

## Introduction

Clothing is defined, in its broadest sense, as coverings for the torso and limbs as well as coverings for the hands (gloves), feet (socks, shoes, sandals, boots) and head (hats, caps). Humans nearly universally wear clothing, which is also known as dress, garments, attire, or apparel. People wear clothing for functional as well as for social reasons. Clothing protects the vulnerable nude human body from the extremes of weather, other features of our environment, and for safety reasons. But every article of clothing also carries a cultural and social meaning.

People also decorate their bodies with makeup or cosmetics, perfume, and other ornamentation; they also cut, dye, and arrange the hair of their heads, faces, and bodies (see hairstyle), and sometimes also mark their skin (by tattoos, scarifications, and piercings). All these decorations contribute to the overall effect and message of clothing, but do not constitute clothing per se.

Articles carried rather than worn (such as purses, canes, and umbrellas) are normally counted as fashion accessories rather than as clothing. Jewelry and eyeglasses are usually counted as accessories as well, even though in common speech these items are described as being worn rather than carried.

Among the clothing, skirt is a tube- or cone-shaped garment which hangs from the waist and covers all or part of the legs. Unlike trousers, a skirt is "unbifurcated" — that is, not divided into separate legs. A dress (also frock, gown) is a garment consisting of a skirt with an attached bodice or with a matching bodice giving the effect of a one-piece garment.

In Western culture, skirts and dresses are usually considered women's clothing. However, there are exceptions. The kilt is considered a traditional men's garment in Scotland, and is growing in fashion in other parts of the world. Additionally, garments which are identified as skirts are being proposed as men's clothing by some of the trendier fashion houses such as Jean-Paul Gaultier.

### **Aims/Objectives of the project:**

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The objectives that desired by the project are-

1. Studying about the fashion trend of the skirt especially gored one.
2. Finding the materials and components for the gored skirt manufacturing.
3. Manufacturing of the fashionable gored skirt.
4. Studying about the quality of the fashionable gored skirt.
5. Studying about different techniques & units of operations that are followed in the construction of gored skirt.
6. Studying about the costing of the gored skirt by applying standard costing sheet for 100 pieces.
7. To earn practical knowledge for reducing cost, wastage and time.
8. To improve productivity situation.
9. To be efficient and successful in my position in a reputed organization where it is possible to explore latent and potentials to the fullest and thus make a contribution to the organization's growth as well as personal growth and remove to self actualization.

### **Methodology**

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For the simplicity of the project work, I divided my project work into four parts.

This are-

Unit A: Observation of the trends of clothing and its history related to skirt.

Unit B: Gathering knowledge about materials used in the manufacture of skirt.

Unit B : Range building of the fashionable gored skirt.

Unit C : Manufacturing of the gored skirt.

Unit D : An overview of costing and quality control of the product.

Unit E: Pros and cons of the present status of leather goods sector.

## **Unit A**

### **1. Leather goods Basic**

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#### **1.1 INTRODUCTION TO LEATHER**

"LEATHER" nothing like it is an old adage and a true one. No substance equals it for the construction of articles for personal use. Leather has played an important role in day-to-day life of mankind from immemorial. Man from the very beginning, has been using animal skins for covering his body & legs from climatic conditions, keeping his provisions of water in goat skins, & making belts from various purpose. From ancient civilization to modern times, leather has been used by the human race one from or the other in its daily life & it is discovered everywhere & it seems that mankind can hardly do without these useful materials.

#### **1.2 INTRODUCTION TO LEATHER GOODS**

##### 1.2.1 The Making of Leather goods

The tanning of leather was used by mankind in numerous geographical areas throughout the early periods of human civilization. As certain leather characteristics began to emerge, men realized leather could be used for many purposes besides footwear and clothing. The uses and importance of leather increased greatly. For example, it was discovered that water would keep fresh and cool in a leather bag. It was also found suitable for such other items as tents, beds, rugs, carpet, armor and harnesses. Ancient Egypt, one of the most developed civilizations in this early period, valued leather was as an important item of trade. The Egyptians made leather sandals, belts, bags, shields, harness, cushions and chair seats from tanned skins. Many of these items are in fact still made from leather today.

Similarly, the Greeks and Romans used leather to make many different styles of sandals, boots and shoes. When the Roman legions marched in conquest across Europe, they were well attired in leather armor and leather capes. In fact, right up until the early 18th century, the shield carried by the ordinary soldier was more likely to be made of leather than metal.

As we move into the middle Ages, leather continued to increase in popularity. By far the cleverest craftsmen with leather in medieval times were the Arabs. The Moors developed remarkable skill primarily in the preparation of beautiful goatskin still known as morocco leather after the country of its origin. In fact the description 'genuine morocco' is still very highly regarded today, particularly in the manufacture of small leather goods.

Until the later part of the 19th century, there were relatively few changes in the methods used to produce leather. In fact, the process had changed very little in over 200 years. However, the industrial revolution did not bypass tanning - one of the oldest and most

basic forms of manufacturing. Science was quickly introduced to the art and craft of leather making. A wider range of dyestuffs, synthetic tanning agents and oils were introduced. Together with precision machinery, these changes and continued innovations to the present day have combined to make tanning into available, modern manufacturing industry.

"THE LEATHER PRODUCTS" made out of leather lend themselves to an enormous variety of both useful & essential items, which are a need & asset in modern living. An extensive range of colors & designs widen the selection range which encourage the prospective consumers to put these products to use in a multitude of ways be it fashionable or functional.

"LEATHER GOODS" is the term applied & confined generally to the articles or goods made mainly of leather & intended for carrying personal belongings, such as the smaller items, which can be carried in hand or shoulder. The variety of leather goods we come across everyday is countless. When there are a variety of articles that differs so much in size, design & method of construction, then it is absolutely necessary to classify them into separate convenient articles of similar kind. In this project report, classification of leather goods has been defined in confined terms.

Now a day because of leather becomes a costly commodity, hence goods made of synthetic or man made fibers are also termed as leather goods, but these goods are definitely much lower in price compared to "genuine" leather. But the methods of construction or fabrication are the same for both. In this project report, the real leather is taken for consideration.

### **1.2.2 HISTORY OF LEATHER PRODUCT**

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In Egypt, leather artifacts were found in tombs built as early as 3000B.C. evidence that the pharaohs wore leather sandals.

During 750B.C. the Romans made leather footwear, clothing & ornaments. At that time, Teutonic tribes in the cold north of Europe wore whole garments of leather. And the Roman soldiers came back to Rome wearing leather trousers called Braccae.

By the thirteen century, the Romans introduced money bags. They also introduced the coin purse.

By the fifteen century, many homes contained finely detailed Spanish leather, which was used in wall hangings, upholstery, book covers, vests & jackets.

In sixteen century, a special type of leather called Morocco leather was tanned from goat skin & it was used in many purposes. We also know that Englishmen drank their beer out of mugs that were made from leather.

The 1990s:

In the early 1990s, upon the advent of the open automobile, rich men wore long motoring coats made of leather to protect them from the elements. They also wore leather trench coats fashioned after the British military officer's coat.

The 1920s:

During the 1920s, women's leather & suede sports were began to appear, both in Europe & the United States. Also during the 1920s interior designers namely Corbusier & Marcel

Breuer integrated cowhides with their polished steel furniture during the Bauhaus period.

The 1930s:

In France, in 1930, the designer Paquin created a suit using goat suede & wool.

The 1940s:

During the 1940s & 1950s, shades of tan, rust & brown were predominant in suede for both & woman. One of the most popular jacket styles in 1949s was the aviator jacket. Even die-hard army commanders like general pattern wore then during the world war-I I.

The 1950s:

Bonnie Cashion was the first American designer to create off-white cabarets leather coat.

In early 1960s, designers began to provide new colors in leather.

The 1960s:

In 1960, designer's created many leather & suede garments, in combination with fabric & knit, as well as leather & suede ensembles. Ornamented leather garments were fashionable in 1960 century probably the most popular coat during the late 1960 century was the embroidered goat skin jacket by Mallory.

The 1970s:

The 1970 century saw a return to the more sophisticated leather garment. By 1978, Claude Montana was quickly establishing himself as the king of women's leather apparel design.

The 1980s:

By the 1980s, Leather a luxury item. Designer's used it to make fashionable colours leather goods; pants, suit, leather coat dress, leather pouf dress etc are the gifts of the year likely 1980.

The 1990s:

Novelty skins were becoming popular in Italy & France in the early age of 1990. Different luxurious leather products was created, from the designer to budget category. The history of leather products, actually an unbelievable length of time, from the earliest time to today's sophisticated fashion. The art of leather products manufacturing will add a new dimensions to the world by the time 2010.

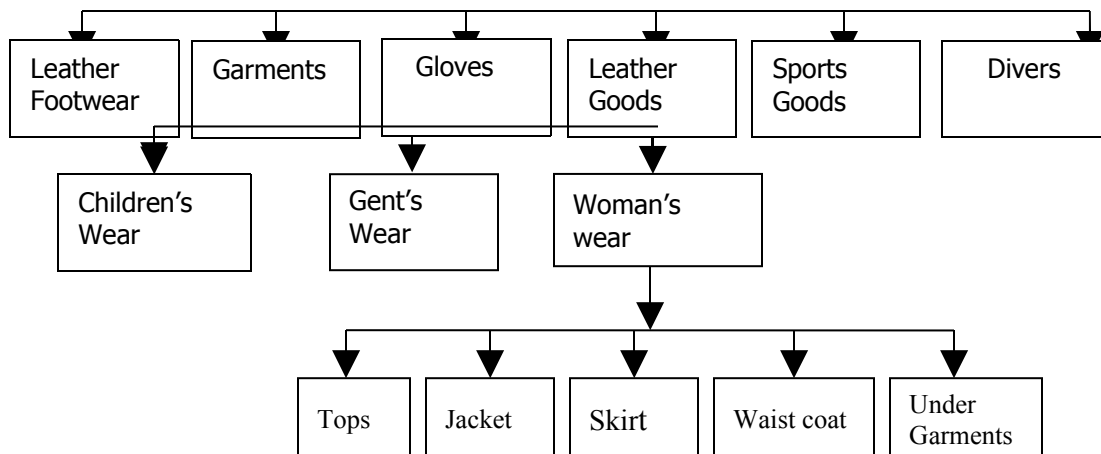
### **1.2.3 CLASSIFICATION OF LEATHER PRODUCTS**

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A leather product means any type of footwear, goods or leather apparel.

**Leather Products**





Now we will study about leather goods. Leather goods refer to articles made mainly of leather & intended for the containing of personal belongings. Some leather goods are small in value & some special forms of leather goods are purely decorative. However, leather goods are classified according to the points into consideration.

