



**Daffodil**  
*International*  
**University**

Faculty of Engineering

Department of Textile Engineering

Thesis Topic On

Analysis of T-Shirt consumption and costing for knitted garments

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Submitted By:

Rasel Ahammed ID: 181-23-458

Md. Alauddin ID: 172-23-357

Supervised by:

Sharmin Akter

Lecturer

Department of Textile Engineering

This Report Submitted in partial satisfaction of the necessities for the level of

**Bachelor of Science in Textile Engineering.**

Advance in Apparel Manufacturing Technology

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# Latter Of Approval

October, 2020

To

The Head,

Department of Textile Engineering (DIU)

Datta Para, Ashulia, Savar, Dhaka

Subject: Approval of Thesis Report of B.Sc. in Textile Engineering Program.

Dear Sir,

I am just writing to let you know that this project report titled as “Analysis of T-Shirt consumption and costing for knitted garments” Has been prepared by the student bearing **ID’s** 181-23-458 & 172-23-357 are completed for final evaluation. The whole report is prepared based on the proper investigation and interruption through critical analysis of empirical data with required belongings. The student were directly involved in their project activities and the report become vital to spark of many valuable information for the readers.

Thusly it will profoundly be valued on the off chance that you mercifully acknowledge this task report and think about it for definite assessment.

Yours Sincerely

-----  
Sharmin Akter

Lecturer

Department of Textile Engineering

Daffodil International University

# Declaration

We attest that this report is totally our own work, except where we have given fully documented references to the work of others and that the materials Contained in this report have not previously been submitted for assessment in any formal course of study. If we do anything, which is going to breach the first Declaration, the examiner/supervisor has the right to cancel my report at any Point of time.

.....

Name: Md. Alauddin

ID: 172-23-357

.....

Name: Rasel Ahammed

ID: 181-23-458

# Acknowledgement

By the infinite mercy of Allah we have been able to complete our project report “**of T-Shirt consumption and costing for knitted garments**” successfully.

By then we should acknowledge the open way to offer us because of our good boss **Sharmin Akter**, Lecturer, Department of Textile Engineering, Daffodil International University for giving us rules and proposition to complete this Project. His shrewd appeal help rational course and tries have made it possible to execute the undertaking dependably.

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## **Dedication**

From the beginning I have to give this cutting edge report to all-ground-breaking Allah for enabling me this opportunity to substantiate myself. Without god-like's help nothing would be possible. By then I have to dedicate my report to my people. I venerate them beyond a shadow of a doubt, for completing my assessment they accept an irreplaceable activity to wrap up. It's an uncommon enjoyment for me. Without their help it is extremely abnormal for me to complete this association so I'm grateful to them. My people were helpful to set up this association. Besides, I similarly need to submit this report to my reasonable instructor and educational chairman, Sharmin Akter, Lecturer, Department of Textile, Daffodil International University give us a very help and rule to arrange this association. I submit this report to my revered watchmen.

Committed to the pieces of attire worker, who works morning to night, contribute showing the wheel of country economy to persevering work. Much gratitude to you such a lot of, proceed, we are with you.

## **Abstract**

This project report on analysis of consumption and costing of trims and accessories for knitted garments. Consumption & costing is a most important part of garments business. Consumption is define as the quantity of raw materials required to produce a complete garments. Consumption is related to style description, Fabric description, Fabric width & weight etc. The study focus on the factor that are related to FOB cost (trim & accessories cost, fabric cost, storing cost, washing cost, transportation cost, testing cost etc) Price is the most important part attainable in the world competitive market without any doubt. Costing is the process of calculating and determining the total cost of producing a garment Such as, material cost , labor cost, transport cost etc. All the calculation of our study, we collect 10 different T-shirt and then identified its different part and calculate consumption & also we calculate costing for use 50000 Piece of knit garments (T-Shirt).The study provided convinced principle of fabric consumption, thread consumption, CM calculation, required poly, cartoons calculation that's are done very carefully. The Manufacturer, retailers, exporters, consumers of polo shirt will get the discernible method of consumption & costing and its parameter.

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# **CHAPTER-01**

## **INTRODUCTION**

## 1.1 Introduction

Materials and dress will dependably be significant things for people. Turning and weaving were the chief practices that drove the Industrial Revolution in the eighteenth century. Beginning now and into the not so, distant the material business has been a crucial industry in the fundamental time of industrialization in different nations in various time ranges on the planet. Bangladesh is an imperative maker and exporter of weave RMG thing. There are around 4500-5000 bits of articles of clothing creation lines running in Bangladesh. Headway of bits of articles of clothing plants began in Bangladesh around 1980. Regardless, straightforwardly for all intents and purposes 82% of our outside money is earned from RMG trade. At present Bangladesh is passing on and passing on in excess of 60 things of bits of clothing. Bits of clothing are passed on to USA, Canada, Japan, Australia, Middle East and different nations on the planet. Most practical work cost is the best unbelievable circumstance for Bangladeshi bits of clothing makers and exporters.

Progressing is one of the most basic parts for bits of articles of clothing exchange. Without publicizing this exchange never be satisfy. Merchandiser approaches or handles everything from purchaser to creation. He is inside for the entirety of the errands. In the wake of getting a requesting, merchandiser figure everything, what he have to finish this sales and influence a superior than normal strategy by which he to can do the shipment in time with purchaser's basic. In gathering plant level, merchandiser makes the entirety of the requesting for embellishments necessities for a sales like; surface need, sewing string, get, washing if focal, holder, poly-bag, shipment approach, and so on. Everything considered merchandiser expansion looks as a rule ground.

Sound Knowledge is particularly basic for the direction of material structure and advancement. Sensible Knowledge makes us talented and flawless to apply hypothetical information in reasonable life. . We get Studying on weave Garments Merchandising, Garments age, Quality control, Operation, Marker making, Cutting &Finishing district. We tried our best to get settled with this Project will support our future sensible life.

## 1.2 History of Bangladesh Garments Industry:

The RMG business started in Bangladesh during the 70s yet it was then just effort, the essential committal of knitwear exchange as made in 1973 and the chief dispatch of woven pieces of clothing was made in 1977. In 1981-82 the responsibility of woven garments in the full scale passage was 1.10%.Sometime later it is a record of preceded with achievement for the Bangladesh RMG territories. The knitwear territory has become during the time in geometric development and become the prime primary force of Bangladesh's admission pay. Inside 10 years the dedication of woven to the toll receptacle got 42.83% (1990-1991) and the knitwear part's responsibility 41.79% to national convey pay at the completion of FY 2008- 09(July-April).

The businessmen of the weave section wandered forward with their inclination in the late 80s .With their genuine undertakings they had the choice to convey US\$14.84 million out of 1990-90. Out of this, US\$ 2.02 million was conveyed to US. The example continued with un the weave division because of the market find a workable pace to the LDCs under the summarized structures of tendency (GSP) advantage. Admission from Bangladesh Export from Bangladesh 1972-73 to 2009-2010 1972 Export from Bangladesh 1972-73 to 2009-2010 - 73 to 2009-2010.This is the resuscitated beginning of the epic story of Bangladesh knitwear fragment that in clear sense has been possible as a result of enormous industrialization

in a sensible way with sway on all conceivable human progression edges which is the engaging some segment of the story. The improvement of knitwear zone is extending at a growing rate. The consolidated ordinary advancement pace of the part is 20%, and it is relentlessly grabbing more sections in the passage pie of Bangladesh .this is generally attributed to the workplaces gave under the EC GSP and ROO. The knitwear division is seriously controlled by the great game plans and acknowledged the open way to develop a strong in switch linkage for the territory. Bangladesh RMG portion has adequately easily finished some essential tests and is as of now cruising with shafts: weave and woven. The sub-territory is right now in sound test among them to play the activity of activity inside the country.

In FY 2003-04, knitwear since conveyed with 91.6 million bunches. Knitwear is so far driving in regards to sum conveyed and is developing the opening bit by bit. Admission measure of knitwear things extended to 241.59 million bunches which is 163.74% higher than the year 2003-04 to 2007-08. On the extended length of December of the FY s 2008- 2009, outright knitwear admission was 146.5 million bunches which is 30.58 million bunches higher than a comparable time of a year back. Relationship a Export Quantity.

