

Knitting cost/Doz =  $\$0.05 \times 12 = \$0.60$

Dyeing cost =  $0.78 \times \$1.21 = \$0.94$

Collar & Cuff cost / Doz = \$4.66

3rd Step

Total production cost:

Body fabric cost ( 4.41 kg X \$5.41) = \$23.86 / Doz

Collar & Cuff cost = \$4.66 / Doz

CM = \$6.00 / Doz

Accessories Cost = \$3.00 / Doz

Total production cost: = \$37.52 / doz

### Final Step

Fob pricing of per piece polo shirt:

Total production cost: = \$37.52 / doz

Commercial cost will be (3%) = \$0.95 / doz (Except CM)

Profit will (20% of CM) = \$1.20 / doz

---

Total FOB price (doz) = \$39.67 / doz

Fob price per piece will be = \$3.3058 / pc

Final quoted price for buyer = \$3.35 / pc (FOB)

i. Calculate the yarn consumption of a Yarn dyed t-shirt for booking the yarn for bulk dyeing.

Details of T-shirt:

Style: 100% cotton, Single jersey, 160 GSM yarn dyed round neck t-shirt.

Color: Beige/Navy (only one combo)

Quantity: 10,000 pcs (in four sizes, S, M, L & XL)

Stripe: Beige 7 cm & Navy 1.5 cm (Total 8.5 cm)

Body length: 73 cm

Sleeve length: 19.5 cm

½ Chests: 52 cm



Consumption: 2.78 kgs/dozen (considering total wastage 18%) you may use this for pricing. Normally the wastage of yarn dyed garments depends on styling.

Normal wastage for yarn dyed:

Dyeing (yarn) wastage: 6%

Knitting wastage: 3%

Wash wastage: 5%

So, you should need 116 kgs yarn to produce 100 kgs fabric

during the bulk yarn booking you should booked the yarn based on the consumption you got by using pattern & marker. Some time I saw buyer asked for match the body stripe with sleeve then the cutting wastage become more than 5%.

We know the body length is 73 cm

Where, beige color stripe is 7 cm

And Navy color stripe is 1.5 cm

Then total length of one repetition is 8.5 cm

So, we need total  $(73/8.5) = 8.58824$  repletion to complete a body (but here we will count 9 repetition for cutting & sewing wastage.)

So, total sum of Navy stripe will be  $(1.5 \text{ cm} \times 8.58824) = 12.8824 \text{ cm}$

And total sum of Beige color stripe will be  $(7 \text{ cm} \times 8.58824) = 60.1177 \text{ cm}$

So,  $12.8824 \text{ cm} + 60.1177 \text{ cm} = 73 \text{ cm}$  (total body length)

Now we just calculate the percentage of each color in a body

Navy color percentage in the body will be

$$= (12.8824 \div 73) \times 100$$

$$= 17.65 \%$$

$$= (60.1177 \div 73) \times 100\%$$

$$= 82.35 \%$$

$$= 17.65 + 82.35$$

$$= 100 \%$$

So, now if the consumption is 2.78 kg

Then

Navy color will be  $= 0.49067 \text{ kg}$   $(2.78 \text{ kg} \times 17.65\%)$

And Beige color will be  $= 2.28933 \text{ kg}$   $(2.78 \text{ kg} \times 82.35\%)$

In this above way we can booked the yarn

J. Calculate the Zipper Length-front long zipper of sweat shirt or Jacket

A) If the garments is hooded sweat shirt and the zipper goes up to front neck drop from bottom then the rules will as under

Body length (From CB) - 71 cm

Front Neck drop(CB) - 8 cm

(Use the below rule if the body length measure from CB)

Rules : (Body length - Front neck drop ) - 2% to 3%

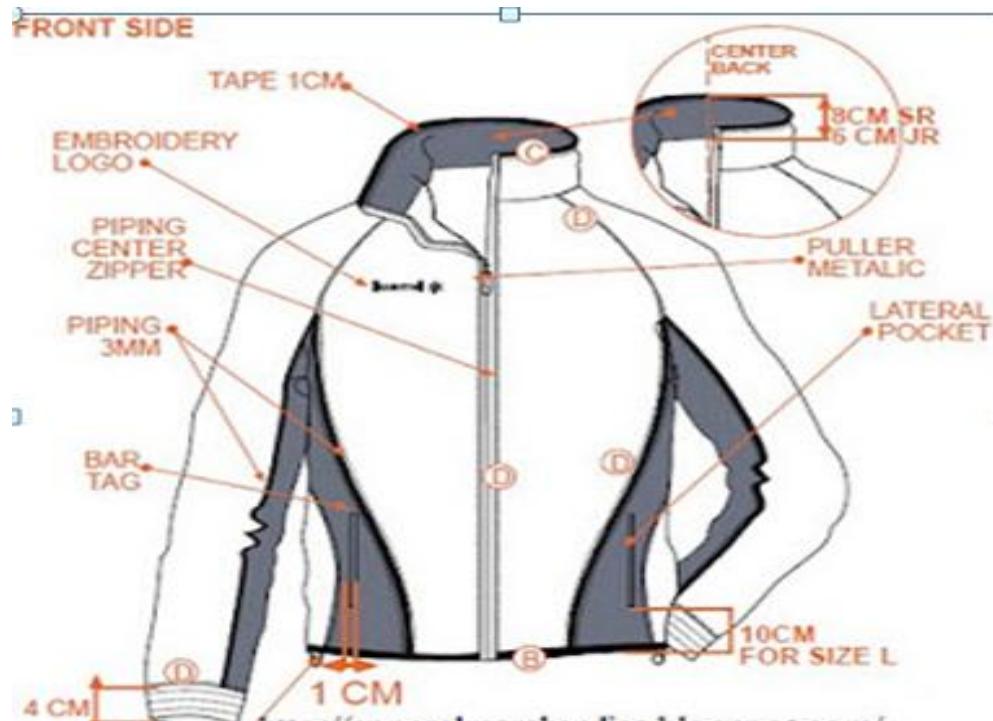
$$= ( 71 - 8 ) - 2\%$$

$$= ( 71 - 8 ) - 2\%$$

$$= 63 - 2\%$$

$$= 61.5 \text{ cm}$$

B) If the garments is high neck and the zipper goes up to of high neck drop from bottom then the rules will as under -



Say,

Body length (From CB) - 65 cm

Front Neck drop - 6 cm

Height of high neck - 6 cm

Rules : (Body length - Front neck drop) - 2% to 3% + Height of high neck

$$\begin{aligned} &= (65 - 6) - 2\% + 6 \\ &= (59) - 2\% + 6 \\ &= 57.82 + 6 \\ &= 63.82 \text{ cm} = 64 \text{ cm} \end{aligned}$$

Moreover, the rules is not always remain fixed, it may vary depends on practical situations.

Conversion Formula Used in Merchandising.

K. Calculate yarn length, count & weight.

Length (in yards) = Count \*840 \*weight of yarn in pound

Count = Length / weight of yarn in pounds\*840

Weight of yarn = length/count \*840

L. Calculate button ligne from mm

If Button length (dia) is 12.7 mm

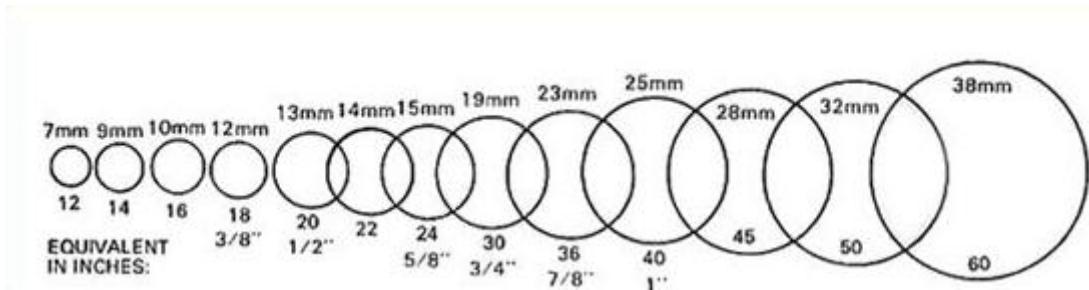
Calculate Button ligne

Rule

Button dia (in mm) / 0.635 = button ligne

12.7 mm / 0.635 = 20 L (L = ligne )

Result = 20 L



#### M. Calculations of Yards from kgs: (in knit fabric)

Fabric GSM - 140

Fabric width - 45"

Fabric Weight - 0.49181 kg

#### Rules:

Fabric length = Fabric weight / ( Fab width X Fab GSM /1550 / 1000)

Fabric length =  $0.49181 / (6300 / 1550 / 1000)$

Fabric length =  $0.49181 / 0.00406451612$

Fabric length = 121" (where the fab width is 45" open)

Fabric length = 3.3611 yards (121/36")

## N. Calculation of GSM

GSM means the weight in gram per square meter of fabric. GSM is a very important parameter for specified a certain quality of knitted fabric. The production of knitted fabric is calculated in weight. The GSM cutter is very popular and easy usable GSM testing instrument used in most knitted factory. But the construction of this cutter is very simple. It is circular disk of 100 square cm area with sharp blade attached to its edge. So 100 square cm of fabric can easily cut by it and weighted at the electric balance to get GSM reading.

$$\text{GSM} = (\text{WPI} \times \text{CPI} \times \text{SL(mm)}) / \text{Count(Ne)} \times 0.9155$$

### Calculation of Wales Per Inch (WPI)

We calculated the number of Wales in 10 inch fabric unraveling the yarn. Then we divide the no of total Wales by 10 inch to getting the Wales per inch.

### Calculation of Course Per Inch (CPI):

We calculated the number of course in five inch with the help of counting glass and needle. Then we divide the total no of course by five inch to getting the course per inch.

### Measurement Of Stitch Length (SL mm):

Stitch length is theoretically a single length of yarn which includes one needle loop and adjacent needle loops on either side of it. Loop exists in course in course length and it is that which influence fabric dimension and other properties including weight. In order to determine the stitch length, we count 100 no Wales or stitch and count its length by hanging the yarn on the stitch counter. The reading is found in mm unit.

### Measurement of Yarn Count:

At first we unravel a considerable no yarn from the fabric. Then we measured the total length of the yarn and measured the weight of that no of yarn. From these weights, we find out the count of the yarn.

The equation we followed is as follow:

$$\text{Count} = (\text{N} \times \text{L} \times 453.6) / \text{Wt} \times 36 \times 840$$

Where,

N = number of yarn in bundle.

L = length of yarn.

Wt = weight of yarn.

#### O. Calculate GSM (w/o machine)

Calculate GSM from the data given

Total Weight of fabric = 15.5 Kgs

Length of fabric = 35 meters

Width of fabric in open form = 65 inches

First we will calculate area of the fabric

Fabric length = 35 meters

Fabric width = 65 inches or 1.65 meters

Fabric area = Length \* width

$$= 35 * 1.65$$

$$= 57.75 \text{ meters square}$$

Weight of 57.75 Meter square is 15.5 kgs or 15500 grams

So weight of one square meter

$$= 15500 / 57.75$$

= 268.39 grams per meter square of GSM of the fabric

#### P. Calculate weight of fabric

Calculate weight of fabric from the given data.

Fabric GSM=300

Width of fabric= 35 inches (in tubular form)

Length of fabric= 20 meters

First we will calculate area of the fabric

Area of fabric = Fabric length \* fabric width

$$= 20 * 35 * 2 \text{ (since fabric is in tubular)}$$

Note: 1meter=39.37 inches

= 35.6 meter square

Weight of one meter square is = 300 (GSM)

And weight of 35.6 meter square =  $300 \times 35.6$

= 10680 grams or 10.680 Kgs

Q. Convert 250 GSM (grams per square meter) into OSY (ounces per square yard) sign.

Convert 250 GSM (grams per square meter) into OSY (ounces per square yard)

It means weight of one meter square is 250 grams or

Weight of one square meter is 8.93 ounces (28 grams are equal to one ounce) or

Weight of 1.196 yard square (one meter square is equal to 1.196 yard square) is 8.93

or

Weight of one yard square =  $(8.93 \times 1) / 1.196$

= 7.47 ounces per yard square

## Understanding of Problems and their solutions

### a. Pigment print

Pigment print is done on light color fabric because if we do this print on dark color then the print will be not clear to us, also the background color will show through the print which is not acceptable. This is the main and only one disadvantage of pigment print.

Pigment print has no hand feels like as rubber print. So, many times buyer prefers the pigment prints. So, during the negotiation of any order with buyer if you found any pigment print in the art work then please check the body color also. In the body color if you found any dark color then clarify the buyer about the limitation of this print.

\$1.00 to \$1.50/dozen is enough for a two color chest print. During calculate the pricing of print please consider the number of color not dimension. \$0.50/dz is enough for a one color label print (normally which placed in the inner neck as alternative of main and size label)

b. Relation between Yarn Count, fabric type, Machine Diameter, Stitch Length and Finish GSM

Fabric Description	Yarn count (Approx.)	Stitch line (Approx.)	Grey GSM (Approx.)	Conditions
Single Jersey 130 to 150 GSM Fabric	30/s comb or card	2.65 - 2.90 cm	110 - 120	1 cm = 18/20 Feeder for Single Jersey 1 cm = 28/32 Feeder for Single Lacost, S/Pique 1 cm = 30/34 Feeder for Double Lacost, D/pique
Single Jersey 160 to 170 GSM Fabric	26/s comb or card	2.70 - 2.90 cm	125 - 135	1 cm = 16/18 Feeder for Single Jersey 1 cm = 26/30 Feeder for Single Lacost, S/Pique 1 cm = 28/32 Feeder for Double Lacost, D/pique
Single Jersey 170 to 190 GSM Fabric	24/s comb or card	2.75 - 2.95 cm	135 - 145	1 cm = 16/18 Feeder for Single Jersey 1 cm = 24/28 Feeder for Single Lacost, S/Pique 1 cm = 26/30 Feeder for Double Lacost, D/pique
Single Jersey 190 to 210 GSM Fabric	20/s comb or card	2.90 - 3.20 cm	150 - 165	1 cm = 14/18 Feeder for Single Jersey 1 cm = 22/26 Feeder for Single Lacost, S/Pique 1 cm = 24/28 Feeder for Double Lacost, D/pique
P/Interlock 180 to 210 GSM Fabric	40/s comb or card	1.55 - 1.75 cm	135 - 150	1 cm = 32/36 Feeder

P/interlock 210 GSM to 230 GSM fabric	34/s comb or card	1.65 - 1.85 cm	150 - 170	1 cm = 30/34 Feeder
P/interlock 230 GSM to 250 GSM fabric	30/s comb or card	1.65 - 1.85 cm	170 - 190	1 cm = 28/32 Feeder
1X1 Rib 170 GSM to 190 GSM fabric	30/s comb or card	2.65 - 2.85 cm	125 - 130	1 cm = 17/18 Feeder
1X1 Rib 195 GSM to 225 GSM fabric	26/s comb or card	2.70 - 2.95 cm	140 - 155	1 cm = 16/17 Feeder
1X1 Rib 230 GSM to 250 GSM fabric	24/s comb or card	2.70 - 2.95 cm	160 - 175	1 cm = 16/17 Feeder

### Single Jersey Fabric

Fabric Type	Yarn count	Stitch length (mm)	Color	Machine Dia	Machine Gauge	Finished diameter (inch)	Finished GSM
Plain S/j	18s/1	2.94	White	26	24	30	220-230
Plain S/j	20s/1	2.98	White	30	24	33.5	200-210
Plain S/j	24s/1	2.68	White	30	24	32	175-185
Plain S/j	26s/1	2.66	White	30	24	31	160-170
Plain S/j	28s/1	2.70	Avg	26	24	25	150-160
Plain S/j	30s/1	2.68	Avg	30	24	30	130-140
Plain S/j	34s/1	2.40	Avg	26	24	24	125-135
Plain S/j	40s/1	2.44	Avg	24	24	20	100-110

From the above tables, we can summarize the above data:

For Single Jersey fabric

finished Gsm	Count	Finished Diameter
140	30s/1	Machine dia = Finished dia
160	26s/1	Machine dia +1 = Finished dia
180	24s/1	Machine dia + 2 = Finished dia
200	20s/1	Machine dia + 3 = Finished dia
220	18s/1	Machine dia + 4 = Finished dia

N.B: If the fabric is to be Enzyme washed, the stitch length should be kept (10%) less than the normal range. Because, enzyme wash reduces the total weight of the fabric by removing the floating fiber and hairy fiber.

### C. Careful while SPI Selection

Garments	SPI	Comments	Garments	SPI	Comments
Jersey T-shirts, Tops, Polos	10-12	Using more SPI increases the chance of needle cutting.	Swimwear	12 - 16	The more elastic the seam, the more SPI that should be used to minimize stitch cracking.
Underwear	12-14	The more elastic the seam, the more SPI that should be used to minimize stitch cracking.	Dresses, Skirts	10 - 12	The more elastic the seam, the more SPI that should be used to minimize stitch cracking.
In fantwear	10-12	The more elastic the seam, the more SPI that should be used to minimize stitch cracking.	Intimates	12 - 16	The more elastic the seam, the more SPI that should be used to minimize stitch cracking.
Fleece	10-12	More stitches per inch are required to provide the proper seam coverage on fleece.	Stretch Knits (Lycra®, Spandex®, etc.)	14-18	More stitches per inch are required to provide the proper seam coverage on fleece.

d. Things to be gathered Before Starting Work with a New Buyer/Buying house.-

Based On Observation of Tasneem fashion (Buying House)

- The buyer name & history.
- Final destination or place of delivers the goods.
- Buying house name (if any).
- Payment terms (L/C or TT or Contact).
- If L/c then, the Payment Condition at sight or deferred.
- If deferred then, 60 days or 90 days or any other.
- Price will be in FOB or CIF?
- Is the price will be including buying commission or w/o commission?
- Who will inspect the goods?
- If third party then who will be pay the inspection charge?
- Original art work with styling details or Scan copy must be needed.
- Actual & latest size specs with all the sizes which quantity in purchase order / order sheet.
- Fabrications details (Composition, Type, Gsm, Peach/sweated, Enzyme/silicon or any other additional requirement).
- Additional fabric details (Appliqué etc, if any).
- Wash garments or w/o wash (if then washing details).
- Print details including dimension & placement. Such as pigment/rubber/flock/foil etc (if any).
- Embroidery details (Normal stitch, appliqué, Badge etc, if any).
- Test requirement details.
- Order quantity, if possible color wise (Approximately).
- Maximum body color (Approximately).
- Size wise quantity ratio
- Stripe repetition details with color (for yarn dyed).
- Viscose percentage for Grey mélange & Polyester percentage for cvc or pc
- Probable delivery date.

