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Submitted by:

Student's name: Hasibul Hasan Shaon ID: 191-32-392

Supervised by:

Supervisor's name: Tanvir Ahmed Chowdhury

Designation: Assistant Professor

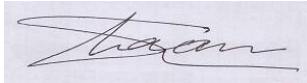
A thesis submitted in partial fulfillment of the requirements for the degree of  
**Master of Science in Textile Engineering**

August, 2023

## DECLARATION

I hereby declare that the work which is being presented in this report entitled, “**Comparison between Piece Planning and Minute Planning in RMG Sewing Production Planning**” is original work of my own, has not been presented for a degree of any other university and all the resource of materials uses for this thesis have been duly acknowledged.

**Student:**



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**Hasibul Hasan Shaon**

ID: 191-32-392

M.Sc. in Textile Engineering

This is to certify that the above declaration made by the candidate is correct to the best of my knowledge.

**Supervisor:**



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**Tanvir Ahmed Chowdhury**

Assistant Professor

Textile Engineering Department

Daffodil International University

## **ACKNOWLEDGEMENT**

This work has done directly under Department of Textile Engineering at Daffodil International University (Duration: May, 2020 to August, 2023).

As I'm a student of Textile Engineering & my professional background related to my education background. So I tried to enrich knowledge about Ready Made Garments Production Planning. In Ready Made Garments Industry every work related to lead time. This lead time is provided by Buyer. The lead time starts from getting order confirmation. Buyer wise lead times depends. But the standard lead time is 4 weeks or 1 months. We get all related information from merchandiser.

Buyer wise information, delivery, styles actually all related things depends. So here we can know also few terms related to Ready Made Garments Production Planning from various Buyer's perspectives.

This research help me to increase my educational level as well as my professional strength. During this research time I got directly instruction from my respective thesis supervisor Tanvir Ahmed Chowdhury who is currently working as Assistant Professor at Textile Engineering Department in Daffodil International University. And I'm very thankful to all professionals who help me to gather knowledge about Ready Made Garments Production Planning.

## ABSTRACT

This research is directly related to Ready Made Garments Production Planning. To do so have to know about various information like garment, fabric, washing and many others things. Actually Planning is related from order confirmation to delivery. That's why Planning is always very much important in Ready Made Garments Trade. For better working progress now a days there's various types of Planning software is used for Planning like Fast React, SAP etc. All of these are ERP based software. These kind of software keeps all related information from booking, in-house, planning, production, shipment etc.

Here we also know about manual Planning and various types of planning, there compares. Which one is better for which types of product or factory and so on many other daily basis information related to practical things.

In this **Comparison between Piece Planning and Minute Planning in RMG Sewing Production Planning**, we will know deeply about ready-made garments planning and others related things to planning. Planning department is related from top to bottom to run factory smoothly. They work with capacity booking, order projection & confirmation, supply chain, delivery, factory earning etc. many things. That's why Production Planning department have special value to Managing Director of the factory.

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# CHAPTER-01 INTRODUCTION

# **INTRODUCTION**

Production Planning is the basic heart in RMG trade for factory. To run the factory & business smoothly there's no other option better than Production Planning. Production Planning Department mainly work with updated information like order status, SCM (Supply Chain Management), production follow-up etc.

Before taking non-projected order during a running season/projection, merchandising department take capacity booking from Production Planning Department. Actually Production Planning Department is the bridge between merchandising department & production department who is responsible from order placement to ex-factory. Production Planning Department is also known as Production Planning & Control.

Mainly Production Planning team divided into two class. One is Central/Head Office Team and another one is Factory Team. Production Planning Team is directly responsible from order confirmation to Ex-factory.

**CHAPTER-02**  
**LITERATURE REVIEW**



# LITERATURE REVIEW

Production Planning is the term widely used for its immense importance in day to day life. It comes with strategy, mission, scheduling & routing. Though it seems like planning & scheduling is the same stuff, but in real practice, it is not. Planning is a summary view of a set of activities in which proper objective, mission, routing path & scheduling included. From planning, we can find alternative paths & solutions. Scheduling is a part of planning with proper time & action plan of selective activities.

Garments Production Planning is an important factor in the garments industry. Garments manufacturers take orders based on production planning. Proper planning can execute the right time delivery (shipment) of export garments, that's why planning is a department in the garments manufacturing industry and getting high value to middle and top management. Among cutting, sewing, washing and finishing departments; sewing capability is the main factor of garments production planning.

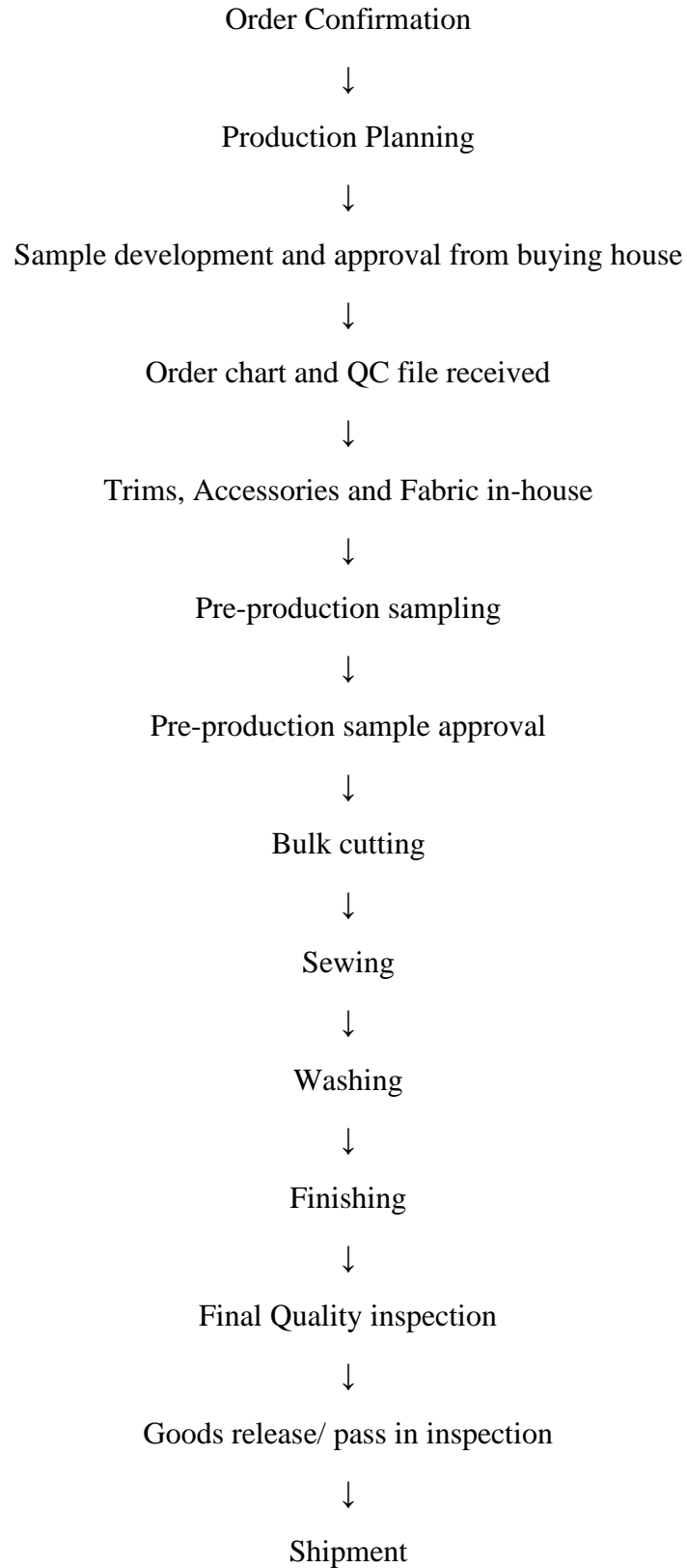
Getting a job in garments production planning is like a dream comes true. A demandable job sitting in a cool desk, very much respected by all departments. A production planner salary is comparatively more than other departments; not needed to deal with too many people, report and work with top management what makes a production planner very special in the apparel manufacturing industry.

## **Objectives:**

Here's the objectives of Garments Production Planning:-

1. Utilize full production capacity.
2. Right product input right line.
3. Meet customer given delivery date.
4. Execute whole garments manufacturing process.
5. Give feedback to top management.

**Production Planning process execution flow chart:-**



## **Cutting Plan**

Cutting is not all about capacity, efficiency and working hours. Cutting starts as per the planning sequence if the garments production preparation process has already completed. Cutting delay for some quality issues of fabrics. Based on shade grading, shrinkage, there has a cutting plan.

### **Cutting Planning process:**

- i. Cutting Planning is done based on the following: Size breakdown, Specifications, etc. Approved Shade Band chart, Approved fabric swatches. The Production Plan is received from the Production Manager, order details from Merchandiser and Shade Band Chart from the QC Department.
- ii. Based on the above information the Cutting In-Charge prepares the Cutting Plan.
- iii. The Cutting In-Charge informs Size, Ratio and fabric width to the CAD department for marker preparation by preparing cutting lay order sheet.
- iv. Once the Cutting In-Charge has approved the marker after it has been checked for the pattern direction and tightness and consumption, it is further approved by the Production Manager for efficiency.
- v. Cutting In-Charge requisition slip based on the consumption approved by Production Manager and give to the stores department for issuing of fabric.

## **Sewing Plan**

Sewing plan depends on per hour production capacity, working hour, efficiency, order quantity, machine types and product difficulties. The first day is to set Line layout, 2nd day you will get output but production will be less than average.

Sewing planning for example: For a lot of 5000 pcs, your sewing 1st-day production 300, 2nd Day 700, 3rd day 1000, 4th day 1150, 5th day, 6th day the rest 700 and Layout of next lot. So your average production per day 833.

## **Washing Plan**

When it is coming to the wash process, generally a minimum of 3 days keep after the sewing completion date for the washing plant. In the garments industry, everything never going to happen as per planning. Sewing may take two days more than the planned date. So pressure going to hit on Washing and Finishing. A production planner has to follow up washing backlog with Washing factories; what goods urgent, what washing delay is allowable. If garments manufacturer does not have own washing plant, they have to give subcontract in another factory. In this case communication with a washing plan, washing follows up is very much necessary for a production planner.

## **Finishing Plan**

The finishing process is very complex of fancy style. Casual styles are comparatively easier than fancy style. Based on the buyer product quality standard and the number of the finishing process, finishing the production plan can be done. If you have many lots in hand in finishing, you have to check which delivery is tight. Finishing is done on priority base and Shipment date status.

## **Final Audit and shipment**

Final quality inspection is done when goods packing already completed. If a final inspection fails and the buyer asks to recheck the whole quantity of goods, you will fall in trouble if you do not have time in hand to ship the goods. So it's really necessary to keep one week in advance when you do production planning.

## **Garments Production Planning and Execution Factors:-**

These factors are related to start and execute planning.

1. Order Sheet
2. QC File (Trim Card)
3. Approved sample
4. Size set cutting and approval status
5. Supplier raw materials quality clearance
6. Bulk cutting start date
7. Daily sewing production
8. Washing status
9. Finishing Backlog
10. Shipment date

[1]

**CHAPTER-03**  
**EXPERIMENTAL DETAILS**

# EXPERIMENTAL DETAILS

## 2.1 DEFINITION

The execution of an order is basically done by Production Planning team. Utilizing capacity by booking confirmation for order projection to get order as per projection & materials in-house and making production plan to meet shipment within required time with smoothness plan is done by Planning team which is basically known as Production Planning. Major two responsibilities of Production Planning are “proper line feeding” & “on time shipment”. One more thing, Production Planning team co-ordinate with all others department to achieve the Plan.

## 2.2 THINGS NEED to KNOW:

There's few common and widely used few terms that must have to know before doing Production Planning. So here we briefly discuss about few things which desperately need to know for smooth Production Planning. Here's a short list about “Things Need to Know”:-

1. CPM
2. EPM
3. CM
4. SMV
5. Productivity
6. Efficiency
7. Capacity & Booking
8. SPM
9. PCD
10. TNA
11. Shade & Shrinkage Summary
12. Country Shade Plan
13. Pattern
14. CS
15. Art-work
16. OS & Production File.
17. Lead Time
18. Product Category
19. Layout
20. Embroidery
21. Printing
22. Washing
23. Order Projection
24. Delivery
25. ETD
26. ETA
27. SCM

**1. CPM:** To run factory as well as to make apparels the management must have to maintain cost against making. Here, CPM means Cost Per Minute. Suppose a shirt is making a line per day 1000pcs, so what is making cost for a minute of that line? How can we calculate CPM here? Well, we can calculate CPM in two ways. One is known as Estimated Cost Per Minute (ECPM) and other one is Actual Cost Per Minute (ACPM). To calculate ECPM, we need to know Total salary of a day, Total Working Minute of a day & Line Efficiency%. And to calculate ACPM, Total salary of a day, Production of a day & SMV (SMV means Standard Minute Value) of a garments.

So,

$$\text{ECPM} = \frac{\text{Total Factory cost/ Number of line/number of day}}{\text{MP x WH x 60}}$$

$$\text{ACPM} = \frac{\text{Line Cost}}{\text{MP x WH x 60}}$$

**2. EPM:** We already acknowledge about CPM (Cost Per Minute), now it's time to know about Earning Per Minute which is simply called EPM. Imagine, a shirt making line's per day production is 1000pcs, so what is per minute earn from this production? To find EPM we have to know the produce quantity, CM (Cost of Making) of produced garment and total working minute of a day.

So,

$$\text{EPM} = \frac{\text{Production of a Day*CM}}{\text{MP x WH x 60}}$$

**3. CM:** To make a garment, we've to go through a lot of process which is mainly divided into 3 steps (Cutting, Sewing & Finishing) which is the part of CM. Out of this three steps there are Embroidery, Printing & Washing cost separately. So literally (Cutting, Sewing & Finishing) is known as Cost of Making (CM). To find out CM, we have to know per month factory expense and No. of running machine, daily working hour & monthly working day.

So,

$$\text{CM} = \frac{\text{SMV* CPM}}{\text{EFF\%}}$$

**4. SMV:** SMV defined as the time which is allowed to complete a job satisfactorily. How many times required to make a garment? Have you ever faced this question? Well, here's the answer for it with little details. Standard Minute Value is known as SMV. To produce a garment in sewing stage how many manpower need, how would be efficiency/productivity, CM etc. the SMV is calculated to find out these data. To calculate SMV, the equation are follows:-

$$\text{SMV: (Basic Time + Allocated Allowance)/60}$$

Here, basic time = Observe time X rating (rating = skill + effort + concentrate)

In practical scenario, the SMV is calculated by style wise single process Standard SMV base which is provided by factory management.

**5. Productivity:** Productivity can be measured in several ways. Like costing productivity, theoretical productivity and actual productivity. When the order comes a quarry that time we calculate Costing productivity. Theoretical productivity is percentage of output by input. Actual productivity: after completing the style of a line total production divided by number of days used for production. Productivity can increased by many things like operator skills, proper machine utilization, running days, line expertise, back to back same or almost same style feeding, similar style, production unit wise marketing and many others thing.