- A) According to volume.
- B) According to the degree of reinforcements.
- C) According to the utility.

#### 1.2.4 GENERAL CLASSIFICATION OF 'LEATHER GOODS

Now we will study about leather goods. Leather goods refer to articles made mainly of leather & intended for the containing of personal belongings. Some leather goods are small in value & some special forms of leather goods are purely decorative.

According to the volume, the different classes of leather goods are as follows.

1. Small leather goods.
2. Medium leather goods.
3. Heavy leather goods.

##### 1.2.4.1 Small leather goods:

The goods are made from leather having sometimes of (0.5-1.00) mm falls under this category. Sometimes these goods are called Fancy leather goods or personal leather goods. The different type of skins which are used in an animal in the suckling Calf is the terms generally used to describe stage.

Calf Skin: average size of the skin is from 6 to 10 sqft. It is used for making wallets, coin purses, passport covers, key cases etc.

Goat skin: Its average size is 4 to 6 sqft when dyed, when dyed it is very rich in appearance. It is used for making wallets, bill folds, passport covers etc.

Glance kid: It is made from goat skin and tanned with a smooth, bright glossy finish. It is used for making wallets, bill folds, passport covers etc.

Morocco: It is goat skin tanned with a characteristic grain developed naturally. It is used mainly for making wallets, coin purse, underarm cases etc.

#### 1.2.4.2 Medium leather goods:

Medium leather goods indicates the proposal thickness of (0.8-1.2) mm. ladies bags, side bags, shoulder bags etc are called medium leather goods.

Nappa: Soft, full grains of clothing leather made from cow, calf, sheep or goat are extensively used in hand bags manufacturing. This leather is glossy and more dirt resistant than suede leather. Nappa leather are best suited for making leather garments and turn type of hand bags like shoulder bags, disco bags etc.

Exotic skins:

- a) Reptiles: Reptiles are the skins of crocodile, alligator lizard & snake skins. These are largely used to make exclusive bags.
- b) Lizard skin: Lizard skins with beautiful grain are finished in charming shades. These are used in framed purses, hand bags etc.
- c) Snake skin: Python skins with its striking pattern of attractive shades are used in hand bags, framed purses etc.
- d) Crocodile skin: The belly of the skin is used as the heavily scaled back being too coarse & horny. The beauties of the scale are best suited to make wallets, hand bags & other novelty goods.

#### 1.2.4.3 Heavy leather goods:

These are made generally from cow & butt hides which are strong & durable. These types of goods are made from heavy leather bearing the thickness of (1-1.5) mm. Suitcase; Luggage etc are the examples of the class.

- a) Box sides: These are black in colour with distinct surface grain & are used for making documents cases, attaché case etc.
- b) Willow sides: These are brown in colour with distinct surface grain. These are used for making briefcase, travel suitcase etc.
- c) Care sides: These are firmly dressed leather, stained or otherwise coloured having a smooth move or less glossy surface finish. These are used for making document cases, travel suit cases etc.

1.3d) Split leather: These are the under layer of the sides. The split are sometimes finished with pigments coating & an artificial grain is produced by embossing. Naturally finished split are used for making wall hangers, patch bags.

### 1.3 Clothing and skirts

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A skirt is a tube- or cone-shaped garment which hangs from the waist and covers all or part of the legs. Unlike trousers, a skirt is "unbifurcated" — that is, not divided into separate legs. A dress (also frock, gown) is a garment consisting of a skirt with an attached bodice or with a matching bodice giving the effect of a one-piece garment.

In Western culture, skirts and dresses are usually considered women's clothing. However, there are exceptions. The kilt is considered a traditional men's garment in Scotland, and is growing in fashion in other parts of the world. Additionally, garments which are identified as skirts are being proposed as men's clothing by some of the trendier fashion houses such as Jean-Paul Gaultier.

At its simplest, a skirt can be a draped garment made out of a single piece of material (such as sarongs or pareos), but most skirts are fitted to the body at the waist and fuller below, with the fullness introduced by means of darts, gores, pleats, or panels. Modern skirts and dresses are usually made of light to mid-weight fabrics, such as denim, jersey, worsted, or poplin. Skirts and dresses of thin or clingy fabrics are worn with slips to make the material of the skirt drape better.

The hemline of skirts and dresses can be as high as the upper thigh or as low as the ground, depending on the whims of fashion and the modesty or personal taste of the wearer.

Some medieval upper-class women wore skirts over 3 metres in diameter at the bottom. At the other extreme, the miniskirts of the 1960s were minimal garments that may barely cover the underwear when seated.

## **Unit B**

### **2 About skirt**

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#### **2.1 Feature of the skirt**

A skirt is a tube- or cone-shaped garment which hangs from the waist and covers all or part of the legs. Unlike trousers, a skirt is "unbifurcated" — that is, not divided into separate legs. A dress (also frock, gown) is a garment consisting of a skirt with an attached bodice or with a matching bodice giving the effect of a one-piece garment.

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## **2.2 History of Skirt**

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### **2.2.1 Dresses and skirts in the 19th century**



During the nineteenth century, the cut of women's dresses in western culture varied more widely than in any other century. Waistlines started just below the bust (the Empire silhouette) and gradually sank to the natural waist. Skirts started fairly narrow and increased dramatically to the hoopskirt and crinoline-supported styles of the 1860s; then fullness was draped and drawn to the back by means of bustles. Dresses were generally one-piece garments from 1800 through the 1840s; after that it became common for a dress to be made as a separate skirt and bodice, and many dresses had a "day" bodice with a high neckline and long sleeves, and an "evening" bodice with a low neckline (decollete) and very short sleeves.

Throughout this period, the length of fashionable dresses varied only slightly, between ankle-length and floor-sweeping.

### 2.2.2 Dresses and skirts in the 20th and 21st centuries



FIGURE NO. 11 G.A.

Dress of the mid-1920s:

Beginning around 1915, hemlines for daytime dresses left the floor for good. For the next fifty years, fashionable skirts became short (1920s), then long (1930s), then shorter (the War Years with their restrictions on fabric), then long (the New Look), then shortest of all during the 1960s, when skirts became as short as possible while avoiding exposure of underwear, which is considered taboo.

Since the 1970s and the rise of pants as an option for all but the most formal of occasions, no one skirt length has dominated fashion for long, with short and ankle-length styles often appearing side-by-side in fashion magazines and catalogs.

### 2.3 Styles of dresses and skirts of the [twenty-first centuries](#) include:

Dresses

**Basic shapes:**

- Shirtwaist, a dress with a bodice (waist) like a tailored shirt and an attached straight or full skirt

- Sheath, a fitted, often sleeveless dress, sometimes without a waistseam (1960s)
- Shift, a straight dress with no waist shaping or seam (1960s)
- Sundress, a sleeveless dress of any shape, with a low neckline in a lightweight fabric, for summer wear
- Tent, a dress flared from above the bust, sometimes with a yoke (1960s)

#### **Fads and fashions:**

- Chanel's Little Black Dress (1920s and on)
- Tea gown, a frothy, feminine semiformal dress
- Dinner dress, a semiformal dress worn when fashionable people "dressed for dinner" (men in tuxedos or dinner jackets, even at home)
- Evening gown or formal, a long dress for formal occasions
- Ball gown, a long dress with a full, sweeping, or trained skirt for dancing
- Kitty Foyle, a dark-colored dress with contrasting (usually white) collar and cuffs (1940s, after a dress worn by Ginger Rogers in the movie of the same name)
- Cocktail dress, a semiformal party dress of the current street length (1950s and sporadically popular since)
- Granny gown, an ankle-length, often ruffled, day dress of printed calico, cut like a Victorian nightgown, popularized by designer Laura Ashley (late 1960s-1970s)

## **2.4 Skirts And Its Basic Styles**

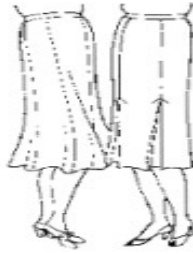


- Straight skirt: A tailored skirt hanging straight from the hips and fitted from the waist to the hips by means of darts or a yoke; may have a kick-pleat for ease of walking
- Full skirt: A skirt with fullness gathered into the waistband
- A-line skirt: A skirt with a slight flare, roughly in the shape of a capital letter A
- Pleated skirt: A skirt with fullness reduced to fit the waist by means of regular pleats ('plaits') or folds, which can be stitched flat to hip-level or free-hanging
- Circle skirt:



A skirt cut in sections to make one or more circles with a hole for the waist, so the skirt is very full but hangs smoothly from the waist without darts, pleats, or gathers

- Gored skirt:



where all panels are divided equally to produce 4,6,8 ,10 or 3, 5,7 ,11 gore to a skirt.

- Multi-Grain Skirt:



This clever vintage pattern uses the grain line of the fabric as the main design element. The front panel of the skirt is on the straight of grain while the side and back panel (there is no side seam) features the cross grain. A striped fabric is the best choice for showing off this fabulous design. The center back seam falls ever so slightly on the bias thereby forming a chevron (as shown in the back view of the skirt) The skirt is very full. The fullness is pleated in at the waist so there is less bulk.

### **Fads and fashions:**

- Hobble skirt, a fashion of the early 20<sup>th</sup> century, with fullness at the hips narrowing to the ankles
- Poodle skirt, a circle or near-circle skirt with an appliqued poodle or other decoration (1950s)
- Dirndl, a skirt made of a straight length of fabric gathered at the waist
- Prairie skirt, a flared skirt with one or more flounces or tiers (in 1970s).
- Kilt-skirt, a wrap-around skirt with overlapping aprons in front and pleated around the back.
- Miniskirt, a thigh-length skirt, and micromini, an extremely short version (1960s)
- Maxiskirt, a midcalf-length skirt (1970s)
- Broomstick skirt, a skirt with many crumpled pleats formed by compressing and twisting the garment while wet (1980s and on)
- Sarong, a square of fabric wrapped around the body and tied on one hip to make a skirt; worn as a skirt or as a cover-up over a bathing suit in tropical climates.
- Trouser skirt, a straight skirt with the part above the hips tailored like men's trousers, with belt loops, pockets, and fly front

- Jean skirt, A trouser skirt made of denim designed like 5-pocket jeans

## 2.5 How skirts and dresses are worn today

In Europe and America skirts and dresses can be worn by females of all ages when they are not wearing pants. A skirt may be worn as part of a suit. Skirts or dresses are the garments of choice for many women in formal situations, such as weddings and geopolitical summits. In cold climates, girls and women may wear trousers or long underwear for warmth and/or modesty, with a skirt or dress on top to mark their femininity or other reasons (for instance, since they happen to be "in-fashion" at the time). In traditional societies, such as in many countries in Africa, the Middle East and Central and South America, it is considered inappropriate for girls and women to wear trousers rather than a skirt or dress.