### e.100% Viscose Fabric characteristics

Viscose fabric is not a common fabric like as cotton. The hand feelings of this fabric are same as silk & soft.

Viscose yarn is a kind of yarn which made from cellulose base. Viscose is a type of man-made fiber but it is not a synthetic fiber like as polyester, because it is made from natural materials, but it is heavily processed.

### Advantages of Viscose

Fabric which is made from viscose yarn is that takes dyes very well, so that, we can work with a wide variety of colors. Viscose fabric is very shiny; also it stays bright and colorful throughout the life of the products made with it. So, if you want to work with various kind of bold and colorfast fabric then you can choose viscose.

### Disadvantages of Viscose fabric

- 1) Fabric tearing possibility is very high during the dyeing process.
- 2) If the fabric remain wet for long times then some spot creates on it's, which removal process is very difficult. But in cotton fabric we can do this very easily.
- 3) If the fabric dyed uneven then it is very difficult to remove.
- 4) During the dyeing process if we fail to maintain the temperature & pressure properly then fabric strength will be reduce.

#### f. Regional Requirement for Zipper

Normally we follow some regional requirement regarding the zipper, when we ordered or attached the zipper with body. Such as right handed zipper and left handed zipper. This requirement also very important for fashion trend so, before place a order please be confirmed with your buyer.



For Jacket front zippers, please note the following habit in U.S.A and Europe.

#### USA

Men's jackets with the zipper slider on the right-hand side of the zipper when the jackets is worn. The wearer uses her left hand to zip.

Ladies (Female) Jackets with the zipper slider on the left-hand side of the zipper when the Jacket is worn. The wearer uses her left hand to zip.

#### Europe:

Just the opposite of the above.

Men's (male) Jacket with the zipper slider on the left hand side of the zipper when the jacket is worn. The wearer uses her right hand to zip.

Ladies (Female) Jackets with the zipper slider on the right hand side of the zipper when the Jacket is worn. The wearer uses her right hand to zip.

### g. Some Important Issue Regarding Zipper

The main material of zipper is teeth. The Zipper teeth are usually made of brass, aluminum, plastic or nylon and shrinkage of these items is very low. These items do not shrink when washed.

Therefore, the zipper tapes must be made of materials which do not shrink when washed otherwise the shrinkage will make the zipper fail to function. In most cases, the zipper tapes are made of nylon or polyester which do not shrink and are colorfast.

When we order zippers we should specify that, the zippers (teeth and tape) are color fast, and order them in colors to match the garment color after wash.

The colors of pigment dye fabric, garment dye fabric, garments or denim garments may change substantially during the washing process. If your zipper colors match them before wash, you will end up having the zippers much darker than garments colors after wash.

If it is a long zipper like the front zipper of a Jacket, you have to make sure the shell fabric you use is of maximum 3% shrinkage otherwise when the garments shrinks in washing and the zipper does not shrink, the zipper will become wavy making it difficult for the zipper slider to go up down. Besides, a wavy zipper will make the garments look bad.

#### h. Correct dimension of print

Suppose, you have got a print art work from your buyer with only mentioned the measurement of length, but we also need the correct width of print for making the correct sample.

Though it is the responsibility of print factories/designer, but it is also essential for you to know this calculation. Because, many times we found that, buyer provided design is not placing correctly in all the sizes, also some time the print designer make mistake during scaling the print design.

So, it is very essential for a merchandiser to know the calculation process to ensure that, the design & dimension is correct.

If you don't have the hard copy of print art work then at first print the art work.



Suppose, in the art work, buyer has mentioned the length of print is 30 cm tall. But he has not mentioned the width of the print.

Now, at first take the measurement of print length & width from the printed copy of paper.

Suppose, you found

Print length 21 cm (but in real size it should be 30 cm, as per written on the art work)

Print width 16 cm (We should find out real size measurement of this print width)

As, we got the measurement of print length is 21 cm instead of 30 cm. So, the proportional rate will be as under:

= Require measurement of print length / measurement of print length, which we got from the printed paper.

$$= 30 / 21$$

$$= 1.4286$$

So, the real size print width will be

= 16 cm (print width, which we got from paper copy) X 1.4286

= 22.85 cm. (this is the real size print width)

### i. Real size measurement

Suppose buyer has sent you a art work of yarn dyed t-shirt along with size spec. But you found that, stripe width & repetition is not mentioned anywhere in the art work. Then what you will do?



#### Garment Description:

The body length is 73 cm (from hps)

$\frac{1}{2}$  chests is 52 cm

And we know 1 cm = 10 millimeter (mm)

Now print the art work and take the measurement of body length (on the printed paper) .Suppose it is 7.3 cm or 73 mm, so the Proportional rate between real size and the printed paper size is  $73 \text{ cm} \div 7.3 \text{ cm} = 10$  (remember it)

Now take the measurement of stripe repetition

Suppose you found it is 8.5 mm, so the real size repetition measurement will be 8.5 mm X 10 = 85 mm

So, now we can tell that, the real size repetition (measurement) will be  $85 \text{ mm} \div 10 = 8.5 \text{ cm}$  ( $1 \text{ cm} = 10 \text{ mm}$ ).

So now we understand that the main thing is Proportional rate, by which we can calculate the measurement of any part.

## Capability Analysis

For merchandising module Implementation, capability depends on IT infrastructure and technology.

There are three type of server used in the factory Mail Server, Proxy Server, Database Server. They have web enabled service named as www.jmfabric.com. They are using three technologies CCTV System, Intercom (BTTB), Video Conferencing with HRM software for attendance and pay roll named as Personal Management System (PMS), Link3 ERP for Commercial Purpose. There are three Experts Involve to provide support to IT Department.

The merchandising department has manpower capacity as follows

Designation	Quantity
General Manager	1
Senior Merchandiser	2
Merchandiser	3
Asst. Merchandiser	3

## Merchandising module Analysis.

The Technology used in merchandising module as Front End is PHP, J-Query, and Ajax and in Back End is MS SQL. After Login on, the First page we get a graph of the goods that has been already shipped, Confirm/Projected Order. We can see in two ways Quantity Wise and Value Wise. Merchandising modules has three sub sections Order Tracking, Library, and Tools.

Sub-sections-Order Tracking	Properties
Sales Target entry	Information Related to Sales Target
Confirmed Order Entry	Order Details, Color & Size Info, Measurement, Yarn Info, Cost sheet, Sample approval, Lap dip Approval,

	Trims Approval
Projected Order Entry	Information Related to Projection
Material Budget	Report of material Budget
Fabric and Trims Booking	Information Related to fabric and trims Booking
Inspection Follow-up	Inspection follow up information
Reports	Sample Approval Summery, Lap dip approval Report, Accessories approval Report. Various report visible in Report module of platform .
Repeated Order	Information Related to repeat order.

Sub-sections-Library	Properties
Merchandising Details	Garment Sample List, Marketing Team Info Standard CM Entry
Variable Setting.	Order Tracking
Contact Details	Buyer Profile, Supplier Profile, Institution Details Buyer task Info

Sub-sections-Tools	Properties
User management	User Id,Password,User level, Bind to ip ,Expiry Date, Status
Password Management	Password Change Functions
Privilege Management	Privilege assigned to Module Name with User Id
Database backup	Download database
Reader Configuration	General info, database info, table info
Module Management	Main Module Name, Main Module Link,Sequence,Status
Menu Management	Main Module Name, Menu Name, Menu Link, Root menu, Root menu Under,Sequence,Status

## General observation

- shifting to merchandising module is a complex learning process,
- Garment factories are often faced with changes imposed, rather than designed
- IT support also is centralized while responsibility for accurate data entry is shifted back to the point of entry, increasing the Responsibility.
- The platform specialists trained specialist users, focusing on technical issues.

## System Issues findings.

Three technical factors are identified (business process reengineering, Customization, Enhanced features). Additionally, more General issues are compared (culture/language, management style, political factors and labor skills).

Merchandising module implementations completely change factory working system. Careful planning of how to implement merchandising module is needed in factory environments in order to identify the best merchandising module design and the best redesign of business processes.

## Business process reengineering

BPR is effective in reducing overlapping activities for the merchandising module. It also reduced

Transfer of paper in order processing or other activities. BPR resolved problems of order tracking, forecasts, identifying production delays and ordering of inventory. Through BPR, processes are standardized and systematic procedures put in place. Systems department skills were aligned with current merchandising module. The system is implemented without BPR so while implementation there is unviability of process mapping and diagnosis with measure of performance. Merchandising module is not designed through BPR. The merchandising module is redefined when there is necessity.

### Problem to conduct BPR

- Different work practices across apparel industries
- There may be cultural resistance to change
- There may be variance in user computer experience.
- Complication in the process.

### Suggestions

Before implementing merchandising module following BPR exercise should be undertaken

- mapping with current processes
- Identify problems or issues
- select best practice from Platform
- Remap or enhance processes to match Platform

### Customization

Merchandising Module customization is a way to approach ERP implementation because it provides the flexibility to cope with local needs, while operating within an overall unified framework. However, some places Platform impose customization to meet these local needs, which is usually unattractive from the perspectives of cost and schedule risk.

### Enhanced Features

Enhanced Features provides a way for merchandising participants to gain access to expertise. Like RFID, Barcode, EDI, etc.

### Others General Issues

There are a number of general issues in the implementation of merchandising module.

### Culture/language

Cultural factors include IT knowledge and data entry difficulties. And it includes cultural resistance.

It can be solved with the following process

- A series of workshop should be conducted.
- Strategic analysis should be done
- Assignment of proper responsibility of merchandising module activities
- Continuous feedback to the management.

### Management style

The ‘big bang’ approach is a less expensive way to implement merchandising module. This approach was successfully adopted by the J M Fabric. It should consider the more conservative approach of rolling out ERP systems in phases, to reduce risks in complicated environment.

### Political factors

The structure of centralize control leads to create inter-organizational differentiation. This can create mistrust within the organization and it’s reflected in the behavior such as hiding the information to retain local power.

### Labour skills

In Platform merchandising module implementation, a major problem identified that is Fear of layoff. Training is the key consideration of merchandising module success.

### Need for cases

In implementation of Platform merchandising module, previous work cases is lacking. Only tangible and intangible factors (web access) has been included

### 3.2.2 Select Best Customization Option

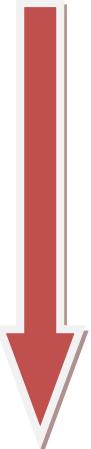
Merchandising module is designed with traditional way of design. The Vendor team determined who is the main primary user, Administration need and what is the process.so according to match with the process they have to choose system conversion and process adoption cell.

	System Customization Options.			
Risk & Cost	Process Customization Option	Module Customization	Database Configuration.	Source Code Modifications
Low	Ideal	<b>No Customization Needed</b> Production Process Match with the ERP System	<b>Match System to Production process</b> Production Process change Not Necessary	<b>System Conversion</b> Customize system process to production Process.
	Incremental change	<b>Process Adaptation Necessary</b> Production process close to ERP System	<b>Mutual Adaptation necessary</b> ERP System and production process are close. Minor change is needed to both of them	<b>System conversion and process Adaptation necessary</b> <u><b>Merchandising Module</b></u> Minor Production process change is desirable, Customize system process to production process.
	Complete change	<b>Process conversion needed</b> Production process should match the ERP system.	<b>Match Process to ERP system</b> Minor System process change, Redesign production process to ERP System Process	<b>ERP System And Production Process Reengineering</b> Redesign of production Process and ERP System.

### 3.2.3 Match Customization Option with Capability

		Process Change Capability	
System Change capability		Low	High
Low		Novice factory (Severe Constraints)	Organizer factory (To take advantage of process improvement associated with ERP System.)
High		<b><u>Technician Factory</u></b> (Guard against Over Customization)	Expert Factory (guard against the temptation to use all available expertise)

### 3.2.4 Simulation

System Customization Options.				
Risk & Cost	Process Customization Option	Module Customization	Database Configuration.	Source Code Modifications
Low 	Ideal	<b>No Customization Needed</b> Novice factory Organizer factory Technician Factory Expert Factory	<b>Match System to Production process</b> Novice factory Organizer factory Technician Factory Expert Factory	<b>System Conversion</b> Technician Factory Expert Factory
	Incremental change	<b>Process Adaptation Necessary</b> Novice factory Organizer factory Technician Factory Expert Factory	<b>Mutual Adaptation necessary</b> Novice factory Organizer factory Technician Factory Expert Factory	<b>System conversion and process Adaptation necessary</b> Technician Factory <u><b>Merchandising Module</b></u>
	Complete change	<b>Process conversion</b> Organizer factory Expert Factory	<b>Match Process to ERP system</b> Organizer factory Expert Factory	<b>ERP System And Production Process Reengineering</b> Expert Factory

### 3.2.5 Implementation

The Various Issues comes while Implementation that is solved due to System conversion and Process adaption Strategy so the Frame work is fit with the Merchandising module.

Issues Descriptions.

- There is some issue of not getting option of print like Merchandising report-garment Shipment Schedule Work Progress report detail .in that place no print option available
- Some Excel sheets Link is not Workable The various places tuning is necessary like In material Budget print preview should be there instead of Label name “Print”.
- Single style may have multiple types of fabric, color, size each garment rate may vary so how we can insert details. A/c to your solution we have to take average.it is very tedious task.-Cost Details
- Alignment is not proper.so it's Difficult to refer. Order Number is limited like max 20 so it should be fixed a/c to maximum, so alignment will not vary.
- Balance amount should be shown according to buyer
- Create Dummy Purchase Order according to need(As per Style)
 

Note: If we get style but not the Purchase Order then merchandiser can create dummy Purchase Order a/c to Format but actual Purchase Order & dummy Purchase Order relation should be established in commercial(ERP Development )
- Partial Shipment Status Should be Known
 

Note: it means projection order Vs. Actual Purchase Order And their Details
- Show the Business Status according to Intimate/Non Intimate. Key point should be included.
  - Capacity
  - Booking status
  - Monthly Order
  - Shipment Status

- Color & Size Combination in Cut and Sew.
- Expense Details.
- Feasibility to see the details (Report) when click the graph.
- In material Budget print preview Button should be there with minimize and maximize facility. Note: Instead of writing Label name “Print”. Write as print preview.
- Balance amount should be shown according to buyer
- Order wise report pending report needed.

### 3.2.6 Evaluation

Merchandising module is important due to the opportunities they provide to improve merchandising processes, to link with other departments. Business process reengineering is an important means for ERP systems to provide Efficiency to adopting garment factories. The BPR is complicated due to the increased probability that best practices will vary across departments. Business process reengineering should reflect these local needs.

Merchandising module need to consider additional cultural factors. Top management support is necessary, qualified project leadership and competent implementation staff should be included .It also is necessary to inform employees of how the system can help them to do their jobs better.

<i>Organization</i>	<i>ERP Type</i>	<i>Vendor</i>	<i>Outcome</i>	<i>Brief Specifics</i>
<i>J M Fabric</i>	<i>Web</i>	<i>platform</i>	<i>Implemented</i>	Training challenges Late deliveries enhanced Output up

### 3.3 TNA Module

The main objective of TNA module is to scheduling .it should be designed in such a way so it minimizes the Lead time and properly combined and scheduled with existing processes. It found that using a proper day scheduling rule eliminates the extra need of time for orders in setups, and accommodates higher product mix variety.

With the application of this framework, the methodology has been applied and we can get some conclusion after that.

#### 3.3.1 Analysis of the current system.

The two type of analysis has been done.

- Process Analysis
- ERP Module Analysis
- Capacity Analysis(As per merchandising Module)

#### Process Analysis

The factory Process used for merchandising Refer Attachment: Appendix A

They use a pre-defined TNA for scheduling.