**6. Efficiency:** The more efficiency a factory gain, the more CM will earn and management will be more profitable. Normally efficiency is express by percentage. By efficiency, we can know total factory condition, status & set-up of a group or factory. In sewing floor, line operator set-up should be enough good as per styling so that they can give more production which needs to achieve expected efficiency. To achieve maximum efficiency must have to use proper utilization of Manpower, Machine and all production related things. The percentage of Produce Minute & Total Minute is the basic equation of Efficiency. To find produce minute have to know day production and SMV and to know total minute have to know Manpower & Working Minute.

$$\text{Efficiency} = \frac{\text{Produce Minute}}{\text{Total Minute}} * 100$$

Even to get enough good impression from Buying Office to get more attractive order, efficiency play very important roll. Efficiency is related to CM earning. More efficiency gives more CM earning. Industrial Engineering department is directly related and calculate factory efficiency. They utilize everything to make smooth production path so that expected efficiency can achieve.



$$\text{Standard Factory Capacity} = (\text{TL} \times \text{OP} \times \text{WH} \times 60 \times \text{WD} \times \text{Eff} \%) / \text{SMV}$$

Here,

**TL** = Total line of factory; **OP** = Total Operator of factory considering absenteeism 5%;

**WH** = Monthly Avg Working Hour; **WD** = Working Day of a month; **Eff%** = Standard monthly Eff%

$$\text{Capacity (in minute)} = \text{Monthly Production pcs} \times \text{Avg SMV}$$

Marketing teams do marketing by the Capacity of factory. They (Marketing team) get capacity from Production Planning team. To book order capacity booking is very much important. It helps to secure on time delivery, smooth production and many others relate things. Before capacity booking for smooth production tracing, in-house embroidery, printing & washing capacity gives a lot of advantages. And capacity in minutes gives very much exact prediction of production capacity. The best way of getting actual capacity of factory is above Standard Factory Capacity in minutes. So standard factory capacity in minute provides actual scenario with details and capacity prediction. For smart capacity booking, factory capacity can be divided in below ways:-

$$\text{Tops (Shirt/T-shirt/Jacket)} = (10/10/10) \text{ } 30\%$$

$$\text{Bottom (Pant: Basic/Chino/Cargo \& Trouser):} (10/40/10) \text{ } 40\%$$

$$\text{Dress (Overall):} \text{ } 20\%$$

$$\text{Others} = 10\%$$

For a well reputed group of company, above capacity class could be a standard in both ways (woven & knit). If marketing team can do marketing like this, factory efficiency will be high.

**8. SPM:** SPM means Sales per Minute. So per minute cost can be easily calculated by Sales per Minute (SPM). There's two way to find SPM. It's a goods path to find marketing trend. SPM could be CM based and CM with FOB profit based. Basic rules to get SPM is CM divided by SMV and the standard SPM rules follows:-

$$\text{SPM} = \frac{\text{CM} + \text{FOB Profit}}{\text{SMV}}$$

**9. PCD:** PCD is one of the vital part of RMG trade. PCD means Plan Cut Date. Most of the buyer follow PCD/TNA before starting production. On PCD day PPM (Pre-Production Meeting held) and get cutting permission to start bulk production. To success PCD material have in-house minimum seven days prior from PCD along with Counter Sample approval and production file. To on time shipment, PCD is very much important to meet. So Supply Chain have to track seven days prior to get on time PCD.

**10. TNA:** Time and Action or Trims and Accessories along with fabrics and Counter Sample approval & Production file handover date from marketing team are known as TNA. TNA is advance thing than PCD. Remember, on PCD materials in-house seven days prior and on TNA, PCD happened seven days after from TNA. To hit on time TNA, have to track before two/three days before TNA.

**11. Shade & Shrinkage Summary:** In fabric process stage, shade & shrinkage summary has done. Shade & shrinkage report are done for two different purpose. Shade report represents the shade status of fabric. If fabric is not washable then leg/blanket send to finishing for steam iron and proceed for shade and shrinkage report and if washable after wash fabric has check with counter sample and find out shade update. To do this process, after in-house fabric leg/blanket has cut by store concern then it's hand over to fabric process department who send it to washing and after wash fabric process team received it and make shade wise segregation to get shade approval and in similar way with maintaining shrinkage rules shrinkage report is done to get shrinkage wise pattern from technical department. Shade & Shrinkage summary is very vital issue for cutting fabrics. In this stage fabric fault also be found like missing yarn, slub, spot, fault etc. then have to check with concern if this fabric is workable or not. If not then fabric have to replace. If workable with checking, then fabric supplier bear it. Here's the shade & shrinkage summary report in two different attachment.

<b>BUYER NAME: NEFARIO</b>		<b>STYLE: ALEXANDRIAN RAMESIS S.2</b>								
<b>PO. NO: 23CX91-7656</b>		<b>COLOR: BLUE DK (76-229)</b>								
<b>SUPPLIER NAME: BLUE NILE TEXTILE</b>		<b>LOT: 1</b>								
<b>COMPOSITION : 65% POLY.33 %VISCOSE 2 % ELASTAN</b>										
<b>CONSTRUCTION : 32S/2*32S/2+40D</b>		<b>COUNTER SAMPLE APPROVAL: OK</b>								
<b>DATE : 30-6-20</b>		<b>ROLL DOCUMENTS: 80 ROLL</b>								
<b>COMMENTS:</b>		<table border="1"> <tr> <td><b>P.1</b></td> <td><b>L=0 , W=0-1%</b></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table>		<b>P.1</b>	<b>L=0 , W=0-1%</b>					
<b>P.1</b>	<b>L=0 , W=0-1%</b>									
<b>FAB.QC</b>		<b>CUTTING.M</b>		<b>T. MANAGER</b>		<b>E.D.Q.A</b>				
ROLL NO	YDS/MTR	SHADE	PATTERN NO	SHRINKAGE%		AFTER WASH		BEFORE WASH		STICK NO
				LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	
38	131			0	-0.2	50	49.9	50	50	
16	129.5			0	-0.4	50	49.8	50	50	
48	133			0	0	50	50	50	50	
67	135			0	-0.4	50	49.8	50	50	
61	118.5			0	-1	50	49.5	50	50	
40	115			0	-1	50	49.5	50	50	
22	92.5			0	-0.4	50	49.8	50	50	
24	145			0	-0.6	50	49.7	50	50	
54	123			0	-0.4	50	49.8	50	50	
62	119			0	-0.2	50	49.9	50	50	
15	43.5			0	0	50	50	50	50	
17	120.5			0	0	50	50	50	50	
79	139.5			0	-0.4	50	49.8	50	50	
63	141.5			0	0	50	50	50	50	
74	117.5			0	-0.4	50	49.8	50	50	
60	121			0	0	50	50	50	50	
33	78.5			0	0	50	50	50	50	
35	51			0	0	50	50	50	50	
5	43			-0.4	0	49.8	50	50	50	

Fig: Pattern Summary

<b>PIRAMID GROUP</b>					
Cairo , Egypt , Dhaka-1341					
<b>Shade and Shrinkage Summary</b>					
<b>Buyer:</b>	Nefario	<b>Color:</b>	D.STONE	<b>Supplier:</b>	Tuten Textiles Limited
<b>Style:</b>	NEF20PUSFA W-20	<b>Fabric:</b>	77.91%Cotton 19.38%Polyester 2.71%ELASTANE RFD Denim 340GSM	<b>Lot/Slot</b>	N/A
<b>Last Consignment: 7 Out Of 7 Rolls</b>					
<b>Shade</b>	<b>P2</b>		<b>Shade Comments</b>	<b>Total Yrds</b>	<b>Total Roll</b>
	P2 L=(-3,1,-5) W=(-17,1,-19)				
	<b>Roll</b>	<b>Yrds</b>			
A	1	150		150	1
B	5	791		791	5
C	1	139		139	1
<b>TTL</b>	<b>7</b>	<b>1080</b>		<b>1080</b>	<b>7</b>
<b>Overall Consignment: (7 [7] /1080) =</b>					
<b>Shade</b>	<b>P2</b>		<b>Shade Comments</b>	<b>Total Yrds</b>	<b>Total Roll</b>
	P2 L=(-3,1,-5) W=(-17,1,-19)				
	<b>Roll</b>	<b>Yrds</b>			
A	1	150	OK	150	1
B	5	791	Pending	791	5
C	1	139	Not OK	139	1
<b>TTL</b>	<b>7</b>	<b>1080</b>		<b>1080</b>	<b>7</b>

Fig: Shade Summary

**12. Country Shade Plan:** In an order sheet of a style there could be multiple color with multiple shade for particular country, since there're many country could be in an order sheet. Why country shade plan is important? Well, it's important so that in a particular country there could be less shade and for multiple shade it's a document which is maintained and could be necessary for further. Country shade plan is done by fabric inspection team and it's important for a cutting planning. Based on country shade planning, all goods are cut by cutting department. If cutting don't follow shade plan, then during finishing lots of shade variation will visible in particular country and even for assorted PO it'll be causes of shipment hassle.

**PIRAMID GROUP**  
**UNIT : HIEROGLYPHY DESIGN LTD**  
**BUYER: NEFARIO ; SHADE RECORD**

STYLE : Alex S.2      Nefario ON:21NF63-5686      FAB SUPP: Tuten Textile Ltd.      DATE: 16-07-16

FAB. DISCRIPTION: 98 %COTTON 2% SPENDEX      COLOUR:BLUE DK (73-210)      CONZ ONE PCS: 1.36

COLOUR SHADE	D 65	TL 83	A
TO APP FABRIC			
SHADE: A		FAMILY	
ROLL QTY: 7 ROLL			
TOTAL LENGTH: 823 YDS			
PLANNED COUNTRY: ZA			
COLOUR SHADE	D 65	TL 83	A
TO APP FABRIC			
SHADE: C		FAMILY	C.D.G.H
ROLL QTY: 4 ROLL			
TOTAL LENGTH: 381 YDS			
PLANNED COUNTRY: AU			
COLOUR SHADE	D 65	TL 83	A
TO APP FABRIC			
SHADE: D		FAMILY	C.D.G.H
ROLL QTY: 4 ROLL			
TOTAL LENGTH: 513 YDS			
PLANNED COUNTRY:AU			
COLOUR SHADE	D 65	TL 83	A
TO APP FABRIC			
SHADE: G		FAMILY	C.D.G.H
ROLL QTY: 32 ROLL			
TOTAL LENGTH: 4250 YDS			
PLANNED COUNTRY:CL,PE,UY,AU.			

APPROVED BY> N.QC.      MARCHENDISER      Q.A.GM

Fig: Country Shade Plan

**13. Pattern:** Pattern is one of the vital part about cutting fabrics as well as for planning. Suppose, if pattern change of a running style due to new fabric consignment then have to make size set to get bulk permission meantime needs enough time to produce size set. Basically now a days if any style have five pattern then most fabrics in which pattern is called mother pattern and make size set only on that mother pattern and give correction on rest four pattern. Pattern depends on fabric shrinkage and fabric shrinkage has some universal range of limitation. Based on that range of limitation pattern is released. One more thing here's need to know is marker. In a very simple way the plural version of pattern is called marker. Marker is two types. One is called regular marker (in this marker, pattern can be set from any side) and other one is called selvage marker (in this marker, pattern is one way. So more fabric is required and it could be more than approved consumption which can make lots of trouble and even the fabrics from overseas supplier than it can causes delay/short shipment. This marker is used when fabric has shading or related issues).

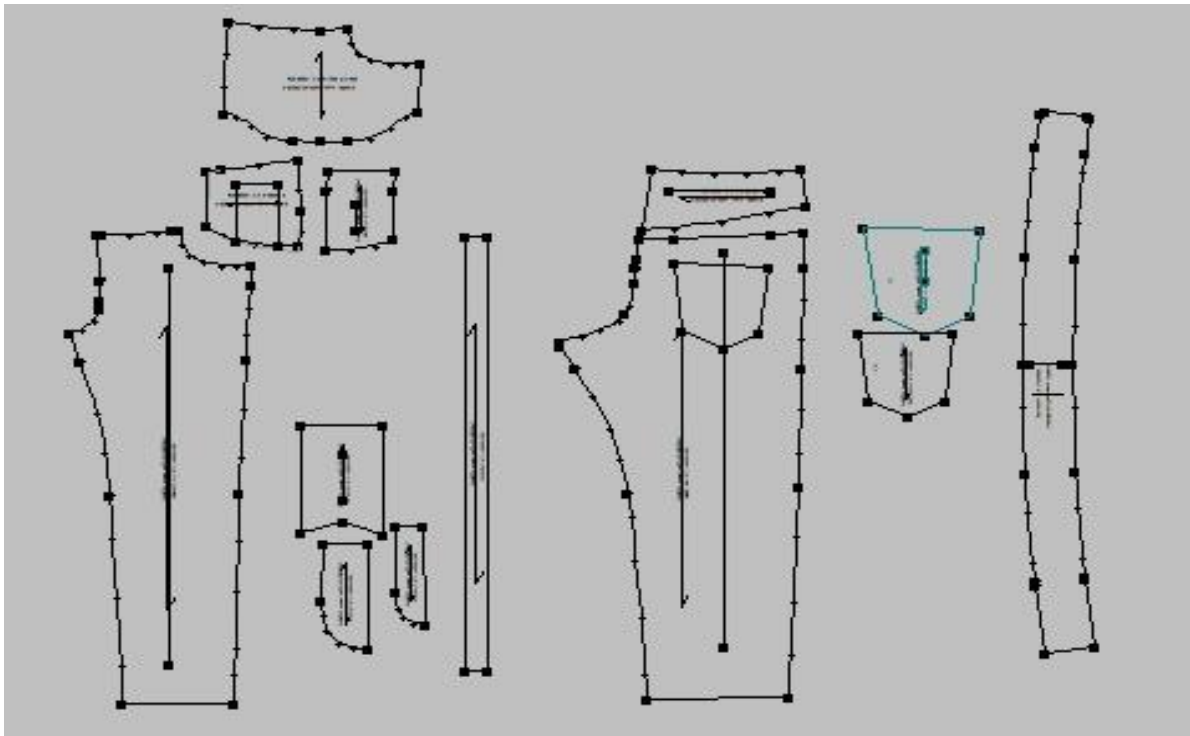


Fig: Pattern (Basic 5PKT Pant)

**14. CS:** CS means Counter Sample. Based on which sample production has done is called Counter Sample. Various buyer called it in various name. Some called Seal Sample, Red Tag Sample, and Collection Sample etc. Actually all of them are same thing by consider various buyer. In association with technical team by the instruction of respected buyer and booking from concern merchant the sample is developed in technical section and got approval from buying office concern. CS is developed by following Size Set sample and Size set sample is developed from color sample. And the first sample is made by following buyer given tack-pack or art-work and sometime buyer also provide pattern.

BAKELADISH DATE: 29.04.

THIS PART TO BE FILLED BY THE SUPPLIER FOR THE PRODUCTION OFFICE.

PRODUCT: BRACES TRS 1...

OPTION: ...

D/N DEPT: 130 556 SEASON: ...

SUPPLIER: APPARELS LTD

PRODUCTION UNIT: WOVEN PRICE: ...

M-CHART: 004-1 SIZE: 104

PATTERN/LAST REF: 004-1

MATERIAL REF: ... YARN DYED FABRICS LTD.

COMPOSITION: 100% BCI COTTON

CONSTRUCTION: 62\*52

YARN COUNT: 12\*12

GUNGE: ...

WEIGHT: 233 (+/-5%)

COLOR: 09- BLACK ALT 04

COMMENTS:

QUOTATION SAMPLE (QS)

SIZE SET SAMPLE (SSS)

COUNTER SAMPLE (CS)



Fig: Counter Sample

**15. Art-work:** Art-work is given from buying office concern. This is the very first thing from where factory/technical concern get prototype idea to make Size Set/ Collection sample. In an art-work, there's a sketch of the ultimate garment, all kind of information, stitching details, seam types, button types, appearance, fabrics details, print/embroidery, wash types, color details etc. in a simple way everything related to finishing garments are in the art-work.