A disadvantage of skirts and dresses that contributes to many girls and women preferring trousers and shorts is that they may be either too long and therefore limit freedom of movement such as when climbing ladders, or too short, in which case one, because of modesty will need to take the trouble when sitting down, such as crossing legs, to avoid exposure of the underwear.

## 2.6 Men in skirts



Greek Evzones wearing the Traditional Greek 'Foustanela' Kilt

Aside from kilts, which have traditionally been worn by men throughout the British Isles and to a lesser extent by Scottish descendants in the United States, skirts, dresses, and their like are still considered primarily women's garments in the West and some other parts of the world, and the wearing of them by men in these areas is generally considered cross-dressing. In some countries and regions, though, the wearing of these garments is either normal or accepted as traditional costume. Examples include:

- Throughout most of Southeast Asia and the Pacific Islands, sarongs are worn by both men and women.
- The kaftan is worn by men in the eastern Mediterranean.
- The djellaba is worn by men in Morocco and other parts of Africa.
- The thobe is commonly worn by men in Arabia.
- The foustanela, worn by men in Greece and the Balkans up to the mid-20th century.

## Unit C

### **3. Project Overview**

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#### **3.1 Project Plan**

The title of my project is “**Studies on Different Steps and Units of Operation for Manufacturing of a Gored Skirt.**” First of all it should finding the way or making a project plan:

- An overview of the leather history related to skirt and dresses.
- Identification of the different types of skirt.
- To be familiar with the materials used in the manufacture of the skirt.
- To gather knowledge about product development.
- To know about different techniques those are applying in the construction of the skirt.
- Total construction process of the goared skirt.
- Product specification sheet and range building.
- Quality control of the specified product.
- Knowledge about costing sheet of the flared skirt.
- Marketing and future of leather garments especially skirt in the field of economy of Bangladesh.

#### **3.2 What is goared skirt?**

A goared skirt is comprised of evenly divided sections and is extremely practical to sew, as identification of the parts is very easy.

It can be 4,6,8,10 or even 3,5,7,9 goared.

##### **3.2.1 Characteristics of goared skirt**

- Gored skirt don't have dart at the waist, these being into fullness at the hem.
- Panels age equally divide according to requirements.
- It does not contains any slit.
- Easy to wear.

### **3.3 Materials used in Skirt**

#### **3.3.1 Upper**

##### **3.3.1.1 Leather**

#### 3.3.1.1.1 Properties of Leather

- The structure of the natural leather is unique, particularly in the complex random weave of its fibers.
- Leather has particularly good tear strength.
- Leather has both elastic and plastic property.
- It is an identification of the resistance of leather to break. Leather has maximum of 210 kg/cm<sup>3</sup> tensile strength.
- It determine to resistance of the tear of the leather due to stitches when it is in regular use. Tear strength is 30 Kg/cm<sup>3</sup>.
- It indicates the resistances of leather tear in lasting through perforations, sharp angles or along seams.
- A certain amount of elongation without break is necessary for pulling over on the last or other uses. For leather elongation at break is 45-75 p.c.
- Leather surface do not readily conduct heat, and they are interlaced with air spaces. Therefore, leather shoes are cooler in summer and warmer in winter than shoe made of other materials, making them more comfortable and versatile.
- Leather is hygienic for foot or their uses. Leather adapts to the slope of the foot during fitting. It has water permeability, water vapor resistance. Water resistance, perspiration resistance and thermal conductivity. All things give compact.

#### 3.3.1.1.2 The most common kinds of leather for leather garments are:

Buckskin – from deer or elk, often a suede finish.

Calfskin – strong fine-grained leather from young cattle.

Cowhide -- The hide from cows is the most common material for shoe making. The strongest and most massive part of the hide is located on either side of the spinal column and called side leather. The neck section is used for the insole and middle sole, the belly for the welt, heel cup and vamp.

Exotics – leather from alligator, crocodile, lizard, snake, ostrich, boar, shark, pin (Caution - Cow leather can be embossed to resemble exotic skins such as alligator).

Kidskin – leather from a young goat, very pliable and soft.

Nappa – sheep or lambskin.

Nubuck – The exterior side of leather which has been brushed off for a nap similar to suede (which uses reverse, or flesh side of leather).

Patent – leather processed on the grain side to form a bright hard brittle surface. Used for formal footwear. See “history” for why this is called Patent.

**Sheepskin- can be used in linings and slippers.**

Suede – (also called Reverse Calf) split leather, usually of lambskin, doeskin or cowhide that has been buffed on the flesh side to raise a slight nap. The word comes from part of the French phrase, “gants de Suède”, meaning “gloves of Sweden”.

### **Garments leather:**

Garments leather can be divided:

1. Fur garments leather
2. Grain garment leather
3. Suede garment leather

Fur garment leathers:

This is generally made from sheep skins with fine wool. Among fur garment leathers, there are two varieties available viz. Hair-on leather and Double Face fur skin leather. In the case of Hair-on, emphasis is given only on hair/fur side and processing is carried out to make the fur soft, lustrous etc. In the case of double face fur skin, both fur side and flesh side can be used.

Grains garment leathers:

This category leathers are finished on the grain side using either resin or protein. They are usually made from red hair sheep skins or wool sheep skins. Now days, these are made from goat skins and cow sides also such as Nappa.

Suede garment leathers:

These leathers are finished on the flesh side by raising the nap and dyed in different shades.

Normally, sheep and goat skins are the widely used raw materials for making garments leathers along with small quantities of cow. For chapter garments, however, the splits of cow and buffalo are also converted into suede and used. In foreign countries garment leathers are also made from pig skins.

### **3.3.2 Lining material**

LEATHER

Hygienic, comfortable and flexible.

TEXTILE

Suitable in winter for its good thermal insulation quality.

SYNTHETIC

Easy to care for, easily put on; limited airflow which can cause higher perspiration.

#### **3.3.2.1 Leather**

Leather as a lining material can be used for high quality leather garment. Generally not use because most of the customers do not like its feel directly with contact of body as well as due to perspiration chemicals can transfer from leather to body. Very high quality lining leather with limited thickness can be used for this purpose.

#### **3.3.2.2 Textiles**

This term describes any woven or knitted material. Yarns used for weaving and knitting are of natural origin, such as cotton, wool or Lilen, or a host of synthetic yarns, such as viscose, nylon, Orlon and Dacron. Some fabrics are made of a blend of natural and synthetic fiber. Characterized by a wide colour selection and lightness; used mainly for summer and fashionable garments.

### **3.3.2.3 Variety**

Cotton, Printed cotton, Brushed cotton, Polyester, Printed polyester, Satin, Poly satin, Taffeta, Polyononic, MM Dabu (viscous polyester), Twilted (Polyester, Sattin, Cotton), Wool and fur (Natural and synthetic), CrepeCanvas

Viscose is made from cellulose which is derived from wood pulp, and like most other synthetic fibers. Linings constructed from viscose fibres have strength, luster, softness and an affinity for dyes.

Rayon, Originally rayon was produced as a cheap substitute for silk and the fibers were known as “artificial silk”. Rayon linings have similar properties to those of viscose linings but are somewhat weaker.

Polyamide, Derived from nylon, polyamide produces linings with excellent tensile strength and a relatively high degree of elasticity, and it takes dye stuffs very well. A drawback with polyamide linings is that some solvents used for dry cleaning can have a detrimental effect on the fabric.

Polyester, Polyester fibers are closely related to polyamides and lining made from polyester fibers have many similar properties. The first polyester linings had a tendency to soften when pressed with a hot iron, but fibers with a high melting point have since been developed and these withstand regular pressing temperature.

### **3.3.2.4 Consumer appeal**

The surface and luster properties of the lining have a considerable influence on this, and those properties for linings most widely used are:

Taffeta, a crisp woven fabric with a faint warp pattern which produce a shiny surface. These linings are generally piece - dyed which helps to soften them and make them able to withstand normal washing and dry cleaning process.

Crepe, Made from specially processed years, mostly viscose acetate, the finished surface of this lining has a minute and uniformly crinkled appearance.

Satin (sateen), this lining is characterized by a smooth and highly lustrous surface and a dull back. Satin is the name of a weave pattern and all - cotton fabrics that were once constructed with this weave pattern were called sateen.

### **3.3.3 SYNTHETIC**

The term is used to describe a whole range of man made leather like materials. The base for this fabrics are either knitted or woven cotton in the form of sheeting, drills or sateen. To these a coating of synthetic resin is applied. The most commonly used coating is vinyl, sometimes known as PVC. Colour, types and finishes and embossing that can be given to the coated fabrics are unlimited and the appearance and feel can be that they are very difficult to tell from leather. Coated fabrics, like textiles, have to be further processed with a backing, to give the weight and thickness required.

Used for a wide spectrum of shapes, easy to care for, suitable for rainy weather. PVC, PU, rubber, leatherette, polymers – materials which have similar look as leather but their characteristics do not measure up to the qualities of natural leather as far as breathing, absorption, flexibility is concerned; synthetics are suitable in combination with breathable linings and new materials such as PVC and PU. New options in colour and shapes inspire a rise of new designs especially in young fashion. Besides already mentioned characteristics, which are an advantage for designing, the next obvious advantage is their low price.

#### **3.3.4 Interlining**

Interlinings are used to restrict any stretching of the leather and generally to reinforce facings, collars, lapels and pockets so that the newly made garment has a general “Crisp” appearance.

One disadvantage of an interlining with a continuous adhesive film that is not allow for dimensional changes in the leather during ironing or pressing. As the leather loses moisture during ironing there can be a 2-3% loss in area which is regained afterwards. If the interlining restricts this regain, puckering can occur, being more apparent on grain leathers. There is a wide selection of fusible interlinings available, the adhesive of which is insoluble in the adhesive is dispersed over the fabric as small spots and this intermittent dispersion accommodates dimensional changes in the leather so that puckering is minimized. Intermittent bonding of the interlining in this way barely affects the drape or handle of the leather.

The adhesive generally requires a melting point of 150°C although there are some available with a melting point as low as 120°C. The leather should stand a dwell time of 5-10 seconds at these temperatures, provided no pressure is applied (if a press is being used) and the leather is kept dry, not steamed. All the same, it is wise to test the leather for heat resistance before bonding the interlinings.

The main advantage of such interlinings is that they remain attached throughout wear and successive dry-cleaning treatments, with the result that the garment retains its shape and appearance to the satisfaction of the wearer.

### **3.3.5 Needle**

Needle is an important tool of the sewing machine which pierces the material to be stitched and facilitates to stitch during stitching the selection of correct needle depends upon the needle size needle system as well as the needle point. The needle should be designed so that the thread lies with in its overall dimensions.