Bangladesh knitwear is playing out a well augmentation to the extent sum which is a sensible indication of addition of breaking point right now. In the year 2007-08, the responsibility of woven wear to the toll picking up was 36.17% and in knitwear was 38.97% .In the present year, the presentation of both the division are according to the accompanying:

- Knitwear exchange US \$ 5231.01 million FY 2008-09(July-April)
- Woven admission US \$4902.48 million FY 2008-09 (July-April)
- Therefore the dedication of knitwear in national passage addition is 57.82%

RMGs are the completed material item from garments production lines and the Bangladeshi RMG Sector is one of the quickest developing areas in the Bangladeshi economy, with a development pace of 55% from 2002 to 2012. Fares of materials, apparel, and instant pieces of clothing (RMG) represented 77% of Bangladesh's absolute product trades in 2002. By 2005 the (RMG) business was the main multibillion-dollar assembling and fare industry in Bangladesh, representing 75 percent of the nation's income in that year. Bangladesh's fare exchange is currently commanded by the instant pieces of clothing (RMG) industry. In 2012 Bangladesh's piece of clothing sends out – chiefly to the US and

Europe – made up almost 80% of the nation's fare salary. By 2014 the RMG business spoke to 81.13 percent of Bangladesh's complete export. Much of the colossal development of the segment and its job as a monetary powerhouse for the nation is ascribed to the accessibility of "modest" work. Of the 4,000,000 laborers utilized by the RMG business, 85% are uneducated ladies from country towns. The workplaces and states of the manufacturing plants that produce instant pieces of clothing has experienced analysis as of late concerning specialist well-being and reasonable wages. Subcontracting is a significant part of the RMG business in Bangladesh. Numerous Western organizations contract various Industrial facilities, just mentioning that specific portions be met at specific occasions. Organizations incline toward subcontracting in light of the fact that the level of partition apparently expels them of risk of pay and work violations. It additionally makes it simpler to disseminate creation over an assortment of sources.

## 1.3 Objectives of the Study

Through This project, we have known that paper defines frequently occurs the Analysis of consumption and costing of trims and accessories for knitted garments. To get some answers concerning proper quality & organizing system.

- To plan a new technique for quality control on the cutting segment.
- To get some answers concerning the distortions of articles of the utilization of pieces of clothing.
- To developed products and increases profit and reduce product prices.
- To know the purposes behind string distortions and their fixes.
- To get some answers concerning the deformations of articles of Accessories.
- To get analysis a T-shirt costing and consumption system.

## 1.4 Important and Scope of the Study

- To know how to take plan step by step for garments production.
- To divide the sorts of insufficiencies in consumption and costing term.
- To accept an ideal activity in augmentation or decay age capacity.
- To process each hour faults in a costing successfully.
- To keep thought from blemishes on articles of utilization.
- To know each manufacturing process of garments.
- To measuring consumption and costing in factory profit development

## 1.5 Limitations of the Study

- First of all we can't find out any industry for internship due to pandemic situation.
- Always afraid go to industry by public transport for covid-19 virus.
- Limitation of time to explore this theme.
- Limitation of collect data from industry, due to corona situation.
- Limitation of essential information sources.
- Limitation of precise information.
- Input and yield issue.
- Respondent reluctance.
- Changing the style and course of action.
- Controlling issue are Different sort of Accessories.

**Chapter-02**  
**LITERATURE REVIEW**



## 2.1 RMG Industrial Issues

Bangladesh instant article of the clothing industry is presently, appropriately, encountering expanded requests from global clients to address a more extensive range of issues identified with the manageability of the area. We are for the most part acquainted with client necessities in regards to building security, laborers' welfare, and natural concerns, however, a developing number of clients are starting to make arrangements to grow the degrees of consistency to cover territories that will require better waste administration, reusing of the item and the segments utilized, exacting control of carbon outflows, and more prominent control of small scale plastics. The rising two-overlap question confronting the RMG part today is: Are we prepared for this expanded level in manageable targets being set by our clients and where will the essential venture to execute the fundamental moves up to our industry originate from.

### 2.1.1 Concentration of RMG Sectors

It is significant for us to understand that the RMG part can't disregard the rising requests of our clients for more elevated levels of maintainability. More significant than just conforming to our client's desires is the basic reality that expanding the supportable accreditations of the area carries natural advantages to every one of us - both locally and for the world everywhere-yet additionally offers an undiscovered chance to build income for the segment.

Nearby the subjects of carbon emanations and small scale plastics, the issues encompassing better waste administration and reusing are going to the fore. With clients trying to take care of more necessities on their providers to accomplish their very own destinations of building up an increasingly reasonable, round economy. We are on the whole mindful that the RMG part and the country all in all need to address the issue of carbon emanations. We should all examine ways that lessen our carbon impression, from outfitting regular assets through to the appropriation of hydrogen energy units for our open vehicle framework and crucial merchandise transportation administrations. This isn't a zone that is the sole save of the RMG segment, yet one that requires more prominent venture at a national and neighborhood government level.

### 2.1.2 Requirements of RMG Sectors

This issue of miniaturized scale plastics is another case of a result of our lives today that influences every one of us. The RMG business needs to find a way to limit the effect of plastic contamination on nature, regardless of whether that be the presentation of progressively stringent filtration control of pro-fluent from weaving and washing plants through to the everyday house-keeping of any waste that we produce. We are not the only ones in this. Because of the procedures in question, precisely reused items don't require any color, synthetic applications, and insignificant measures of water. Making it's a maintainable answer for contamination from a piece of clothing generation. Textures on separated and combined to make various hues. The filaments are checked, spun, and afterward transformed into totally new material, frequently offering a 15-30% value advantage versus textures produced using virgin yarns. There is an assortment of other new reusing innovations effectively accessible, with organizations setting up or testing their first mechanical plants (Worn Again, Circular Systems, Tyton, Evernu, Renew cell, Moral Fiber, Refibra from Lenzing, for instance) that take the reusing of fiber to a totally new degree of value and empowers the reusing of up to 85% of various pieces.

### **2.1.3 Purpose of RMG Sectors**

These are altogether different innovations, with some requiring a greater venture. The natural effects are different, and the market potential is unique, yet these innovations make them thing in like manner - they expect backing to flourish and to arrive at greater market volumes. It is one of the RMG part's greatest market chances to work connected at the hip with those early advancements and welcome them to complete their examination in Bangladesh by opening up the market information to them to enable them to work viably and present frameworks that would profit the business in general. The material being referred to be not squander. We have to reevaluate our way to deal with the waste item we create and think about how we can best use it both for the earth and to put a stop to the assets streaming out of our industry all the time.

### **2.1.4 RMG Sectors Future Progress**

It is presently time for us as an industry to lead the pack and explore ways that we can back and grasp these progressions to the area. It bodes well, both for expanding the maintainability and circularity of our business, yet additionally in light of the fact that they offer potential money related streams that will generally go disregarded. With a discount change in approach towards articles of clothing waste, Bangladesh would have the option to show to its RMG industry clients that we are stepping up to the plate with regards to a maintainable round way to deal with the design business.

## **2.2 About Consumption & Costing**

Nowadays, Apparel business is one of the most important and doubtful business over the world. Most of the developing countries are doing this garments business. In apparel Business consumption and costing is very important issue to maintain in business field. We should understand the terms Garments Consumption and costing.

### **2.2.1 Consumption**

In the apparel business, consumption means quantity of raw materials with a view to determine the price of a garment. In order to calculate the quantity how much fabric, sewing thread, zipper, button, and other accessories are required to produce a garment up to the exporting is called consumption.

### **2.2.2 Costing**

Costing: Costing means calculating process of a product to fix profit and loss mathematically. RMG sector is a business where so many guys have to perform to achieve. A particular target. It is a hard working track where every minute is counted. Costing of a garment is a mandatory task for an RMG merchandiser, especially in soft line. Overall chance of getting order and profit depends on it simultaneously. Product costing is a vital matter to know profit and loss in apparel industry. It is not only mandatory in apparel industry but also other industry should calculate product costing accurately. Otherwise, that business will not run a long time. It's probably one of the toughest tasks for someone to find out accurate product pricing. There are two main hazards and someone should be aware of underpricing and overpricing while evaluating and planning overall business strategies. Causes, both elements are harmful for any organization. It's a general trend for all to gain profit by selling a product.

## 2.3 Cost to Consider

### 2.3.1 Direct Cost

A price that are directly related to the production of a company that's called direct cost. Direct cost refer to, materials, labor, and expenses related to the production of a product.

### 2.3.2 Indirect Cost

This costing system is the price that are not directly related to the production it's called indirect cost. Indirect cost refer to utilities cost, rent, fuel cost, electricity cost, telephone cost, maintenance cost etc.