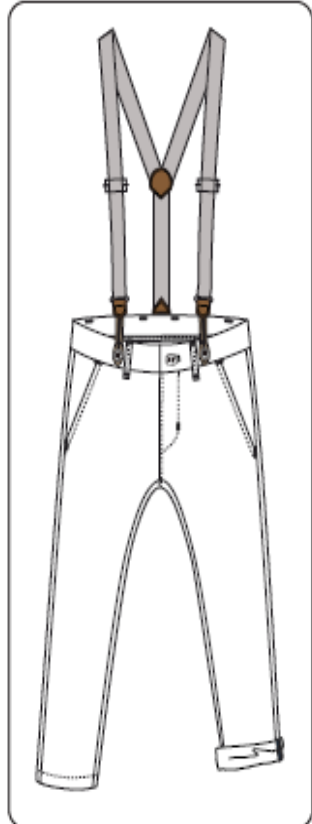
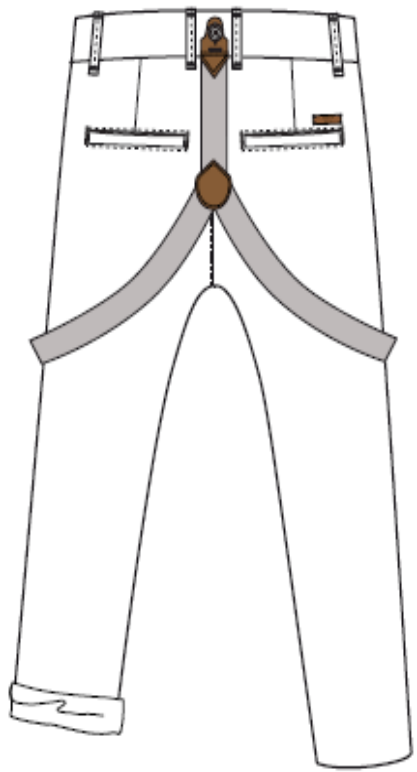
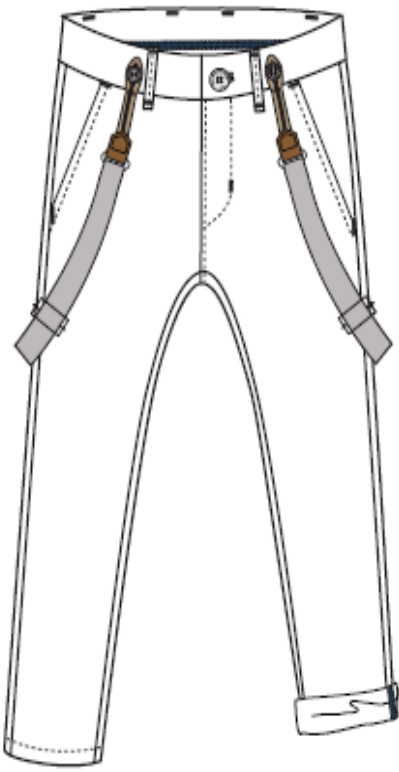


Fig: Art-work of a sample

STYLE: Ramon slim 5pkt

DEPT: 182044

Nerario X2L


DETAILS - PRINT INSIDE WAISTBAND

**SLIM FIT STRETCH**

Print Width:  
SIZE 134-152: 12,5 cm  
SIZE 158-170: 13,8 cm

Value Driver on Print:  
Soft Handfeel, Matte Look

PLACEMENT: Please center PRINT to W.B.



NO PRINT INSIDE W.B. FOR CANADA MARKET  
(due to language rules and regulations, english vs. french)

Fig: Printing Instruction

From above sketch, printing department gets visual idea of the printing portion for a style and Production Planning team can know this style have printing.



STYLE: RAIN <b>Freidriq</b>	DEPT: Ladies	S: 3 W
-----------------------------	--------------	--------

Info

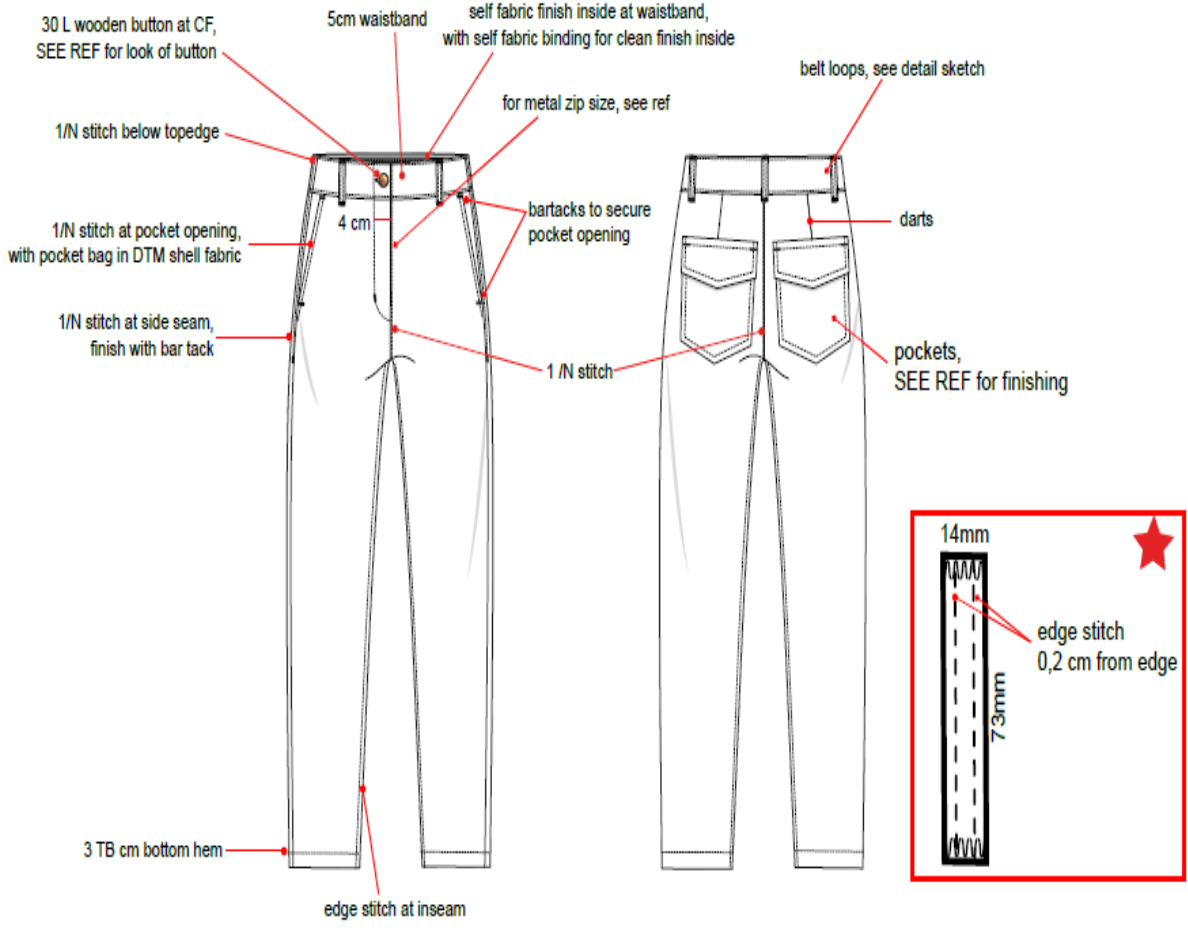


Fig: Various Seam details

In the figure of the above sketch, seam details are given of various sewing process. Even the loop design and various measurement also given.

STYLE: RAIN <b>Freidriq</b>	DEPT: Ladies	S: 3 W
-----------------------------	--------------	--------

Colorways:



Fig: Color Details

Color details are given above photos in the artwork of a style. Button, Zipper, Thread for which color of shell fabrics need is also given in the artwork.

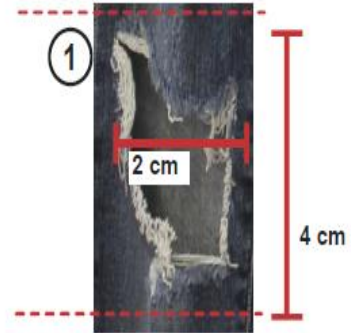
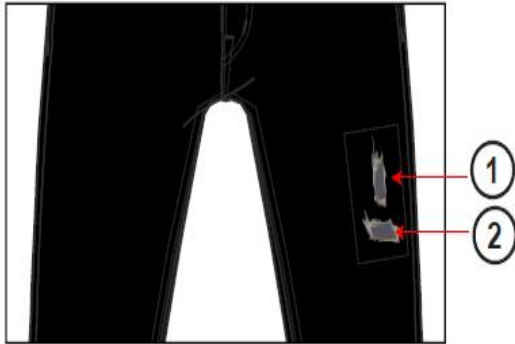
STYLE: RAIN **Freidriq**

DEPT: Ladies

S: 3 **W**

FOR COLORWAYS WITH TRASCH DETAILS:  
TEARED SEE S9 TEARED DETAILS

REF FOR TEAR/RIPPING EFFECT WITH FRAYING AT THIGH



REF FOR TEAR/RIPPING EFFECT WITH FRAYING AT THIGH

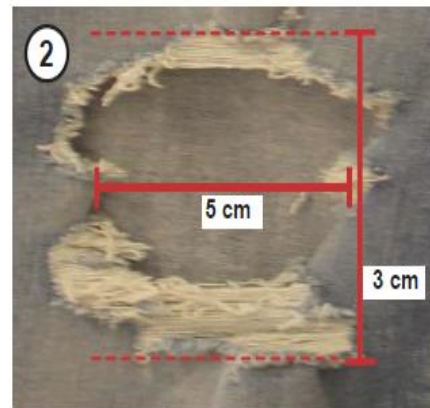


Fig: Wash Data

Wash details are also given in artwork. The appearance of various wash effect with measurement are given here with details. In the pictures we can see destroy wash process which is a dry process with measurement.

By seeing this measurement wash technical team develop wash related thing like pattern etc.

**16. OS & Production File:** Order sheet is simply called OS. Few buyer called it PO (PO means Purchase Order) Sheet also. Full style breakdown (Size and Country wise) of a style is given in OS and size label breakdown is also given here. Details of finishing packing list like country destination, color size ratio, solid/assort packing list etc. also available in OS. And normally PO sheet two type. One is for online shop and another one is for local shop. Delivery details also has given in OS like Sea, Air or Sea/Air.

Purchase Order						
Order No:	17000-8030	Product No:	000002			
PT Prod No:	62700	Product Name:	RC Everonn shorts new			
Date of Order:	17 Aug 2020	Product Description:	Shorts - Bottom			
Supplier Code:	7751	Season:	2020			
Supplier Name:	311 APPARELS LTD.	Customs Customer Group:	Men			
Option No:	3BDDH	Type of Construction:	Woven			
Development	0792675D					
Country of Production:	Bangladesh	Packing Mode:	Flat			
Country of Delivery:	Bangladesh	No of Pieces:	1			
Country of Origin:	Bangladesh	Sales Mode:	Single			
Terms of Payment:	20 DAYS SHIP LESS 2%					
Terms of Delivery						
OI, LD, OL, OO						
Transport by sea, if not specified. Terms: Free carrier Chattagram (Direct/via River Terminal/via Rail). Service Provider: Damco. Incoterms 2010.						
Time of Delivery	Planning Markets	Quantity	% Total Qty			
17 Aug, 2020	LD (OL-MX)	50	46%			
07 Sep, 2020	OL (OL-TI)	10	9%			
05 Oct, 2020	OI (OL-IN), OO (OL-AU)	49	45%			
		Total:	109	100%		
Quantity per Article						
Article No	Colour Code	PT Article Number	Colour	Graphical Appearance	Cost	Qty/Article
004	09-090	06	Black Dark	All over pattern		109
Total Quantity:						109

Fig: Main page of OS

### Total Country Breakdown - Online

Order No:	170556-8030	Product No:	0951412
PT Prod No:	63506	Product Name:	RC Slim shorts new
Date of Order:	17 Jul, 2020	Product Description:	Shorts - Bottom
Supplier Code:	7701	Season:	SS20
Supplier Name:	SHIRAZ APPARELS LTD.	Customs Customer Group:	Men
Option No:	3BES11	Type of Construction:	Woven
Development No:	0792675D		

Colour / Country Breakdown			
Country	Total	Article:004 09-090	
OI OL-IN	14	14	
LD OL-MX	50	50	
OL IDW262 OL-TI	7	7	
OL THW263 OL-TI	3	3	
OO OL-AU	35	35	
<b>Total:</b>	<b>109</b>	<b>109</b>	

Fig: Country Breakdown

Total Country Breakdown - Online			
Order No:	170556-8030	Product No:	0951
PT Prod No:	63506	Product Name:	RC Slim shorts new
Date of Order:	17 Jul, 2020	Product Description:	Shorts - Bottom
Supplier Code:	7701	Season:	SS20
Supplier Name:	SHIRAZ APPARELS LTD.	Customs Customer Group:	Men
Option No:	3BES11	Type of Construction:	Woven
Development No:	0792675D		

Colour / Size breakdown																
Article	27/30*	28*	28/30*	29*	29/30*	30*	30/30*	31*	31/30*	32*	32/30*	33*	33/30*	34*	34/30*	36*
004 09-090	1	7	2	7	1	11	4	10	3	19	5	9	2	12	4	7
<b>Total:</b>	<b>1</b>	<b>7</b>	<b>2</b>	<b>7</b>	<b>1</b>	<b>11</b>	<b>4</b>	<b>10</b>	<b>3</b>	<b>19</b>	<b>5</b>	<b>9</b>	<b>2</b>	<b>12</b>	<b>4</b>	<b>7</b>
Article	36/30*	38*														
004 09-090	2	3														
<b>Total:</b>	<b>2</b>	<b>3</b>														
Article	Total:															
004 09-090	109															
<b>Total:</b>	<b>109</b>															

Fig: Color/Size Breakdown

For any style label is the heart of identity. Suppose a style waist size 32 inch. Now how can we be sure this style for 32 waist body? The easy way to get is size label cause none can take measurement tape for all the to measure the size. So in the OS there's space for size label breakdown. Here's a size label breakdown details:-

Size Label (Corresponding Sizes)																
194 - Mens Inches, mixed sizes	EUR	27/30	28	28/30	29	29/30	30	30/30	31	31/30	32	32/30	33	33/30	34	34/30
	Asia/EUR	27/30	28	28/30	29	29/30	30	30/30	31	31/30	32	32/30	33	33/30	34	34/30
	US	27/30	28	28/30	29	29/30	30	30/30	31	31/30	32	32/30	33	33/30	34	34/30
	CA	27/30	28	28/30	29	29/30	30	30/30	31	31/30	32	32/30	33	33/30	34	34/30
	CN	165/68A	170/72A	165/72A	175/74A	170/74A	175/76A	170/76A	175/78A	170/78A	180/82A	170/82A	180/84A	175/84A	180/86A	175/86A
	MX	27/30	28	28/30	29	29/30	30	30/30	31	31/30	32	32/30	33	33/30	34	34/30
	AU	27/30	28	28/30	29	29/30	30	30/30	31	31/30	32	32/30	33	33/30	34	34/30
	UK	27/30	28	28/30	29	29/30	30	30/30	31	31/30	32	32/30	33	33/30	34	34/30

Fig: Size label breakdown

Production file means all necessary documents for a particular style which needs to make the garments accurately during production stage. Without OS in the production file there're M list (measurement sheet), final art-work, Fabrics technical data, Label spec sheet, Supplementary product information, Care Label Layout, RA Sheet, Counter/Size Set Approval comments etc. also given.