#### **3.3.5.1 Shape of the Needle**

Consultation of the needle manufactures, catalogues reveals a bewildering choice of needles and even in the leather section a wide choice is available. For leather, a needle with a cutting point is essential so that the material is pierced with the minimum of friction. Two basic shapes are recommended.

The wedge shaped needle is the most popular. The cutting edge is 70% of the diameter of the needle which is generally 1.2 mm wide at the maximum. The needle leaves a hole approximately 1 mm long. The orientation of the wedge can be perpendicular to the line of sewing which gives the maximum number of stitches per inch and the strongest seam for a given stitch length. It is, unfortunately, a some what unsightly seam. The neatest seam is produced with the wedge parallel to the direction of sewing, but this type o seam is also the weakest and there must be a limitation on the number of stitches per inch otherwise the leather can be completely cut. The compromise of appearance and performance is obtained using the reverse twist needle where the wedge is at 45° to the line of stitching (that is on a South west to north east line) with the threading from West to East, as shown below.

The needle should be designed so that the thread lies with in its overall dimensions.

The very small triangular point needle is a more recent introduction. It is essentially a round needle with a small triangular shaped tip with very short cutting edges. It has a better piercing action through the leather than the round needle and gives a more uniform stitch formation. It requires a somewhat greater force for penetration than does the wedge but leaves a neater hole.

As with the wedge shaped needle, it should be designed so that the thread lies smoothly within its overall dimensions.

### **Thread**

Almost all garments produced have one component in common: the sewing thread. Whilst sewing threads are usually a relatively small percentage of the cost of a garment, they have an extremely significant influence on the appearance and durability of the finished product. The production of sewing threads is an extensive and complex subject.

1. Facilitating the consistent formation of stitches
2. The minimum occurrence of skipped stretches.
3. In order to prevent changes in tension during sewing, the thread 0must have a uniform diameter.

4. A high level of resistance to abrasion is essential due to the friction of the thread in the needle eye and with other mechanisms.
5. The thread has to have sufficient surface smoothness to pass easily through the guides on the machine. This ensures the uniformity of stitch formation.

### 3.3.6.1 Twisting

The twisting of thread is made in two directions known as “S” and “Z” twists.

The “Z” type twist (Twisting towards left) is most widely used as it is suitable for most machines some special machines however requires “S” type twist.

The following types have been offered for leather garments.

Mercerized Cotton	:	Approximately 10% stronger than normal cotton and probably the most widely used for leather garments.
Nylon	:	Its main advantage is greater tensile strength permitting a finer thread and finer needle for a seam of the same strength.
Nylon / Cotton	:	Smooth running and soft.
Polyester / Cotton	:	Superior in strength to cotton. The cotton covering provides improved flow through the needle, reduced cutting of the leather by the polyester and also protects the stretches during heat treatments.
Linen thread, double twist	:	This is traditionally used for protective clothing made from chrome tanned splits.

### 3.3.6.2 Relation between needle, thread & material

(Table 01)

Thread Thickness TKT No.	Light Material		Medium to heavy material	
	Needle Size		Needle Size	
	NM	SIZE	NM	SIZE
80	65-70	9-10	70-80	10-12
60	80-90	12-14	90-100	14-16
40	90-100	14-16	100-110	16-18
30	110-120	18-19	120-130	19-21
35	110-120	18-19	120-130	19-21
20	120-130	19-21	130-140	21-22
25	130-140	21-22	140-160	22-23

15	130-140	22-22	140-160	22-23
10	140-160	22-23	160-180	23-24
8	160-170	23-24	180-200	24-25

### 3.3.6.3 Relation between seams, materials thickness, Needles & Threads

**Table 02**

No.	Seam	Material Thickness mm	Needle	Thread	Stitch/cm
1	Back seam/ Side seam/ Close seam	0.7-0.9 1.0-1.2 1.2-1.4 1.6-1.8	P, Ps, PCL 70 P, Ps, PCL 80-90 P, Ps, PCL 100 P, Ps 110-120	50/3 40/3 40/3 40/3	7 5-6 4-5 4
2	Lap-Seam	1-1.2 1.2-1.4 1.6-1.8	SDI, LR 80 90 100-110	60/3 40/3 40/3	6-7 5 4-5
3	Top-Line	1.0-1.2 1.4-1.6	LR 80 PCL, Ps 80 LR, P,Ps 90-100	60/3 60/3 40/3 40/3	7 8-10 5-6 7-8
4	Counter	1.0-1.2 1.4-1.6 1.6-1.8	LR 80 LR 90-100 LR 100-110	60/3 40/3 40/3	7-8 5-6 4-5
5	U-Binding (Synthetic fabric) or	1.0-1.2 1.2-1.4	SDI, P, Ps 80 SDI, R 70-80 SDI, Ps 90-100	60/3 60/3 40/3	6-7 6-7 4-5
6	Decoration	1.0-1.2 1.4-1.6 1.8-2.0	LR 70-80 LR 100 LR, S 120	60/3 40/3 20/3	6-7 4-5 3-3.5
7	Intacting	1.0-1.2 1.4-1.6	P, Ps 90-100 100-110	40/3 40/3	4-5 4-5
8	Saddle	1.0-1.2 1.4-1.6	PCL 90 LR 100	40/3 40/3	4-5 4-5
9	Blind seam or French binding	0.8-1.0 1.0-1.2	PS, SDI 90 P, Ps 90	60/3 60/3	8-10 6-8
10	Elastic gores or textile Butted seam	1.0 1.0 1.0 1.0	R70-80 R90-100 LR90-100 SDI80-90	60/3 40/3 40/3 60/3	6-7 5-6 4-5 5-6

### 3.3.7 Tools use in leather garments manufacture:

**Knife:** knives are the most important tools. There are many types knife like Survel knife, Xacto knife utility knife, and shoe making knife.



**Skiving knife:** for skiving edge of leather using this tool requires. Skills & Experience can be also done more easily with a skiving machine.



**Crease:** It is steel tools for finishing the outer edge leather goods. It compresses the leather, giving it a slightly darker and shiny line. It is in different sizes & design.

**Oil stone:** Oil stone is made by carbonandum or silicon carbide. It is used to remove the wire edge formed in the cutting knife. It is also two sides soft & rough. To get fine cutting edge rub the knife on the soft side of the oilstone.

**Leather shears:** These are used for cutting leather of any thickness.

**Edge beveller:** For cutting away a portion of the edge of heavy leather.



**Revolving punches:** The revolving punch has a magazine of punches of different diameter. It is used to make holes close to the edge of the fabric.



**Awl:** It is used for sewing leather in order to make leather goods. They are known by different names either diamond harness or bucking awls. It is used to making hole in leather.



**Hammer:** It is used for hammering. There are several types of hammer such as heavy hammer, light hammer & medium hammer. Hammer for leather worker are of two types. Generally they are used for nailing pounding & creasing.

**Square scale:** For measuring a straight edge for trimming & for measuring & 90° angle. It may be used.

**Stitch marker:** It is an important tool for making leather goods. It is necessary to the leather.

**Folding hammer:** these are used for hammering after cementing & stitching. Also when folding gusset heavy leather not to be used for punching.

**Bone folder:** Made of wood or bone used when turning edges over. Also used when pattern making.

**Springs divider:** Used in designing departments for measuring various allowances of patterns.

**Thickness gauge:** Used for same purpose as thickness gauge.



**Scissors:** Used by the worker of the closing room for trimming thread ends, cutting slots & for other similar works.

**Cutting knife:** Generally used for cutting leather of heavy type.

### 3.3.8 Adhesive used in leather garments manufacture

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#### 3.3.8.1 Categories of adhesives

##### Natural adhesives

Adhesives based on vegetable (natural resin), food (animal hide and skin), and mineral sources (inorganic materials).

##### Synthetic adhesives

Adhesives based on elastomers, thermoplastic, and thermosetting adhesives.

##### Drying adhesives

These adhesives are a mixture of ingredients (typically polymers) dissolved in a solvent. Glues such as white glue, and rubber cements are members of the drying adhesive family. As the solvent evaporates, the adhesive hardens. Depending on the chemical composition of the adhesive, they will adhere to different materials to greater or lesser degrees. These adhesives are typically weak and are used for household applications. Some intended for small children are now made non-toxic.

##### Hot adhesives (thermoplastic adhesives)

Also known as "hot melt" adhesives, these adhesives are thermoplastics; they are applied hot and simply allowed to harden as they cool. These adhesives have become popular for crafts because of their ease of use and the wide range of common materials to which they can adhere.

### Reactive adhesives

A reactive adhesive works by chemical bonding with the surface material. They are applied in thin films. Reactive adhesives are less effective when there is a secondary goal of filling gaps between the surfaces. These include two-part epoxy, peroxide, silane, metallic cross-links, or isocyanate.

### Pressure sensitive adhesives

Pressure sensitive adhesives (PSAs) form a bond by the application of light pressure to marry the adhesive with the adherend. They are designed with a balance between flow and resistance to flow. The bond forms because the adhesive is soft enough to flow, or wet, the adherend. The bond has strength because the adhesive is hard enough to resist flow when stress is applied to the bond. Once the adhesive and the adherend are in close proximity, molecular interactions such as van der Waals forces become involved in the bond, contributing significantly to its ultimate strength.

### 3.3.9 Materials used for decoration and ornamentation

Fabrics used for the decoration and trimming of leather garments are endless. Ornamentations comprise bows, buckles, buttons etc, and their application varies according to the dictates of the fashion. They are made from textile as well as plastic, glass, metal etc. There are some which combine decoration and functional use such as buckles, laces, drawstrings etc.

#### Button

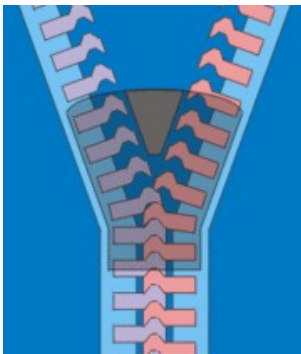


A button is small disc- or knob-shaped object attached to cloth or an article of clothing in order to secure an opening, or for ornamentation. Functional

buttons work by slipping the buttons through a fabric or thread loop, or by sliding the button through a slit called a buttonhole.

Buttons may be manufactured from an extremely broad variety of materials, including natural materials such as antler, bone, horn, ivory, shell, vegetable ivory, and wood; or synthetics such as celluloid, glass, metal, and plastic.