### 2.3.3 Profit

12-20% depends on order and size. It depends on which types of style quantity get order from buyer.

### 2.3.4 Factors that are Affecting Consumption & Costing

Production Planning

Marker making fault

Low quality dye

Termining, accessories

Inefficient worker,

Details of printing

Fabric structure

Yarn count & yarn cost,

Quantity of garments,

Size ratio, color ratio

AQL level

Hidden cost

Production

Design of garments

Number of carton box etc.

### 2.3.5 Point that should be considered before Costing

- **Fabrication:** We must get knowledge about fabrication before getting order from buyer. The merchandiser should confirm the strong source of fabric delivered after get order then ensure following fabric source.
- **Fabric color:** Try to know how many color require for order and also known color wise quantity ratio.
- **Quantity:** Merchandiser must consider quantity of cost before production.
- **Size Specification:** Buyer given sample merchandiser confirms size of garments PO sheet before bulk production.
- **Shipment date:** Discussing buyer and internal management for delivery shipment date.
- **Test:** To know how many require test of garments cost.
- **Inspection:** Try to get information from buyer that who inspected the product, if inspected third party then ensures that who will pay.

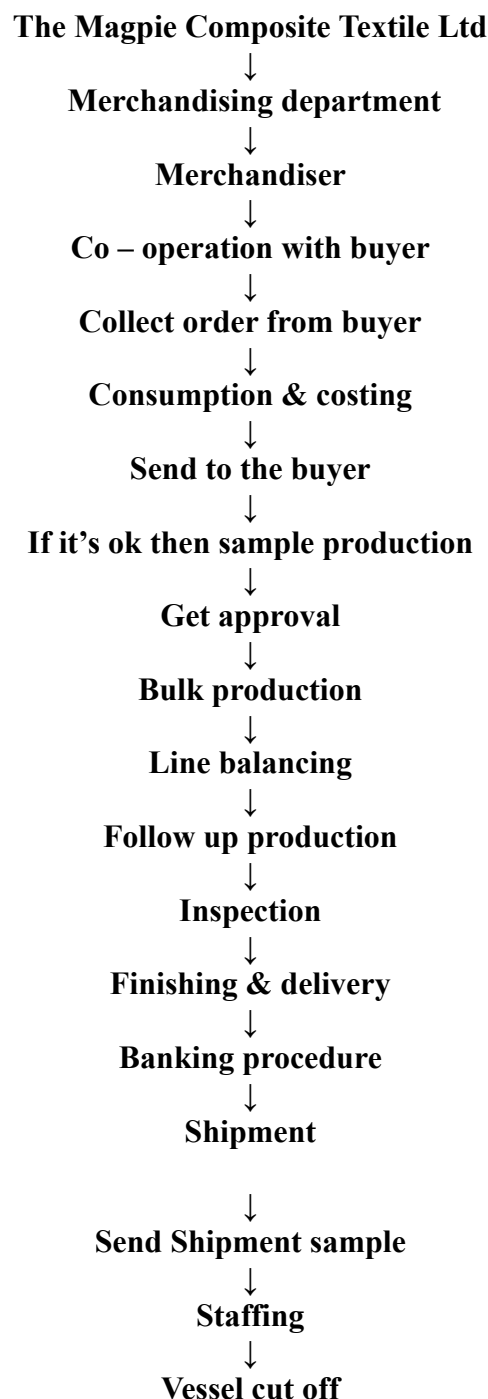


**CHAPTER-03**  
**METHOD & MATERIAL**

## 3.1 Methodology

To complete this study we collect different types of consumption and cost data from many departments of industry mainly collect data from the merchandising department. We collect data daily at internship time. Our group members collect data in different ways such as collect data by their own pad, collect data by using the laptop, collect data by excel sheet. We are studying in the apparel manufacturing department and this project report is related to our subject, that's why we choose this project report. Accordingly, a total department of that company polo shirts consumption & costing procedure had been considered for this study.

### 3.1.1 Process Following of Methodology



## 3.2 Merchandising

The Merchandising Department has created a goods for sale. Here goods are bought and sold. Merchandising basically acts as a bipartisan agreement for trade. Merchandising is the work of merchandising to lead in building a bridge of communication between buyers and sellers by discussing in details, what customers want and at what price they want the desired all about textile product.

### 3.2.1 Responsibility of Merchandiser

- ❖ Internal& external hot communication
- ❖ Quality& Sampling
- ❖ Cost& Consumption
- ❖ Preparing for internal order sheets
- ❖ Accessories& trims in-housing
- ❖ Preparing to purchase orders
- ❖ Getting approvals on lab dips
- ❖ Advising and assisting production and quality department
- ❖ Taking responsibility about Special inspections
- ❖ Giving Right time shipping instructions and following shipment

### 3.2.2 Deity of Merchandiser

Right time: keeping delivery schedule with mandatory time.

Right cost: select the right cost for everybody

Right quantity: To ensured right quantity of product what buyer ordered

Right quality: keep the righty quality, what buyer ordered.

### 3.2.3 Skill of a Merchandiser

- Good personality
- Good communication skill
- Good knowledge about English language.
- Order getting ability etc.



- Good knowledge about fiber, yarn, fabric, dyeing, printing, finishing, production etc.
- Hard worker
- Right costing knowledge of raw materials.
- Right consumption knowledge of various items.
- Good knowledge about computer (word, excel, power point, G-mail, Internet browsing).
- Knowledge of the quota system that used in different countries.

### 3.2.4 Function of a Merchandiser

- Procure of garments order
- Procure of material
- Follow up Garments Production
- Control of garments quality.
- Receive payment from buyer
- Garments Shipment

## 3.3 Garments Manufacturing

A total piece of clothing should confront numerous cycles from its request accepting to freight. All through garments creation, a strategy stream graph should be needed to complete a partner in nursing request essentially. Additionally, a technique stream graph assists with knowing a piece of clothing creating method that anyway the crude materials square measure renewed into the wearable garments.

## 3.4 Fabric Knitting

Knitting is a strategy by which yarn is controlled to make a material or texture; it is utilized in numerous kinds of articles of clothing. Knitting might be finished by hand or by machine. Knitted texture comprises various continuous columns of associated circles that intermesh with the following and past lines.

### 3.4.1 Knitting Procedure Condition

Fabric Type	Finishe d GSM	Formula	Select Yarn Count	Select Stitch Length/Inch
Single Jersey	160/180	4320/Finish GSM	26-28 s / 24 s	2.85-2.6

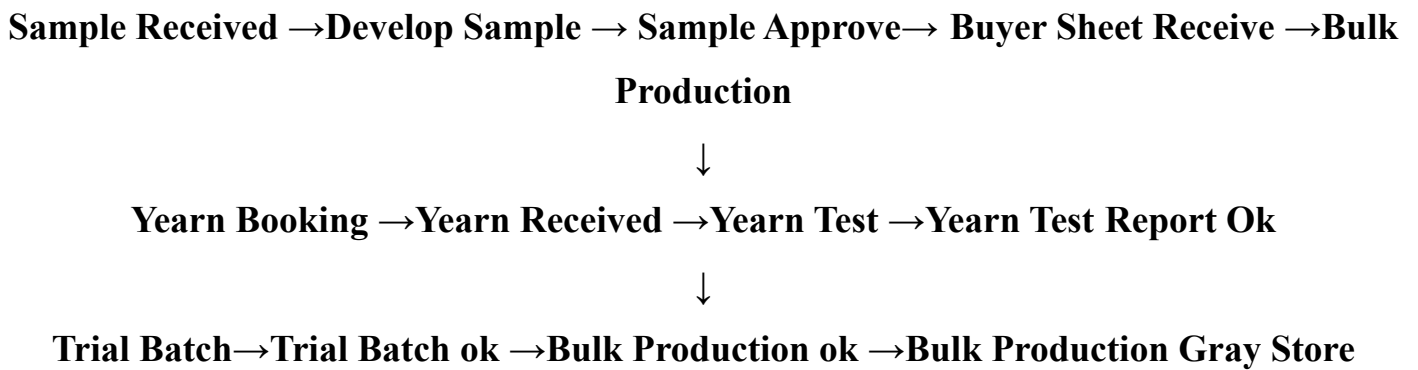
Lycra Single Jersey	180	6120/Finish GSM	34 s	2.85
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**Table No-1: Knitting procedure**

Knitting Calculation:

$$\text{Single Jersey} = \frac{4320}{\text{Finish GSM}}$$

### 3.4.2 Flow chart of fabric knitting process



### 3.4.3 Quality Standard Inspection Method

4 point system for textile knitted fabric investigation is a standard technique that is generally utilized in Textile and Apparel Industries. In this system, texture quality is assessed by inspection focuses per 100 square yards. In this way, to assess knitting quality you need to know fabric width and length of the examined roll.