Table 20 -Ch-3 Current TNA Used By Factory

JM FABRICS LTD				
TIME AND ACTION PLAN ( T & A )				
Date:	11.10.2011	Colour:	Coral, Teaberry, Egret, Pale banana	
Order Number:	150566, 150567	Ship mode:	FOB	
Style Number:	10237F and 10237H	FOB Value :		
Description:	Ladies capri set	Quantity :	9180 set	
SHIPMENT DATE:				
Critical Path	Planned Dates	Revised Dates	Actual Dates	Comments
Order Confirmation			12.08.2011	
Contract Received			ok	
LC received by			ok	
Size Breakdowns received			12.08.2011	
Colour Standards received			12.08.2011	
Lab dips sent			ok	
Lab dips approved by			ok	ALREADY APPROVED ON DT.07.09.2011
Fabric booking date			06.09.2011	ALREADY DONE
Yarn booking by			ok	ALREADY DONE
Yarn in house by			ok	ALREADY DONE
Fit Sample Sent				ALREADY APPROVED
Photo sample sent				ALREADY APPROVED ON DT.29.09.2011
Accessories Details Received				ALREADY RCV'D
Accessories order at nominated/Local Supplier				NOMINATED AND LOCAL SUP.
Accessories Sent for approval			10.11.2011	
Accessories approval rcvd by	15.10.2011			OUT STANDING
Fabric quality sent			ok	ALREADY APPROVED
Fabric quality approved by			ok	BY CLIENT
Knitting start by			ok	ALREADY CPMPLAT
Knitting complete by			ok	ALREADY CPMPLAT
Embroidery/Print/Badge sent for approval by			ok	
Embroidery/Print/Badge apvd by			ok	PRINT APPROVED ON DT.06.10.2011
P.P. sample sent by				PP SAMPLE SENT ON DT. 11.10.2011
P.P. sample apvd by	16.10.2011			
Fabric/ Print/ Aop/ Acc/others sent for Lab test by	15.10.2011			
Fabric/ Print/ Aop/ Acc/others Lab apvd. by	25.10.2011			
Dyeing start start by			ok	ALREADY COMPLEAT
Bulk Fabric sent			ok	ALREADY APPROVED
Bulk Fabric approved by			ok	WAITING FOR PP SAMPLE COMMENTS
Dyeing complete by			ok	ALREADY COMPLEAT
Fabric In house start date	17.10.2011			WAITING FOR PP SAMPLE COMMENTS
Fabric Inhouse Complete by	18.10.2011			WAITING FOR PP SAMPLE COMMENTS
Test sample sent by	15.10.2011			
Test sample apvd. By	25.10.2011			
Size set sample sent	18.10.2011			WAITING FOR PP COMMENTS
Size set sample approved by	25..10.2011			WAITING FOR PP COMMENTS
PP meeting date	19.10.2011			
Fabric Cutting start date	17.10.2011			
Fabric cutting complete by	20.10.2011			
Sewing start date	20.10.2011			
Sewing complete by	30.10.2011			
finishing Start date	22.10.2011			
Finishing complete by	25.10.2011			
Shipment Booking Date	25.10.2011			
Inspection offer date	27.10.2011			
Inspection date	30.10.2011			
Ex. Factory Date	30.10.2011			
Merchandiser	Manager Merchandising & Marketing	G.M. Marketing	Executive Director	

Page 1

Table 21-Ch-3 General observed Delay Found in the Process

System related	Technical problem	People related
Communication delay	Communication delay	Communication delay
Approval & Rejections	Approval & Rejections	Approval & Rejections
Special yarn or fabric requirements	Style allocation from agency	Style allocation from agency
Resources unavailability	Transportation delay	Quality standard issues
Priorities	Rework	Improper Planning
Custom clearance	Unforeseen delays	Wrong scheduling of process
Transportation delay	control procedures	Transportation delay
Holidays	Poor or complex design,	Incorrect calculation (either from buying or export house),
Rework	Low utilization of equipment	Fabric parameters
Unforeseen delays	Long machine setup times	Financial delays
control procedures	Low quality output	Rework
Poor or complex design	Errors in different stages of manufacturing	Unforeseen delays
Inefficient utilization of resources	frequent machine breakdowns	Complicated planning
Low utilization of equipment	Adjustment to accommodate design, & late changes during production.	control procedures
High rate of machine idle-time		Process delay due to due to misplacement product (Like -samples)
Long machine setup times		overlook of information
Low quality output		Poor or complex design,
more rework Inefficient material handling,& production facilities		Inefficient utilization of resources
Errors in different stages of manufacturing		Low utilization of equipment
Limited resources		due to poor job design
equipment		High rate of machine idle-time
computer and skilled people		Long machine setup times
frequent machine breakdowns		Low quality output
Adjustment to accommodate design, & late changes during production.		more rework Inefficient material handling, & production facilities
		Errors in different stages of manufacturing
		Equipment
		frequent machine breakdowns
		Adjustment to accommodate design, & late changes during production.

### Findings to Major causes of delay in shipment

There are four major cause of delays has been found they are Insufficient days allotment in TNA, Rejection in lab-dips & size set, Fabric delay, Improper communication of factory with buying house between the process, Delay in production

Table 22-Ch-3 Delay in Production process

<b>Major Delay at Pre-production stage</b>	<b>Major Delay At Production stage :</b>	<b>Delay at post –production stage</b>
Lab dip rejection & approval	Cutting delays	Shipment sample approval
Art-work approval	Line availability	Final audit
Fabric delay	Sewing floor delays	Ex-factory
Size set approvals delay	Garment dyeing & washing	
Other delays which are not major delay but may delay the process like TNA late confirmation from factory, Pilot run approval		

## TNA Analysis

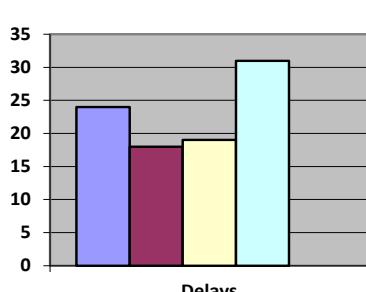
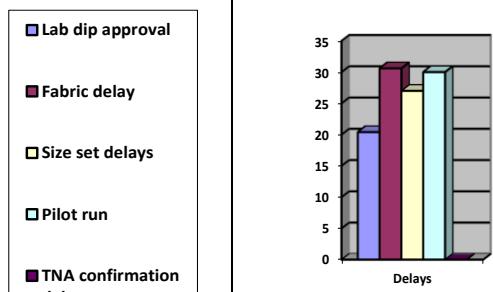
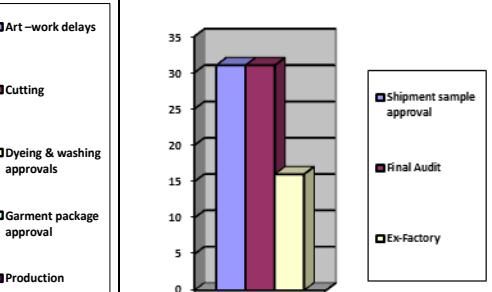
There are 31 styles has been taken for the analysis to find the actual Delays in process. And then with the help of Column chart it has analyzed for proper TNA planning.

### Delay Calculation

Buyer	Style No	Style Description	Pre-production Delay				Production Delay				Post Production Delay			
			Lab dip approval And rejectio	Fabric delay	Size set delays	Pilot run	TNA confirmation	Cutting	Dyeing & washing appro	Garmet package approval	Production	Shipment sample approval	Final audit	Ex-factory
AMERELLA	GRS21405PW	L/S KNIT SLEEVELESS TOP	1		1	1								
	GRS21402PW	L/S KNIT SHORT SLEEVE TEE	1	0	1	1		1	0	0	1		1	1
	GRS21002LDW	L/S KNIT SHORT SLEEVE JERSEY	1	0	0	1		1	0	0	1		1	1
	GRS21402PPW	L/S KNIT SHORT SLEEVE TEE AOP	1	1	1	1		1	0	0	1		1	1
	GRS21002LDWSTPW	L/S KNIT SHORT SLEEVE JERSY/D	1	1	1	1		1	0	0	1		1	1
	D10580GTJ	M KNIT LONG SLEEVE CREW NECK	1	0	1	1		1	0	0	1		1	1
	G231024	G21 CHEMISE	1	0	0	1		1	0	0	1		1	1
	G231023LD	G21 CHEMISE AOP	1	0	0	1		1	0	0	1		1	1
	G231022	G21 SUPER LONG TANK	1	0	0	1		1	0	0	1		1	1
	G231024LDW	G21 CHEMISE AOP	1	0	0	1		1	0	0	1		1	1
	G231023LDW	G21 CHEMISE AOP	1	0	0	1		0	0	0	1		1	1
	G231022LDW	G21 SUPER LONG TANK	1	0	0	1		1	0	0	1		1	1
	GRS21016LDW	LADIES TANK TOP	0	0	0	1		1	0	0	1		1	1
	GRS21402PPW	L/S KNIT SHORT SLEEVE TEE AOP	1	0	0	1		1	0	0	1		1	1
	G2M21051LDW	L KNIT TANK TOP	1	0	0	1		1	0	0	1		1	1
	G2M21050LDW	L KNIT TANK TOP JERSEY	0	0	0	1		1	0	0	1		1	1
SAINSBURY	STROKE CITY JOG SHORT	MENS HALF PANT	1	1	1	1		1	0	0	1		1	1
	CHELSEA JOG PANT	MENS LONG PANT	1	1	1	1		1	0	0	1		1	0
	DUDELEY	MENS PRINTED HOODY	1	1	1	1		1	0	0	1		1	0
	MAN CITY	MENS PRINTED HOODY	1	1	1	1		1	0	0	1		1	0
	TOTTENHAM	MENS ZIP THROUGH PRINTED HOODY	1	1	1	1		1	0	0	1		1	0
	EPSOM(Y/D)	MENS MICRO STRIPE ZIP THROUGH HOODY	0	1	1	1		1	0	0	1		1	0
	SALT LAKE TEE	100% COTTON (S) 180 GSM WITH PEACHE	0	1	1	1		1	0	0	1		1	0
	TRISHA V2	LADIES NIGHTWEAR TOP	1	1	0	1		1	0	0	1		1	0
	BELIVETHETRUTH	100% COTTON (S) 140 GSM W/C PRINT	0	1	1	1		1	0	0	1		1	0
	BREAK DANCE	100% COTTON (S) 140 GSM W/C PRINT	0	1	1	1		1	0	0	1		1	0
	THREE STAR	100% COTTON (S) 140 GSM W/C PRINT	0	1	1	1		1	0	0	1		1	0
	APPLE STRIPE(Y/D)	100% COTTON 2x2 RIB 200 GSM Y/D	1	1	1	1		1	0	0	1		1	0
	COCONUT BOOB TUBEKIV	95% COTTON ELASTANE (S) 180 GSM	1	1	1	1		1	0	0	1		1	0
	CLIFF	100% COTTON (S) AOP 140 GSM	1	1	1	1		1	0	0	1		1	0
	CHESTER FIELD	100% COTTON (S) AOP 160 GSM	1	1	1	1		1	0	0	1		1	0
	Total Delay		24	18	19	31		30	0	0	31		31	16

Here 1 =Delay,0=Ontime.

Table 23-Ch-3 TNA Outcomes

Pre-production Delays		Production Delays		Post –production stage																																	
Activities	Delays in order	Activities	Delays in order	Activities	Delays in order																																
Lab dip approval And rejections	24	Art –work delays	27	Shipment sample approval	31																																
Fabric delay	18	Cutting	30	Final audit	31																																
Size set delays	19	Dyeing & washing approvals	0	Ex-factory	16																																
Pilot run	31	Garment package approval	0																																		
TNA confirmation delay	0	Production	31																																		
Column-chart		Column-chart		Column-chart																																	
 <table border="1"> <thead> <tr> <th>Activity</th> <th>Delay</th> </tr> </thead> <tbody> <tr> <td>Lab dip approval</td> <td>24</td> </tr> <tr> <td>Fabric delay</td> <td>18</td> </tr> <tr> <td>Size set delays</td> <td>19</td> </tr> <tr> <td>Pilot run</td> <td>31</td> </tr> <tr> <td>TNA confirmation delay</td> <td>0</td> </tr> </tbody> </table>		Activity	Delay	Lab dip approval	24	Fabric delay	18	Size set delays	19	Pilot run	31	TNA confirmation delay	0	 <table border="1"> <thead> <tr> <th>Activity</th> <th>Delay</th> </tr> </thead> <tbody> <tr> <td>Art –work delays</td> <td>27</td> </tr> <tr> <td>Cutting</td> <td>30</td> </tr> <tr> <td>Dyeing &amp; washing approvals</td> <td>0</td> </tr> <tr> <td>Garment package approval</td> <td>0</td> </tr> <tr> <td>Production</td> <td>31</td> </tr> </tbody> </table>		Activity	Delay	Art –work delays	27	Cutting	30	Dyeing & washing approvals	0	Garment package approval	0	Production	31	 <table border="1"> <thead> <tr> <th>Activity</th> <th>Delay</th> </tr> </thead> <tbody> <tr> <td>Shipment sample approval</td> <td>31</td> </tr> <tr> <td>Final Audit</td> <td>31</td> </tr> <tr> <td>Ex-factory</td> <td>16</td> </tr> </tbody> </table>		Activity	Delay	Shipment sample approval	31	Final Audit	31	Ex-factory	16
Activity	Delay																																				
Lab dip approval	24																																				
Fabric delay	18																																				
Size set delays	19																																				
Pilot run	31																																				
TNA confirmation delay	0																																				
Activity	Delay																																				
Art –work delays	27																																				
Cutting	30																																				
Dyeing & washing approvals	0																																				
Garment package approval	0																																				
Production	31																																				
Activity	Delay																																				
Shipment sample approval	31																																				
Final Audit	31																																				
Ex-factory	16																																				

TNA. Suggested.

The TNA used by the factory is very descriptive so it gives burden to the user to maintain the time and all buyer work culture is different so the lead time of every activity is different so one TNA Calculator has been suggested and applied on some Orders. At First in This TNA Calculator, lead time is filled by senior merchandiser/Manager with some logic that can be understood by hierarchical order of activity and their actual lead time. Then it automatically creates Target date of the work according to total lead time. According to the buyer behavior it shows the actual lead time, and then takes the average of that particular buyer lead time. And for that particular buyer this average lead time can be assigned further for making the TNA.

Refer: Appendix B (New Merchandising Work Process Suggested.)

Table 24-Ch-3 Repeat Order

TNA PLANNING						
Factory :	J M FABRIC LTD.	Date :	6-Mar-2012	Target Lead Time	24	
Customer :	INTERNATIONAL					
Factory Required Del.Dt	30-Mar-2012		Customer PO No			
Style No:	ZINGER LOVE	Order Qty				2820
Activity	Target Dt.	Revised Dt.	Actual Dt.	Lead time allocated.	Status	Remarks
<b>Process :Fabric</b>						
Fabric Order-Fabric	9-Mar-2012	2-Jan-1900		2		
Bulk Fabric In-House Factory (1st Lot)-Fabric	19-Mar-2012	10-Jan-1900		10		
Bulk Shell Fabric In-House Factory (Last Lot)-Fabric	24-Mar-2012	5-Jan-1900		5		
<b>Process :Order handling</b>						
Placement Call-out meeting with Merch / Fabric /Tech QA	8-Mar-2012	1-Jan-1900		1		
Re-order Entry of OTS-Order Handling	7-Mar-2012			1		
TNA Advised to Fty date-Order Handling	8-Mar-2012	1-Jan-1900		1		
TNA Confirmed by Fty date-Order Handling	9-Mar-2012	1-Jan-1900		1		
<b>Process :Artwork/Trims</b>						
Trims,Artwork Ordered-Artwork/Trims	10-Mar-2012	3-Jan-1900		3		
All Bulk Trim-Cards, Thread Runs & Packaging Approved	17-Mar-2012	7-Jan-1900		7		
<b>Process :Production</b>						
CUT TRIGGER DATE-Production Plan	19-Mar-2012	12-Jan-1900		12		
Start Bulk Cutting-Production Plan	21-Mar-2012	2-Jan-1900		2		
Production Completion Date-Production Plan	27-Mar-2012			3		
<b>Process :Bulk Checkpoints &amp; Inspections</b>						
Inline Inspection	24-Mar-2012	3-Jan-1900		3		
Garment package Tests Approved	26-Mar-2012	5-Jan-1900		5		
Pre-Final inspection-Bulk Checkpoints & Inspections	27-Mar-2012			3		
FINAL INSPECTION AUDIT-Bulk Checkpoints & Inspections	28-Mar-2012			2		
Shipment Samples Approved and Deposited	29-Mar-2012			1		
<b>Total Lead Time till Ex-factory</b>	20		-40969			
<b>Total Production Time(Days)</b>	40995					
<b>Production Time(Kindly Assign)</b>	5					
<b>Production Time Targeted</b>	6					

Table 25-Ch-3 Normal Order

		TNA PLANNING					
Factory :		Division :	Date :	Style No:	Target Lead Time		
Department :		Customer :	Lot No:	Colour	Lot Quantity:		
Factory Required Del.Dt	3-Mar-2012	Customer PO No	Product Group	Employee:	Fabric Type:		
Shipment Status:		Order Qty			Collection:		
Activity	Target Dt.	Revised Dt.	Actual Dt.	Lead time allocated.	Status	Actual lead time	Remarks
Process :Fabric							
Lab dip info rcvd date-Fabric	11-Feb-2012		12-Feb-2012	3		4	
Fabric Lap-Dip / Yarn Dip Approval-Fabric	26-Feb-2012	27-Feb-2012	27-Feb-2012	15		15	
Fabric Order-Fabric	18-Feb-2012	19-Feb-2012	19-Feb-2012	4		4	
Fabric Tests Approved-Fabric	29-Feb-2012	1-Mar-2012	1-Mar-2012	11		11	
Bulk Fabric In-House Factory (1st Lot)-Fabric	17-Mar-2012	18-Mar-2012	18-Mar-2012	17		17	
Bulk Shell Fabric In-House Factory (Last Lot)-Fabric	31-Mar-2012	1-Apr-2012	1-Apr-2012	14		14	
Process : Order handling							
Placement Call-out meeting with Merch / Fabric /Tech QA	15-Feb-2012	16-Feb-2012	16-Feb-2012	1		1	
Order Projection (Colors in Selling) Details Received	14-Feb-2012		15-Feb-2012	6		7	
Purchase Orders Received	14-Feb-2012		15-Feb-2012	6		7	
OTS PWN Created-Order Handling	15-Feb-2012	16-Feb-2012	16-Feb-2012	1		1	
TNA Advised to Fty date-Order Handling	15-Feb-2012	16-Feb-2012	16-Feb-2012	1		1	
TNA Confirmed by Fty date-Order Handling	15-Feb-2012	16-Feb-2012	16-Feb-2012	0		0	
Process :Artwork/Trims							
Trims Approved & Ordered-Artwork/Trims	1-Mar-2012	2-Mar-2012	2-Mar-2012	16		16	
All Artworks (Embd / Print etc) 1st Submit-VA (Embd/Print etc)	24-Feb-2012	25-Feb-2012	25-Feb-2012	10		10	
All Artworks Approved-Value Addition (Embd/Print etc)	21-Feb-2012	22-Feb-2012	22-Feb-2012	7		7	
All Bulk Trim-Cards, Thread Runs & Packaging Approved	6-Mar-2012	7-Mar-2012	7-Mar-2012	14		14	
Process :Sampling							
pp sample Dispatch-Sampling	16-Mar-2012	17-Mar-2012	17-Mar-2012	31		31	
pp sample Approved (Actual Fabric & Trims)-Sampling	19-Apr-2012	20-Apr-2012	20-Apr-2012	34		34	
Process :Pre-Production							
Pre-Production Meeting with Merch / Tech Qa / QC / FM	24-Apr-2012	25-Apr-2012	25-Apr-2012	5		5	
QC File Handover-Pre-Production	24-Apr-2012	25-Apr-2012	25-Apr-2012	0		0	
Size Set / Pilot-Run Approved-Pre-Production	25-Apr-2012	26-Apr-2012	26-Apr-2012	6		6	
Process :Production							
CUT TRIGGER DATE-Production Plan	23-Apr-2012	24-Apr-2012	24-Apr-2012	4		4	
Start Bulk Cutting-Production Plan	25-Apr-2012	26-Apr-2012	26-Apr-2012			0	
Ex-Factory-Production Plan	29-Feb-2012			3		-40965	
Process :Bulk Checkpoints & Inspections							
Inline Inspection	28-Apr-2012	29-Apr-2012	29-Apr-2012	3		-41025	
Garment package Tests Approved	30-Apr-2012	1-May-2012	1-May-2012	5		-41025	
Pre-final inspection-Bulk Checkpoints & Inspections	27-Feb-2012			5		-40961	
FINAL INSPECTION AUDIT-Bulk Checkpoints & Inspections	28-Feb-2012			4		-40963	
Shipment Samples Approved and Deposited	17-Feb-2012			15		-40941	
Total Lead Time till Ex-factory	89				90		
Total Production Time(Days)	-57						
Production Time(kindly Assign)	12						
Production Time Targeted	-56						