## Zipper



A zipper (British English: zip fastener or zip) is a device for temporarily joining two edges of fabric together. It is widely used in clothing, luggage and other bags, sporting goods and camping gear (e.g., tents, sleeping bags), and other textiles. Other fasteners used in the same items include buckles, buttons, safety pins, laces, snaps (also known as poppers and press studs), and Velcro

### Types

- Coil zippers form the bulk of the sales of zippers world-wide—the classic zipper. The slider runs on two coils on each side. The "teeth" on this zipper are coils. Two basic types of coils are used. One type uses coils in spiral form, usually with a cord running inside the coils. The other type uses coil in ladder form, also called the Ruhrmann type. This second type is now used only in a few parts of the world, mainly in South Asia.
- Invisible zippers' teeth are behind the tape. The tape's color matches the garments, as does the slider, so that, except the slider, the zipper is "invisible". This kind of a zipper is common in skirts and dresses. Invisible zippers are usually coil zippers.
- Metallic zippers are the type found in jeans today. The teeth are not a coil, but are individual pieces of metal moulded into shape and set on the zipper tape at regular intervals.
- Plastic-moulded zippers are identical with metallic zippers, except that the teeth are plastic instead of metal. While metal zippers must be painted to match the surrounding fabric, plastic zippers can be made in any color of plastic.
- Open-ended zippers use a "box and pin" mechanism to lock the two side of the zipper into place, often in jackets. Open-ended zippers can be of any of the above specified types.

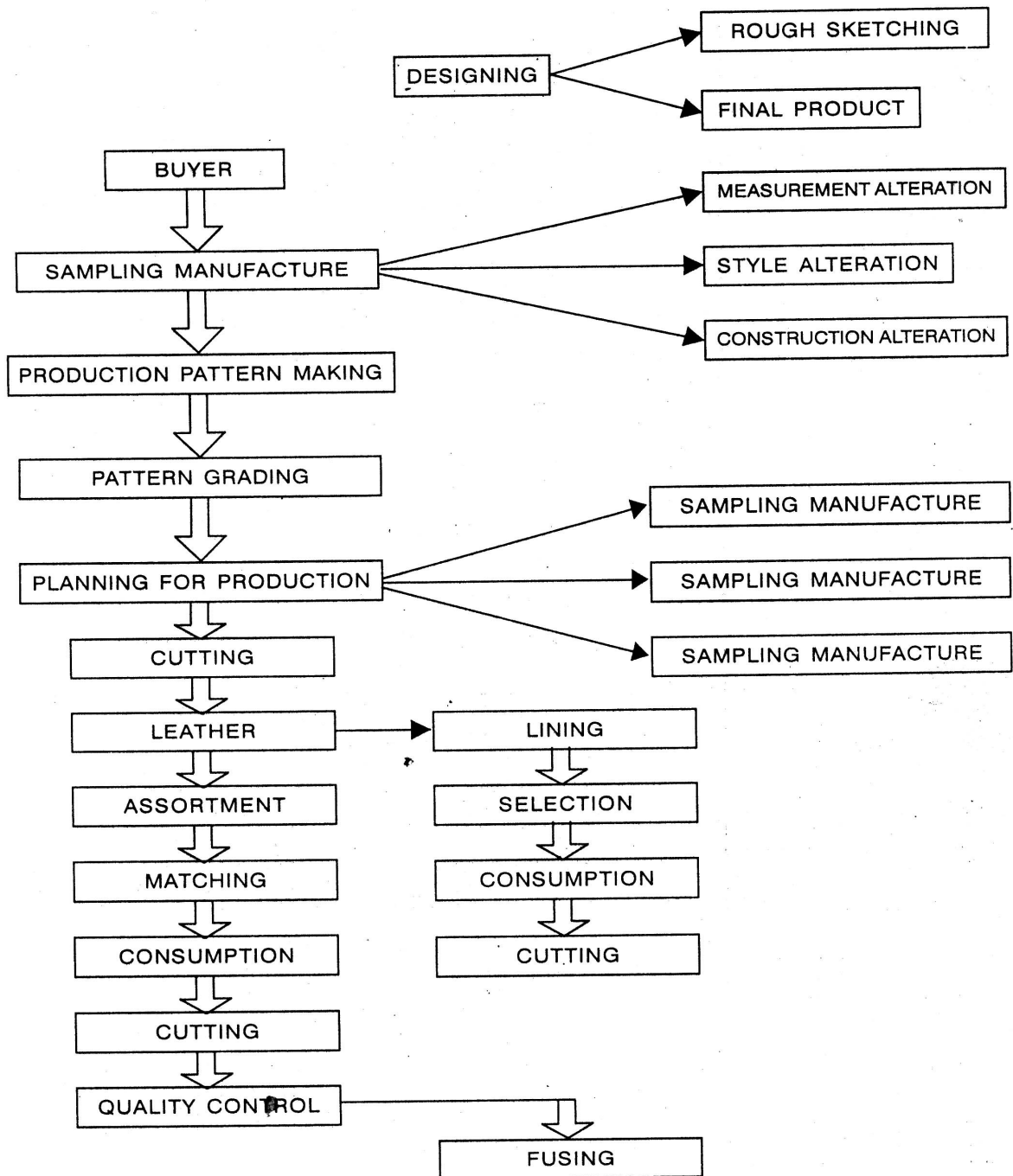
- Closed-ended zippers are closed at both ends; they are often used in baggage1.14.

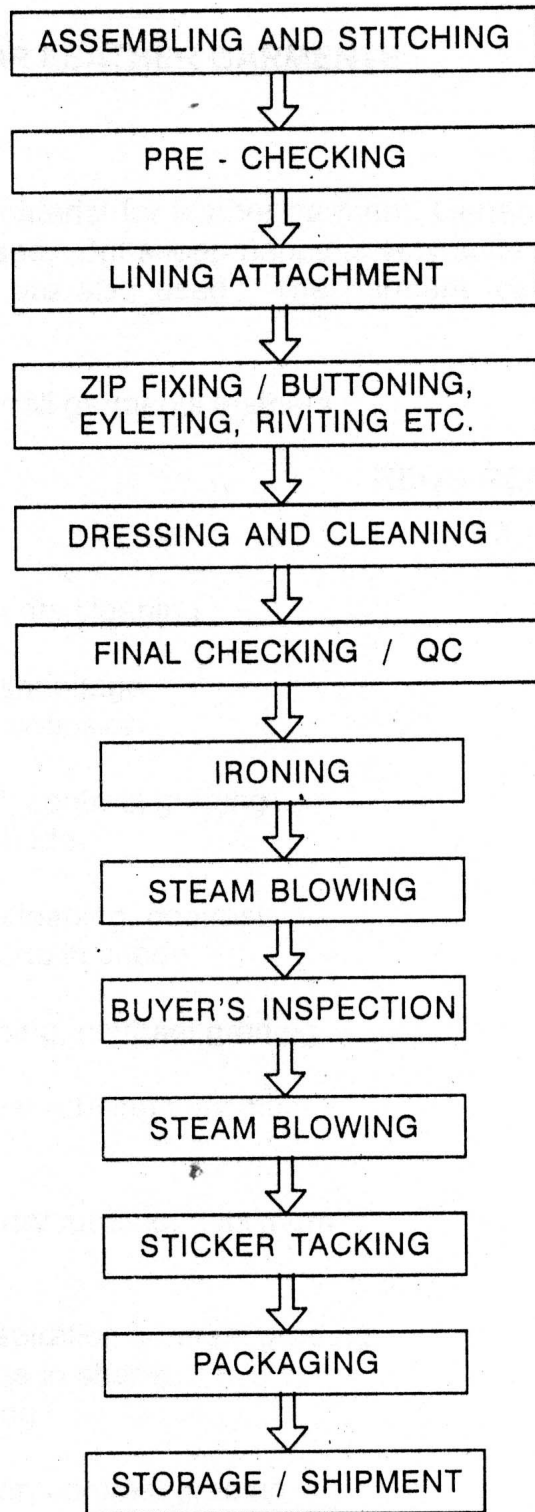
## **Unit D**

### **4. Product Making**

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#### **4.1 Flow chart of leather garments manufacturing:**





## **4.2 Product range building system**

Product development in leather garment is a process of developing ‘a range of product.’ The main stage of the range building system are-

Pre-design stage

Objectives:

- Analyze the market and fashion
- Segment the market or target group

### **4.2.1 Analyze the market trend and fashion**

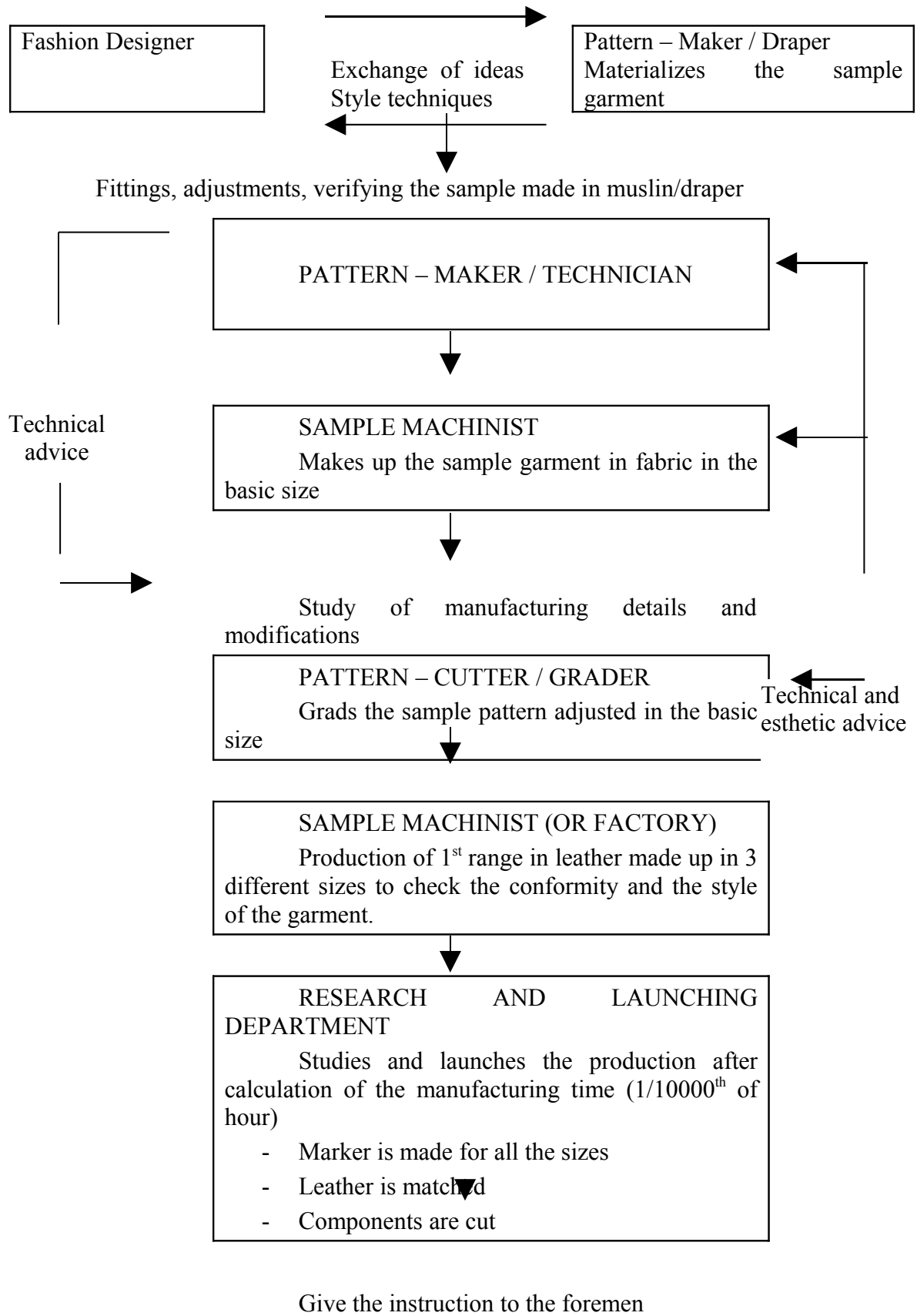
Fashion is driving force behind consumer buying. But fashion itself is shaped by dominant culture as well as economic and political forces of the time. Fashion has also been a globalize phenomenon long before the term ‘globalization’ came into being. What happens in the west in terms of fashion trends eventually tickle into the east determining the general flow of style while meshing with local flavor? The Bangladeshi fashion scene, though directly influenced by trends in neighboring countries, has not been completely immune to the catwalk of Milan or Paris.