### 3.4.4 Four Point Grading System:

Size of defects	Penalty
3 inches or less	1 point
Over 3 inch but not over 6 inch	2 point
Over 6 inch but not over 9 inch	3 point

Over9 inch	4 point
------------	---------

**TableNo-2: Four point grading**

$$\text{Point Calculation} = \frac{\text{Total Points} \times 36 \times 100}{\text{Fabric length in yards} \times \text{Fabric width in inches}}$$

### 3.4.5 Fabric Knitting Charge & Yarn Price

Fabric Knitting Charge and yarn costing should be need big consumption and calculation. We have just showing here yarn price& knitting charge for single jersey knitting fabric. Let in below table here.

<b>Yarn Price Charge &amp;</b>	<b>Per Kg</b>
<b>Yarn Price</b>	<b>\$ 3.00</b>
<b>Knitting Charge</b>	<b>\$ 0.15</b>

**Table No-3: Fabric Knitting Charge & Yarn Price**

Here,  
Yarn price + Knitting charge

### 3.5 Fabric Dyeing

Dyeing is the utilization of colors or shades on material materials, for example, filaments, yarns, and textures with the objective of accomplishing shading with the ideal shading quickness. For most textures, coloring should be possible at any phase of the piece of clothing's creation.

#### 3.5.1 Price List of knit Fabric Dyeing:

<b>Shade</b>	<b>Shade %</b>	<b>Open Finish</b>	<b>Tube</b>	<b>Open with Hear set</b>
White	00.00	\$ 0.83	\$ 0.49	\$ 0.97
Light	0.001-1.49%	\$ 1.25	\$ 0.90	\$ 1.53
Medium	1.50 – 2.49%	\$ 1.39	\$ 1.04	\$ 1.67
Dark	2.50 – 3.99%	\$ 1.60	\$ 1.18	\$ 1.74

**Table No-4: Price List of knit Fabric Dyeing**

Additional dyeing price with enzyme and silicon for Cotton & Lycra fabric

Enzyme wash= \$ 0.14

Silicon wash= \$ 0.7

Only heat set= \$ 0.31

Average dyeing price without enzyme and silicon for Cotton & Lycra fabric

Oven finish cotton = \$ 1.60

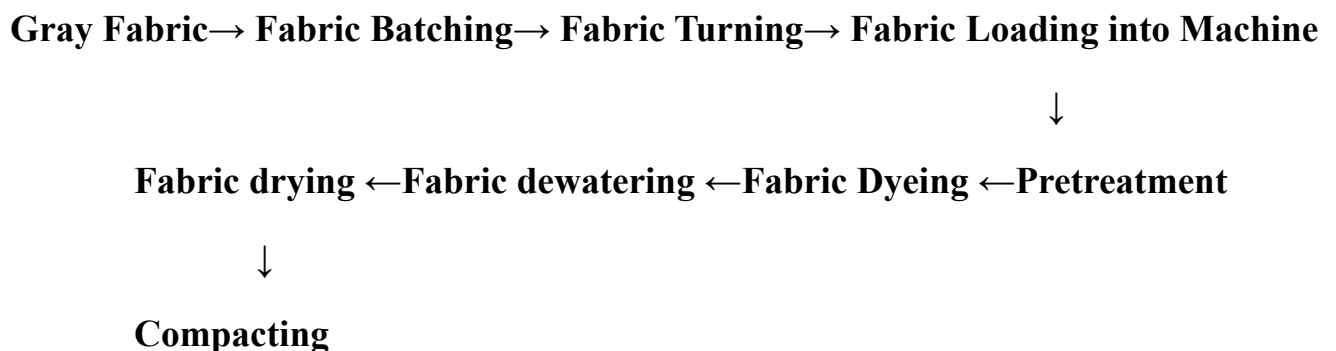
Tube Finish cotton= \$ 1.25

Open finish with heat set for cotton Lycra= \$ 1.88

Here,

Dyeing cost + Average cost

### 3.5.2 Flow chart of fabric Dyeing Process:



## 3.6 Fabric Cutting

The essential stage in the amassing of garments is the cutting and for that model, making is the base. Cutting is disengaging of the piece of clothing into its portions and in an overall structure, it is the creation system of segregating (isolating, twisting, removing) a spread into a piece of clothing parts that are the specific size and condition of the model pieces on a marker. The cutting method may similarly incorporate moving engravings and indents from the piece of clothing parts to help executives in sewing, severing or isolating a spread into squares of pieces stock many go before precision cutting of individual patter shapes. This is done to consider exact organizing of surface structure or more straightforward amassing of a cutting edge.

At the point when the marker is made, plan pieces should be eliminated of the predefined surface, a methodology called "cutting." Currently, a couple of cutting frameworks exist, going from low-to inventive. Notwithstanding the way that scissors are used sometimes exactly when working with outstandingly little gatherings or tricky surfaces cutting continues being done by hand, particularly in many lower volume establishments. Here, cutters control electric cutting machines around the edge of model pieces, cutting

through the surface stack. An electric drill may be used to make model indents. The accuracy and viability of this system are widely not actually in mechanized cutting structures.

### 3.6.1 Marker Making

A marker is thin paper where drawn the body parts sketch. That depend fabric is cut by placing it on a large table in the shape of a lay. Marker made by cad section with special software. Here we show that, how to measure a marker, before fabric cutting to control production cost and consumption.

### 3.6.2 Here is the T-shirt Measurement List from Buyer

#### Style Information

**Buyer Name:** Clique

**Style:** Men's T-Shirt

**Season:** S/S 2019

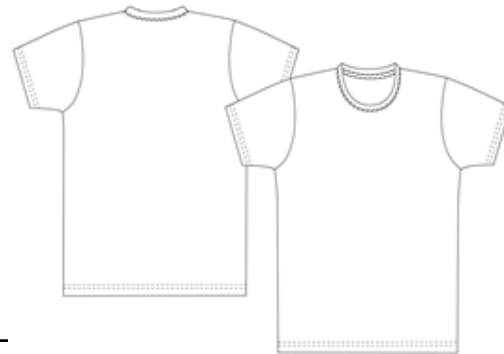
**Style No:** 02936

**Theme:** Basic

**Gender:** Men's

**Size:** XL - XXL

**Status:** Photo Sample



Description of body parts name		XS	S	M	L	XL	XXL	3XL	4XL	5XL	Tolerance
A	Body length (HPS)	65	68	71	<b>74</b>	77	80.50	84	87.50	91	
B	1/2 Chest	44	48	52	<b>56</b>	60	66	72	78	84	
C	1/2 Bottom	44	48	52	<b>56</b>	60	66	72	78	84	
D	Shoulder width	40	42	44	<b>47</b>	50	54	58	62	66	
E	Armhole depth	26	27	28	<b>29</b>	30	31	32	33	34	
F	1/2 Biocept	20	21	22	<b>23</b>	24	25	26	27	28	
G	1/2 Bottom sleeve width	15	16	17	<b>18</b>	19	20	21	22	23	
H	Sleeve length	18	19	20	<b>21</b>	22	23	24	25	26	
I	Neck width	16.75	17.50	18.25	<b>19</b>	20	21	21.75	22.50	23	
J	Front Neck Drop	8.50	8.50	9	<b>9.50</b>	10	10.50	11	11.50	12	
K	Back neck drop	2.00	2.00	2.50	<b>2.50</b>	2.50	3.00	3	3.00	3	
L	Collar height	1.50	1.50	1.50	<b>1.50</b>	1.50	1.50	1.50	1.50	1.5	
M	Hem height	2.50	2.50	2.50	<b>2.50</b>	2.50	2.50	2.50	2.50	2.5	

**Table No-5: T-Shirt measurement list from Buyer**



## 3.7 T-Shirt Marker Consumption Report with CAD Software

### 3.7.1 CAD

In the clothing producing area, CAD represents the computer supported plan. These days, Computer-supported plans or CAD programming gets perhaps the most fundamental apparatuses for design making and related positions in the garments business. It is utilized for design making, design evaluating, and the creation of the marker.