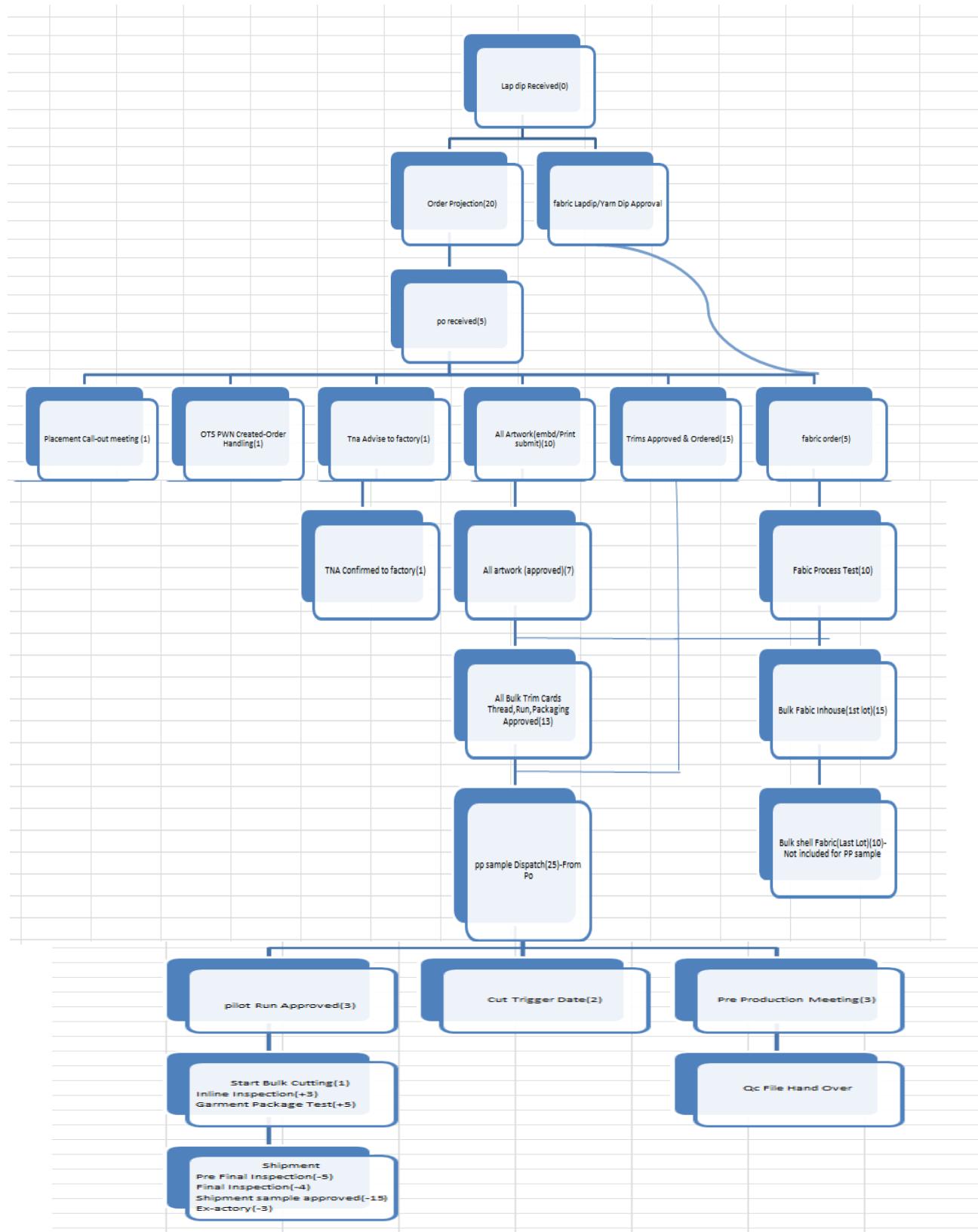
Table 26 -Ch-3 Samples

		TNA PLANNING	Date :	6-Mar-2012 Target Lead Time	24
Factory :	J M FABRIC LTD.				
Customer :	INTERNATIONAL				
Factory Required Del.Dt		30-Mar-2012	Customer PO No		
Style No:	ZINGER LOVE		Order Qty	2820	
<hr/>					
Activity	Target Dt.	Actual Dt.	Status	Remarks	
Process :Fabric					
Fabric Order-Fabric	9-Mar-2012				
Bulk Fabric In-House Factory (1st Lot)-Fabric	19-Mar-2012				
Bulk Shell Fabric In-House Factory (Last Lot)-Fabric	24-Mar-2012				
Process :Order handling					
Placement Call-out meeting with Merch / Fabric /Tech QA	8-Mar-2012				
Re-order Entry of OTS-Order Handling	7-Mar-2012				
TNA Advised to Fty date-Order Handling	8-Mar-2012				
TNA Confirmed by Fty date-Order Handling	9-Mar-2012				
Process :Artwork/Trims					
Trims,Artwork Ordered-Artwork/Trims	10-Mar-2012				
All Bulk Trim-Cards, Thread Runs & Packaging Approved	17-Mar-2012				
Process :Production					
CUT TRIGGER DATE-Production Plan	19-Mar-2012				
Start Bulk Cutting-Production Plan	21-Mar-2012				
Production Completion Date-Production Plan	27-Mar-2012				
Process :Bulk Checkpoints & Inspections					
Inline Inspection	24-Mar-2012				
Garment package Tests Approved	26-Mar-2012				
Pre-final inspection-Bulk Checkpoints & Inspections	27-Mar-2012				
FINAL INSPECTION AUDIT-Bulk Checkpoints & Inspections	28-Mar-2012				
Shipment Samples Approved and Deposited	29-Mar-2012				

Page 1



Figure 9-Ch-3 Logic (To fill the Lead Time in TNA Calculator.)



### Suggestions to get approvals soon

There is some suggestions given to get approval soon e.g. do not get delay in communication & in information transfer, Proper co-ordination with vendors., Segregation of suppliers to reduce lead time, To avoid rejection its better vendor selection for better result, Take care of pre-planned holidays before any commitment for deliveries, Order according to capacity to vendor, Take buffer of days in the case of rejections, Dates has to be match for bulk order so that when order gets ready dyeing starts without any delay.

### ERP Module Analysis

TNA Module is under development Stage. The technology and Issue Findings is the same as the merchandising module. TNA modules have also three sub sections TNA, Library, and Tools. Library and Tools have same characteristics as Merchandising module Tools.

Sub-sections-TNA	Properties
TNA Preparation	Company, Style Ref,Buyer Name, Job Number
Sample Follow up	
Lap dip follow up	
Accessories Follow up	Under Development.
Fabric Receive status Report	
Accessories Inventory Follow up	
Projected Order Report.	

### 3.3.2 Select Best Customization Option

TNA module is under development stage. The Vendor team is analyzing who is the main primary user, Administration need and what is the process so according to match with the process they have to choose System Conversion.

	System Customization Options.			
Risk & Cost	Process Customization Option	Module Customization	Database Configuration.	Source Code Modifications
Low	Ideal	<b>No Customization Needed</b> Production Process Match with the ERP System	<b>Match System to Production process</b> Production Process change Not Necessary	<b>System Conversion</b> Customize system process to production Process. <b>TNA Module</b>
	Incremental change	<b>Process Adaptation Necessary</b> Production process close to ERP System	<b>Mutual Adaptation necessary</b> ERP System and production process are close. Minor change is needed to both of them	<b>System conversion and process Adaptation necessary</b> Minor Production process change is desirable, Customize system process to production process.
	Complete change	<b>Process conversion needed</b> Production process should match the ERP system.	<b>Match Process to ERP system</b> Minor System process change, Redesign production process to ERP System Process	<b>ERP System And Production Process Reengineering</b> Redesign of production Process and ERP System.

### 3.3.3 Match Customization Option with Capability

		Process Change Capability	
System Change capability		Low	High
Low		Novice factory (Severe Constraints)	Organizer factory (To take advantage of process improvement associated with ERP System.)
	High	<b><u>Technician Factory</u></b> (Guard against Over Customization)	Expert Factory (guard against the temptation to use all available expertise)

### 3.3.4 Simulation

System Customization Options.				
Risk & Cost	Process Customization Option	Module Customization	Database Configuration.	Source Code Modifications
Low	Ideal	<b>No Customization Needed</b>  Novice factory Organizer factory Technician Factory Expert Factory	<b>Match System to Production process</b>  Novice factory Organizer factory Technician Factory Expert Factory	<b>System Conversion</b> Technician Factory  <u>TNA Module</u>
		<b>Process Adaptation Necessary</b>  Novice factory Organizer factory Technician Factory Expert Factory	<b>Mutual Adaptation necessary</b>  Novice factory Organizer factory Technician Factory Expert Factory	<b>System conversion and process Adaptation necessary</b> Technician Factory Expert Factory
		<b>Process conversion</b>  Organizer factory Expert Factory	<b>Match Process to ERP system</b>  Organizer factory Expert Factory	<b>ERP System And Production Process Reengineering</b> Expert Factory

### 3.3.5 Implementation and Evaluation

#### Implementation

The ERP System is in development stage so after development the issues can be analyzed with the objective to prepare proper scheduling.

#### Evaluation

Now the Implementation of TNA module is under Consideration. ERP vendor know there is system conversion needed.it comes under system conversion cell. In TNA Module does not have adequate functionality so its require coding.

### 3.4 Human Resource Module

HR modules routinely maintain a complete employee database including contact information, salary details, attendance, performance evaluation and promotion of all employees. Web linkage to HR module provides standardized platforms for data transfer and sharing, among departments. With the application of this framework, the methodology has been applied and we can get some conclusion after that

#### 3.4.1 Analysis of the current system.

The three type of analysis has been done.

- HR Process Analysis
- Capability Analysis
- HR Module Analysis

#### HR Process Analysis

The present process for the HR works is maintained by Personal management system software. by the help of RFID and Barcode reader they maintain the records. For the maintaining the Supplier selection, Performance Evaluation is done at the end of every 6 months/for the period under review with respect to

Quality, Delivery, Customer Care and Service. A weighted plan method is used to rate the performance for each supplier in the following basis.

(No of Consignments received without any Complaint with respect to quality /No of Consignments Supplied X 50)+ (No of Consignments Supplied on time/No of Consignment Supplied X 40) +Score given for care and service out of 10(Ten) = Score

.

Supplier will be enlisted into the Approved Supplier List as in

- Satisfactory (Overall Performance greater or equal to 80%),
- Conditional Acceptance (Overall Performance less than 80% and greater or equal to 55 % on the Approved Supplier List.)
- Unsatisfactory(Less than 55% will be Removed from Approved Supplier List.)

Table 27-Ch-3 Supplier Performance Evolution Format Used.

<b><u>SUPPLIERS PERFORMANCE EVALUATION</u></b>								
Name of supplier	Type of supplier / service provider	Item supplied / service provider	Score on individual criteria				Total score	Remarks
			x	y	z	w		
Moontex	Accessories	Hanger, Elastic	17	17	11	6	82	Satisfactory. Supplier will remain in ASL
Asia Link International Ltd.	Accessories	Label(main, size, care), Hang Tag, Carton sticker	25	18	8	6	55	Conditional Acceptance. Areas of concern will be notified
Confidence Thread	Accessories	Thread, Poly, Tag pin, Back board, Elastic	132	125	116	8	91	Satisfactory. Supplier will remain in ASL
Shirsha Printing	Accessories	Label(main, size, care, Barcode), Carton sticker	7	7	5	8	87	Satisfactory. Supplier will remain in ASL
Young Label	Accessories	Label(main, size, care)	24	23	6	5	63	Conditional Acceptance. Areas of concern will be notified
Rana Enterprise	Accessories	Tag pin, Herring, Tape	18	18	13	7	86	Satisfactory. Supplier will remain in ASL
Montrims Ltd.	Accessories	Care label, Sewing Ticket, Price Ticket	250	241	82	5	66	Conditional Acceptance. Areas of concern will be notified
The X-Trims	Accessories	Hang Tag	15	15	0	5	55	Conditional Acceptance. Areas of concern will be notified
Innovative Trims	Accessories	Hang Tag	22	22	12	5	77	Conditional Acceptance. Areas of concern will be notified

**Note**  
For performance rating use the following formula:  
 $y/x \times 50 + z/x \times 40 + w = \text{Score}$  where x = Total number of consignments supplied, y = Number of consignments product quality, z = Number of consignments supplied on time and w = Score given for care and service out of 10 (ten)

### Suggestion for Supplier Selection.

Supplier Selection is based on Only Four parameters Quality, Delivery, Customer Care and Service. Others parameter like Price/ Costing, Social Compliances, Minimum Order, Geographical location, Protocols should also be considered while calculating the performance.

### Capability Analysis

For HR module Implementation, capability depends on IT infrastructure and technology. That is described in merchandising module. For Attendance record they have 6 readers in this factory.

The HR department has manpower capacity as follows

Designation	Quantity
Deputy Manager	1
Asst. manager	1
Executive	2

## HR Module Analysis

The Technology used in HR module as Front End is PHP, J-Query, and Ajax and in Back End is MS SQL.

HR module has three sub sections HRM, Library, and Tools. Tools have same characteristics describe in merchandising module.

Subsection- HRM	Properties
Employee Information	Basic,photo,Address,salary,Bank,Entitlement, Experience,Education,family,Promotion
Resource Allocation	Issue Item, Return Item, Money Recovery
Disciplinary Information	Investigation and details.
Transportation Information	Details Related to Transportation
Policy Tagging with employee	Policy name, Rule name, Rule Description
Job Separation	Assigning with Employees
Job Reactivation	Function Related to activation
Attendance and Leave Management	Attendance Management(Define Weekend,Define Holiday,Duty Roster Process,Download Attendance,Manual attendance Entry,Process attendance ,Movement Register),Leave Management(Opening Leave balance,Leave Entry,Maternity Leave Entry,Leave Year Costing)
Payment Management	Download from excel sheet, Manual OT Entry , Process Salary, Process Bonus, Payment Disburse, Increment Entry, Approval (Salary Info, Increment, Promotion), Salary adjustment Entry.
Loan	Loan Entry, Payback
Data Management	Data Download/Synchronization, Attendance data Process

Report	
Sub Section-Library	Properties
HR & Admin	Designation Chart, Payroll Head, Policy Setup(Shift Policy,Overtime Policy,Holiday incentive policy,Duty Roster Policy,Leave Policy,Maternity Leave Policy,Attendance Bonus Policy,Salary Breakdown Policy,Absent Deduction Rules,Late deduction rules,Bonus Policy,Tax Policy)
Cost Center	Group details, Company Details, Location Details, Division Details, Department Details, Section Details, Subsection Details
Year	Leave Year ,Salary Year, Tax Year
General Info	Currency Info, Bank Info
Variable Info	Attendance variable.
Account	Account Group setup, Journal Type Setup
Merchandising Details	Garment Sample List, Marketing Team Info, Standard CM Entry
Contact Details	Buyer Profile, Supplier Profile, Institution Details, Buyer task Info

The main function of this module is to take data from RFID Reader and the barcode reader to calculate attendance and salary. For taking data from Reader following steps need to follow.

- Used Third Party Software (RMS V4.21) to receive data from Reader.
- Use Package Downloader to take Data from RMS V4.21.
- Go to HRM module →Data Management--→Data Processing→Select Company, Date and Start Data processing.

General Observation and System issue Findings.

The Observation and system Issue findings are same as described in merchandising module.

### 3.4.2 Select Best Customization Option

HR module is designed with new way of design The ERP Vendor Decided to minimize System customization and provide training to users to understand HR process contained in HR module. So ERP system and Process Re-engineering cell has selected.

System Customization Options.				
Risk & Cost	Process Customization Option	Module Customization	Database Configuration.	Source Code Modifications
Low	Ideal	No Customization Needed Production Process Match with the ERP System	Match System to Production process Production Process change Not Necessary	System Conversion Customize system process to production Process.
	Incremental change	Process Adaptation Necessary Production process close to ERP System	Mutual Adaptation necessary ERP System and production process are close. Minor change is needed to both of them	System conversion and process Adaptation necessary Minor Production process change is desirable, Customize system process to production process.
	Complete change	Process conversion needed Production process should match the ERP system.	Match Process to ERP system Minor System process change, Redesign production process to ERP System Process	ERP System And Process Reengineering Redesign of Process and ERP System. HR Module

### 3.4.3 Match Customization Option with Capability

		Process Change Capability	
System Change capability		Low	High
Low		Novice factory (Severe Constraints)	Organizer factory (To take advantage of process improvement associated with ERP System.)
High		Technician Factory (Guard against Over Customization)	Expert Factory (guard against the temptation to use all available expertise)

### 3.4.4 Simulation

		System Customization Options.			
Risk & Cost	Process Customization Option	Module Customization	Database Configuration.	Source Code Modifications	
Low	Ideal	No Customization Needed Novice factory Organizer factory Technician Factory Expert Factory	Match System to Production process Novice factory Organizer factory Technician Factory Expert Factory	System Conversion Technician Factory Expert Factory	
	Incremental change	Process Adaptation Necessary Novice factory Organizer factory Technician Factory Expert Factory	Mutual Adaptation necessary Novice factory Organizer factory Technician Factory Expert Factory	System conversion and process Adaptation necessary Technician Factory Expert Factory	
	Complete change	Process conversion Organizer factory Expert Factory	Match Process to ERP system Organizer factory	ERP System And Production Process Reengineering Expert Factory HR Module	

### 3.4.5 Implementation and Evaluation

#### Implementation

The Various Issues comes while Implementation that is solved due to Matches Process to ERP System Strategy so the Frame work is fit with the HR module.