**17. Lead Time:** Lead time is the most vital part for RMG industries. And most of this part is handled by Planning Department. From order confirmation to delivery normally for a style 90 days lead time is given but for production only about 4 weeks we get, even for some style sometime 2weeks lead time also!

For smooth shipment and run lines 4 weeks without pre-production time is perfect as lead time. Few buyer takes shipments simultaneously. For that so lead times reduced to 7 days without pre-production during production running and literally they gives lead time without pre-production 4 weeks and this lead time from material in-house date to base TOD and before base TOD few qty shipment is required. In this case from 1<sup>st</sup> shipment only 2weeks lead time get.

If shipment delayed from required lead time than have to take extension. This extension proposal is given by Planning department and get approval by buyer. Here's few thing, if planning team have logical reason then buyer accept extension proposal. But if they don't accept then have to ship on time by anyhow otherwise sea ship mode change to air ship by supplier (Factory) cost and

sometimes get discount and few buyer keep it in record and reduce order from next season. So shipment within buyer given proposal have to maintain and it's very much important.

Before execute production lead-time from TNA to TOD, merchant and technical team develop sample and merchant team do costing and get order confirmation then they start sourcing for raw materials and book raw materials. After from TNA to TOD, this total time all responsibility goes to planning department except technical and supply chain issues.

Lead Time	
Criteria	Lead Time (Day)
Order Confirmation to Delivery	90 & (120 days for Foreign Fabrics)
Details	
Fabric I/H	30 & (60 days for Foreign Fabrics)
Sampling (Counter Sample)	07
Pre-Production	07
Production (Cutting to Wash)	40
Washing	01-05
Finishing	01-02

**18. Product Category:** Here we will know about various types of woven product like pant types, shirt types etc. Normally pant are three types (Basic, Chino, and Cargo). And if pant bottom are mounted by elastic then it's called Jogger. Shirt are two types (basic & pilot shirt). Jackets are many types like denim jacket, twill jacket, far jacket etc. In a basic pant there are only five pocket (two front pocket along with coin pocket and two back pocket). This types of product SMV around 18 and can produce around 1200pcs in 8hrs with 55 man power and efficiency will be around 80%. Chino pant have two front pocket along with one coin welt pocket (because of welt pocket this pant called chino pant) and two welt pocket in back some of this type of pant have tailoring waist belt which is also called dress pant. And this type of pant average SMV around 25 and can produce 800pcs in 8hrs with 60 man power and efficiency will be around 70%. In cargo pant there are front/back/thigh pocket with flap and below part and lots of panel and piping. This type of product SMV around 35 or more can produce 550pcs in 8hrs with 65 man power and efficiency will be around 60% in long run. For jacket SMV around 45 or more and production can be 400 pcs in 8hrs by 70 man power and efficiency will be around 50%.



Fig: Front & Back view of Basic 5PKT Pant





Fig: Front & Back of Chino Pant



Fig: Front & Back view of Cargo Pant

**19. Layout:** Line layout is very much practical thing for better production. To get better productivity we must have to maintain back to back almost similar style feeding. If not almost same similar style back to back possible then have to plan similar style which have done by that line. But to make all line expert for any style rotation layout is very much good and ultimate productivity easily can achieve by random layout if worker and production person have good knowledge. During emergency style change before starting layout which is new have to inform concern people minimum two days ago so that fabric process, cutting team, IE, mechanical team, production/quality team and others related concern take preparation for it. Per line monthly layout or changeover should be less and which is good for better productivity.

**20. Embroidery:** By using thread there are many kinds of design created on fabric surface which is known as embroidery. To decorate shell fabric or any part of a garment embroidery is much useful. Lots of stitch together makes a design which is particularly shows as embroidery. An embroidery design production depends on this type stich and costing also depends on it. Less stitch less cost means more production. And more stitch means less production means high cost. Now a days embroidery machines are very much developed. It can automatically change color wise thread during production based on design and color. Embroidery also includes with attaching pearls, beads etc.



Fig: Embroidery (stone)





Fig: Embroidery (Various Color)



Fig: Back PKT Decoration



Fig: Together (Embroidery & Print)

**21. Printing:** Printing is one of the most anticipated thing which make a very simple fabric to gorgeous stage. In the beginning of printing, printing was restricted only in color and now it's exposed to widely among rubber and many other things. In the very beginning of printing, it is three types and here they are:-

- a. Screen Print
- b. Rotary Print
- c. Digital Print

**a. Screen Print:** In screen print technology, ink is pressed by using mesh of stainless steel (screen) into the fabric surface. It is one of the most popular printing technology and wide used and oldest in the history of printing. This printing technology provides very good color output and it's one of the easiest printing technology. The screen is prepared based on the ultimate design, ink is prepared. For screen print, these thing are required frame where screen is set, squeegee by this ink pressed over screen to fabric etc. by all of this screen print is ready to print. This type of print is developed by China. Most common and simpler printing design is screen print. Here's few collection of screen print as follows:-





Fig: Striped design by screen print

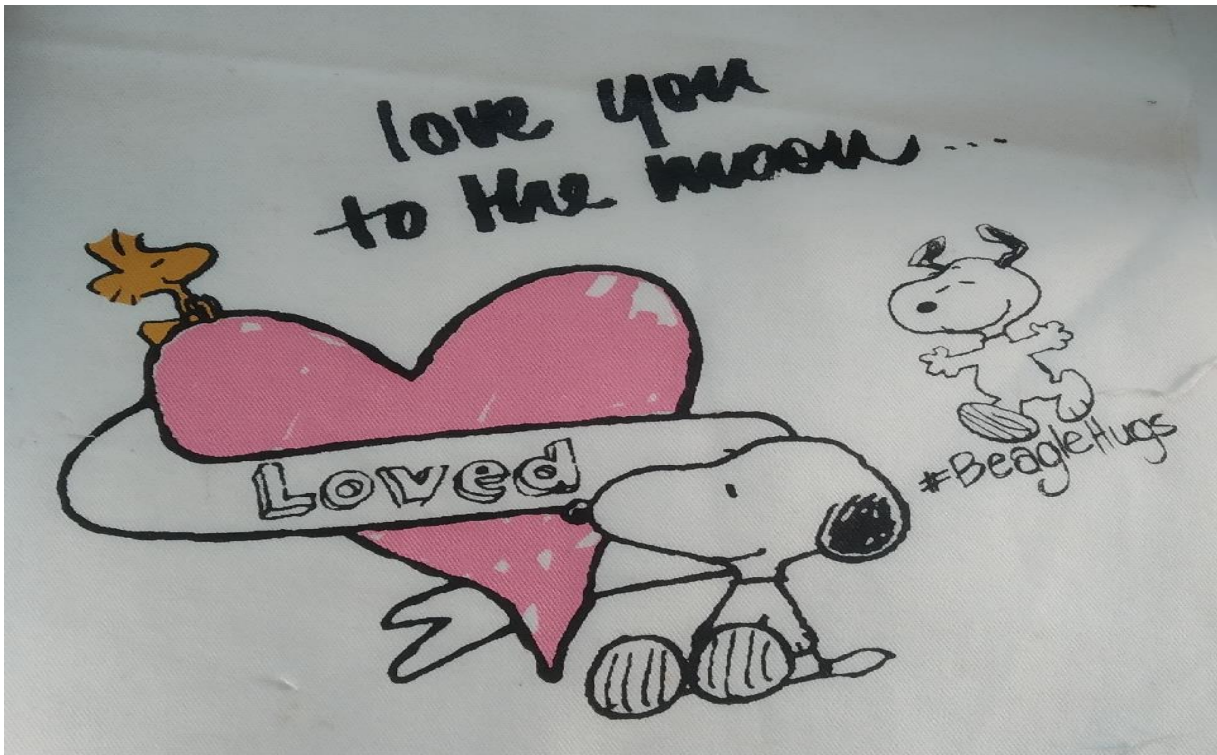


Fig: Various colour print by Screen

**b. Rotary Print:** To make continues repeat of a single design this technology is used. Rotary print also used for various types of color and size print. It's can produce continues design. On a big canvas of fabric can print very easily using rotary printing technology. For various types of fabric dia (width) various type of rotary available. This is an advance level of printing. By this printing technology highest production can achieve easily. Lots of color more than 10 color can use by it. Woven/Kint any kinds of fabric is suitable for rotary printing. Stripe deign also created by rotary print. Most of the ladies dress, home textile which is printed, are done by rotary printing technology. In rotary print, after printing dryer dry the printed fabrics.



Fig: Rotary Print on Textile Fabric

Rotary printing is widely popular in home textile goods as well as ladies wear fabrics printing without these garments fabric also printed by rotary print. But the amount of garment fabric printing in rotary printing machine is quite less than home textile goods or ladies wear fabrics.



**c. Digital Print:** Digital print is the super most advance technology in the world of printing technology. In this printing machine, every droplet of ink can control and it provide the ultimate vivid color flow which makes the goods premium. Mostly carpet or related heavy items are printed by this technology.



Fig: Jaynamaz

**22. Washing:** Washing is one of most technical part in the world of Textile Region, especially for denim fabrics. Most of the eye catching style has developed for denim items in washing plant. Washing are two types. One is called Wet wash and another one is Dry wash. In wet processing of washing, water is used and dry process of washing no water used. To do smooth Production Planning need to know various types of washing lead time like for normal wash 4 hours, enzyme wash 6 hours, heavy enzyme/bleach wash 8 hours, Over Dye program minimum 12 hours, normal wash with 3D crinkle(Dry) need minimum 10 hours, Destroy/Grinding/PP etc. process need 8 hours.



Fig: Normal Enzyme Wash





Fig: Over Dyed Garment



Fig: Over Dyed, 3D (Crinkle), Fraying





Fig: Bleach, Destroy & Grinding



Fig: Acid, Destroy, Grinding, Fraying





Fig: Heavy Bleach, Destroy & Fraying



Fig: Grinding, Bleach, Brush

**23. Order Projection:** After booking production capacity and confirm order status factory merchant concern update Order Projection based on projection/confirm order status from respected buyer. Here we'll see Order Projection of various buyer. In order projection there are order placement/receiving date, buying merchant department, order type(online mall/shopping mall), order quantity, material in-house date, production time, delivery time, production type, smv, per day production by receiving order, wash type etc. approximately given. Here's order projection of HZM:-

Weekly production schedule for SEASON 01 from the month of August 2020 to April 2021																		
BUYER NAME HZM BANGLADESH										Date: 16 July 2020								
Supplier Name: PARAMIT Apparel Ltd.										14-Sep-20	21-Sep-20	28-Sep-20	5-Oct-20	12-Oct-20	19-Oct-20	26-Oct-20	TOTAL	Wash Type
STYLE NAME	ASSORTMENT	SMV	TYPE	OPD	TOD	Order	TON/Q	Prod	W-30	W-28	W-26	W-24	W-22	W-20				
MONT CARGO JOGGER	Man	34.57	CRITICAL / CARGO	46	52	Shop	3,629	695									3,629	Non wash
MONT CARGO JOGGER	Man	24.57	SEMI CRITICAL / CHINO	47	53	Shop	37,738	665									37,738	Non wash
5-Pkt Slim Fit	Boy	18.73	BASIC	31	41	Online	4,499	1,188	4499								4,499	Garment Wash
5-Pkt Slim Fit	Boy	18.73	BASIC	33	43	Shop	84,882	1,188		19162	28320	28320	10000				84,882	Garment Wash
Billy 1 Slim Fit	Kids Boy	18.73	BASIC	41	51	Shop	7,342	1,188									7,342	Garment Wash
Billy 1 Slim Fit	Kids Boy	18.73	BASIC	44	1	Shop	4,214	1,188									4,214	Garment Wash
5-Pkt Slim Fit	Kids Boy	18.73	BASIC	47	4	Online	1,500	1,188									1,500	Garment Wash
Billy 5-Pkt Slim 1 PACK	Kids Boy	18.73	BASIC	32	42	28344	136,652	1,188	21732	42488	42488	30000					136,652	Garment Wash
Billy 5-Pkt 1 Fit 2 PACK	Kids Boy	18.73	BASIC	48	5	Shop	11,362	1,188									11,362	Garment Wash
EVERT C 3 SHORTS	M&M Man	24.58	SEMI CRITICAL / CHINO	53	6	Shop	250,000	962									250,000	Enzyme Wash
Linen Joggers R.W	L.O.G.G. Ladies	17.39	BASIC	44	3	Shop	168,271	1,262									168,271	Enzyme Wash
Linen Joggers R.W	L.O.G.G. Ladies	17.39	BASIC	48	7	Shop	116,781	1,262									116,781	Enzyme Wash
J. Jogger Pull-on	Kids Boy	22.98	SEMI CRITICAL / CHINO	38	46	Online	3,335	964					3335				3,335	Enzyme Wash
JONAS 1 FIT 5-PKT	Man	19.88	BASIC	41	47	Shop	98,800	1,117					16384	26888			98,800	Enzyme Wash
J S SLIM 5-PKT SHORTS	M Man	18.68	BASIC	53	6	Shop	250,000	1,188									250,000	Enzyme Wash
Lem 5 shorts	Everyday Collection	18.64	BASIC	2	8	117844	14,428	1,188									14,428	Enzyme Wash
Lem 8 shorts	Everyday Collection	18.64	BASIC	2	9	Shop	27,384	1,188									27,384	Enzyme Wash
M 5 pkt slim 2 pack	Young Boy	28.67	BASIC	28	37	171677	3,122	1,182									3,122	Enzyme Wash
M 5 pkt slim 2 pack	Young Boy	28.67	BASIC	46	2	Online	1,764	1,182									1,764	Enzyme Wash
M 5-pkt shorts	Young Boy	18.53	BASIC	2	11	Online	1,118	1,196									1,118	ENZYME WASH
M 5-pkt shorts	Young Boy	18.53	BASIC	3	12	Online	11,928	1,196									11,928	ENZYME WASH
MALC 1 5-pkt slim fit	Young Boy	28.67	BASIC	25	26	171576-8796	1,662	1,182									1,662	Enzyme Wash
MALC 5-pkt slim fit	Young Boy	28.67	BASIC	42	58	Shop	1,317	1,182									1,317	Enzyme Wash
MALC 5-pkt slim fit	Young Boy	28.67	BASIC	48	3	Shop	2,877	1,182									2,877	Enzyme Wash
f shorts	Kids Boy	23.12	SEMI CRITICAL / CHINO	43	5	Shop	14,537	991									14,537	Garment Wash
f shorts	Kids Boy	23.12	SEMI CRITICAL / CHINO	44	1	Shop	23,419	991									23,419	Garment Wash
f shorts	Kids Boy	23.12	SEMI CRITICAL / CHINO	46	8	Shop	21,111	991									21,111	Garment Wash
f shorts	Kids Boy	23.12	SEMI CRITICAL / CHINO	47	4	Shop	1,983	991									1,983	Garment Wash
L shorts	Kids Boy	23.12	SEMI CRITICAL / CHINO	48	5	Shop	26,987	991									26,987	Garment Wash

Fig: HZM Order Projection

From above order projection we can see style name, assortment, smv, style type, Order Placement Date (OPD) week, Time of Delivery(TOD) week, order type, quantity, production need per day, weekly production projection monthly, wash type etc. HZM also provides few low season order which delivery many later but can do production earlier, speed & super speed order which delivery too tight and also few small quantity of old big quantity style called Southern Hampshire(S/H).