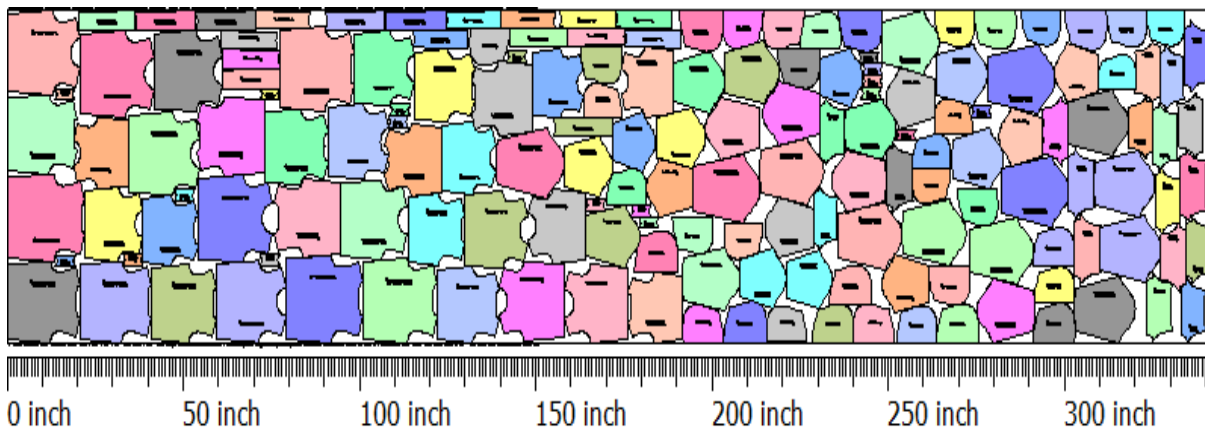


Figure No-1 Marker consumption with CAD software

<b>Marker info</b>											
<b>Marker Width</b>	22	inch	Pin To Pin	Number projects	of	1					
<b>Marker Length</b>	29.5	inch		Number products	of	12					
<b>Marker efficiency</b>	5.00%			Total patterns		108					
<b>Spreading option</b>	Simple			Placed patterns		108					
<b>Marker Consumption</b>				<b>Marker Consumption With Actual Length &amp; Width</b>							
<b>Weight per unit</b>	160	G/m2		Extra Cutting Width	2	Inc					
<b>Total weight</b>	3.000	KG		Extra Cutting Length	2	Inc					
<b>Used weight</b>	3.1	KG		Extra Cutting (%)	5%						
<b>Wasted weight</b>	0.5	KG		<b>Total Consumption/Doz</b>	3.000	KG / Doz	as per				
<b>Cut-able Consumption/Doz</b>	0.000	KG / Doz	as per	<b>Total Consumption/Pcs</b>	0.205	KG / PCS	as per				
<b>Cut-able Consumption/Pcs</b>	0.000	KG / PCS	as per	Total Fabric Required	#NAME?						
<b>Order Qty</b>	0	Pcs		Booking Fabric Width	0	Inc					
<b>Price Per KG/Yds</b>	0	USD		<b>Total Fabric Price Per KG/Yds</b>							

**Table No-6: T-Shirt marker consumption with CAD software**

### **3.7.2 Marker Consumption**

**For Inch:**

$$\frac{\text{Marker Length} \times \text{Marker Width} \times \text{Style GSM}}{1550/1000/\text{Marker Pes Quantity (One Pes)}} + 5\% \text{ [Cutting Allowance]}$$

$$\text{Dozen} = 1 \text{ Pes consumption} \times 12$$

**For CM:**

$$\frac{\text{Marker Length} \times \text{Marker Width} \times \text{Style GSM}}{10,000/1000} + 5\% \text{ [Cutting Allowance]}$$

$$\text{Dozen} = 1 \text{ Pes consumption} \times 12$$

### **3.7.3 Flow Chart of Fabric Cutting Process**

**Pattern receives from pattern department.**



**Cutting ratio received from merchandiser**



**Marker making**



**Fabric received from the store**



**Fabric Checking**



**Fabric Spreading**



**Marker placing on to the lay**



**Cutting the fabric**



**Numbering**



**Checking**



**Sorting and Bundling**

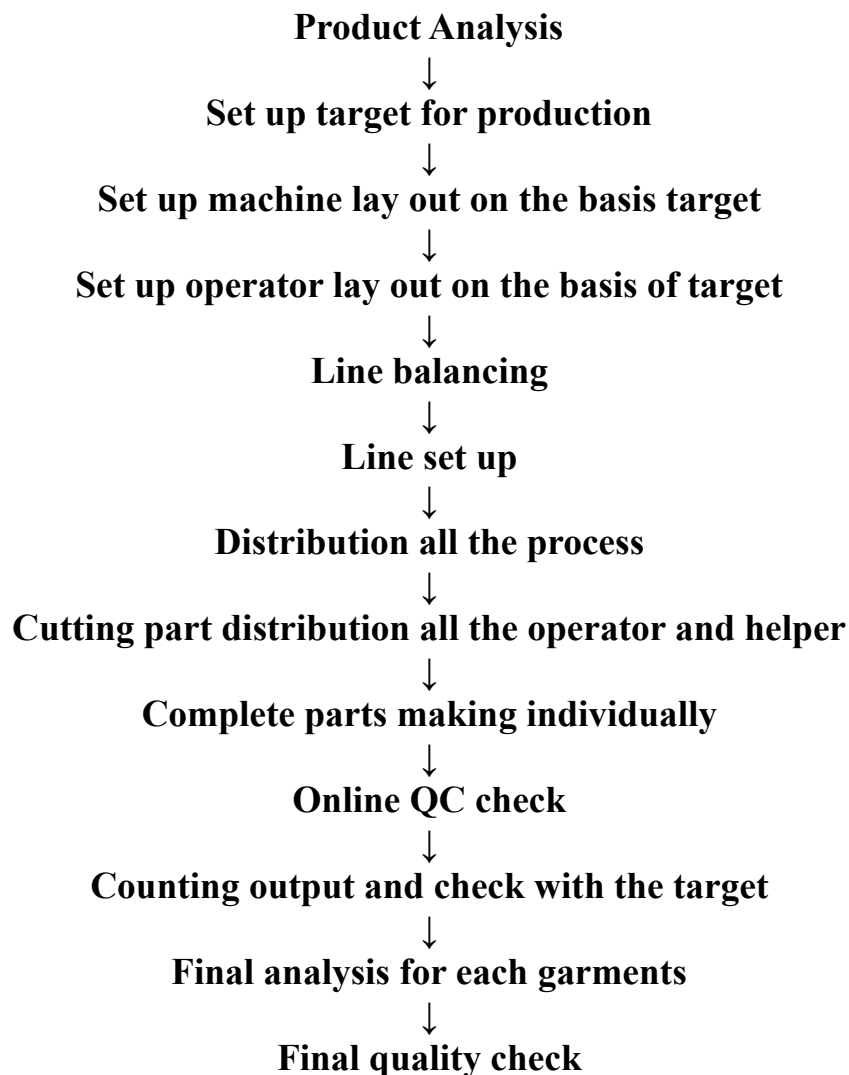


## Send to the sewing department

### 3.7 Garments Sewing

The secondary stage of make a garments is sewing, after send cutting department then part by part of different size of fabric attach by using different sewing machine. In this work place there are many operators who perform single operation. All factors decide what part of garments can be sewing at that station. In this stage various types of machine used for attach different size of fabric such as, plain sewing machine, over lock sewing machine, Flat lock sewing machine, Button hole sewing button attaching sewing machine etc.