#### Issues Descriptions.

Issues	Status.(At the Time of Evaluation)
After saving one employee information contents of all fields and tabs didn't refresh properly after clicking cancel button(System bug)	Updated Soon
In Leave Entry from the System is allowing if 'from date' is bigger than 'to date'(System bug)	Updated Soon
System is taking time in multiple employee separation and sometime separation is not working properly. (System bug)	Updated Soon
Data Download & Data Process taking too much time(System bug)	Trying to Resolve
In OT policy Entry Page: Max OT these shift- Hours takes as a time formatted. (System bug)	Updated Soon.
Leave Entry Issue 1. When we Assign Employee Message Comes No Leave Info Saved Even When We Save it Many Times./It should be it already saved. 2. If saving single record then data saved but when we search multiple record and saving one then it's giving database error.	Not Confirmed
0.01 paisa difference in calculation of policy rull order Ref-4100,4300	Future

## Evaluation

The ERP Vendor Decided to minimize System customization and provide training to users to understand HR process contained in HR module and develop the new facilities according to requirement So ERP System and Production Process Reengineering cell has selected.in which Expert factory needed. In J M Fabric system change capabilities is developed but Expert factory capability is lacking so J M fabric reengineered the process. They made changes like defining policies, holidays, terms etc.

### 3.5 System and capacity Analysis of Other Modules

Other Modules such as Commercial, Administrator, Production, Inventory. Due to time Restriction the system and capacity analysis has been completed that is available in the platform ERP and the factory.

#### 3.5.1 Commercial Module

Commercial module included Export, Import Transactions .Web linkage to Commercial module is provides standardized platforms for data transfer and sharing, among departments. With the application of this framework, the methodology has been applied and we can get some conclusion after that.

Analysis of the current system.

The Two type of analysis has been done.

- Capability Analysis
- Commercial module Analysis

#### Capability Analysis

For Commercial module Implementation, capability depends on IT infrastructure and technology. There are three type of server used in the factory Mail Server, Proxy Server, Database Server. They have web enabled service named as www.jmfabric.com. They are using three technologies CCTV System, Intercom (BTTB), Video Conferencing with Link3 ERP for the Commercial Transaction).there are three Experts Involve to provide support to IT Department.

The Commercial department has manpower capacity as follows

Designation	Quantity
Manager	1
Asst. Manager	2
Executive	1

Commercial module Analysis.

The Technology used in Commercial module as Front End is PHP, J-Query, and Ajax and in Back End is MS SQL. Commercial module has three sub sections Commercial, Library, and Tools. Tools have same characteristics describe in merchandising module. In Library there is a variable setting for garment Export capacity, maximum BTB Limit, maximum PC Limit.

Sub-section-Commercial	Properties
Export Details	Sales Contract Entry, Export LC info entry, Export LC amendment Entry, Export Information Entry, Document Submission Entry, Export Proceed Realization Entry
Import Details	Pro Forma Invoice (PI) Entry, BTB/Margin LC Entry, Import LC amendment Entry, Import Doc acceptance Entry, Import Payment Entry.
Pre-Export Finance Entry	Financial Information
Reports.	Export LC Report(Export LC summary, File Wise Cost Analysis, Pending sales Contact For Replacement, Order wise Document Status

It is difficult to Understand the terminology Used in the commercial transactions so A Terminology Guide has been suggest for Export Transaction.it contains Description of terminology used in the Export Transaction. Refer-Appendix-C

### 3.5.2 Production Module

Production module included Cutting, Sewing, and Finishing Details .Web linkage to Production module provides standardized platforms for data transfer and sharing, among departments. With the application of this framework, the methodology has been applied and we can get some conclusion after that.

Analysis of the current system.

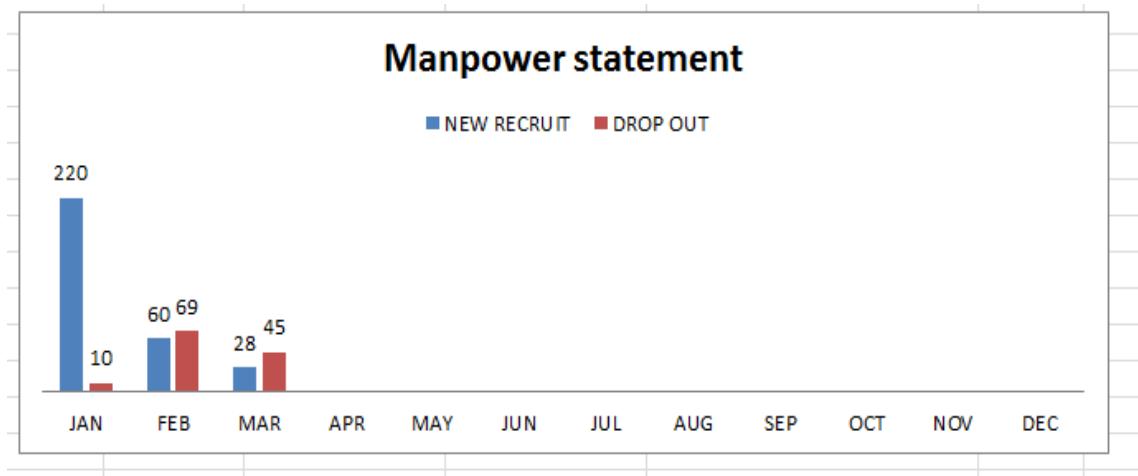
The Three type of analysis has been done.

- Capability Analysis
- Production Department Status
- Production module Analysis

Analysis of Production Department (Intimate-3 months)

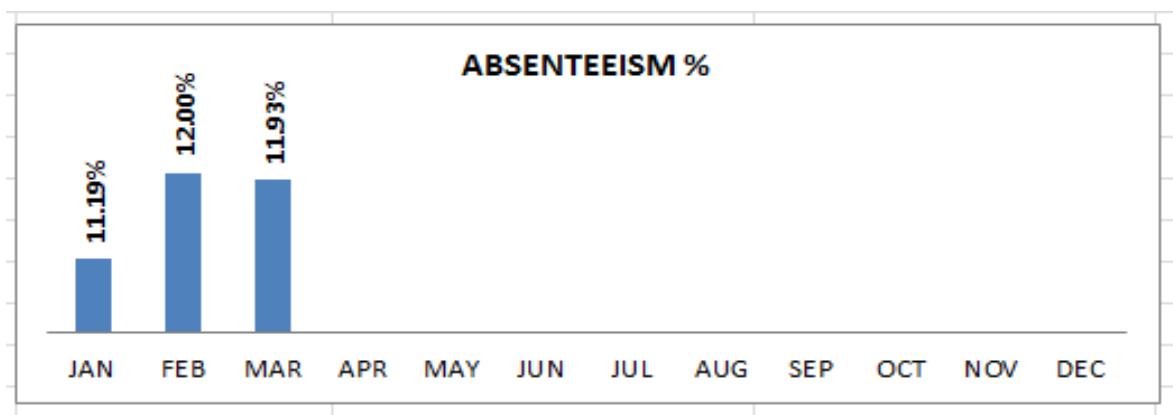
1. Manpower Status.

MONTH	NEW RECRUIT	DROP OUT	REMARKS
JAN	220	10	
FEB	60	69	
MAR	28	45	



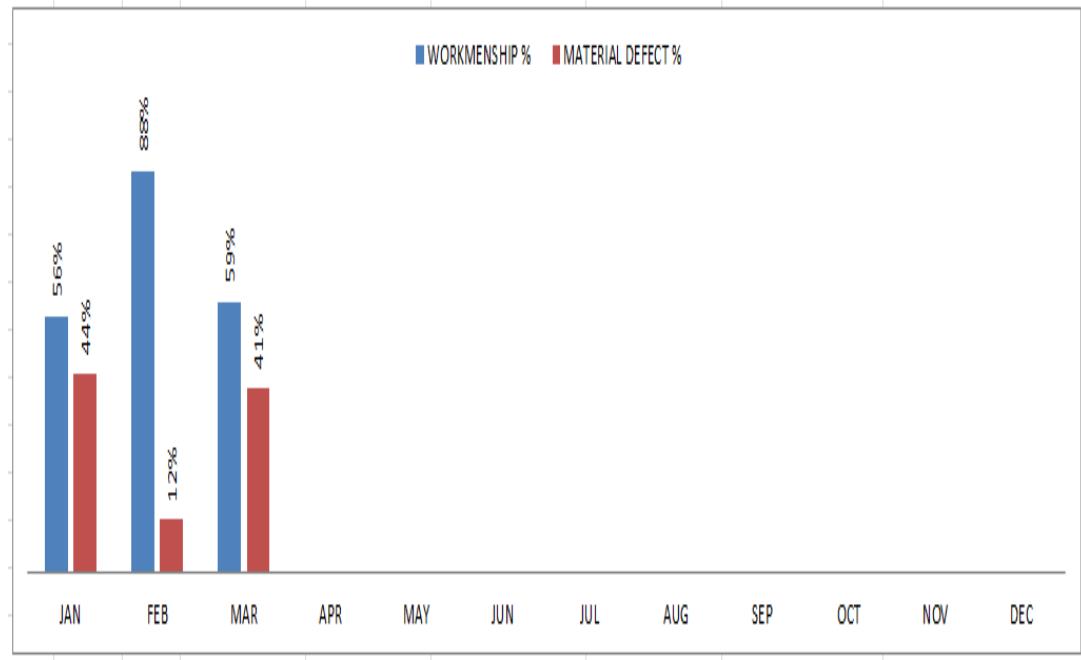
2. Absenteeism In factory (Intimate)

MONTH	ABSENTEEISM %	REMARKS
JAN	11.19%	
FEB	12.00%	
MAR	11.93%	



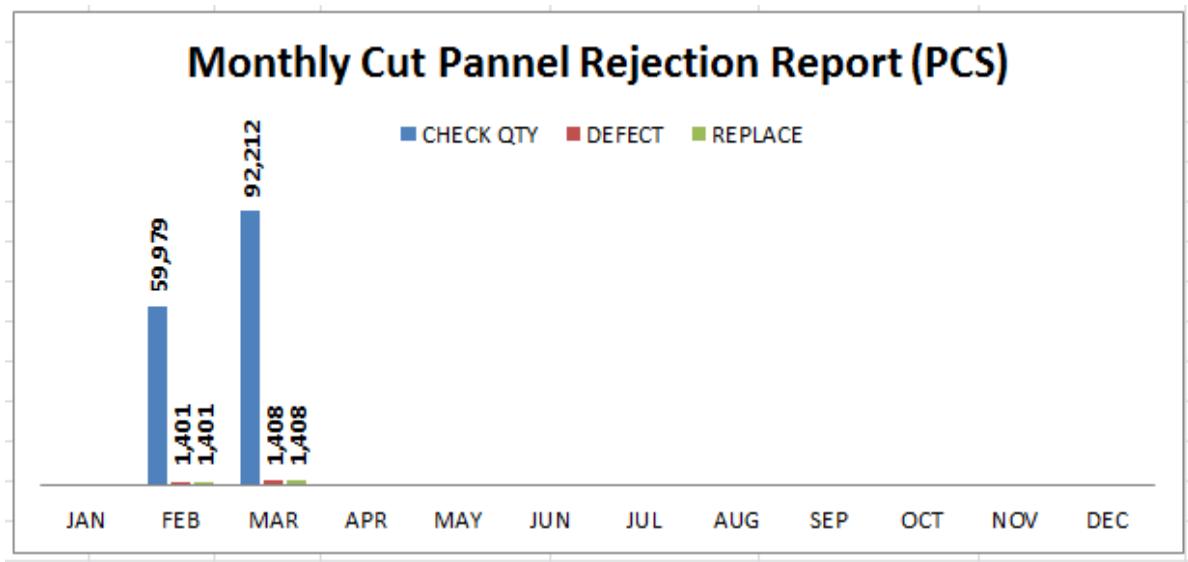
3. Rejection Status

SL NO	MONTH	UNIT	INTIMATE FLOOR					REMARKS
			REJECTION QTY	WORKMENSHIP	WORKMENSHIP %	MATERIAL DEFECT	MATERIAL DEFECT %	
1	JAN	pcs	3452	1944	56%	1508	44%	Including December 2011
2	FEB	pcs	1009	891	88%	118	12%	
3	MAR	pcs	757	450	59%	307	41%	



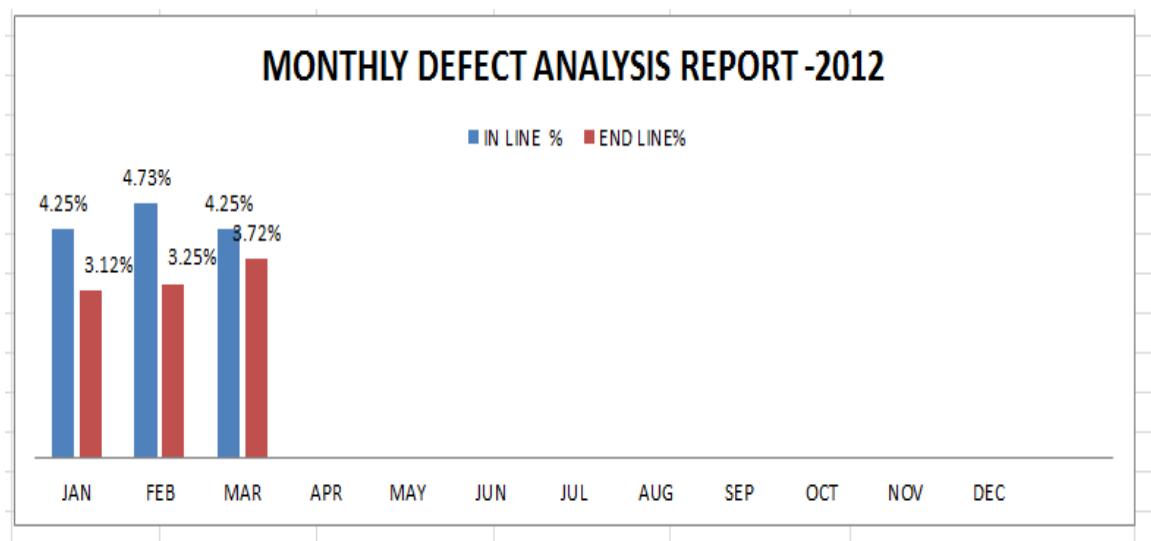
#### 4. Monthly Cut Panel Rejection

SL NO	MONTH	UNIT	INTIMATE FLOOR			REMARKS
			CHECK QTY	DEFECT	REPLACE	
1	JAN	pcs				
2	FEB	pcs	59,979	1,401	1,401	
3	MAR	pcs	92,212	1,408	1,408	
4	APR	pcs				
5	MAY	pcs				
6	JUN	pcs				
7	JUL	pcs				
8	AUG	pcs				
9	SEP	pcs				
10	OCT	pcs				
11	NOV	pcs				
12	DEC	pcs				
<b>TOTAL</b>			<b>152,191</b>	<b>2,809</b>	<b>2,809</b>	



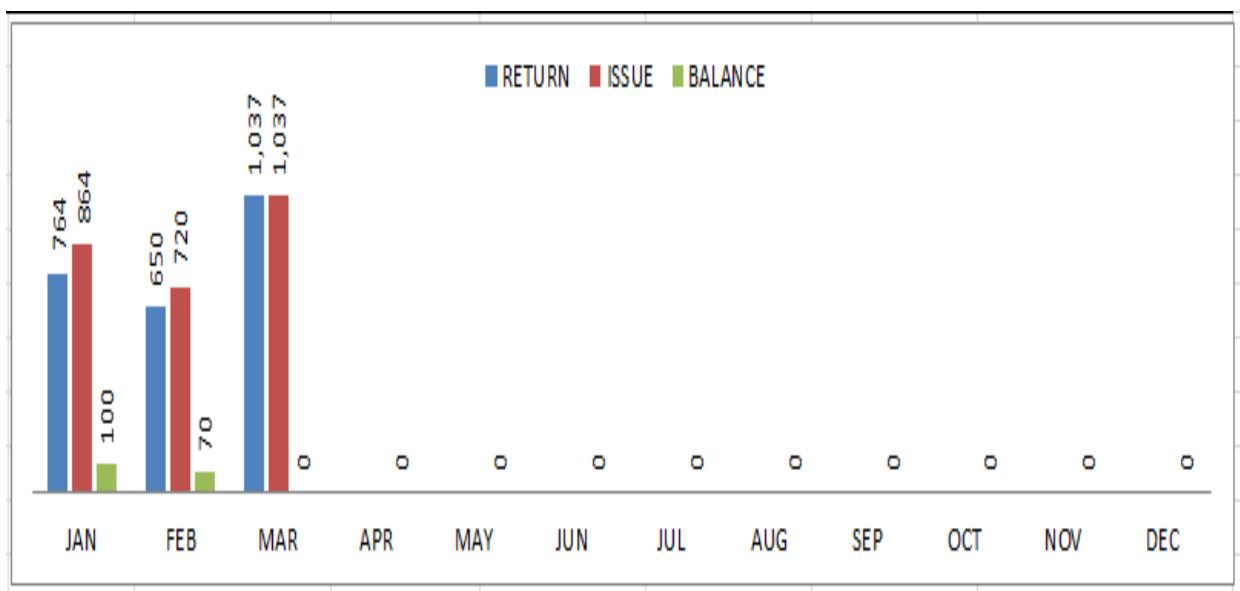
#### 5. Monthly Defect Percentage

MONTH	CHECK QTY	DEFECT QTY	IN LINE %	END LINE%	REMARKS
JAN	259,851	11,053	4.25%	3.12%	
FEB	209,546	9,912	4.73%	3.25%	
MAR	310,154	13,200	4.25%	3.72%	