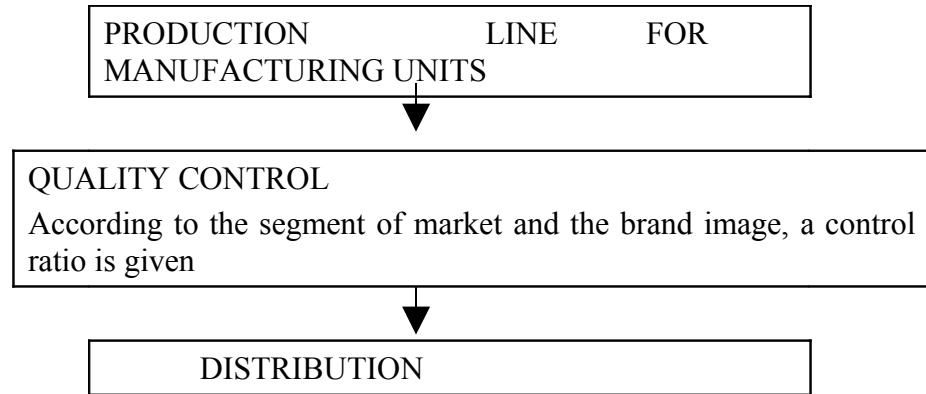
Today’s Bangladeshi ladies are very much aware about fashion. Though most of people wrongly use the term fashion only to describe high fashion but the changing of their behavior also come out in light. Today’s teenagers accepted new design so early and even it is also true for the aged women. The socio economic consideration also changed their pattern of thinking. Now sleeveless fashion is very common in our town area. Wearing jeans by the young women is very available.

### **4.2.2 Segment the market and target group**

According to my project it should be define the customer group of my product though I was assigned for making the fashionable ladies sandal. The target group should be thus those women who are very much fashion oriented and adopt new fashion.

### **4.2.3 Stages of Collection**





The product that I made is for the following target people

Garment type: Ladies Gored Skirt		
S.l no	Segmentation criteria	Target group
01	Age	Teen and above (13-30)
02	Socio-economic group	Higher middle class and above
03	Distribution area	Town
04	Educational status	High school, college and university level
05	Purchasing behavior	Specialized leather garment shop/chain store/fashion house
06	Acceptance duration	Early
07	Purpose of the purchasing	For every usage and matching with jeans top
08	Taste of the target group	Free style
09	Retail price level	

#### 4.2.4 Preparing Story or theme board:

A story board is a summary of collection's inspiration and theme. It's a design tool that will help remain focused and consistent as the line develops. It's also a great communication aid when explaining designer's vision to others (retailers, media etc.). Magazine tears, fabric swatches, old photos, buttons, ribbons; basically any visual reference desire are mounted onto a hard board. A story board should have a title, like a book or film.

#### 4.2.4.1 New Product Deveopment

New product development is the complete process of bringing a new product to market. There are two parallel aspects to this process : one involves product engineering ; the other marketing analysis.

##### 4.2.4.1.1Types of new products

There are several types of new products. Some are new to the market, some are new to the firm, and some are new to both. Some are minor modifications of e.xisting products while some are completely innovative. These are displayed in the following



##### 4.2.4.1.2 The process

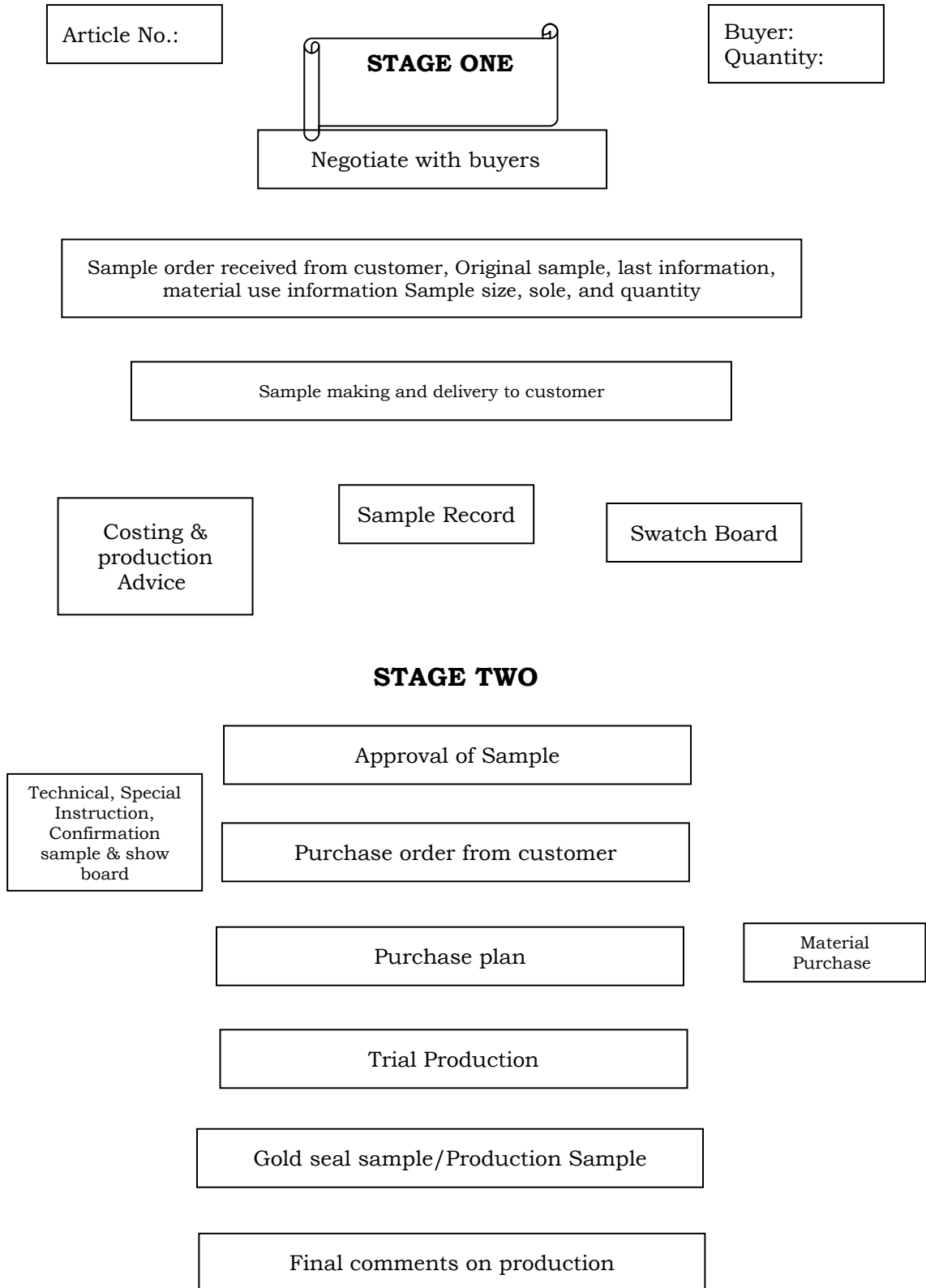
There are several stages in the new product development process:

1. Idea Generation

- ideas for new products obtained from customers, the R&D department, competitors, focus groups, employees, or trade shows
- formal idea generating techniques include attribute listing, forced relationships, brainstorming, morphological analysis, problem analysis, virtual prototyping, and rapid prototyping
- 2. Idea Screening
  - eliminate unsound concepts
  - must ask three questions:
    - will the target market benefit from the product
    - is it technically feasible to manufacture the product
    - will the product be profitable
- 3. Concept Development and Testing
  - develop the marketing and engineering details
    - who is the target market
    - what benefits will the product provide
    - how will consumers react to the product
    - what will it cost to produce it
- 4. Business Analysis
  - estimate likely selling price
  - estimate sales volume
  - estimate profitability and breakeven point
- 5. Beta Testing and Market Testing
  - produce a physical prototype or mock-up
  - test the product in typical usage situations
  - make adjustments where necessary
  - produce an initial run of the product and sell it in a test market area to determine customer acceptance
- 6. Technical Implementation
  - New program initiation
  - Resource estimation
  - Engineering operations planning
  - Department scheduling
  - Resource plan publication
  - Program review and monitoring
  - Contingencies - what-if planning
- 7. Commercialization
  - launch the product
  - produce and place advertisements and other promotions
  - critical path analysis is useful at this stage

For the more innovative products indicated on the diagram above, great amounts of uncertainty and change may exist, which makes it difficult or impossible to plan the complete project before starting it. In this case, a more flexible approach may be advisable.

**Product Development flow chart.**



#### 4.2.5 Design Stage

This creative work includes:

1. First of all, I select the size chart for which the skirt is going to manufacture.
2. Then the sketch of the skirt is drawn and from which the perspective figures are outlined.
3. Selecting the material including their color, shapes, comfort, availability, and costing etc.
4. Planning for production method.

#### **4.2.5.1 Designing**

Designing is an important process in the manufacture of school bag. In the principal of designing, a good design should be easy for fabrication & saleable.