RIAMI ORDER FLOW CHART - SUMMER 20														
		Week>>>	2019-41	2019-42	2019-43	2019-44	2019-45	2019-46	2019-47	2019-48	2019-49	2019-50	2019-51	
Sl#	SSM	STYLE#	TOTAL QTY	7-Oct	14-Oct	21-Oct	28-Oct	4-Nov	11-Nov	18-Nov	25-Nov	2-Dec	9-Dec	16-Dec
1	S20	MGMW 'CHINO	604900		60400	69000	5000	44000	6000	30000		26000	41000	24500
2	S20	EDM' 8GSCHI	42400		12600	400	2000			2500			2500	
3	S20	EDM' 8THIN6	1400	700										
4	S20	EDMS18THIN8	1400	700										
5	S20	TCK' 0PCHIC	100000	40000			7000	5000		18000		7000	5000	
6	S20	CAB' 0PBBRA	23000		23000									
7	S20	NSL' 8PSTRE	41000		3000	10000			4500	4000			2000	
8	S20	TCKV' 9PREGC	70300	13500	9000	6000	5000	800	6000	5000			6000	4000
9	S20	TGK' 0PCSLI	184000		81000	10000		14000	5000	11000		15000	6000	5000
10	S20	TCK' 0PSKIC	330395		92395	10000	30000	5000	23000	27000	6000	5000	26500	12500
11	S20	TCK' 9PSKID	110000				30000		12000		10000		5000	11000
12	S20	TGK' 0PSKID	50000											
13	S20	VDK' 9BCCHI	118216	2116										
14	S20	VDK' 0PTH1A	14690		14690									
15	S20	VDK' 0PCOUL	2436	2436										
16	S20	VDK' 0BCOUL	2820	2820										

Fig: RIAMI Order flow

In the given RIAMI order flow we can see style name, total order quantity and weekly basis slot wise quantity, this quantity delivery wise, merchant provide production file along with PCD before four weeks from given delivery date on the order flow.



SIDL-1917 Confirmed Order Summary														14-Sep-20	
Sl	Org Wk	Ext. Wk	PSI Est. Dt	IAN	Product description	Style	TTL Qty	Gmt. Qty's	Color	Fabrications	Fabric in-house Dt	Trims in-house Dt	PP Status	OK Spec Status	Remark
1	2011	2011	13-Mar-20	328314 Riones	Ladies Jeans Shorts	A	501,506	219,051	Blue Denim	98/2 Cotton/Lycra	TBA	TBA	TBA	TBA	
						B		128,033	Coral Slub Twill	98/2 Cotton/Lycra	TBA	TBA	TBA	TBA	
						C		154,422	Blue Acid Wash Denim	98/2 Cotton/Lycra	TBA	TBA	TBA	TBA	
								501,506							
2	2011	2011	13-Mar-20	US- 344146 (328304) Riones	Ladies Jeans Shorts USA	A	4,928	1,540	Blue Denim	98/2 Cotton/Lycra	TBA	TBA	TBA	TBA	
						B		1,540	Coral Slub Twill	98/2 Cotton/Lycra	TBA	TBA	TBA	TBA	
						C		1,848	Blue Acid Wash Denim	98/2 Cotton/Lycra	TBA	TBA	TBA	TBA	
								506,434							
3	2014	2018	03-Apr-20	328736 Riones	Ladies Jeans Super Skinny Fit Lycra Beauty High-Quality	A	226,994	97,740	Black Denim	88/10/2 Cotton/Elastomultiester/Lycra	TBA	TBA	TBA	TBA	
						B		129,254	Blue Denim	88/10/2 Cotton/Elastomultiester/Lycra	TBA	TBA	TBA	TBA	
								226,994							
4	2016	2020	16-Apr-20	328816 Riones	Ladies Jeans Super Skinny Fit Lycra Beauty High-Quality	A	61,670	22,411	Black Denim	88/10/2 Cotton/Elastomultiester/Lycra	TBA	TBA	TBA	TBA	
						B		39,259	Dk. Blue Denim	88/10/2 Cotton/Elastomultiester/Lycra	TBA	TBA	TBA	TBA	
								61,670							
5	2020	2020	14-May-20	327980 Riones	Ladies Jeans Super Skinny Fit- Valuable	A	55,566	31,654	Black Denim	72/25/3 Cotton/ Polyester/Lycra	TBA	TBA	TBA	TBA	
						B		23,912	Blue Denim	86/12/2 Cotton/ Polyester/Lycra	TBA	TBA	TBA	TBA	
								55,566							
				<b>G Total</b>			<b>850,664</b>								

Fig: SIDL order summary

SIDL buyer provide selection wise projection. In the selection PCD week, DD week, production details, quantity, color, fabrication, fabric weight, fabric code etc. given. Merchant provide details on seven days early from PCD.

**24. Delivery:** Delivery is the most vital part of RMG industries. Inspection has done before delivery. Buyer to buyer Delivery name varies like HZM says cut-off/TOD (Time of Delivery), RIAMI says DD (Delivery Date). Delivery schedule varies buyer to buyer. Some buyer takes delivery weekly wise like RIAMI and some also count as weekly like HZM but take delivery as cut-off wise. Here cut-off means delivery is done schedule by two/three day of a week. Few take delivery port wise. And few buyer take delivery slot by slot like EroCostale.

ARREN WD PULL ON TRS S.2 O/N: 232991-7656 (04/05/2020)									
TOD	WEEK	CNTRY	O/QTY	76-229 (BLUE DARK)	SHIP MODE	Cut-Off	INS Date	QTY	TTL QTY
27-Jul	WK 31	RU	1000	1000	SEA	1st Cut off	26-Jul	1000	3502
		CO	619	619		2nd Cut off	30-Jul	2502	
		MX	1883	1883	SEA				
3-Aug	WK 32	CH	1789	1789	SEA	2nd cut off	6-Aug	1789	1789
10-Aug	WK 33	US	8500	8500	SEA	1st Cut off	9-Aug	15106	25787
		NL/PL	4000	4000	SEA				
		SE	1609	1609	SEA				
		DK	997	997	SEA				
		NL/BE	7500	7500		2nd cut off	13-Aug	#REF!	
		CA	2706	2706	SEA				
		IX	118	118	SEA				
		IN	357	357	SEA				
17-Aug	WK 34	DE	6500	6500	SEA	1st Cut off	16-Aug	10727	11374
		NO	1211	1211	SEA				
		ME	1150	1150	SEA				
		TR	1403	1403	SEA				
		HR	286	286	SEA				
		RS	177	177	SEA				
		TW	647	647	SEA	2nd cut off	20-Aug	647	
24-Aug	WK 35	CN	5500	5500	SEA	1st cut off	23-Aug	8541	12512
		JP	1916	1916	SEA				
		KR	635	635	SEA				
		PE	362	362	SEA				
		VN	128	128	SEA	2nd cut off	27-Aug	3971	
		NL/GB	3183	3183	SEA				
		PH	348	348	SEA				
		NZ	390	390	SEA				
		UY	50	50	SEA				
31-Aug	WK 36	HK	560	560	SEA	1st cut off	30-Aug	338	898
		TH	338	338	SEA	2nd cut off	3-Sep	560	
7-Sep	WK 37	MY	531	531	SEA	1st cut off	6-Sep	531	531
TOTAL			56393	56393				56393	56393

Fig: HZM Delivery Schedule

From above figure we can see TOD week date, Week Number, County name, color, quantity, ship mood, cut-off, inspection day, day inspection quantity, weekly inspection quantity etc.

Here's a thing, HZM didn't provide above delivery chart. They just provide below (Time of delivery, planning market (Country Code) etc. information in the Purchase Order Sheet and factory concern make about delivery schedule as per HZM given instruction.

Time of Delivery	Planning Markets	Quantity	% Total Qty
27 Jul, 2020	RU (PM-RU), MX (PM-MX), CO (PM-CO)	3552	6%
03 Aug, 2020	CH (PM-CH)	1773	3%
10 Aug, 2020	SE (PM-SE), DK (PM-DK), NL/BE (PMSEU), US (PM-US), NL/PL (PMEEU), CA (PM-CA), IX (PM-IX), ID (PM-ID), IN (PM-IN)	26725	47%
17 Aug, 2020	NO (PM-NO), DE (PMCEU), TR (PM-TR), HR (PM-HR), ME (PM-ME), RS (PM-RS), TW (PM-TW)	11557	21%
24 Aug, 2020	NL/GB (PM-UK), CN (PM-CN), JP (PM-JP), KR (PM-KR), CL (PM-CL), AU (PM-AU), PH (PM-PH), PE (PM-PE), NZ (PM-NZ), VN (PM-VN), UY (PM-UY)	12221	21%
31 Aug, 2020	HK (PM-HK), TH (PM-TH)	828	1%
07 Sep, 2020	MY (PM-MY)	494	1%
	Total:	57150	100%

Fig: HZM country wise weekly delivery quantity

Colour / Country Breakdown	Country	Total	Article:002 76-229
SE	PM-SE	1597	1597
NO	PM-NO	1223	1223
DK	PM-DK	1022	1022
NL/GB	PM-UK	3282	3282
DE	PMCEU	6705	6705
NL/BE	PMSEU	7661	7661
US	PM-US	8683	8683
NL/PL	PMEEU	4205	4205
CN	PM-CN	4904	4904
JP	PM-JP	1883	1883
KR	PM-KR	565	565
RU	PM-RU	1034	1034
CH	PM-CH	1773	1773
CA	PM-CA	2784	2784
HK	PM-HK	521	521
TR	PM-TR	1420	1420
HR	PM-HR	266	266
MX	PM-MX	1942	1942
MY	PM-MY	494	494
CL	PM-CL	81	81
ME	PM-ME	1176	1176
IX	PM-IX	110	110
TH	PM-TH	307	307
RS	PM-RS	165	165
AU	PM-AU	310	310
ID	PM-ID	321	321
TW	PM-TW	602	602
PH	PM-PH	323	323
IN	PM-IN	332	332
PE	PM-PE	340	340
NZ	PM-NZ	367	367
CO	PM-CO	576	576
VN	PM-VN	119	119
UY	PM-UY	47	47
<b>Total:</b>		<b>57150</b>	<b>57150</b>

Fig: HZM country wise quantity

Buyer: RIAMI provide delivery schedule weekly slot wise and in the Purchase Order sheet they keep one week advance from actual (which is given in delivery schedule) delivery. By following this projection we can see style wise weekly basis order status. Concern merchant team provides related all order sheet along with related files to do production.



Here's the delivery schedule of RIAMI as follows:-

		Running		RIAMI S'20 Delivery Chart		Oct'19			
		IN plan				WK41	WK42	WK43	WK44
	TYPE	Style		Item	TTL QTY	07-Oct	14-Oct	21-Oct	28-Oct
1	NON DENIM	MGMV	HINO	MEN'S CHINO PANT	604,900		60,400	69,000	5,000
					-				
2	NON DENIM	EDMW	SCHI	Mens Pant, (Papa size	42,400		12,600	400	2,000
					-				
3	NON DENIM	EDM...	HIN6	MEN'S CHINO PANT	1,400	700			
					-				
4	NON DENIM	EDM...	HIN8	MEN'S CHINO PANT	1,400	700			
					-				
5	NON Denim	TCKS	CHIC	MEN'S CHINO PANT	100,000	40,000			7,000

Fig: RIAMI delivery slot (weekly)

**25. ETD:** Estimated Time of Delivery is the full form of ETD. By an example we can say suppose few goods ordered at China and after confirming order they (who will delivery from China) gives a delivery date. In this given date goods will sea-off from China which is called Estimated Time of Delivery. For every kinds of order the seller gives ETD time for smooth delivery & post-delivery works. Goods ETA from China after 28 days from ETD. Sometimes ETA could increase or decrease too. We'll know soon about ETA.

**26. ETA:** The full form of ETA is Estimated Time of Arrival. Suppose few items from China ETD on today by sea. After passing 4 weeks these items will arrive at designated port. Normally sea vessel arriving date in the port is called ETA but if the vessel can't arrive to the port cause of port restriction, vessel at berthed at berthing point then carried out good by another vessel to the port.

**27. SCM:** Supply Chain Management is one of the most vital part at RMG industries. Cause of supply chain most of the plan fails as per Planner. Supply Chain Management work with material in-house as per given TNA or PCD. Normally supply chain team works out based on merchant team booking, they follow-up accordingly to in-house material smoothly.

This team also works in sourcing stage like if marketing team need new type of fabric or accessories, supply chain management team source for that fabric and arrange. They also update it on software for keeping record and others team who needs to see to work.

Supply Chain Management team works continuously on subjected thing like for a very big style it have more than 1 lakh cone thread which are in-house partial basis daily, here Supply Chain Management team works to keep the accordingly so that production flow can okay. Team SCM

works with raw materials transportation, in-house material inventory, increase sourcing, all kind of material flow etc.

Here is a requirement sheet of a particular style to follow-up Supply Chain:-

BUY# SIDL-2002											
STY# 335588											
O.QTY # 261856 Pcs											
REQ SHEET											
S/L	DESCRIPTION OF GOODS	COLOUR	SIZE	ORDER QTY	CON	%	REQ QTY	UNIT	RCVD QTY	SHORT EXCESS	REMARKS
01	Shell Fabric	DK Blue Denim -A	All	134957	15.50	4%	181292	YDS	69136	-112156	
	Shell Fabric	Black Denim- B	All	126899	16.52	4%	181686	YDS	16402	-165284	
				261856							
02	T/C POCKETING	DK Blue Denim -A	Off White	134957	1.35	4%	15790	YDS		-15790	
	T/C POCKETING	Black Denim- B	Black	126899	1.35	4%	14847	YDS		-14847	
				261856							
03	INTERLINING	DK Blue Denim -A	White	134957	2.6	4%	30410	YDS	5000	-25410	
		Black Denim- B	Charcol	126899	2.6	4%	28595	YDS	10000	-18595	
				261856							
04	SEWING THREAD	DK Blue Denim -A	20/3	134957	45	0%	3158	CONE	1216	-1942	
			20/2	134957	34	0%	1591	CONE	1152	-439	
			40/2	134957	233	0%	8176	CONE	1900	-6276	
								0			
05	SEWING THREAD	Black Denim- B	20/3	126899	46	0%	3035	CONE	640	-2395	
			20/2	126899	35	0%	1540	CONE	416	-1124	
			40/2	126899	240	0%	7918	CONE	600	-7318	
									0		
06	MAGIC THREAD		40/2	261856	1.7	4%	326	CONE	326	0	
									0		
07	Irone Label (Heat Seal)		34	1148	1	4%	1194	Pcs	1350	156	
			36	37360	1	4%	38854	Pcs	18000	-20854	
			38	38158	1	4%	39684	Pcs	24000	-15684	
			40	67933	1	4%	70650	Pcs	27000	-43650	
			42	61021	1	4%	63462	Pcs	29000	-34462	
			44	37850	1	4%	39364	Pcs	9000	-30364	
			46	18386	1	4%	19121	Pcs	21000	1879	
				261856							
08	CARE LABEL -	00 %c0112 %p01y2 %L1	A	134957	1	3%	139006	PCS		-139006	
	CARE LABEL -	13 %c0112 %p01y2 %L1	B	126899	1	3%	130706	PCS		-130706	
09	YKK ZIPPER -A	34-38	11.5 CM	37864	1	3%	39000	PCS	43085	4085	
	Mettal Zipper -960	40-42	12.5 CM	60531	1	3%	62347	PCS	70410	8063	
		44-46	13.5 CM	36562	1	3%	37659	PCS	41740	4081	
10	YKK ZIPPER -B	34-38	11.5 CM	38799	1	3%	39963	PCS	44050	4087	
	Mettal Zipper -580	40-42	12.5 CM	68423	1	3%	70476	PCS	76550	6074	
		44-46	13.5 CM	19674	1	3%	20264	PCS	22355	2091	
11	SHANK BUTTON -18mm		A+B	261856	1	3%	1873	GRS	2	-1871	
				261856							
12	RIVITS 7mm		A+B	261856	5	3%	9365	GRS	5	-9360	

Fig: Requirement Sheet of a style

### 3.3 PLANNING TEAM TYPES:

Production Planning are mainly doing loading plan as per given TNA/PCD and execution to ship goods on time and keep feeding lines so that line won't seating idle. The challenge of Production Planning department is quite difficult but no impossible to do. A good production planning setup factory can do any kind of order of any buyer smoothly because planning department always work with risk factor and only they have full knowledge about anything against particular style. From Pre-Production meeting to cutting and embroidery/printing to sewing to washing to finishing and shipment everything is followed by planning department and they check all possible risky checkpoint to ship the goods within given lead time. Normally factory production planning team is enough for planning department to run.