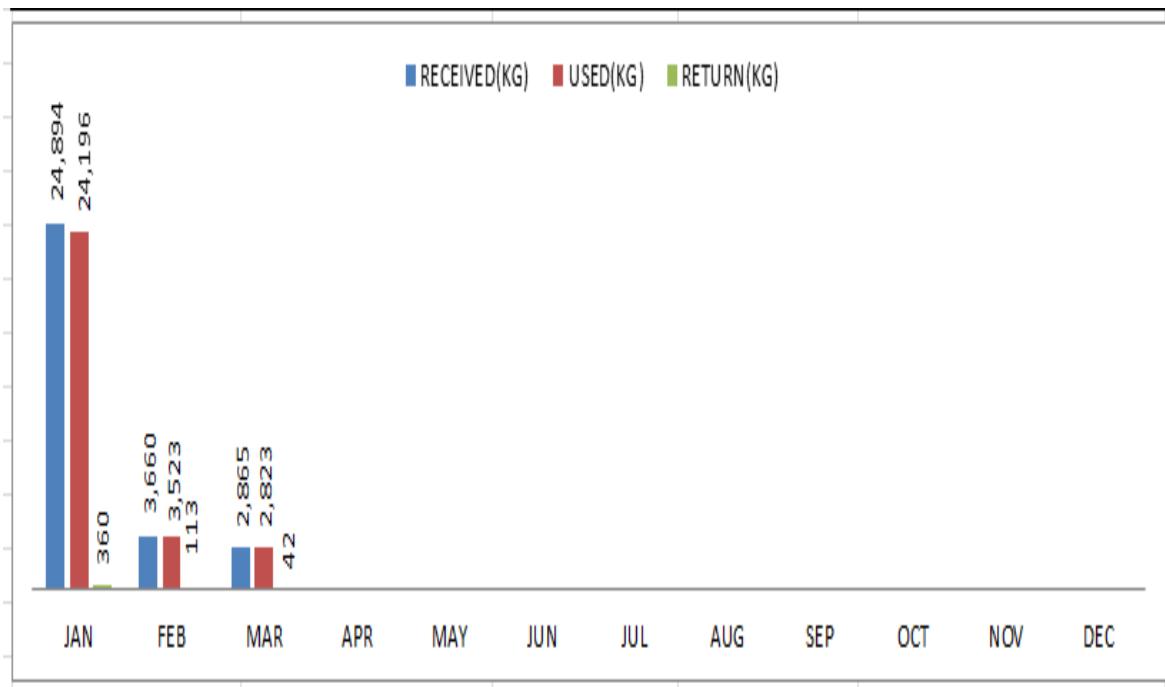
## 6. Needle issue & consumption

SL NO	MONTH	UNIT	INTIMATE FLOOR			REMARKS
			RETURN	ISSUE	BALANCE	
1	JAN	pcs	764	864	100	Due to starting new line balance is more.
2	FEB	pcs	650	720	70	
3	MAR	pcs	1,037	1,037	0	
4	APR	pcs			0	
5	MAY	pcs			0	
6	JUN	pcs			0	
7	JUL	pcs			0	
8	AUG	pcs			0	
9	SEP	pcs			0	
10	OCT	pcs			0	
11	NOV	pcs			0	
12	DEC	pcs			0	
TOTAL			2,451	2,621	170	



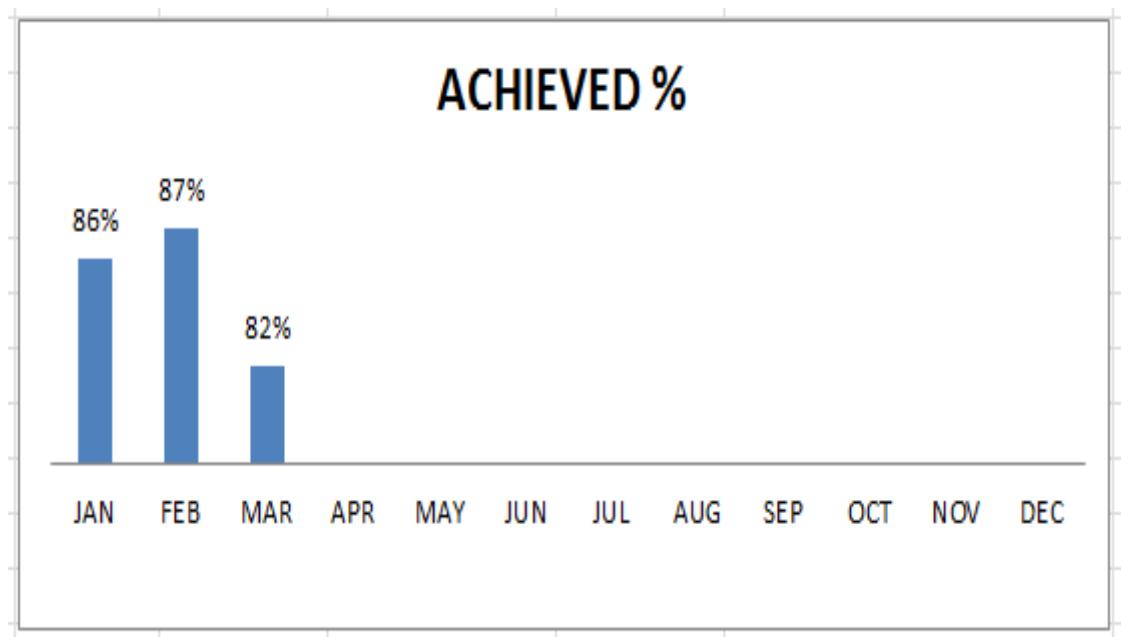
## 7. Fabric (KG) Return to Dyeing

MONTH	RECEIVED(KG)	USED(KG)	RETURN(KG)	Remarks
JAN	24,894	24,196	360	* Calculation of Closed Style
FEB	3,660	3,523	113	* Calculation of Closed Style
MAR	2,865	2,823	42	5 KG of Basic style will not return to dying.
APR				
MAY				
JUN				
JUL				
AUG				
SEP				
OCT				
NOV				
DEC				
TOTAL	31,419	30,542	515	



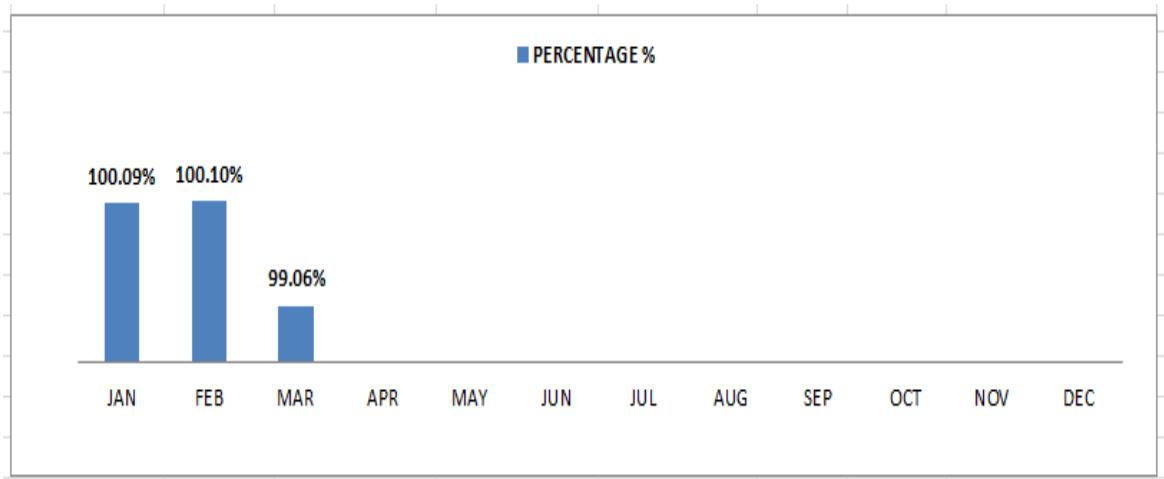
### 10. Monthly Plan vs. Achievement

MONTH	PLAN	ACHIEVEMENT	ACHIVED %	REMARKS
JAN	287,630	247,295	86%	
FEB	236,919	206,458	87%	
MAR	335,024	274,060	82%	
APR				
MAY				
JUN				
JUL				
AUG				
SEP				
OCT				
NOV				
DEC				
<b>TOTAL</b>	<b>859573</b>	<b>727813</b>		



### 11. Monthly Order vs. Shipment

MONTH	BUYER	ORDER QTY	SHIP QTY	PERCENTAGE %	SHORT	EXCESS	REMARKS
JAN	A & E	186,658	186,825	100.09%	4	171	
FEB	A & E	286,186	286,483	100.10%	0	301	
MAR	A & E	241,083	238,817	99.06%	2707	441	



### 12. Production Achievement Status.

MONTH	FLOOR	Production(PCS)	FOB VALUE \$	CM VALUE \$	SHIPMENT(PCS)	SHIP VALUE \$
JAN	Intimate	247,295	\$324,965	\$79,240	186,825	\$256,597
FEB	Intimate	206,458	\$263,071	\$59,594	286,483	\$349,219
MAR	Intimate	274,060	\$340,453	\$108,709	238,817	\$309,913

Garment defects, classified according to the various manufacturing stages are

#### Spreading defects in garment

- Narrow fabric, causes garment parts at the edge of the lay getting cut with bits missing.
- Plies misaligned, resulting in garment parts getting cut with bits missing in some plies at the edge of the spread.
- Incorrect tension of plies, this will result in parts not fitting in sewing, and finished garments not meeting size tolerances.
- Not all plies facing in correct direction (fabric Spreading Direction).
- Spread distorted by the attraction or repulsion of plies caused by excessive static electricity.

#### Cutting defects in garment

- Failure to follow the marker lines resulting in distorted garment parts.
- Top and bottom plies can be a different size if a round knife is used on too high spreading fabrics.
- Notches, which are misplaced, omitted, or wrong type.
- Frayed edges or fused edges, caused by a faulty knife, not sharp enough, or rotating at too high a speed.
- Garment part damaged by careless use of knife or due to overrunning cutting previous piece. Marker incorrectly positioned on top of spread.
- If too tight or too loose then garment parts are distorted.

### Capability Analysis

For Production module Implementation, capability depends on IT infrastructure and technology. There are three type of server used in the factory Mail Server, Proxy Server, Database Server. They have web enabled service named as www.jmfabric.com. They are using three technologies CCTV System, Intercom (BTTB), Video Conferencing).there are three Experts Involve to provide support to IT Department.

The Production department has manpower capacity as follows

Designation	Quantity
DGM	1
Manager	2
Asst. Manager	1
Executive	2
Others	948

### Production module Analysis.

The Technology used in Production module as Front End is PHP, J-Query, and Ajax and in Back End is MS SQL. Production module has Four Sub sections Production, Sub Contract Bill, Library, and Tools. Tools have same characteristics describe in merchandising module.

Sub-Section-Production	Properties
Grey Production Entry	Grey Production Information
Dyeing Production Entry	Batch Creation and Recipe Entry, Finish Receive Entry
Sewing Production Entry	Cutting Update Entry, Issue To print/Emb Entry, Receive print/Emb entry, Sewing i/p Entry, Sewing O/p Entry, Finishing I/p Entry, Garment Finishing Entry
Ex-Factory Entry	Ex-Factory Information
Report	Sewing Production Summery, Periodic line wise sewing Production, Order wise Production Report, Date wise Production Report, Fabric Receive status.

Sub-Section-Subcontract Bill	Properties
Knitting Bill issue	Print Bill, New Entry
Dyeing Bill Issue	Under Development
Sewing Bill Issue	
Payment Receive.	

Sub-Section-Library	Properties
Production	Sewing Line
Subcontract Bill	Knitting Charge, Dyeing Charge
Variable Setting	Production Update areas, Excess Cutting Slab, Fabric in Roll Level, fabric in Machine Level, Batch Maintained.

### 3.5.3 Inventory Module

Inventory module included Yarn, chemical, fabric, trims, general store Details .Web linkage to Inventory module provides standardized platforms for data transfer and sharing, among departments. With the application of this framework, the methodology has been applied and we can get some conclusion after that.

Analysis of the current system.

The Two type of analysis has been done.

- Capability Analysis
- Inventory module Analysis

#### Capability Analysis

For Inventory Module Implementation, capability depends on IT infrastructure and technology. There are three type of server used in the factory Mail Server, Proxy Server, Database Server. They have web enabled service named as www.jmfabric.com. They are using three technologies CCTV System, Intercom (BTTB), Video Conferencing).there are three Experts Involve to provide support to IT Department.

The Inventory department has manpower capacity as follows

Designation	Quantity
In Charge	1
Officer	1
Store Keeper	1
Others	2

### Inventory module Analysis.

The Technology used in Inventory module as Front End is PHP, J-Query, and Ajax and in Back End is MS SQL. Inventory module has Three Sub sections Inventory, Library, and Tools. Tools have same characteristics describe in merchandising module.

Sub-section-Inventory	Properties
Yarn Management	Yarn Receive Entry, Yarn Issue Entry to Knitting
Chemical Management	Chemical Receive Entry, Chemical Issue Entry.
General Store	General Item Receive Entry, General Item issue Entry.
Fabric Issue Entry	Grey fabric Issue Entry, Finish fabric Issue Entry
Trims Management	Trims Receive Entry, Trims Issue Entry
Receive Return Entry	Information Related to Receive and return
Issue Return Entry	Information Related to Issue and return
Item Loan Management Entry	Information Related to item loan
Item Transfer Entry	Information Related to item transfer
Physical Inventory Adjustment Entry	Under Development

Sub-section-Inventory	Properties
Item Details	Unit Info, Garment Item Info, Yarn Composition, Yarn Count, Item Group, Store Location
Variable Setting	ILE/Landed Cost Standard, Hide Opening Stock Flag, Item Rate optional, Item QC

### 3.5.4 Administrator Module.

Administrator module included various reports of all the Departments. Web linkage to Administration module provides standardized platforms for data gathering of departments. With the application of this framework, the methodology has been applied and we can get some conclusion after that.

Analysis of the current system.

The Two type of analysis has been done

- Capability Analysis
- Administrator module Analysis

#### Capability Analysis

For Administrative module Implementation, capability depends on IT infrastructure and technology. There are three type of server used in the factory Mail Server, Proxy Server, Database Server. They have web enabled service named as www.jmfabric.com. They are using three technologies CCTV System, Intercom (BTTB), Video Conferencing for the Commercial Transaction).there are three Experts Involve to provide support to IT Department.

The Administrator has manpower capacity as follows

Designation	Quantity
Chairman	1
Managing Director	1
General Manager	1

### Administrator module Analysis.

The Technology used in Administrator module as Front End is PHP, J-Query, and Ajax and in Back End is MS SQL. Administration module has Three Sub sections Top management Reports, Library, and Tools. Tools have same characteristics describe in merchandising module.

Sub-section-Top management Reports	Properties
Cost Breakdown Report	
Garment Shipment Report	
Yarn Requirement projection	
Shipment date wise work Progress	
Order Achievement Analysis	
Order wise Export Pending Report	
Periodic Product Mix Report	Top Management Reports are still in Development Stage Because All
Unused import limit against export LC	Modules Is not Implemented yet.
Yarn reconciliation Report From Knitting	
Current manpower Strength	
Cost management report	
Style wise approval Progress Report	
Shipment Pending Report	
Ex-Factory Deviation with capacity.	

Sub-section-Library	Properties
Mail Engine	Mail User Setup, Mail group setup, Email Server configuration

## LIMITATION AND SCOPE OF THE FURTHER STUDY.

### Limitations

Applicability of the framework is done through a single case study .This case study, however, is not a full validation of the framework. The applicability of this framework is only in one factory. The customization of ERP implementation is more focused in this study other issue like planning, In-depth Study of production has not covered.

### Future Research

Apparel Factory managers can use the framework with the proposed methodology .Validation of this framework should be tested in more garment factory where ERP is going to implement. A future research study could application of this framework in the other modules that has not covered due to time restriction.

## CONCLUSION

Various way of customization has been identified for ERP and Garment Business Processes with the Real Implementation Experience. System capability has been identified for ERP system customization Option and process change capabilities needed for process customization, Combining the process and system customization options with system and process change capabilities, Feasible way for managers to identify customization options for garment industry has been developed. This type of framework helps managers to recognize the gap between desired customization options and change capabilities. And also develop the long term view of ERP implementation by suggesting that ERP implementation be viewed as a series of interdependent customization and implementation projects.

### Contributions to Practice

This framework provides way to examine implementation possibilities rather than the directly matching with the process and the ERP system. The various customization options have provided to match with the system and process with analysis.

My contribution in this research project is to describe how a garment factory can use this framework to implement ERP. This framework provides the way to match with selected ERP and the Apparel production process. ERP Implementation contains multiple ERP modules and process.so factories can use this framework to think the possibilities of changing the ERP system and Production processes.so factories have some set of options to change ERP system and process.it also describes the factories capabilities to make changes with the factory feasibilities. The framework suggests focusing with the customization as well as the capabilities growth. This framework provides a way of thinking about ERP implementation and helps managers to understand and evaluate.

### Contributions to Research

Case Study provides way to understand the Exceptions of process to implement ERP.there is various Techniques has describe in Case Studies that is option to adopt ERP system to business process. This framework provides better Understanding of area of improvement and we can analyses system and process change capability.