#### 3.7.1 Garments Sewing Process



### 3.7.2 Lay out Process for Basic T-shirt

<b>Operator/M/C</b>	<b>18</b>	<b>22</b>
<b>ASO</b>	<b>4</b>	
<b>Efficiency</b>	<b>0.75</b>	
<b>T. Process SMV</b>	<b>4.45</b>	

<b>SL</b>	<b>Operational Process</b>	<b>M/C Type</b>	<b>No of M/C</b>	<b>No of ASO</b>	<b>Process SMV</b>
1	Shoulder join	O/L	2		0.34
2	Nec k rib mark & cut	P/M	1		0.250
3	Nec k join	O/L	1		0.240
4	Main & brand level cut & tack	P/M	2		0.400
5	Nec k top stitc h	F/L	1		0.250
6	Bk tape pipi ng & cut	F/L	1		0.280
7	Mar k & bk tape clos	P/M	2		0.550

	e with level				
8	Sleeve hem	F/L	1		0.26 0
9	Trim min g & body fold	AS O		1	
10	Sleeve mou th clos e	O/L	1		0.25 0
11	Sleeve open tack & fold	P/M	1		0.24 0
12	Sleeve & body matc h	AS O		1	0.26 0
13	Sleeve join & body	O/L	3		0.65 0
14	Sleeve pres s tack	P/M	1		0.24 0
15	Trim min g & body fold	AS O		1	
16	Bott om hem	F/L	1		0.24 0
17	Trim min g	AS O		1	

**Machine Details**

O/L	P/M	F/L	C/B	B/H	B/A	BRTK	KN S	PCOT	S/B	ILC	BT	FA
7	7	4	0	0	0	0	0	0	0	0	0	0

**Table No-7: Lay out Process for Basic T-shirt**

## 3.8 Industrial Engineering

Industrial Engineering is concerned with the design, improvement, and installation of an integrated system of men, material, and machines for the benefit of humankind. It draws upon specialized knowledge and abilities in the mathematical and physical sciences together with the principles and methods of engineering investigation and design to specify, predict and evaluate the results to be obtained from such systems.

**Industrial Engineering (IE) = production↑ cost↓ proper use of all elements↑ Efficiency↑ Revenue↑**

**SMV = (Basic Time + Allocated Allowance)**

### 3.8.1 SAM (Standard Allowed Minute)

The amount of time required to complete an exact job or operation under an existing condition using the specific and standard technique at a standard pace when there is plenty of retentive work.

**Standard Time = (Average observed time × Rating %) + Allowance %**

### 3.8.2 Some Important Formula for Industrial Engineering

**Standard pitch time = Basic pitch time + Allowance%**

**Efficiency% = Total production × SMV man power × working hour 100**

**Production = Total man power × Working Hour efficiency × SMV 100**

**Basic Time = Observe time × Rating time**

**GSD = (man power × work hour) / Target**

**Observed Time = Total cycle time/ no. of cycle**

**Basic pies time = Total garments smv/Total man power**

**Capacity=60/Capacity time in minute**

**Cycle time=60/Team target**

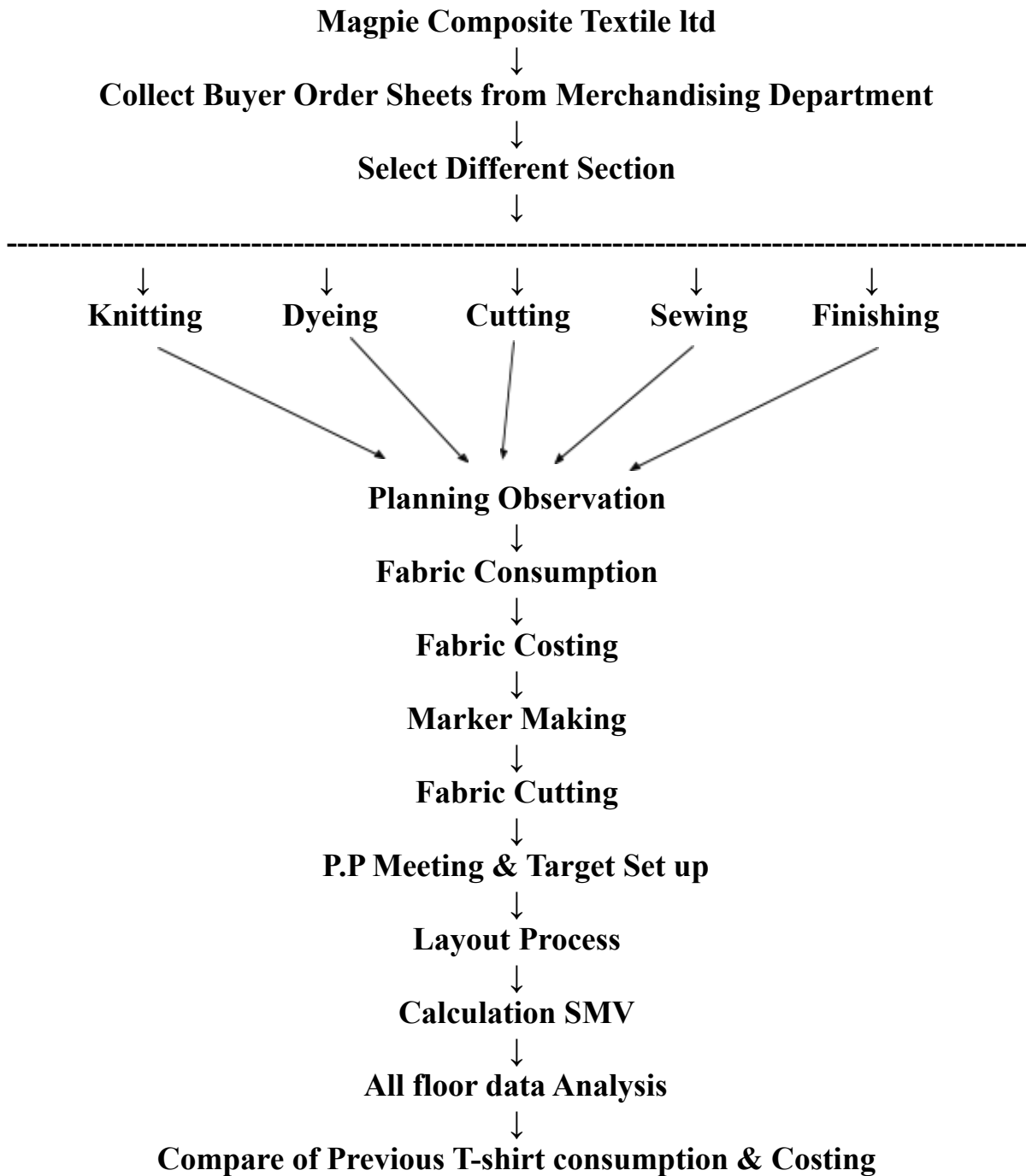
## 3.9 Method of the Study

Method Study is a study that systematically examines all the details and critiques in detail and in this way helps to improve the work in a simple and beautiful way.

### 3.9.1 Work Study

Work study is the study by which minimum utilization of man, machine, materials is possible

## 3.10 Flowing Process



### 3.10.1 Procedure

- A literature review has been made by studying journals, books, articles, report, blog, website, online newspaper and online magazine.
- Then a suitable factory has been selected wherein Inters off apparels like all section floor and Merchandising Department. According to the procedure doing to the task. The material used in the following orders are given below.

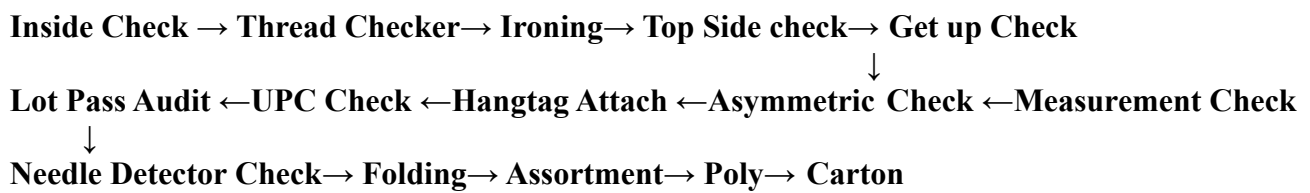
This study was designed to show the existing consumption and costing method used in garment industry. This study is designed at two parts, at first consumption of a T-shirt and then costing of a T- shirt



## 3.11 Garments Finishing

Garments finishing is the last phase of pressed articles of clothing that are prepared available to be purchased. Accordingly, it is perhaps the main stages in the entire piece of clothing producing measure. In the piece of clothing industry completing segment includes with piece of clothing washing, checking, last Testing, squeezing, pressing, and packaging etc.

### 3.11.1 Flowchart of Finishing Section



## 3.12 Garments Shipment

After completing all the required processes it's finally sent to the buyer.

**CHAPTER-04**  
**RESULT & DISCUSSION**

## 4.1 Overall Consumption and Costing for T-Shirt

This study was designed to show the existing consumption and costing method used in garment industry. This study is designed at two parts, at first consumption of a T-shirt and then costing of a T-shirt.