But to run lots of factory of a same group with lots of buyer without factory planning team there're also central planning team. Here central planning department work to allocated order from projection factory wise and factory production planning team do line planning and share with central planning team follow up accordingly.

Central Planning Team also works with marketing team about capacity and order confirmation by maintaining delivery schedule and many other things.

Factory Planning Department always plays vital role for the factory. They are directly engaged with merchandising, marketing, store, quality, production and many others all department. To line feed smoothly and make work as per required priority basis, Production Planning department work here delicately. So we can say Production Planning are based on two department (team) types and here they are:-

#### 3.3.1 Central Planning

#### 3.3.2 Factory Planning

**3.3.1 Central Planning:** Central Planning is the core part of Production Planning Department. Unit wise Buyer/Style/Quantity is allocated by central planning team. Basically this team works from Head office. Most of time they've work with marketing team about projection, order booking, capacity, order confirmation, group order status, production unit wise quantity and order status etc. Central Planning team also can push any merchandising team for better factory support along with Supply Chain department. Suppose to keep feeding lines accordingly goods need to in-house within 1 week earlier from given TNA/PCD. Here central planning team communicate with concern merchant team chase to in-house material earlier as much possible.

Central Planning team have all buyer's order projection & confirm order status and they allocate order factory wise to ship goods on time and keep balancing in all factory mean time. After allocating order, central planning team starts follow-up factory accordingly. In order projection, order placement date or week within quantity and order types are given and central planning team follow it accordingly to ensure order status as per given projection. If any order or style slip from

given projection they raise it to concern marketing team to know the exact reason so that they can keep the actual record. Giving order/style allocation to factory isn't a simple task. To do so have to know about the styling and factory can do it with expected productivity. Sometimes have to give some low season order. Low season order means which goods can stitch earlier but the shipment few months later. These goods play very good role during some sort of problematic situation.

After getting confirmed order, central planning team start working about to get PCD/TNA. They work with marketing team and get possible date of production material (Fabrics and Trims) in-house date along with counter sample status. Counter sample means the goods which will be produced at production stage which is approved by buyer. This counter sample made by technical team along the help of merchant team. Merchant team provides all kinds of related thing to technical team to make the counter sample. Before making counter sample they made size set sample of that style. Central planning team basically follow-up everything which related to PCD/TNA. So that they can start production on time and avoid delivery delay. If for any reason delivery delay occurs, central planning team works it out to find. And find the actual reason then show it concern marketing team to arrange extension so that delivery hampering may not occur.

Central planning team follow-up in production stage that everything is on track or not. If on track, they move forward to another style. If not on track, they find out the reason and take all type of precaution to avoid shipment circumstances or line idle scenario.

In some sort of company, central planning team also follow-up pre-production so that factory can start production as soon as possible. Even they keep follow-up on counter approval and fabric/material in-house status too.

Central planning team also update factory wise CPM/EPM and many other data. Based on production they calculate earning of factories. Also they update weekly planning change over to keep weekly basis follow-up.

Central planning department is related to all kind of order status of all buyer for the concern factories of the company.

Here's the basic responsibility area of Central Planning team:-

- Follow-up buyer wise order projection and confirm order.
- Update monthly order status and keep update with marketing team.
- Co-operate marketing team for special order confirmation.
- Order allocation to factory.
- Keep order balance status same to all factories.

- Update with TNA/PCD.
- Follow-up pre-production for smooth production.
- Chase merchandising/Supply Chain team for advance material in-house if needed.
- Keep follow-up production planning which given from factory.
- Critical situation analysis.
- Cost analysis based of garments CM.

**3.3.2 Factory Planning:** Production Unit wise planning is known as Factory Planning team. They works with allocated order/style and make loading plan. They work with every related team like store, fabric process, cutting, embroidery/printing, sewing, washing, finishing etc. team.

Factory planning team widely works than central planning. Because factory planning team start working with store about material in-house, cut fabric panel for shade, shrinkage etc. purpose, with fabric processing team for shade, shrinkage and other required test details, with technical team for size set, initial or bulk goods pattern, with cutting team for TOD priority basis goods input, it could be po/color/country/size etc. wise, with print/embroidery team if there're embroidery/print in the garment, with production & IE team for expected production, how many lines needed etc., with washing team for better washing support, with fishing team for finishing and shipment. We point out department wise factory planning focusing area as below:-

- Store Team:
1. Material In-House date update
  2. Material In-House status update (Required Sheet)
  3. Priority basis blanket ready and etc.

- Fabric Team:
1. Shade, Shrinkage summary process.
  2. Fabric test report update.

- Technical Team:
1. Pattern for Size Set/ Initial/ Bulk goods.

Cutting Team:           1. Pro Production work (Size Set/ Initial).  
                                  2. Running production feeding.  
                                  3. Give input by securing delivery.  
                                  4. Keep input as per need.

Print/Embroidery Team:   1. Giving plan to print/embroidery  
                                  2. Follow-up production status

Sewing & IE Team:   1. Keep update about style  
                                  2. Allocated Lines  
                                  3. Productivity  
                                  4. Delivery criteria etc.  
                                  5. Finding critical situation and update

Washing Team:           1. Update washing team for space  
                                  2. Share washing planning  
                                  3. Follow-up washing status  
                                  4. Special care on special washing

Finishing Team:         1. Keep finishing plan by securing delivery  
                                  2. Follow-up finishing production  
                                  3. Finishing material in-house update  
                                  4. Keep update after shipment goods status

**3.4 Department Organogram:** We already know Production Planning Department have two team. One is Central Planning Team and another one is Factory Planning Team. There are many ways to set-up the organogram of Production Planning Department.

A very basic set-up for a complete Production Planning Department are follows where head of the department do production planning and capacity update with projection, immediate person after head of the department follow the production planning to execute, associates will check on production material flow, pre-production, production status, finishing & shipment update and far as few management reporting for record. To do so for a factory needs a department head, a deputy manager, two sr. executive and three executive level employee and need any more they can add for specific purpose.

So the basic set-up looks:-

Head	: Will do loading plan, capacity, projection
Deputy Manager	: Execute loading plan
Sr. Executive	: Follow up preproduction & line input
Sr. Executive	: Follow up all production
Executive	: Supply Chain follow up
Executive	: Finishing shipment update
Executive	: Management data update

For a small factory which monthly capacity approx. 01 million pcs above Production Planning Department is enough to run factory smoothly. But there are some restriction for this set-up like the department head most of the time have to engage with loading plan, capacity & projection and update with concern marketing concern so the department head have less time for others thing to think other purpose and so on he can also give less time to focus others work of the department.

So the Deputy Manager will execute loading plan by working with production team. Any production related difficulty must have to face this deputy manager. Such as any style have failed TNA then the deputy manager have to take precaution to avoid line idle issue etc.

And the Sr. Executive will follow-up pre-production and line input as per planning here one Executive helps with supply chain and another Sr. Executive works to follow-up all production here one executive will help to follow-up finishing shipment update.

And there is another Executive who will update all kind of data like monthly production, shipment, cutting, washing, sewing, line layout, cut to ship ratio etc.

But if it is a group of company and they've to handle millions of order with lots of buyer in a month then they need a central planning team to allocate order smoothly. Group Planning head set with central planning team.

Here's the set-up of Central Planning team:-

Group Planning Head	: Work with Order projection and booking
	: Update with order status
Manager	: Order allocation & update TNA/PCD
	: Chase about Supply chain
Unit Leader	: Follow-up unit production status.
	: Critical situation analysis
	: Study factory loading plan

**3.5 How to do Planning:** To do all kind of work smoothly and without wasting of resource Planning is very much important to do. In RMG trade, planning is one of the most and versatile department. Based on good planning shipment goes smoothly and factory capacity utilization is done maximally.

Basically Sewing Planning is the base of garments production planning and if sewing planning seems okay then planning goes wisely. From sewing planning every others planning like cutting, embroidery/printing, washing, finishing get allowance.

**Cutting Planning:** After completing production loading planning, the execution part of Production Planning starts with Cutting Planning. Literally, if cutting team gives input as per Planning and delivery wise, sewing to finishing all thing goes smoothly. The major job of cutting department is cut the fabrics. Before cutting fabrics there're terms have to maintain like fabric shade, shrinkage, shade band chart, country wise shade, fabric relaxation, pattern correction for final stage etc. to finally correct the pattern there have to make size set, initial goods then finally got correct pattern shrinkage and goods measurement report wise.

Cutting Production team or Cutting Planning team directly follow the loading plan given from planning team. They see the loading plan and delivery schedule and make po/country/color wise



input quantity plan. Basically they give input seven working days prior from delivery date and sewing takes maximum 2 days to sew and wash take up to 2 days and finishing take 1 day to finishing on next inspection done and goods ready to ex-factory. All of working allowance are given in the loading plan.

Here cutting production team works with fabric processing team about shade summary and shrinkage update to give relax fabric pattern/shrinkage wise. Fabric relaxing is very much important since pattern correction also follow fabric relaxation allowance.

**Embroidery/Printing Planning:** If any style have embroidery/printing then concern planning team many days earlier give booking about embroidery/printing so that embroidery/printing concern can keep space for embroidery/printing. Cutting production team cut fabrics and send it to embroidery/printing section and they start doing embroidery/printing. Basically embroidery/printing team takes one working day to delivery.

Normally embroidery/printing depends on machine/space capacity. In an embroidery machine, it has many embroidery point which is known as head. Every head can do embroidery even it can also change thread automatically as per design requirement.

In printing, for screen printing needs screen. By using the screen the printing is done. For rotary print there's a rotary machine which rotate and fabric start printing. This type of printing need normally one working day to delivery.

**Wash Planning:** As embroidery/printing concern the washing concern also get update from production planning team about monthly loading plan. And wash planning team keep space for washing. Washing lead time depends on wash types. Normal wash takes about 2 hrs, Heavy enzyme wash takes about 3 hrs, Normal wash with crinkle (dry process) take 5 hrs, over dyed program takes 6 hrs and dry and wet process (heavy) takes 12 to 36 hrs.

Washing lead time	
Type	Time
Normal Wash	2hrs
Heavy Enzyme Wash	3hrs
Crinkle (Dry)	3hrs
Over Dye	6hrs-8hrs
Others	12-36hrs

Fig: Various Washing Lead Time

For better wash planning, factory production planning team provides daily per line per style production wise non-wash goods sending plan to washing plan and they (Wash Planning Concern) provides wash goods sending plan to factory planning. All of this happened with securing finishing lead time and smooth shipment securing.

**Finishing Planning:** The very basic concept of finishing planning is start finishing delivery priority wise. Sometimes goods have to ready two days earlier for pre-final inspection before final inspection. Feeding of finishing depends on washing delivery from washing plant. Smooth washing support gives superior finishing effort to complete goods for final inspection and ex-factory as well.

For basic items needs 4 hrs to ready for inspection and for heavy goods take 08-12 hrs to ready for final inspection.

If any special machine required for finishing like Velcro attach or something special process like that then it could take few more time which is not so much.

Actually finishing process are very less. If finishing get goods from washing on time, the finishing process can done easily and give shipment smoothly.

**Sewing Planning:** The main responsible part of Production Planning Department is Sewing Planning. And Sewing Planning is the heart of all type of planning RMG trade. To do sewing planning we've to know about many things and I guess already discussed about what need to know to do sewing planning.

First of all we've to know production details like styling, productivity, wash types, embroidery/printing or any specialty etc. including delivery schedule with material in-house date and all kind of approval.

So the basic summary goes as follows:-

01. Styling
02. SMV
03. Productivity
04. Machine Requirement
05. Wash types
06. Embroidery/Printing
07. TNA/PCD
08. All kind of approval
09. Any other specialty
10. Delivery Schedule

Here, SMV & Productivity and Machine Requirement provides from Industrial Engineering department. Basically machine is the part of Industrial Engineering department, but to risk free planning knowing machine requirement is good responsibility of Production Planning Department especially there's need any special machine requirement.

To get SMV & Productivity, Production Planning department share Sketch or a sample of the subjected style to concern person of Industrial Engineering department so that they can co-operate with Productivity, SMV etc.

Here to do better planning, productivity depends on few thing like style quantity, styling (basic, semi critical, critical), fabrics construction, seam types, friendly style for production unit so that they can achieve expected efficiency as well as securing production.

In a Productivity report from Industrial Engineering department, there're various types of data like machine requirement, SMV, order quantity, planed line, planed line quantity, Average efficiency percentage, daily/hourly production and most important thing learning curve is given there.

SEWING PRODUCTIVITY					
Date: 15/1/2020				Factory:	PAL
Buyer	Nefertitee	Style Description		Picture	
Style	Ramesis 1522	Basic 5PKT Long Pant. Garmnet wash. No Embroidery or Printing.			
Merchandiser	Mr. Warenn				
Req. Machine/ MO	34				
Helper + Ironman	14				
SMV	16.92				
Order Quantity (Pcs)	175000				
Planned Allocated Line	1				
Planned Line Qty with continuous feeding	30000				
Average Efficiency Per day	70%				
Average Productivity Per day	1021				
Average Productivity Per hr	102				
Style Criticality		Basic			
Days	Efficiency	Day Production	Days	Efficiency	Day Production
1	30%	510	7	65%	1106
2	40%	680	8	65%	1106
3	55%	936	9	70%	1191
4	60%	1021	10	70%	1191
5	60%	1021	11	70%	1191
6	65%	1106	12	70%	1191

Fig: Productivity Data

From above data, there're few relevant summary about subjected style is given like style description, quantity details, productivity with learning curve etc. For all new style we can follow above Productivity data for best possible productivity. As example for above style, we can plan

this style for 1<sup>st</sup> day with 30%, 2<sup>nd</sup> day 40%, 3<sup>rd</sup> day 55%, 4<sup>th</sup> day 60%, 6<sup>th</sup> day 65%, 9<sup>th</sup> day 70% efficiency in line loading planning. Style wise learning target efficiency varies as follows:-

Running Day	Basic	Semi Critical	Critical
	SMV (Up to 20)	SMV (20.01-27)	SMV (27.01-Up to)
01	30%	20%	15%
02	45%	30%	20%
03	60%	40%	25%
04	65%	45%	35%
05	70%	50%	40%
06	72%	55%	45%
07	75%	60%	50%

Fig: Style Criticality wise Learning Efficiency Target (Planning)

To do Production Planning for Sewing which data we need for a style we already know. Now we will see about Master Loading Plan. In master loading plan, line wise sewing production are given style wise delivery priority basis. So in a loading plan there are lots of styles are given.