## BIBLIOGRAPHY

- A. [http://www.basis.org.bd/index.php/members\\_area/member\\_detail/472 "ERP Vendor Details"](http://www.basis.org.bd/index.php/members_area/member_detail/472) [Accessed April 20, 2012, 01:59 p.m]
- B. Kunz | publisher = Fairchild Books | year = 2005 | isbn = 1563673533 }}
- C. <http://www.visual-fashions.com/garments-merchandising-2> [Accessed April 22, 2012, 01:22 p.m]
- D. Mishra, 2009, "Enterprise Resource Planning System" Atilim University Turkey, pp 57-58.
- E. <http://enterpriseapplications.crononline.com/news/erp-market-to-grow-to-503bn-in-2015-forrester-060511> "ERP market to grow to \$50.3bn in 2015: Forrester", [Accessed March 22, 2012, 03:06 p.m.]
- F. <http://www.eresourceerp.com/reason-for-ERP-market-growth-in-india.html> "What is the reason for ERP market growth in India?" [Accessed March 22, 2012, 03:07 p.m.]
- G. <http://blog.technologyevaluation.com/blog/2009/07/14/the-5-biggest-challenges-when-implementing-erp-for-the-first-time/> "The 5 Biggest Challenges When Implementing ERP for the First Time", [Accessed March 22, 2012, 03:08 p.m.]
- H. <http://www.focus.com/briefs/lessons-erp-implementation-failures/> "Lessons from ERP Implementation Failures", [Accessed March 22, 2012, 03:10 p.m.]
- I. <http://www.icmrindia.org/casestudies/catalogue/Operations/OPER049.htm> "SCM and ERP Software Implementation at Nike: From Failure to Success", [Accessed March 22, 2012, 03:11 p.m.]
- J. Consona, 2009, "Six Steps to ERP Implementation, "Consona Publications" pp 1-3.
- K. <http://www.managementstudyguide.com/enterprise-resource-planning.htm> "Enterprise Resource Planning (ERP)", [Accessed March 22, 2012, 03:15 p.m.]
- L. Yusuf, 2003, "Enterprise Information System Project Implementation "University Of Hull" pp 251-257
- M. <http://www.erppandmore.com/erp-reference/erp-definition/> "Understanding the ERP Definition", [Accessed March 22, 2012, 03:51 p.m.]
- N. Ulf Melin, The ERP System as a Part of an Organization's Administrative Paradox, Linkoping University.
- O. <http://www.erppandmore.com/erp-reference/erp-history/> "ERP History", [Accessed March 22, 2012, 04:00 p.m.]
- P. <http://www.business-software.com/article/erp-software-key-features/> "ERP Software Key Features", [Accessed March 22, 2012, 04:42 p.m.]
- Q. Srivastava, 2009, "ERP Overview Implementation Methodology "TCS Limited"
- R. <http://www.erppandit.com/roles-of-ERP-vendors.html> "What are the roles and responsibilities of ERP vendors" [Accessed April 1, 2012, 8:51 p.m.]
- S. <http://www.nickmutt.com/selecting-erp-vendor.htm> "Selection of ERP vendor" [Accessed April 2, 2012, 9:16 p.m.]
- T. BooYoung Chung 2007, AN ANALYSIS OF SUCCESS AND FAILURE FACTORS FOR ERP SYSTEMS IN ENGINEERING AND CONSTRUCTION FIRMS
- U. <http://www.implement-erp.com/index.html> "ERP Implementation –When the Combined Workforce Is Put To Use", [Accessed March 22, 2012, 07:03 p.m.]

- V. <http://blog.softwareadvice.com/articles/manufacturing/erp-implementation-strategies-1031101/> “ERP Implementation Strategies – A Guide to ERP Implementation Methodology”, [Accessed March 22, 2012, 07:29 p.m.]
- W. Kim Gerard & Melanie Austria Farmer, “Business software firms sued over implementation”, <http://news.cnet.com/news/0-1003-202-1428800.html> [Accessed March 26, 2012, 04:54 p.m.]
- X. Vincent A. Mabert, “Enterprise Resource Planning: Common Myths Versus Evolving Reality”, *Business Horizon*, 5/2001 v44 i3 p69
- Y. Polly Schneider, “Another Trip to Hell”
- Z. Suzette Hill, “ERP: It’s all in how you view it”
- AA. Malcolm Wheatley, “ERP training stinks”, *CIO*, 6/1/2000, v13, i16
- BB. R. Michael Donovan, “No magic cure will fix all ERP ills”
- CC. Jonathan Wu, “Business Intelligence: Fostering Success through Managing Expectations”, *DM Review*,<http://www.dmreview.com/master.cfm?NavID=68&EdID=4151>
- DD. Gary Hilson, “Human factor plays big role in IT failures”
- EE. IIE Solutions, 8/2001, v33 i8 p19
- FF. Kim S. Nash, “A Really Bad Bet for Drug Distributor”, *Computerworld*, 10/30/2000, p36
- GG. Stacy Collett, “SAP: Whirlpool’s rush to go live led to shipping snafus”, [http://www.computerworld.com/cwi/story/0,1199,NAV47\\_STO29365,00.html](http://www.computerworld.com/cwi/story/0,1199,NAV47_STO29365,00.html)  
[Accessed March 25, 2012, 03:51 p.m.]
- HH. Brent Mendel, “Bio-Rad’s woes needed two-pronged attack”, *InfoWorld*, 11/15/99, v21 i46 p78
- II. Beaubouef 2011, “Conducting ERP Assessment to Maximize ERP ROI” Enterprise packaged software solutions
- JJ. Kay Roman 2010, PMP “Top Five Factors for ERP Implementation Success “Collegiate Project Services
- KK. European Journal of Scientific Research, ISSN 1450-216X Vol.33 No.4 (2009), pp.617-629
- LL. IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT, VOL. 51, NO. 3, AUGUST 2004  
By Wenhong Luo and Diane M. Strong
- MM. Int. J. Services and Operations Management, Vol. 1, No. 1, 2005 by: Inderscience Enterprises Ltd.
- NN. Journal-institute of Engineers, Malaysia (Vol 67, No 3, September 2006)
- OO. A Systematic approach for monitoring and evaluating the construction project process.<http://eprints.utm.my/8056/1/8056.pdf>
- PP. Ulf Melin, The ERP System as a Part of an Organization’s Administrative Paradox, Linkoping University
- QQ. Divakaran “Lean Approach for Sampling Process In Merchandising” M.F.Tech, NIFT 2011
- RR. <http://garmentmerchandising.com/> “Apparel merchandising” [Accessed March 25, 2012, 04:51 p.m.]
- SS. <http://www.apparel-merchandising.com/> “Basics of apparel Merchandising” [Accessed March 12, 2012, 06:55 p.m.]
- TT. Manuals provided by Factory of Walmart, Nike, Li & Fung and others.

## VITA

Name: Prashant Kumar

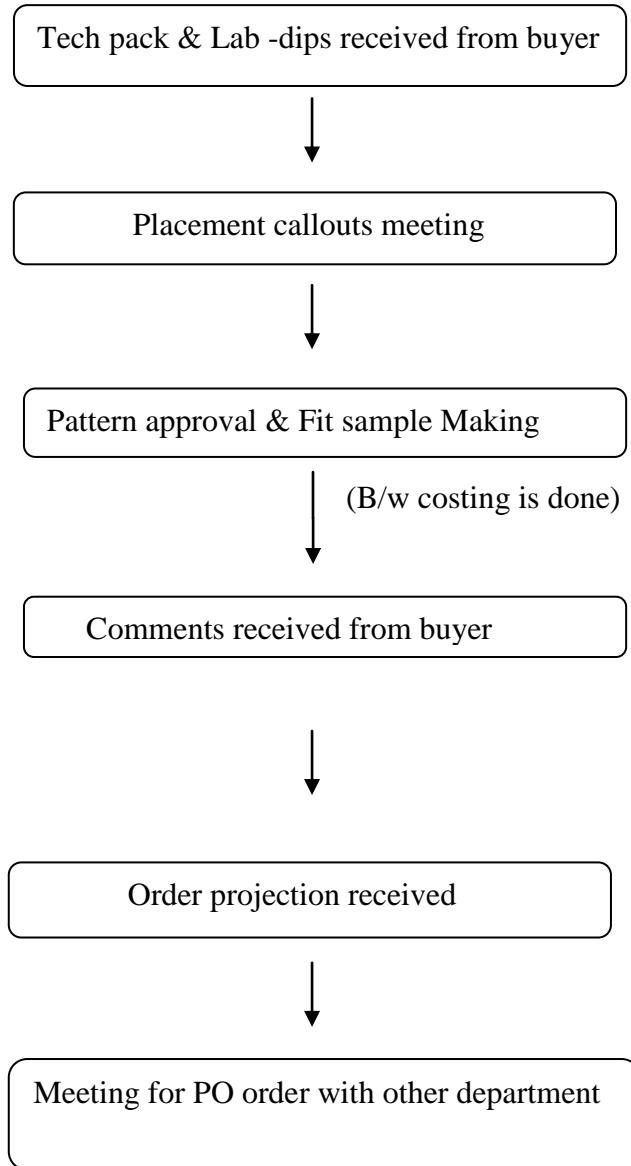
Address: GD College Road, Meerganj  
Begusarai, Bihar  
India, 851101

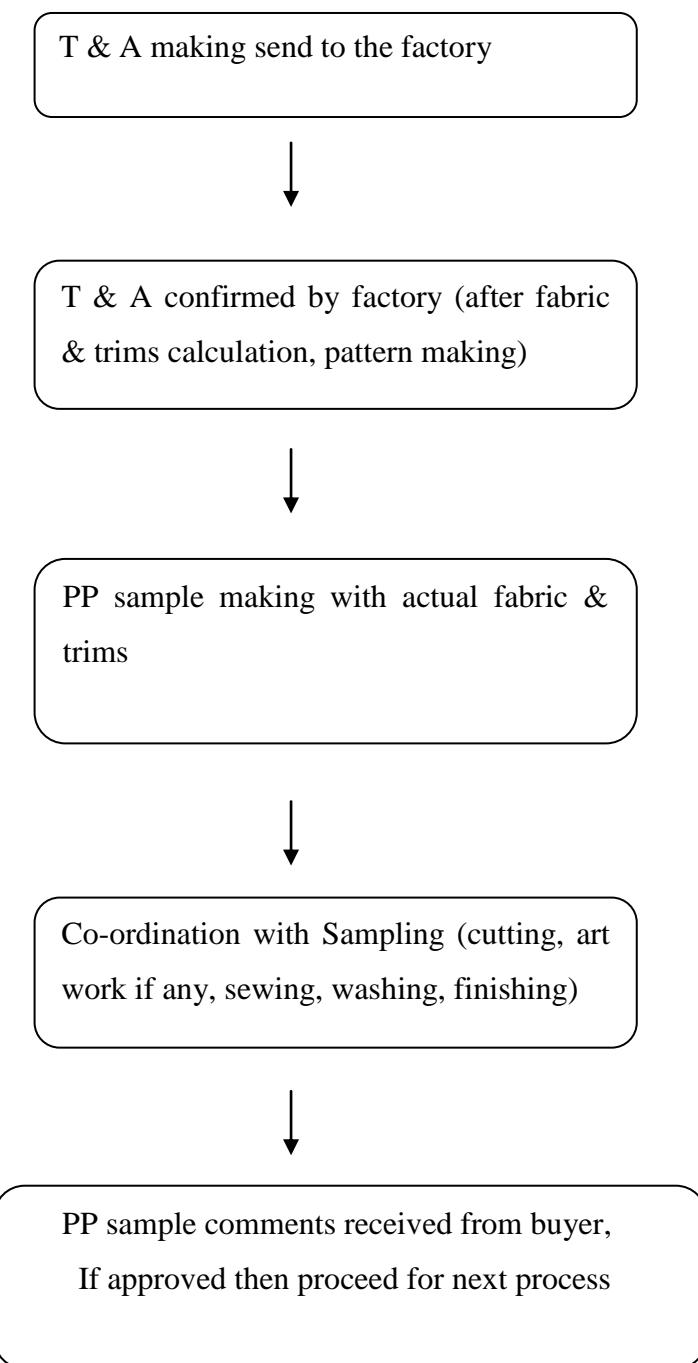
Email Address: prashantsol@aol.com

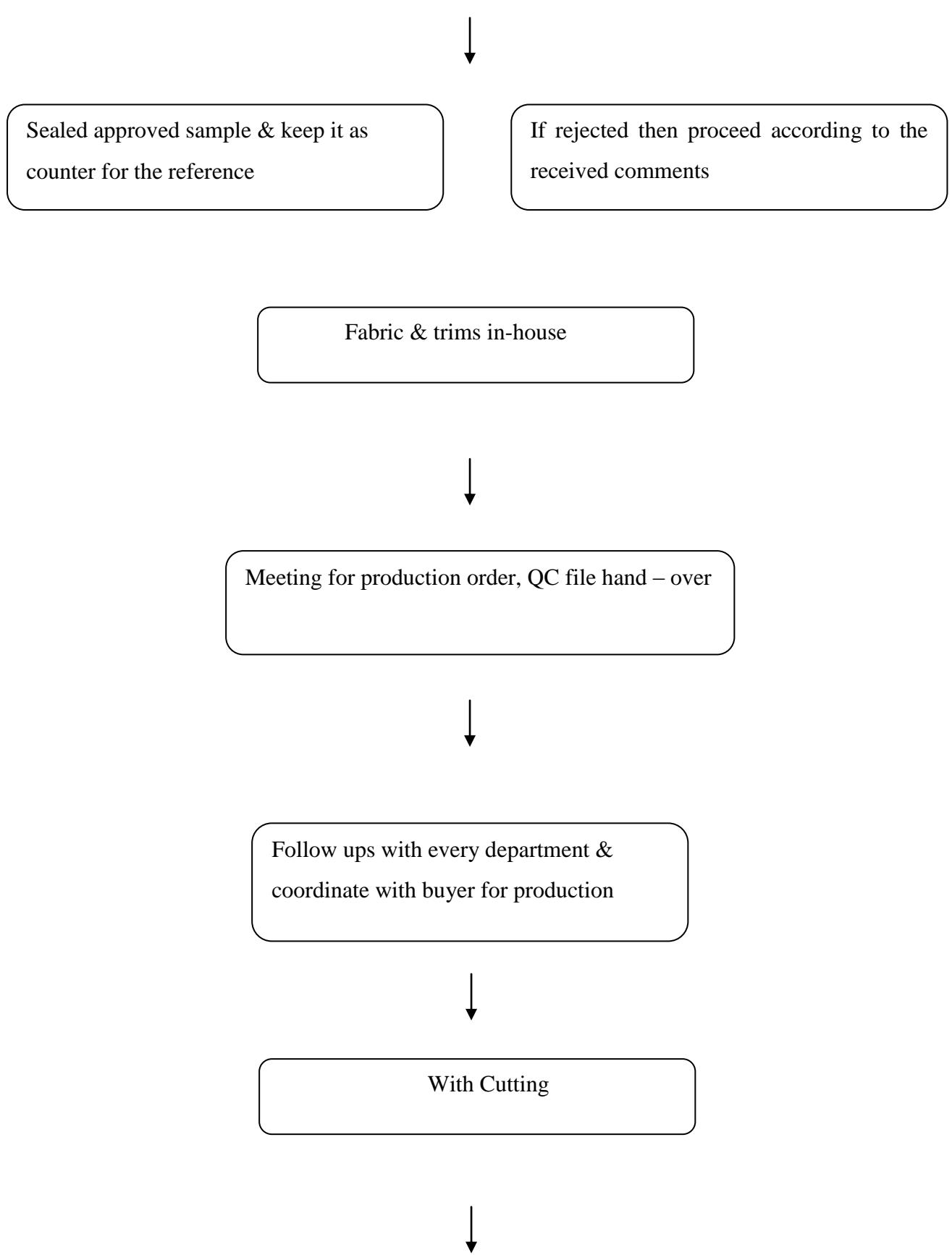
Education: B.tech, Computer Science and Engineering, BPUT at  
Orissa, 2009  
M.F.Tech., Apparel Production-Strategy, NIFT 2012