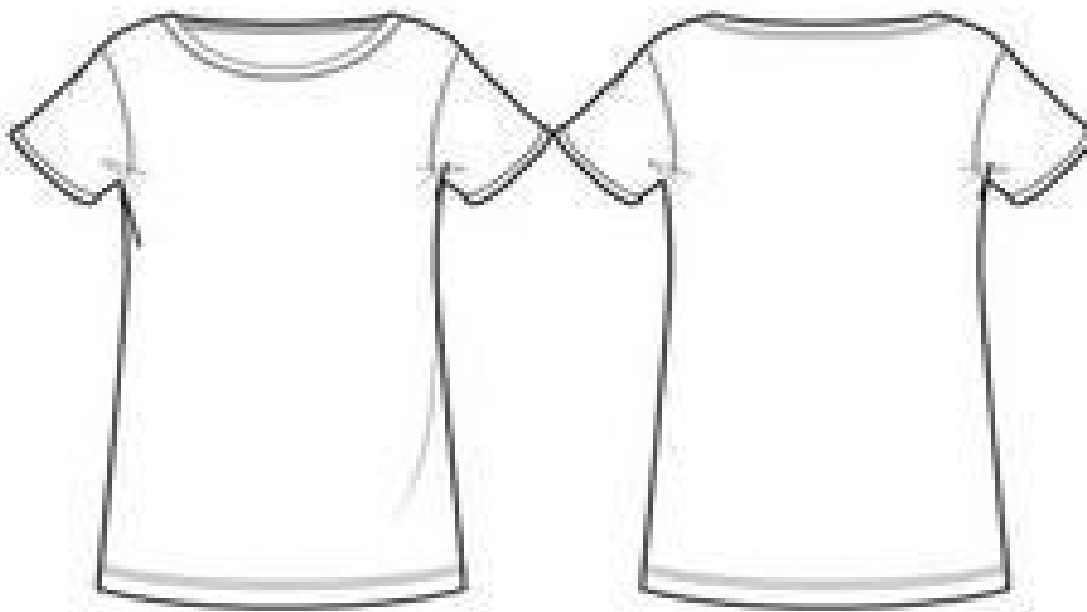


Figure No-2: Basic T-shirt sketch

### 4.1.1 Overall Measurement Chart

Body Parts Name	Actual Name in CM	Allowance in CM	Measurement+Allowance in CM
Body Length	74	6	80
Sleeve Length	24	6	30
½ Chest	58	6	64
Shoulder width	47	2	49
Neck Width	19	2	21

**Figure No-8: Basic parts of T-Shirt**

## 4.1.2 Overall Fabric Consumption of One Dozen T-shirt

The knitted T-shirt formed with the following parts:

Body parts (Front Back)

Neck

Sleeve

1/2 Chest

Body length and half chest is totally depend on buyer requirement, in here, the buyer name is new wave, order a knitted T-shirt (50,000 pcs)

100% cotton S/J fabric for body parts, pocket & half chest. Where fabric GSM is 160.

**So,**

In below, we showing the total fabric consumption for above order per dozen.

$$= \frac{(\text{Body length} + \text{Sleeve length}) \times (\text{1/2 Chest width}) \times 2 \times \text{GSM}}{10,000/1000} \text{ (In Kg)}$$

$$= \frac{(80 + 30) \times (64 \times 2 \times 160)}{10,000/1000} \text{ (In Kg)}$$

$$= 0.22528$$

$$\text{For 1 Dozen} = 0.22528 \times 12$$

$$= 2.70 \text{ kg / dozen}$$

## 4.2 Sewing Thread Consumption

Sewing thread consumption is an element that uses to make any kind of apparel, so it's highly needed to calculation its actual measurement. At this time market is very competitive that's why a merchandiser should have knowledge about thread consumption.

## 4.2.1 Sewing Thread Consumption Depend on Following Factor

- Types of fabric
- Types of stitch
- Thread count
- Thread tension
- Stitch per inch
- GSM (gram per square meter)
- Depends on machine
- Depends on m/c operator skill

## 4.2.2 Standard Formula for Thread Consumption

- Find out various classes stitch
- Measure the thread count
- Calculate total thread length for each stitch
- Brief the total thread for all stitch

## 4.2.3 Some Thread Consumption Ratio

Stitch class	Description	Total thread usage(CMS per cm of seam)	No of needle	Percentage of needle thread	Percentage of looper/under thread
301	Lock stitch	2.5	1	50	50
101	Chain stitch	4.0	1	100	0
401	2-thread chain stitch	5.5	1	25	75
304	Zigzag lock stitch	7.0	1	50	50
503	2-thread over edge stitch	12	1	55	45
504	3-thread over edge stitch	14	1	20	80
512	4-thread mock safety stitch	18	2	25	75
516	5-thread over edge stitch	20	2	20	80
406	3-thread covering stitch	18	2	30	70
602	4-thread covering stitch	25	2	20	80
605	5-thread covering stitch	28	3	30	70

**Table No-9: Some thread consumption ratio**

#### **4.2.4 Basic T-shirt Thread Consumption**

<b>Item</b>	<b>Thread consumption per body T-shirt</b>
T-shirt	125

**Table No-10: Basic T-Shirt thread consumption**

#### **4.2.5 Thread Consumption**

There for,

Make 12 piece (one dozen) T-shirt needed thread =  $125 \times 12$

=1500 meter

Make 50000 piece polo shirt needed thread =  $50000 \div 12$

= 4167/dozen

=  $4167 \times 1500 = 6250500$  meter

### **4.3 Poly-Bag Consumption**

The costs of poly-bags are dependent on the thickness of the product & the weight of the product. Poly-bag is sold by used weight, 1 kg plastic = \$0.78 (62 Taka)

## 4.4 Label Consumption

Different types of labels are used in garments, such as the main labels, content labels. The cost of the label is dependent on the making of the label. Color of a label, Size of label, etc. The other factors that are important while ordering the labels are MOQ, order quantity.

## 4.5 Price Tags Consumption

Price tag is used as packing material, the cost of hand tags are dependent upon the material used, printing on it, & MOQ.

## 4.6 Hanger's Consumption

Hangers are made up of generally hard plastics sometimes wood, the cost of hangers depends on the material used size, print, and color on it. Generally, transparent hangers are more costly than a colored one.

## 4.7 Cartoon Consumption

Cartoon consumption for need cartoon height, width, & length  
Measurement of T-shirt cartoon:

$$= \frac{(\text{Length} + \text{width} + \text{Allowance}) \times (\text{width} + \text{Height} + \text{Allowance}) \times 2}{10000}$$

## 4.8 T-Shirt Fabric Consumption to Costing Measurement Chart

Description of body parts name		XS	S	M	L	XL	XXL	3XL	4XL	5XL	Tolerance
A	Body length (HPS)	65	68	71	74	77	80.50	84	87.50	91	
B	1/2 Chest	44	48	52	56	60	66	72	78	84	



C	1/2 Bottom	44	48	52	<b>56</b>	60	66	72	78	84	
D	Shoulder width	40	42	44	<b>47</b>	50	54	58	62	66	
E	Armhole depth	26	27	28	<b>29</b>	30	31	32	33	34	
F	1/2 Biocept	20	21	22	<b>23</b>	24	25	26	27	28	
G	1/2 Bottom sleeve width	15	16	17	<b>18</b>	19	20	21	22	23	
H	Sleeve length	18	19	20	<b>21</b>	22	23	24	25	26	
I	Neck width	16.75	17.50	18.25	<b>19</b>	20	21	21.75	22.50	23	
J	Front Neck Drop	8.50	8.50	9	<b>9.50</b>	10	10.50	11	11.50	12	
K	Back neck drop	2.00	2.00	2.50	<b>2.50</b>	2.50	3.00	3	3.00	3	
L	Collar height	1.50	1.50	1.50	<b>1.50</b>	1.50	1.50	1.50	1.50	1.5	
M	Hem height	2.50	2.50	2.50	<b>2.50</b>	2.50	2.50	2.50	2.50	2.5	

**Table No-11:T-shirt fabric consumption to costing measurement chart**

## 4.8.1 Consumption

T-shirt has different sizes. Example of XL, S, M, L, XL, XXL

If another size (3XL, 4XL, or 5XL) for others costing and buyer gives extra profit.