So to do master loading plan for sewing lines, have to know about lots of style and buyer. Easy way to do master loading plan is follow up Projection monthly sewing production wise. Suppose for a buyer in the projection there are 1 million pcs to produce in month of March, 20. Which means in the month of March, 20 Production Planner have to do plan for 1 million pcs for March, 20. Here the planner start follow-up from the beginning of February, 20 about having production file, order sheet, TNA/PCD. After having TNA/PCD for particular style, Production Planner can start doing master loading plan.

Here Buyer/style wise quantity various, for big buyer they have much better quantity style wise. Such as in 1 million order quantity, big buyer have around 5 to 10 style. Where small buyer have lots of styles like around 20 with lots of color.

However to line loading plan or master loading plan, we have to maintain some criteria such as try give similar style to same line for better productivity, try to complete slot wise quantity at a time simultaneously which will help to avoid extra line layout.

To keep line loading plan organize have to plan considering delivery & maintaining supply chain. Most of the time Loading Plan affects because of supply chain issue. Like fabrics delay or poor fabric flow or material delay or any issue with material delivery. Sometime everything okay but fabrics or trims inspection or test failed etc.

Sometime have to keep some backup plan for any kind of circumstances. Major two responsibilities of Production Planning department are feeding line (which means keep line free from idle) and on time delivery (smooth planning securing delivery).

In manual production loading planning, we may use MS Office (Excel) software. It is one of the versatile and widely known software and friendly to anyone who knows to run computer. In Excel lots of calculation can do easily. So to do loading plan also have to know about Excel functions.

In line loading plan, style wise daily production are given with learning days. But loading plan details basically only share with production Department Head and cutting department and for rest of the department, Production Planning team share only loading plan summary.

In a master loading plan, production unit or floor name along with line number, buyer, style, PO, Order quantity, Working Hour, Maximum Target, master loading plan target, month wise plan target, day wise plan quantity are given.

Master loading plan is considered with learning days, expected production, efficiency, over time hour etc.

Here is a dashboard on monthly master loading plan for an ordinary factory with most of the details and style/day wise production plan target.

PRODUCTION PLAN			Jul'20-Sep'20		Monthly QTY		300,418	34,159	199,409	66,850	8813	9115	8936	4369	4819	6300	8300	9300	9700	9800	9543	9400	8950			
Floor	LINE	BUYER	STYLE NO	PO	OR.QTY	WH	Max Target	Total Style Plan	Plan in Jul	Plan in Aug	Plan in Sep	27-Jul	28-Jul	29-Jul	30-Jul	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	16-Aug	17-Aug	18-Aug	19-Aug	
SMD	1	H&M	Aren Trs S.2	232991	57,150	8	1250	2500	2500	0	0	1250	1250													
SMD	1	H&M	Suke Trs S.2	266532, 171182	22,908	8	750	5800	450	5350	0		150	300	350	500	700	750		750	750	750	750			
SMD	1	H&M	Colm 5PKT S.2+S.3	171677	89,709	8	1050	24150	0	10500	13650												150	300		
SMD	2	H&M	Relix Trs S.2	238777, 112461	25,345	8	1050	94800	1200	21000	12600		200	500	500	500	700	900		1050	1050	1050	1050	1050		
SMD	3	H&M	Avid 5PKT S.2	189620, 187724	26,505	8	1050	3074	3074	0	0	1050	1050	974												
SMD	3	H&M	Robert Chino S.2	270629, 174224, 270628	39,143	8	800	7800	150	7650	0			150	300	300	450	600		700	800	800	800	800	800	
SMD	4	H&M	Aren Trs S.2	232991	57,150	8	1150	4588	4019	569	0	1150	1150	1150	569	569										
SMD	4	H&M	Suke Trs S.2	266532, 171182	22,908	8	750	4350	0	4350	0						150	300		550	650	750	750			
SMD	4	H&M	Colm 5PKT S.2+S.3	171677	89,709	8	1050	18900	0	9450	9450													150		
SMD	5	H&M	Avid 5PKT S.2	189620, 187724	26,505	8	1050	2100	2100	0	0	1050	1050													
SMD	5	H&M	Relix Trs S.2	238777, 112461	25,345	8	1050	14605	700	13905	0			200	500	500	700	900		1050	1050	1050	1050	1050		
SMD	6	H&M	Erce Chino S.2	142205	11,063	8	800	17100	2750	10350	4000	800	800	800	350	350	500	500		500	500	500	500	500	500	
SMD	7	H&M	Jonson Trs S.2	130218, 249069	24,519	8	548	548	548	0	0	548														
SMD	7	H&M	Reed Tencil S.2	213561, 218516, 223263	3,198	8	750	14700	900	13800	0		150	300	450	450	600	750		750	750	750	750	750		
SMD	8	H&M	Avid 5PKT S.2	189620, 187724	26,505	8	1050	3074	3073.66	0	0	1050	1050	974												
SMD	8	H&M	Robert Chino S.2	270629, 174224, 270628	39,143	8	800	11000	0	11000	0			150	300	300	450	600		700	800	800	800	800	800	
SMD	9	H&M	Relix Trs S.2	238777, 112461	25,345	8	1050	96750	3150	21000	12600	700	900	1050	500	500	700	900		1050	1050	1050	1050	1050		
SMD	10	H&M	Avid 5PKT S.2	189620, 187724	26,505	8	1050	2100	2100	0	0	1050	1050	974												
SMD	10	H&M	Robert Chino S.2	270629, 174224, 270628	39,143	8	800	11942	0	11942	0			150	300	300	450	600		700	800	800	800	800	800	
SMD	11	H&M	Radford Trs S.2	243166	59,136	8	800	17300	1250	16050	0		150	300	350	350	500	550		750	800	800	800	800	800	
SMD	12	H&M	Suke Trs S.2	266532, 171182	22,908	8	750	15000	2150	12850	0		450	600	750	750	800	800		800	800	800	800	800	800	
SMD	13	H&M	Radford Trs S.2	243166	59,136	8	815	7288	2795	4493	0	815	815	815	350	350	550	750		800	800	443	750	750	750	
SMD	13	H&M	Colm 5PKT S.2+S.3	171677	89,709	8	1050	26100	0	11550	14550											150	300	450		
SMD	14	H&M	Suke Trs S.2	266532, 171182	22,908	8	750	14850	1250	13600	0	150	300	450	500	500	750	750		750	750	750	750	750	750	

Fig: Monthly loading plan board (1)

PRODUCTION PLAN			Jul'20-Sep'20			Monthly QTY																											
Floor	LINE	BUYER	STYLE NO	PO	OR.QTY	WH	Max Target	19-Aug 8950	20-Aug 9250	22-Aug 9550	23-Aug 9850	24-Aug 10150	26-Aug 10300	26-Aug 10450	27-Aug 10450	29-Aug 10450	30-Aug 10450	31-Aug 10450	1-Sep 10450	2-Sep 10450	3-Sep 10450	5-Sep 10450	6-Sep 8600	7-Sep 8600	8-Sep 7000	9-Sep 6250	10-Sep 4700	12-Sep 4200	13-Sep 3150	14-Sep 3150	15-Sep 3150		
SMD	1	H&M	Aren Trs S.2	232991	57,150	8	1250																										
SMD	1	H&M	Suke Trs S.2	266532, 171182	22,908	8	750																										
SMD	1	H&M	Colm 5PKT S.2+S.3	171677	89,709	8	1050	300	450																								
SMD	2	H&M	Relix Trs S.2	238777, 112461	25,345	8	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
SMD	3	H&M	Avid 5PKT S.2	189620, 187724	26,505	8	1050																										
SMD	3	H&M	Robert Chino S.2	270629, 174224, 270628	39,143	8	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	
SMD	4	H&M	Aren Trs S.2	232991	57,150	8	1150																										
SMD	4	H&M	Suke Trs S.2	266532, 171182	22,908	8	750																										
SMD	4	H&M	Colm 5PKT S.2+S.3	171677	89,709	8	1050	150	300	450	600	750	900	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
SMD	5	H&M	Avid 5PKT S.2	189620, 187724	26,505	8	1050																										
SMD	5	H&M	Relix Trs S.2	238777, 112461	25,345	8	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
SMD	6	H&M	Erce Chino S.2	142205	11,063	8	800	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	
SMD	7	H&M	Jonson Trs S.2	130218, 249069	24,519	8	548																										
SMD	7	H&M	Reed Tencel S.2	213561, 218516, 223263	3,198	8	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	
SMD	8	H&M	Avid 5PKT S.2	189620, 187724	26,505	8	1050																										
SMD	8	H&M	Robert Chino S.2	270629, 174224, 270628	39,143	8	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	
SMD	9	H&M	Relix Trs S.2	238777, 112461	25,345	8	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
SMD	10	H&M	Avid 5PKT S.2	189620, 187724	26,505	8	1050																										
SMD	10	H&M	Robert Chino S.2	270629, 174224, 270628	39,143	8	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	
SMD	11	H&M	Radford Trs S.2	243166	59,136	8	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
SMD	12	H&M	Suke Trs S.2	266532, 171182	22,908	8	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750
SMD	13	H&M	Radford Trs S.2	243166	59,136	8	815																										
SMD	13	H&M	Colm 5PKT S.2+S.3	171677	89,709	8	1050	450	600	750	900	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
SMD	14	H&M	Suke Trs S.2	266532, 171182	22,908	8	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750

Fig: Monthly loading plan board (2)

In the master loading plan we can see line wise style basis details with PO number and order quantity, maximum target, monthly quantity etc. Everything of a RMG factory runs as per planning which is given by Production Planning team.

Let's consider a factory have 14 lines. And per month production capacity in pcs are 5,00,000. Here the 5,00,000pcs are considered as Basic 5PKT Pant. But in reality we can see not every style are basic. Few are them chino, cargo, overall etc.

So ultimately the 5,00,000pcs capacity can't be considered as right. To make it right, suppose for 5,00,000pcs capacity the SMV is 18 so that for a chino pant we have to find out SMV then make a ratio with SMV 18 and multiply that ration of chino with basic pant smv to get quantity in pcs from chino to basic. It's a messy process.

To avoid this mess we can calculate factory capacity in minutes. To get minute capacity we just have to multiply the capacity with avg. SMV. Such as factory capacity is 5,00,000pcs where avg SMV is 18.

So the capacity in minute are 9,00,000. Here if a chino pant have 25SMV and the chino pant order quantity 50,000pcs. So the capacity in minute of that chino pant is 12,50,000 minute.

Capacity				
In Pcs	SMV	In Minute	Line	Monthly Working Day
500,000	18	9,000,000	14	25
Example				
Item	Quantity	SMV	Booked Capacity (In pcs)	Booked Capacity (In minutes)
Chino Pant	100,000	25	138,889	2,500,000
Basic	290,555	18	290,555	5,229,990
Others	36,286	35	70,556	1,270,010
<b>Total Capacity</b>			<b>500,000 pcs</b>	<b>9,000,000 minutes</b>

Fig: Capacity Status in pcs/minute for a 14 line factory

Normally, line loading plan is shared with production head or concern people who is related to take preparation for upcoming style. Otherwise loading plan summary has share with every related person or department.



Basically loading plan summary is used by store, fabric inspection, ie team etc. and line loading plan (master loading plan) is shared with factory cutting team for details.

Here's a summary of loading plan as follows:-

AMD	01	02	03	04	05	06	07	08	09	10	11	12	13	14																																																																																																								
1-Mar-20	Ezra	Taylor	Ezra	Open	Jonas	Open	Dean &	Reggie	Ezra	Reggie	Ezra	Jonas	Ezra	Taylor																																																																																																								
2-Mar-20	Dean							Ezra					Reggie		Taylor	Jonas	Open	Dean &	Ezra	Reggie	Ezra	Jonas	Taylor	Taylor																																																																																														
3-Mar-20																									MNR	Olle	Reggie	Taylor	Jonas	Open	Dean &	Ezra	Reggie	Ezra	Jonas	Taylor																																																																																		
4-Mar-20																																					MNR	Olle	Reggie	Taylor	Jonas	Open	Dean &	Ezra	Reggie	Ezra	Jonas																																																																							
5-Mar-20																																																MNR	Olle	Reggie	Taylor	Jonas	Open	Dean &	Ezra	Reggie	Ezra	Jonas																																																												
6-Mar-20	Dean & (Proj...)		Felix					Luna					Fargo		Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																														
7-Mar-20																									Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																	
8-Mar-20																																						Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																				
9-Mar-20																																																			Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																							
10-Mar-20																																																																Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																										
11-Mar-20		Dean & (Proj...)		Felix	Luna	Fargo	Open		Open	Dean &	Dean &	Jonas		Open																																																															Open	Open	Dean &																																							
12-Mar-20																																																																																Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																										
13-Mar-20																																																																																													Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &													
14-Mar-20																																																																																																										Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &
15-Mar-20																																																																																																																						
16-Mar-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
17-Mar-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
18-Mar-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
19-Mar-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
20-Mar-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
21-Mar-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
22-Mar-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
23-Mar-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
24-Mar-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
25-Mar-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
26-Mar-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
27-Mar-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
28-Mar-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
29-Mar-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
30-Mar-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
31-Mar-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
1-Apr-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
2-Apr-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
3-Apr-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
4-Apr-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
5-Apr-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								
6-Apr-20															Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Dean &																																																																																											
7-Apr-20	Dean & (Proj...)	Felix	Luna	Fargo	Open	Open	Dean &	Dean &	Jonas	Open	Open	Open	Open	Dean &																																																																																																								

Fig: Loading Plan Summary

From the picture we can see the loading plan summary for a production unit for the month of March to April. From the projection we can see style wise output start date and output closing date which is enough for most of the person in sewing production, store etc. department. For cutting they need style wise details for delivery wise cutting and input.

**3.6 Pre-Production Planning:** Before starting bulk production, we have to make Size Set Initial to check measurement, fabrics quality and many others purpose which is called Pre-Production Planning.

The main purpose of doing Pre-Production Planning are making Size Set and arrange PP Meeting to discuss Size Set issues and get trial/initial cutting permission then have to make trial/initial goods and from here have to submit GPQ team to get finally bulk permission.

Pre Production Status PIRAMID Design Ltd.						
Style	Item	Merchant	Color & Quantity			
Iris 5PKT S.3	Basic 5PKT Long Pant	Mr. Atrario & Mr. Akenset	Color	QTY	Total QTY	3% Total
			Rage Red	55000	175000	180250
			Organ Black	120000		
Fabris	OK	Color	Rage Red	Color	Organ Black	Remarks
Counter Sample	OK	Date	Time	Date	Time	
Shrink		31-Aug-20	03:00pm	1-Sep-20	03:00pm	
Pattern		1-Sep-20	08:30am	2-Sep-20	11:30am	
Size set	Cutting	1-Sep-20	11:00am	2-Sep-20	03:00pm	
	Sewing	1-Sep-20	04:00pm	3-Sep-20	09:00am	
	Wash	1-Sep-20	05:00pm	3-Sep-20	04:00pm	
	Receive	2-Sep-20	08:00am	5-Sep-20	08:00am	
	Submit	2-Sep-20	10:00am	5-Sep-20	10:00am	
PP Meeting		2-Sep-20	11:30am	5-Sep-20	11:30am	
Initial	Cutting	3-Sep-20	04:30pm	6-Sep-20	04:30pm	
	Sewing	3-Sep-20	09:00am	6-Sep-20	09:00am	
	Wash	5-Sep-20	05:00pm	7-Sep-20	05:00pm	
	Receive	6-Sep-20	08:00am	8-Sep-20	08:00am	
	Submit	6-Sep-20	10:00am	8-Sep-20	10:00am	

Fig: Pre-Production Plan & Execution

From above figure we can see a full Pre-Production Planning with Execution. Since Pre-Production lead time is very much important to maintain loading plan input date as well as plan controlling so it is good to keep every task time.