The design should be simple when it is converted into production as much as possible, because production & productivity are the key factors for successful commercial venture.

#### **4.2.5.2 Pattern making / Designing Methodology**

Pattern is the flat representation of a three dimensional figure into a two dimensional form. And pattern making is a science and engineering.

The pattern designing procedure has the following major steps.

1. Study of Anatomy of Human body - Gents, Ladies, Children and Infants.
2. Taking of measurement Actual body measurement.
3. Preparation of Basic block - fitted garments pattern e.g., jacket, skirt, trouser, over coats.
4. Perspective drawing of a specific style.
5. Enlargement of block / draft / construction.
6. Preparation of first pattern.
7. Preparation of the production pattern.
8. Grading

##### **4.2.5.2.1 Anatomy**

The internal study of the Human body it helps to take the measurement correctly for example sleeve length is measured from the shoulder bone (the prominence of the bone) to wrist bone (The prominence of the bone) and also to the idea of the body shape.

##### **4.2.5.2.2 Drafting the Block for Individual Figures**

The blocks can be drafted for individual figures by substituting the personal measurements of the figure for standard ones. It is vitally important that personal measurements are taken accurately and in the correct place on the body if personal blocks are to be successful.

#### **4.2.5.2.3 Taking Measurements**

The body should be relaxed. The measurements are usually taken when the man is wearing a shirt and trousers. Tie a string or elastic around the waist to establish the natural waistline.

#### **Measurements those are required for the skirt**

Waist: the girth measurement required around the circumference of the waist

Hip: the girth measurement below the waist that is the fullest part of the body.

Hem circumference: the maximum hem circumference that is to be allowed.

Length: the required length to be given (59 cm)

#### **4.2.5.2.4 Basic Block**

The first step in pattern making is the preparation of basic block which is used for all pattern adaptations. The basic block is the representation of three dimensional solid measurement of dummy in a two dimensional form.

The basic block is the foundation pattern constructed to fit a specific figure in the garment industry. The blocks are constructed to a set of standard measurements for a particular size. It is used as a basis for interpreting a design and producing a finished pattern. The design shape may change dramatically but the basic fit of the pattern will conform to the size of the basic blocks.

#### **Construction of the basic skirt block for gored skirt**

This skirt block will serve as a guide for the construction of all sorts of skirt

Required measurement: (for UK dummy size 12)

Waist girth: 66 cm

Waist ease: 1 cm

Hip girth: 92 cm

Hip ease: 3 cm

Skirt length: 59 cm

### **Construction outline:**

#### Stage-01: The Frame work

1. Start with right angle for the waist line from point W.
2. CB-CF:  $\frac{1}{2}$  Hip waist +  $\frac{1}{2}$  Hip ease =  $46+1.5=47.5\text{cm}$ .
3. W-H : Hip Line that is 22cm below the waist line.
4. W-L : Length Line that is 57.6cm.
5. Make a rectangular block. This is a rough outline of the straight skirt block.
6. Side EF : The side seam line separates the back & front.  
To find point E,  $L_1-E = \frac{1}{2} L L_1 + 1\text{cm}$  (Skirt Front)  
 $= 23.75 + 1 = 24.75\text{cm}$   
 $L-E = \frac{1}{2} L L_1 - 1\text{cm}$  (Skirt Back)  
 $= 23.75 - 1 = 22.75\text{cm}$

From E, draw EF, extending to line WW<sub>1</sub>.

EF is parallel to the centre front & centre back lines.

#### Stage-02: Waist suppression:

Calculation and position of darts & side seam curves.

1. For size 12,  $\frac{1}{2}$  waist measurement +  $\frac{1}{2}$  waist ease =  $33+0.5 + 33.5\text{cm}$

But now waist line W-W<sub>1</sub> = 47.5cm.

By taking the excess cm into consideration, we shall determine the dart value & the position of side seam curves.

$$\begin{array}{r} W-W_1 = 47.5\text{cm} \\ \frac{1}{2} \text{ waist} = 33.5\text{cm} \\ \hline \text{Excess} = 14.0 \text{ cm.} \end{array}$$

This 14.0 cm must be distributed by the dart & waist suppression.

Dart value:

Centre back = 1cm

Back dart = 3cm

1<sup>st</sup> front dart = 2cm

$$\begin{array}{rcl} 2^{\text{nd}} \text{ front dart} & = & 2\text{cm} \\ \hline \text{Total} & = & 8\text{cm}. \end{array}$$

Excess 14cm less the dart value 8cm=14-8=6cm

2. Therefore there is a difference of 6cm left over for the side seam curves.
3. Divide the 6cm in half on the both side of EF line.
4. From point  $W_2$  &  $W_3$ , back and front, draw two identical curved lines down to the Hip line.

#### Stage-03: Dart outlines/ Dart position & Length.

1. 1<sup>st</sup> Front dart:

$$\begin{array}{rcl} \text{Value} & = & 2\text{cm} \\ \text{Length} & = & 9\text{cm} \end{array}$$

The middle of the dart is 9.5cm from the centre front. It is parallel to the centre front line. Divide the dart value equally on either side of the middle of the dart.

2. 2<sup>nd</sup> Front dart:

$$\begin{array}{rcl} \text{Value} & = & 2\text{cm} \\ \text{Length} & = & 9\text{cm} \end{array}$$

The middle of the dart is half-way between the edge of the first dart and the curved side seam line. Divide the dart values equally on either side of the middle of the dart.

3. Back Dart:

$$\begin{array}{rcl} \text{Centre Back dart:} & \text{Value} & = & 1\text{cm} \\ & \text{Length} & = & 22\text{cm} \end{array}$$

This dart is 1cm from the centre back line and extends down to H in a straight line.

$$\begin{array}{rcl} \text{Back dart:} & \text{Value} & = & 3\text{cm} \\ & \text{Length} & = & 12\text{cm to } 15\text{cm}. \end{array}$$

This middle of the dart is half way between the edge of the centre back and curved side seam.

N.B. The middle of each dart is always parallel to the CF or Back lines.

#### Stage-04: Finishing Waist outline:

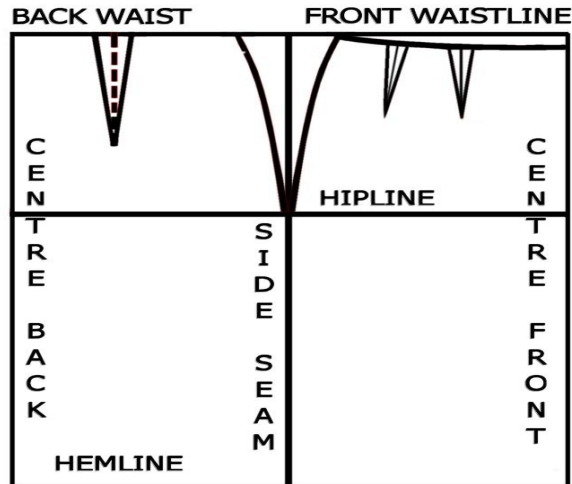
1. Sides:

Extend the curved side seams line in an upward direction to obtain a length of 22.5cm as the hips are more rounded than the abdomen.

2. Close darts:

Draw curved waist line (Eliminating the angles formed upon closing darts). Go over the waistline with a tracing wheel in order to obtain the pointed chart tops.

### **Basic Block**



I

### Calculation of the Gored Value

$$\begin{array}{rcl}
 \text{Given Hip Girth} & = & 92\text{cm} \\
 \text{Hip Girth Ease} & = & 3\text{cm} \\
 \hline
 \text{Total} & = & 95\text{cm}
 \end{array}$$

So, Gored development based on 95cm.

Let, our required Hem Circumference=115cm (according to designer choice)

$$\begin{array}{rcl}
 \text{Front Hem Girth} & = & 59\text{cm} \\
 \text{Back Hem Girth} & = & 56\text{cm} \\
 \hline
 \text{Total} & = & 115\text{cm}
 \end{array}$$

Our required gore is six that's why we will divide the Hip girth & Hem girth by six. Then the value of

Each gored hip value is  $96/6=16+1$  cm allowance in four side = 17 cm

Each gored hem value is  $115/6=19.17+1$  cm allowance in four side = 20.17 cm

### 4.2.5.3 Perspective Drawing

Front and back views of the garment including all style lines, stitch marks, fastening system, collar, cuff etc., should be presented clearly.

#### **4.2.5.4 Enlargement / Draft**

The fitted block is to be enlarged or reduced according to required measurement for a particular size. Then draft construction is developed from the Enlarged block. The various styling details such as.

- Dart manipulation
- Types of seam
- Yokes
- Gathers
- Pleats

#### **Dart manipulation**

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##### **Pivoting**

The professional pattern cutter is much more likely to move darts to different style positions by the technique known as pivoting. This technique is used to transfer darts around the dart point without slashing the pattern and is based on the knowledge gained from slashing the pattern, i.e. that darts on the front bodice all radiate from the bust point, and on the back bodice, skirt and sleeve blocks they all radiate from their respective dart points.

Pivoting is a technique that must be mastered as it is more accurate than slashing and saves much time and effort. The following examples highlight the basic principles of dart pivoting.

The objective is to pivot the neck dart to a site below the underarm point. The pivot point on the front bodice is the bust point. A “site mark” is used to mark the new dart position. This site mark is marked on the block pattern. (The letters C-A-B are used to explain the pivoting action) The principles are as follows, use the working sketch to decide where the new dart is to be sited and mark its position on the block with a site mark.

Decide which dart is not required.

Identify the pattern outline that will not be affected by the repositioning of the unwanted dart and mark it in.

Pivot the pattern so that the unwanted dart is closed up.

Mark the outline that has changed i. e. from the site mark around to the unwanted dart.

##### **Slashing the pattern**

If the hem circumference required is greater than can be obtained by using the darts, the following technique can be adopted, which combines the use of the waist dart with extra fullness.

Prepare front and back skirt. Trace off skirt front fig. 01.

Draw flares lines from hem to waist. Cut out skirt and place on to another sheet of paper.

Slash up flare lines and add required amount of fullness fig. 02.

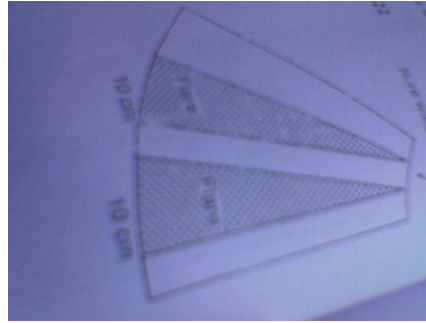
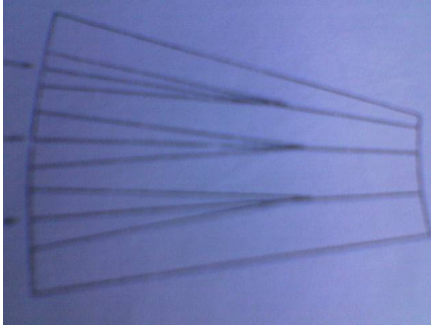


Fig: Slashing the pattern Fig 01 and 02

Pin down on to another sheet of paper. Correct the hem run.