For t-shirt consumption,

Fabric GSM: 160

Take size: L

Take body length (HPS): 74 cm

Take sleeve length: 21 cm

Allowance: 10 cm

(2cm cutting + 2cm sewing + 1cm merchandiser = 5 cm × 2 parts body system = 10 cm)

Neck rib for 12 pcs 0.200 gm

Additional chest allowance 5% (for tube fabric not allowance) 1 dozen Cutting wastage 5%

**We know,**

$$= \frac{(\text{Body length} + \text{Sleeve length} + \text{Allowance}) \times \frac{1}{2} \text{ Chest with allowance} \times 2 \text{ parts} \times \text{GSM}}{10,000/1000} \text{ (kg)}$$

$$= \frac{(74+21+10) \times 56+5 \times 2 \times 160}{10,000/1000} \text{ (kg)}$$

$$= 0.20496 \text{ (kg for 1 pcs)}$$

Now total amount of 100% cotton T-shirt single jersey fabric needed for this order (per dozen)

For 1 dozen =  $0.20496 \times 12 + 0.200 + 5\%$  (Neck rib + Wastage)

$$= 2.790 \text{ gm or } 3.00 \text{ kg/dozen}$$

**So,**

This style have ordered 50,000 Pes (4166 dozen)

$$= 0.20496 \times 4166$$

$$= 853 \text{ kg}$$

## 4.9 Accessories Cost

Accessories Name	Quantity pes	Wastage	Total Quantity pes	Unit Price	Price per dozen	Total Price
Main level	50000	4%	52000	\$ 0.085	\$ 1.02	\$ 4420
Size level	50000	3%	515000	\$ 0.5	\$ 6	\$ 25750
Care level	50000	4%	52000	\$ 0.086	\$ 1.03	\$ 4472
Sewing thread	80×1.0×50000/ 40000	10%	1000 cones	\$ 5.19	\$ 62.28	\$ 5190
Back board	50000	2%	51000	\$ 0.25	\$ 3	\$ 12750
Poly bag	50000	2%	51000	\$ 0.30	\$ 3.6	\$ 1500
Carton	50000/20	No	2500	\$ 6.12	\$ 73	\$ 15300
Price tag	50000/	3%	51500	\$ 0.10	\$ 1.2	\$ 5150
Tag pin	50000/4500	No	11 Box	\$ 1.8	\$ 21.6	\$ 20
Gum tape	2500/8	No	312	\$ 0.70	\$ 8.4	\$ 218
<b>Total Accessories Cost</b>					<b>\$ 181.13</b>	<b>\$ 73270</b>

**Table No-12: Accessories cost**

### **4.9.1 Costing with Different Accessories & Trimming for Basic T-shirts**

- ❖ Order quantity: 50000 pieces
- ❖ Consumption per dozen: 2.790 kg

## **4.10 Overall Fabric Costing**

### **4.10.1 Fabric Type:**

- 100% cotton combed yarn
- Single jersey 160 GSM

### **4.10.2 Fabric Costing**

Yarn Price 30's.....	\$ 5.00/ kg
Landed cost.....	\$ 0.10/ kg
Knitting charge.....	\$ 0.35/kg
<hr/>	
	\$ 5.45/ kg

Process loss in knitting is 3% ( $5.45 \times 3\%$ ) = \$ 0.163/ kg  
= \$ 5.613 /kg

Dyeing charge.....\$ 1.50/ kg

$$=\$ 7.113/ \text{ kg}$$

$$\begin{aligned} \text{Process loss in dyeing 13 \%} &\dots\dots\dots \$ 0.98/ \text{ kg} \\ &=\$ 8.093/ \text{ kg} \end{aligned}$$

$$\text{Per dozen cost } (8.093 \times 2.790) = \$ 22.579$$

$$\text{Garments Quantity} = \$ 50000 \text{ pcs}$$

$$\begin{aligned} \text{Overall fabric cost,} \\ & \quad (22.579 \times 50,000) \\ & = \frac{\text{-----}}{12} \\ & = \$ 94079 \end{aligned}$$

## 5.1 Allover Direct & In-Direct Cost

The direct cost is a price that can be directly tied to the production of specific goods service. Direct cost traced to the cost object, which can be a product service include depreciation and administrative expenses.

**Sample Making Cost** = \$ 150

**Testing Cost** = \$ 120

**Courier Cost** = \$ 300

**Per Day Line Cost** = 50,000 Taka

**Per Hour Production** 180 pcs

**Order Quantity** = 50000 pes

**So,**

80 taka = 1 Dollar

$$\begin{aligned}\text{Cost of Making (CM) cost} &= \frac{50,000 \times 50,000}{150 \times 10 \times 80} \\ &= \$ 20834\end{aligned}$$

**Total CM Cost** = (overall fabric cost – CM cost)

$$= (\$ 94079 - \$ 20834)$$

$$= \$ 73,246$$

**Documentation Cost (1%)** = \$ 800

**Total Documentation Cost** = (Overall fabric cost – Documentation cost)

$$= (\$ 94079 - \$ 800)$$

$$= \$ 93270$$

**Commission Cost (5%)** = \$ 5500

**Total Commission Cost** = (overall fabric cost - Commission Cost)

$$= (\$ 94079 - \$ 5500)$$

$$= \$ 88579$$

Transpiration to Dhaka (FOB-DHK) Airport = \$ 1000

$$\begin{aligned} \text{Total cost} &= (\text{overall fabric cost} - \text{Transpiration cost}) \\ &= (\$ 94079 - 1000) \\ &= \$ 93079 \end{aligned}$$

## 5.2 Direct cost = \$ 93079

## 5.3 Indirect cost (15%)

$$\begin{aligned} &= \text{Direct cost} \times \text{Indirect cost (15\%)} \\ &= \$ 93079 \times 15\% \\ &= \$ 13,962 \end{aligned}$$

## 5.4 Total Direct & Indirect Cost

$$\begin{aligned} &= \text{Total Direct} + \text{Indirect Cost} \\ &= \$ 93079 + \$13962 \\ &= \$ 107041 \end{aligned}$$

## 4.5 Company Profit

<b>12% Profit</b>	<b>Price/Dozen</b>
<b>Total Cost \$ 107041</b>	<b>\$ 2.398 × 12</b>
<b>Profit with Total Cost \$ 119885.92</b>	<b>=\$ 28.78</b>
<b>Unit Price \$ 119885.92/50000 pes quantity =2.398</b>	

Table No-13: Company Profit

# **Chapter-05**

## **Conclusion**



## 5.1 Limitation

Project crafted by this venture was completed in various manufacturing plants. The administrator some of the time didn't remain on the machine when we began considering our capacities, contemplating time. It harms a portion of our valuable time.

First, when we gather information, the language of the administrator doesn't coordinate the language of the book. It resembled the first run through for us.

The necessary data and information couldn't be found because of the bustling timetable of the capable people.

Due to the bustling timetable of the capable people, some important data and information were not accessible.

This examination couldn't be applied for additional requests because of time requirements and absence of authorization and help of the chief.

### 5.1.1 Conclusion

Consumption and costing is a significant piece of an item in articles of clothing. During this venture program, we had made an honest effort to accomplish our work. It is totally another involvement with our life. Which will be powerful in our day-by-day life. In this period we understood the huge contrast between hypothetical information and viable encounters. This is more genuine on account of the investigation of Textile Technology. Hypothetical information gives us the idea about the subject we work for however functional information causes us to see straightforwardly about the point. So pragmatic information is superior to hypothetical information. To make this report I needed to go to the Magpie Composite Ltd for gathering vital data about my point. Following 2 months of working with them, my insight into the material area has expanded a ton. This report has effectively talked about the whole referenced area. This report has talked about the consumption and costing of trims and frills for weaved pieces of clothing. This task likewise offers us a chance to broaden our insight

## 5.1.2 Future Scopes

This approach is compelling contrasted with the profitability and proficiency of sewing articles of clothing on various floors and the accompanying recipe effectively discover creation and productivity. We have directed this investigation just for various thing articles of clothing to pick top, base, hoodie, s-suit. On the off chance that the SMV is comparative, at that point all the cycles are alright yet the creation and proficiency will be equivalent. Because of line balance, short request amount, yield delay, bottle neck, design, machine breakdown, quality issues, ineffective time issue floor creation and productivity increment and decline. So these components are so fundamental for objective creation and aptitude procurement into promoting, costing, sewing, and slicing and instructs us to conform to modern life. At long last, it tends to be said that the fundamental motivation behind the report has gotten fruitful.

## 5.2 Reference

1. [https://www.magpiegroupbd.com/?page\\_id=8189](https://www.magpiegroupbd.com/?page_id=8189)
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