**3.7 Reason to Fail/Backup Planning:** During Planning execution there are various problems occurs. For that so given master loading plan fails. Now we will look forward to why plan fails and what to do when plan fails (means backup planning to avoid line idle).

There many reasons to fail master loading plans like Counter Sample Approval delay, Supply Chain Delay, Materials (Fabrics) poor In House flow, In House material poor quality, Less production (sewing, washing etc.) and many others reasons.

Counter Sample Approval is the job of production merchandising team, technical team develop counter sample and submit to buying house by production merchandising team. Most of the time consumed if counter sample approval delay. The reason of delaying counter sample approval are measurement, color, fabrics quality, zipper issue, trims approval issue etc.

Supply Chain is one of the vital part of reason to fail loading plan. Material flow delay, not in house of given date are the reason to delay supply chain or fail. These type of delay actually happens because of supplier delivery delay.

Materials quality is very important. Because of poor material quality on time supply chain doesn't work out accurately. If in-house fabrics doesn't meet buyer/quality standard then it make causes to fail the total plan. Same for trims and accessories etc. So have to source with good & promising supplier and in-house accurate quality-full goods to avoid any circumstances.

Pre-Production activity in proper way can save lots of time or also can kill a lot of time. Suppose, after making size set the measurement didn't meet actual reason or delay to make it. So what will happen? Yes, have to make size set again and which is causes for time killing and reason to fail plan. Proper follow-up pre-production activity with accuracy will help to make on time pre-production.

Less production during running production stage is a very critical reason to fail plan and also it can be lack of planning or another vital issue. So a planner have to think to make high level of planning accuracy so that there're couldn't fail of planning.

Backup Planning is the plan to pretend lines for setting idle. Literally factory's profit/loss depends on production (sewing). So if sewing line goes idle which means it directly hit profit. So above or related problem occurs than have arrange Backup Planning to secure lines from setting idle.

The very basic rules to do backup planning is to give input to those lines from running style which can increase lines. By applying this have to save lines from setting idle. Mean time have to update loading planning and check delivery impact-ness of that particular style which failed to meet plan & causes lots of changes.

**3.8 Practical Case Study:** In the area of Practical Case Study we will compare between Piece Planning and Minute Planning in RMG Sewing Production Planning. Most of the time we face in factory that we have capacity but can't produce goods as per capacity ultimately which hits late shipment, air shipment even cancel order.

So I tried to figure out what's gap in our so called capacity that we measure our factory have but every time our monthly plan target can't hit actual production achievement.

Usually most of the factory consider order as pieces. And this the part I found we've to improve. Actually factory's most important thing is manpower. Manpower works hard to achieve their most desire achievement through giving highest effort.

In Fig: Monthly loading plan board (1) & (2) we've shown a factory monthly production planning through excel. This plan is done considering item wise.

Let's say our factory monthly capacity is 1000000pcs. So as per capacity we can plan least 1 million pcs. Here is the thing that quantity are style/item wise. If a style basic pant with fake pocket and another is biker jacket. We are considering both as just pcs. But we don't consider SMV during capacity meeting or production planning to showoff management that our factory have this capacity that capacity but ultimately need huge amount of over time to reach shipment target.

From the beginning we talk this month we planned huge quantity which is achievable but in practical isn't. That's why need huge OT to cover shipment. So shipment urgency arise.

In piece production planning only item/style consider to plan which is a very conventional process. If a factory only do one type of item like pant then piece planning could be little similar to practical situation but still so far from reality. Factory's efficiency are time utilization. The more time utilize the more capacity increase. The more piece added but not considering smv will assure more planning accuracy.

So we will see last couple of month, piece planning target & achievement compares considering overtime to ensure suitable result. We have terrible data feedback that how dangerous situation we created here by this piece planning. Every order almost near to shipment urgency. Few of them are delay shipment eve air.

Piece planning are based on yes this much can produce in a line a product during pick production. And based on it set learning days and plan go onboard.

This is how a factory capacity is 1000000pcs/month but achievement is far from the plan. Very basic reason is not consider SMV smartly utilization.

Here are few data of last couple of months production status of a factory as summary month wise plan target, achievement, deviation from plan target, overtime etc.

Apr Plan : 10,09,938pcs  
Apr Achieve : 9,73,681pcs  
Apr Deviation : -36,257pcs  
Apr OT hour : 1,04,000hr

Apr Plan : 10,09,938pcs  
Apr Achieve : 9,73,681pcs  
Apr Deviation : -36,257pcs  
Apr OT hour : 1,04,000hr

Jun Plan : 10,14,234pcs  
Jun Achieve : 9,89,331pcs  
Jun Deviation : -24,903pcs  
Jun OT hour : 2,33,628hr

Jul Plan : 10,09,859pcs  
Jul Achieve : 7,45,948pcs  
Jul Deviation : -2,63,911pcs  
Jul OT hour : 3,68,933hr

Above plan quality are based on piece and see the achievement deviation after giving so many OT hour. This is a very conventional method to do production planning and that's why plan are being are so tight. Shipment will be in trouble.

So to avoid this and ensure proper capacity I ensure SMV have huge roll to play here. We have to plan as per SMV minute not just item wise but considering manpower as well to ensure huge amount of over time.

So below are the data as per minute base production planning. We can convert piece into minute just a click like multiply order quantity with production SMV.

Apr Plan : 2,27,23,605min  
Apr Achieve : 2,24,53,944min  
Apr Deviation : -2,69,661min  
Apr OT hour : 44,834hr

May Plan : 2,25,83,790min  
May Achieve : 22,396,272min  
May Deviation : -187,519min  
May OT hour : 46839hr

Jun Plan : 2,25,20,265min  
Jun Achieve : 2,24,76,271min  
Jun Deviation : -43,994min  
Jun OT hour : 41628hr

Jul Plan : 2,25,01,828min  
Jul Achieve : 2,24,16,270min  
Jul Deviation : -85,557min  
Jul OT hour : 43166hr

Above are the data of last few month based on minute basis planning. Based on minute basis planning we can see very little minute deviation came also OT occurs.

So from the above data we can easily say that minute basis planning is far better. Here capacity utilization appears most. Also efficiency increases.

# CHAPTER-04

## DISCUSSION OF RESULT

## DISCUSSION OF RESULT

In the discussion of the result we will see how Piece Planning and Minute Planning have role in RMG Sewing Production Planning to ensure accuracy in Production Capacity, Ensure most effective Capacity Planning (Efficiency & Delivery Improvement), Efficient Production Planning (Budget Savings) etc. area.

**4.1 Production Capacity:** Actually the difference impact between Piece Planning and Minute Planning in RMG Sewing Production Planning are the main thing of Production Capacity. By mouth saying we have 1000000pcs capacity per month and meaningfully 2,25,00,000min/Month capacity are different talk. Only by ensuring proper use of SMV are possible to ensure accuracy in Production Capacity by doing minute Planning.

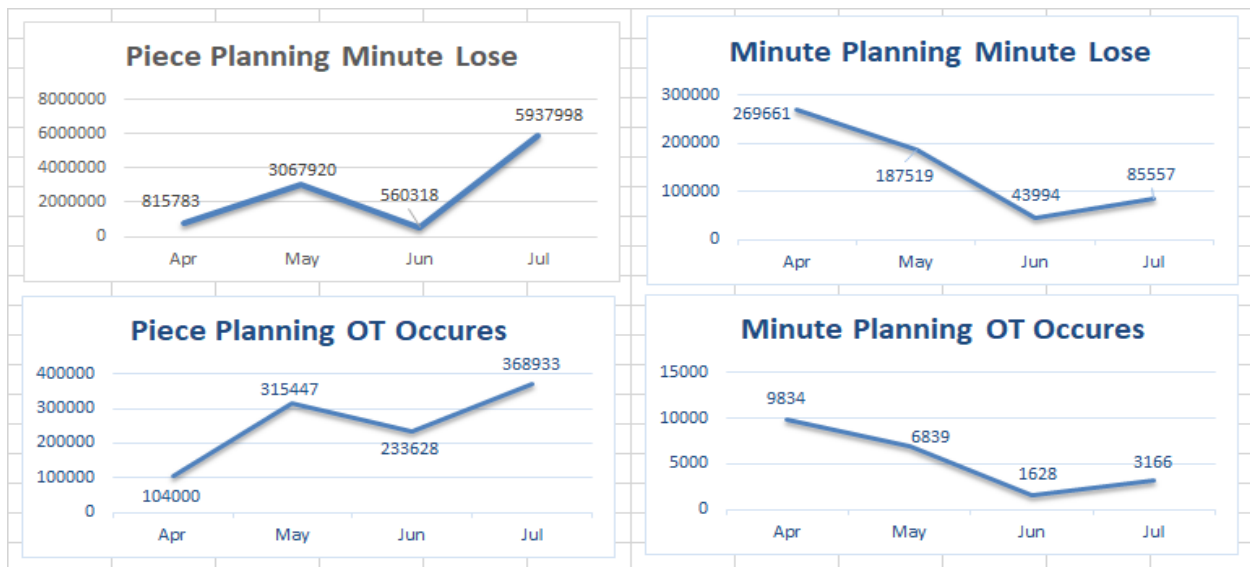


Fig: Minute Lose & OT Occures

From above figure we can easily measure that piece planning have huge gap like minute lose (here minute lose are calculated from the practical case study by multiplying lose pieces with SMV considering 22.5).

In piece planning minute lose and OT occurs huge which is a two side lose. One is achieve minute lost and is OT budget increasing.

In minute planning minute lose are less. So OT occurs less. Which means planning accuracy are good here.



**4.2 Efficiency & Delivery:** Efficiency are the most important part for factory performance. It reduce factory cost and increase performance all over the factory. Also it helps to ensure delivery improvement.

Below are the data for piece planning and minute planning Efficiency & Delivery.



Fig: Piece Planning and Minute Planning Efficiency & Delivery

From the chart it very clear that Factory target Efficiency is 75% where achievement is less than 70% all the mentioned month in piece planning.

And Delivery performance in piece planning are also less than 90% in the mentioned month.

Where achievement of efficiency are far better above 70% in minute planning and also delivery performance are more than 90% in minute planning.

**4.3 Budget Saving:** To run a factory need huge amount of budget. Cause a factory have several types of department and work area with huge manpower. Most of are under OT (Over Time) payment due to wage rules.

In piece planning and minute planning the OT hr have a vital role. Below are the data.

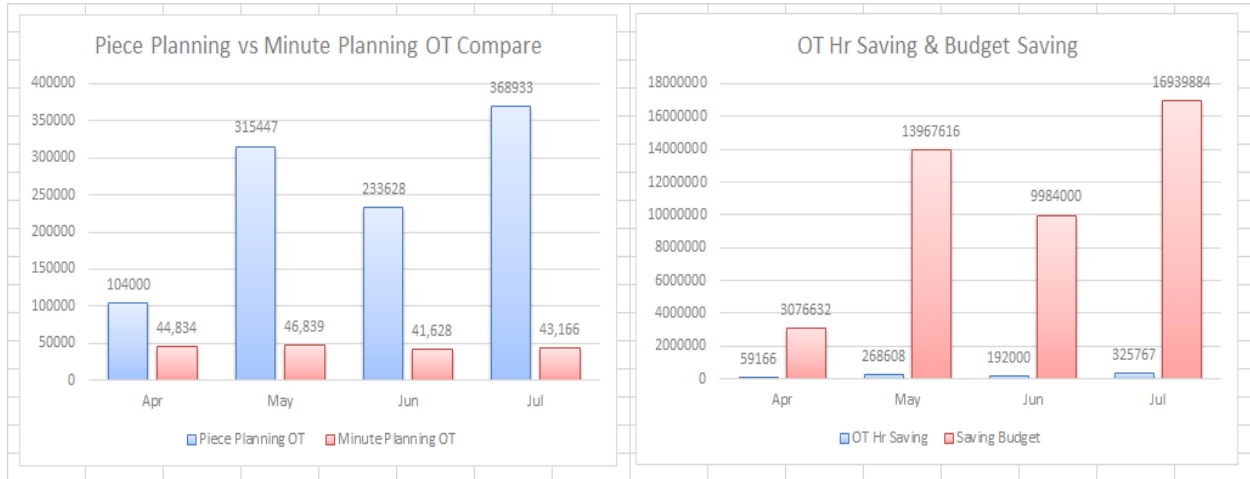


Fig: Piece planning vs Minute Planning OT Compare & OT Hr Saving & Budget Saving

From above chart we are seeing piece planning need huge OT to achieve plan target where minute planning need less that's budget saving also better in minute planning considering OT hr. Here per hour OT cost consider 52 BDT.

**CHAPTER-05**  
**CONCLUSION**

**5.1 Conclusion:** From this brief study it is very much clear that Minute Planning is far better than Piece Planning. Because the accuracy of Minute Planning is far better, reduce production time loss and need less over time to achieve production target.

Below are the summary of the conclusion:-

1. Balanced RMG Sewing Production Planning
2. Ensure proper Capacity Planning.
3. Save huge amount of Extra Budget
4. Over time reduce
5. On time delivery performance increase

**5.2 Reference:** Most of the information are given from production planning experience. Few are collected from a factory & survey through internet to gather related knowledge about the topic. From this purpose I'm referencing few link. Here it is:-

1. [https://onlinegarmentsacademy.blogspot.com/2019/07/garments-production-planning\\_31.html](https://onlinegarmentsacademy.blogspot.com/2019/07/garments-production-planning_31.html)
2. <https://www.sharmingroup.com>

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 Supervised by: Supervisor's name: Tanvir Ahmed Chowdhury Designation: Assistant Professor  
[A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Textile Engineering August, 2023](#) i DECLARETION I hereby declare that the work which is being presented in this report entitled, "Comparison between Piece Planning and Minute Planning in RMG Sewing Production Planning" is original work of my own, has not been presented for a degree of any other university and all the resource of materials uses for this thesis have been duly acknowledged. Student: \_\_\_\_\_ Hasibul Hasan Shaon ID: 191-32-392 M.Sc. in Textile Engineering This is to certify that the above declaration made by the candidate is correct to the best of my knowledge. Supervisor: \_\_\_\_\_ Tanvir Ahmed Chowdhury Assistant Professor Textile Engineering Department Daffodil International University ii ACKNOWLEDGEMENT This work has done directly under Department of Textile Engineering at Daffodil International University (Duration: May, 2020 to August, 2023). As I'm a student of Textile Engineering & my professional background related to my education background. So I tried to enrich knowledge about Ready Made Garments Production Planning. In Ready Made Garments Industry every work related to lead time. This lead time is provided by Buyer. The lead time starts from getting order confirmation. Buyer wise lead times depends. But the standard lead time is 4 weeks or 1 months. We get all related information from merchandiser. Buyer wise information, delivery, styles actually all related things depends. So here we can know also few terms