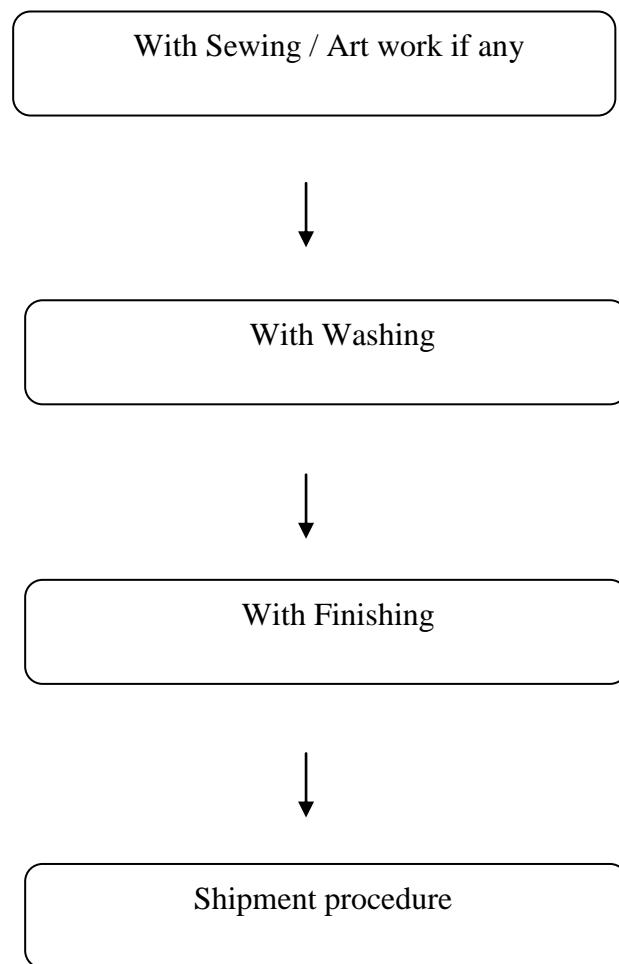
## APPENDIX-A

### Process flow in merchandising department



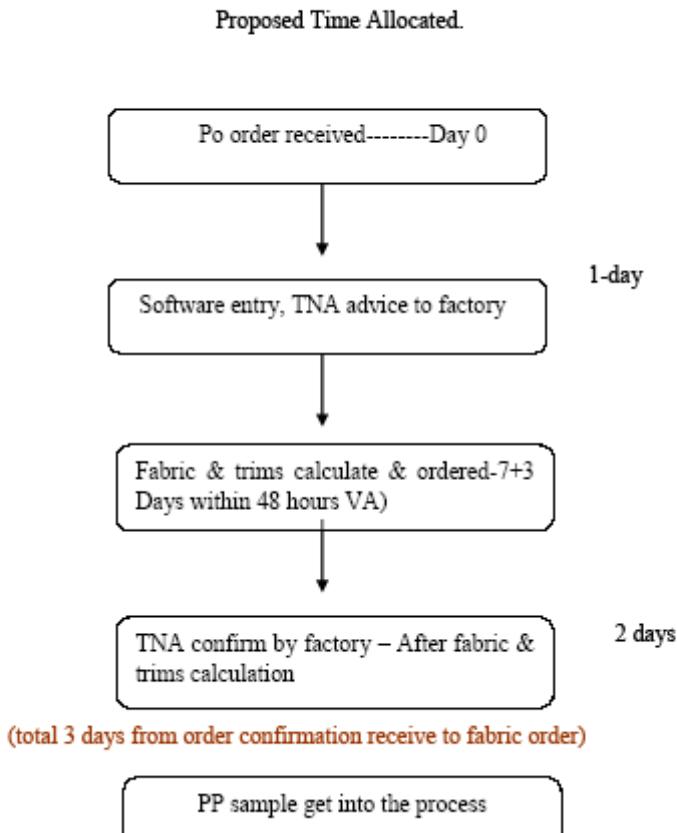






## APPENDIX B

### New Merchandising Work Process Suggested.



#### PP sample (Process)

- Pattern making – 2 days
- Fabric calculation/trims – 1 Day

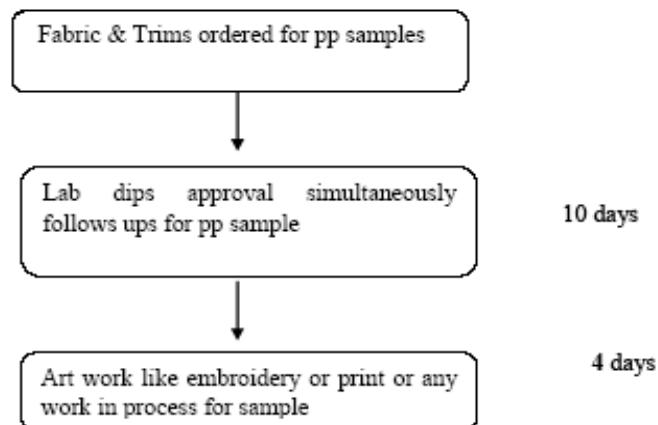
#### Fabric & Trims consumption

Their plan for fabric & trims orders –

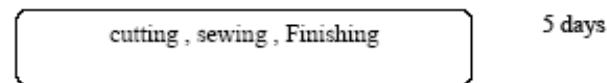
Buyer ask for actual fabric & trims.

Here for any special requirement factory can ask for any substitution so that pp sample can get proceed with in the time limit

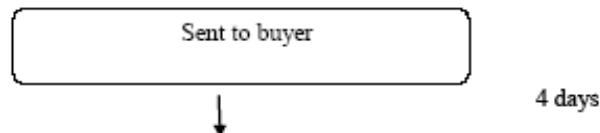
Avg calculation/ garment through pattern laying on fabric –



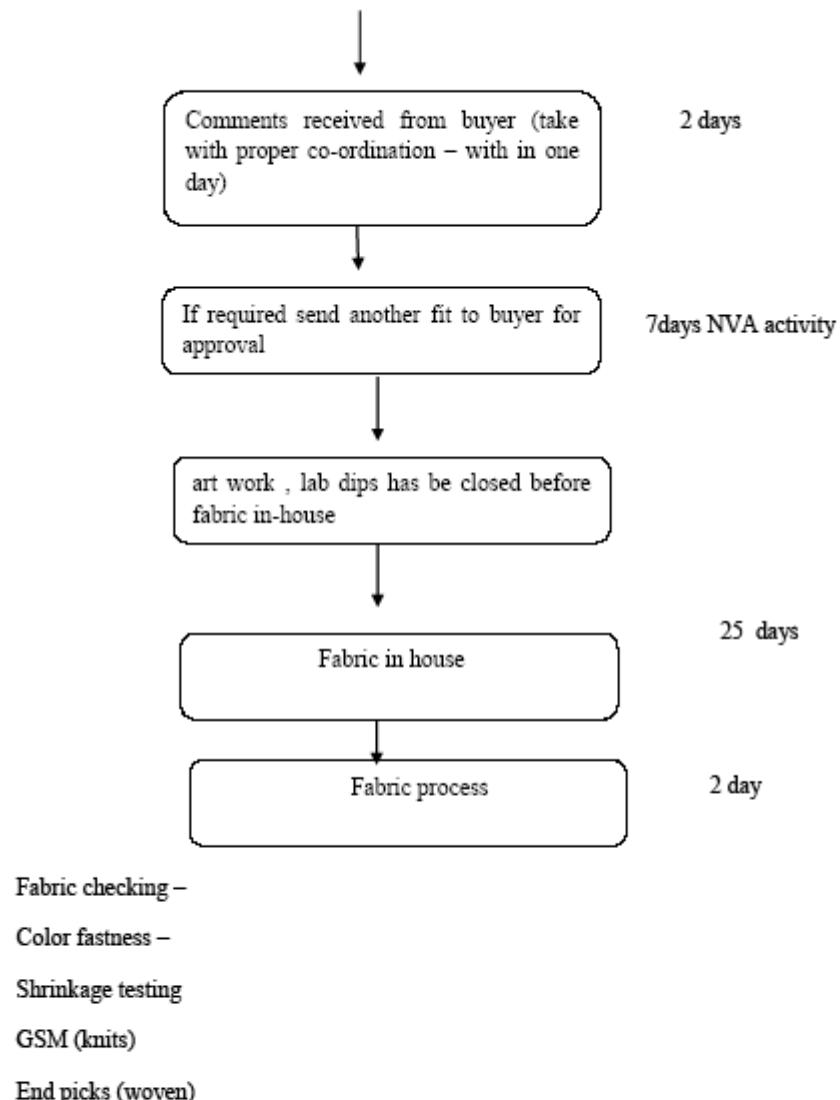
If approved then proceed for next step ----

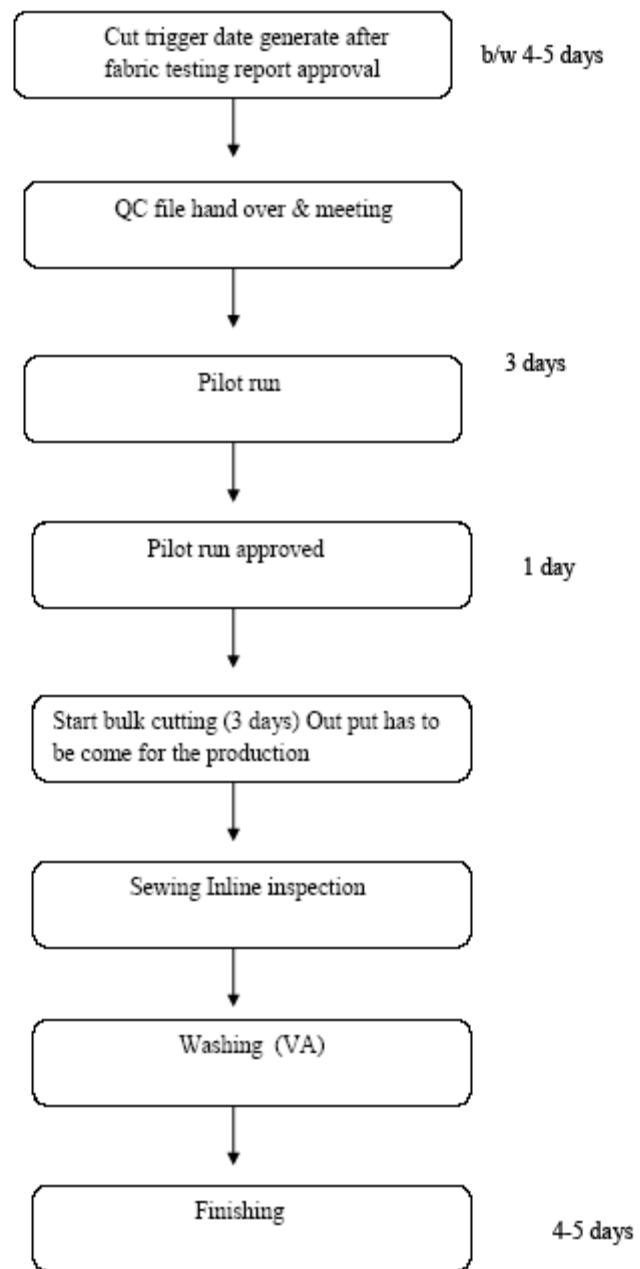


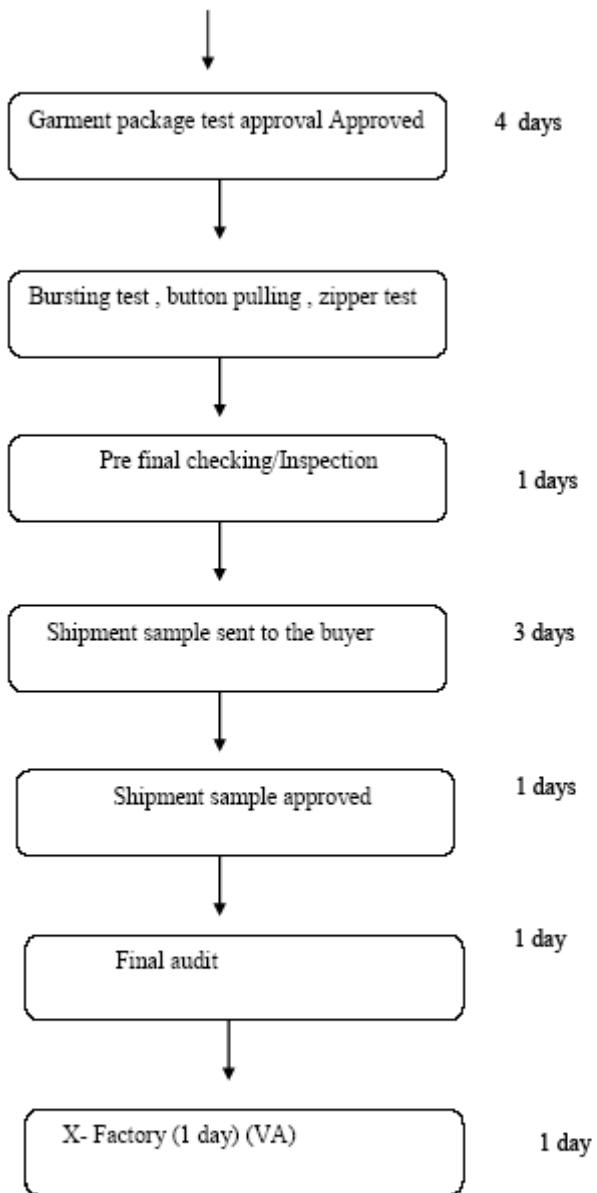
## Depends on styles and their variations & on buyer also how much quantity has been demanding ---(VA)



## Incase of any reason it get missed or reject -----take buffer of 7 days---(NVA)







**APPENDIX-C**  
**Terminology Guide-Commercial**

Terminology	Description
Sales Contract Entry	An agreement between the buyer and the seller stipulating every details of the transaction. It is a legally binding document. It is therefore advisable to seek legal advice before signing the contract.it is prepared by Exporter and Importer
Contract Number & Date	A written document no/Date(a contract) by which a seller agrees to convey property to a buyer for a stipulated price under specified conditions.
Beneficiary	<p>1. In the case of a letter of credit, the individual or company who is entitled to draw or demand payment under its terms.</p> <p>2. In the case of insurance, the person entitled to take the proceeds.</p> <p>3. The person for whose benefit a contract, or trust, or will is executed or enforced.</p>
Applicant (also Account Party)	The party at whose request a bank issues a letter of credit
Convertible to	The attribute of being exchangeable, such as a LC, Finance freely able to be exchanged for another.
Lien bank	Legal claim against a property. Once the property is sold, the lien holder is then paid the amount that is owed.

Pay Term	<b>SIGHT OR TERM/USANCE</b> Letters of credit can permit the beneficiary to be paid immediately upon presentation of specified documents (Sight letter of credit), or at a future date as established in the sales contract (term/usance letter of credit).
Tenor	The time fixed or allowed for payment, as in "the tenor of a draft."
Incoterm	Indicate whether the buyer or the seller carries the risk, responsibility, liability, or costs at specific points during a transaction.
Port Of Entry	Place where imported goods are admitted into the legal frontiers of the importing country. It may or may not be same as the port of destination.
Port Of Loading	Place where shipments are loaded and secured aboard a vessel. It may or may not be the same as port of origin.
Port Of Discharge	Place where a vessel (ship or aircraft) is off-loaded and the shipments are dispersed to their respective consignees. It may or may not be the port of destination. Also called port of unloading.
BTB Limit Percentage	The exporter receives a letter of credit. he then approaches his bank for financial assistance. this comes in mainly two forms - Back to back credit and packing credit. There is some limit on how much the

	exporter will be financed depending on the value addition of the goods. if the LC value is USD 100, then usual back to back limit is 70% and packing credit limit is 15%. packing credit may be given any time before shipment
Export LC Info Entry	A letter of credit is a bank undertaking of payment separate from the sales or other contracts on which it is based.
LC Number & Date	A written Document No and date in the form of commitment to pay, by a buyer's or importer's bank (called the issuing bank) to the seller's or exporter's bank (called the accepting bank, negotiating bank, or paying bank).
Issuing Bank	Buyer's or importer's bank which establishes (opens) a letter of credit (L/C) in favor of a beneficiary (seller or exporter), forwards it to an advising bank for delivery to the beneficiary, and commits itself to honor demand drafts drawn by the beneficiary against the amount specified in the L/C. Also called opening bank.
Transferring bank	The paying, accepting or negotiating bank that makes the credit available in whole or in part to one or more second beneficiaries at the request of the first beneficiary is known as the transferring bank.

Re- Imbursing Bank	The bank authorized by the issuing bank to reimburse the drawee bank or other banks submitting claims under the letter of credit
BL-Clause	Bill of lading for port to port shipment or for combined transport.
Export LC Amendment Entry	Change in a Export LC made by adding, altering, or omitting a certain part or term.
Invoice	An invoice or bill is a commercial document issued by a seller to the buyer, indicating the products, quantities, and agreed prices for products or services the seller has provided the buyer
ETD	The term ETD is the estimated or expected time of departure from the port or point of origin; it applies to all modes of transportation. ETD is shipment on or about
ETA	The term ETA is the estimated or expected time of arrival at the port or point of destination; it applies to all modes of transportation.
Feeder Vessel	Vessel employed in normally short sea routes to fetch or carry goods and containers to and from ocean going vessels.
Import Certificate	A governmental document which permits the importation of a product or material into a country where such licenses are necessary.
Mother Vessel	Main ocean vessel in a liner service designated to move containers from set

	origin points to set destination ports/points on a regular basis.
Document Submission Entry	The beneficiary prepares an invoice in the number of copies required, with the description of goods shown exactly as stipulated in the letter of credit. The beneficiary obtains the bill of lading and/or other transport documents from the carrier and prepares and/or obtains all other documents required by the letter of credit. These are attached to the draft, drawn on the bank indicated and at the term stipulated in the letter of credit, and are presented to the advising/confirming/negotiating bank.
GSP	Under the GSP (Generalized System of Preferences) program or the preferential tariff treatment, a free or reduced duty is granted by developed countries to certain manufactured goods from the least developed countries, in order to bolster their exports and economic growth
Realization of Export Proceeds	On Receiving the Documentary bill of exchange, the importer releases payment in case of sight Draft or accepts the usance draft Undertaking to pay on maturity of the bill of exchange. the exporter's bank receives the payment through importer's bank and is credited to exporter's account.
Certificate of deposit	A certificate of Deposit (CD) is a time

	deposit, a financial product commonly offered to consumers in the United States by banks, thrift institutions, and credit unions.
ERQ A/c	<p>ERQ means exporters retention Quota. Merchandise exporters are entitled to foreign exchange retention quota of 50% of repatriated F.O.B value in their exports. However for exporters of goods having high import content like furnace oil and bitumen, readymade garments made of imported fabrics, electronic goods etc. the retention quota is 10%.</p> <p>The purposes of ERQ account balance are below:-</p> <ul style="list-style-type: none"> <li>a) Business visits abroad.</li> <li>b) Participation in export fairs and seminars.</li> <li>c) Establishment and maintenance of officers abroad.</li> <li>d) Import of raw materials, machineries and spares etc. without prior approval of central bank</li> </ul>
ECC	Excise Control Code :The ECC number is a registration number, issued to all the Central Excise Assesses
SWIFT	SWIFT is the Society for Worldwide Interbank Financial Telecommunication, a member-owned cooperative through which the financial world conducts its business operations with speed, certainty and

	confidence. More than 9,000 banking organizations, securities institutions and corporate customers in 209 countries trust us every day to exchange millions of standardized financial messages.
FDBC	Foreign Documentary Bill for Collection: If Export documents are not in order then bankers send the documents for Collection.
Bi-Salam/PC(Advanced purchase)	The business contract in which bank made advanced payment against the supply of commodities in a future stipulated period of time is called Bi- Salam. On taking delivery of the commodities on the specified time the bank can sale these to other party. /Sale in profit as per contract
FTT/TR	financial transaction tax: A financial transaction tax is a levy placed on a specific type of monetary Transaction for a particular purpose., Treasury Receipt: A zero-coupon bond issued by a brokerage firm and collateralized by treasury securities held for the investor by a custodian.
HPSM	Hire Purchase Under Shirkatul Meelk (Ijara Muntahia Mittamleek) is a special type of contract, used by Islamic Banks, which has been developed through practice. It is a combination of three contracts like Shirkat-al-Meelk, Ijarah and Sale