The skirt must be opened out evenly. Note that as I open out the skirt to obtain more fullness at the hem, the waist line correspondingly changes shape. This curved waist line controls the skirt hangs, because when it is sewn into the bodice waist line it will be straightened. This will pitch the fullness back into the hem.

## SECOND METHOD

Divide these girth measurements by the number of gores required-six, four, eight, ten, etc. fig 02

Example: a six gore skirt

Measurements

Waist 66 cm + 1 cm = 67 cm

Top hip 86 cm + 2 cm = 88 cm

Hip 92 cm + 2 cm = 94 cm

Waist to hem 58 cm = 58 cm

On a sheet of paper long enough to accommodate the required skirt length, i.e. 58 cm, draw the following lines.

1. A-B = waist to hem hip = 58 cm
2. A-C = waist to top hip = 10 cm
3. A-D = waist to hip = 20 cm
4. Square from all these points
5. E to F = waist + 1/6 = 11.2
6. G to H = top hip + 2/6 = 14.5
7. I to J = hip + 2/6 = 15.5
8. Connect E-G-I through to hem
9. Connect F-H-J through to hem
10. Raise points E and F 3 mm
11. Make points K and L 90° angle

This gore is one sixth of a complete skirt. Add seam allowances and cut six.

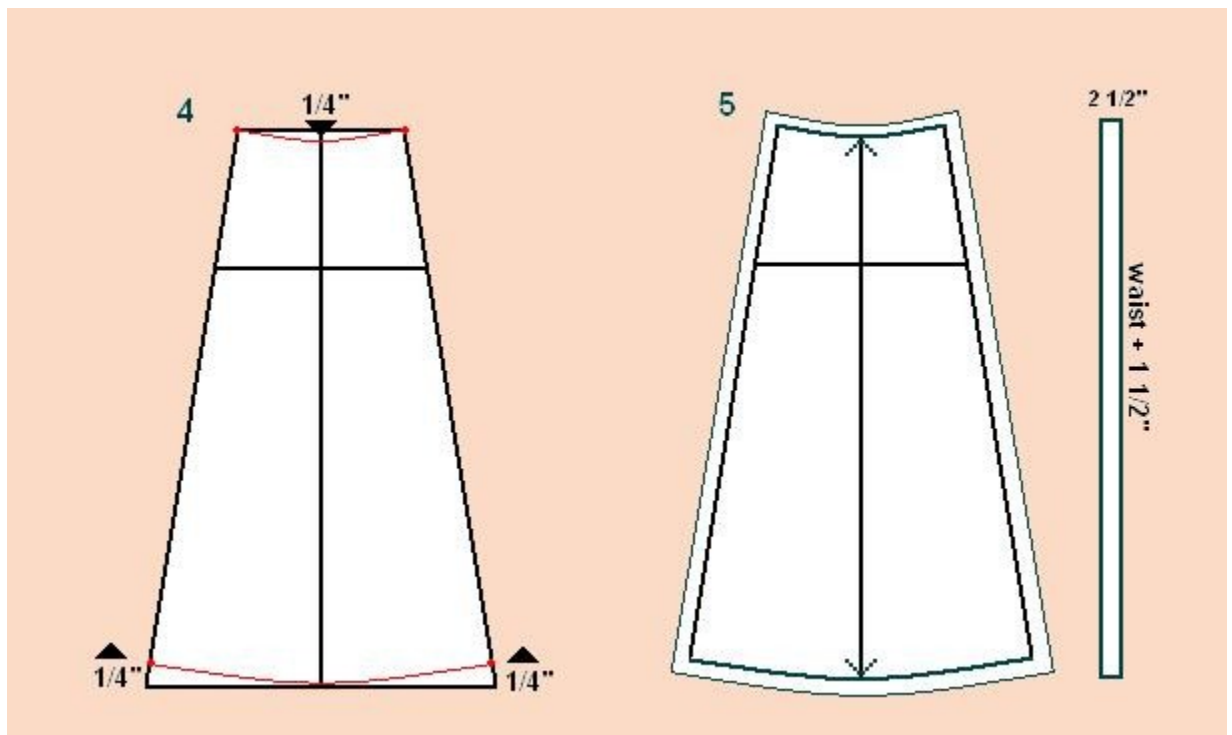
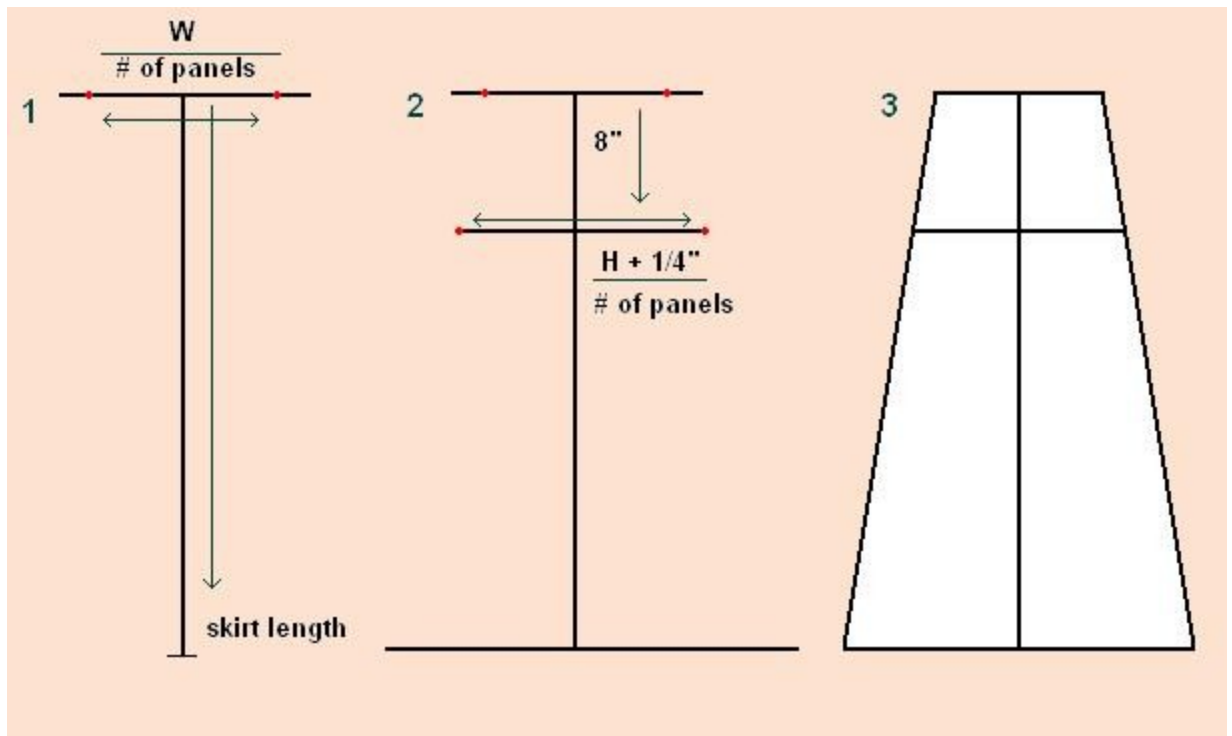


Figure: Gored skirt patterns

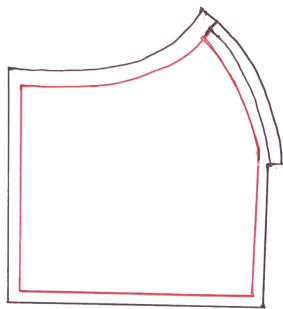
#### 4.2.5.5 Final pattern

This is the pattern developed from the working sketch. Here each section (panel) is traced and adapted to achieve the desired effect on shape and fit. Seam allowances are added, marked and labeled with all the necessary information.

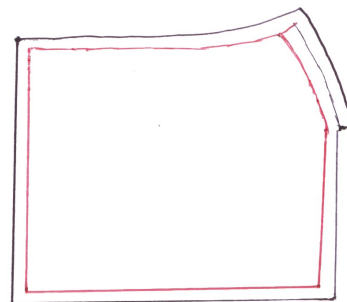
#### 4.2.5.6 Pattern identification

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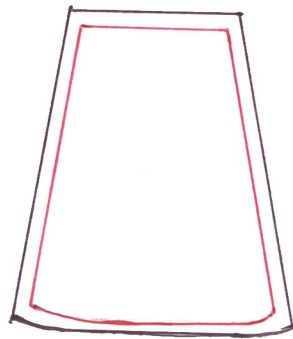
Upper pattern



Front hip



Back hip



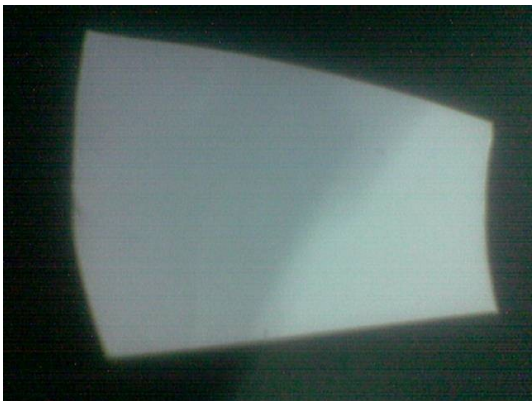
One panel of Gored pattern



Waist Band

### **Lining pattern**

Front



Back



### **4.2.5.7 Production Pattern**

This is the copy of the final pattern. This must be 100% accurate with all necessary information on it. This pattern is then sent for grading together with the sample to grade in the required sizes. As I have just made one piece of skirt so I did not make the production pattern.

#### 4.2.5.8 Total Pattern Area

Total Gored panel-	$36 * 20 = 720 * 6 =$	$4320 \text{ cm}^2$
Total Back Hip	$-28 * 26 = 728 * 2 =$	$1456 \text{ cm}^2$
Total Front Hip	$-28 * 28 = 784 * 2 =$	$1568 \text{ cm}^2$
Total waist band	$-37 * 10 = 370 * 2 =$	$740+3 \text{ cm}^2$
<hr/>		
Total	$=$	$8087 \text{ cm}^2$
	$=$	$80.87 \text{ sq dm}$
	$=$	$8.705 = 9 \text{ sq ft}$

So Total Leather pattern area including 25% waste =  $9 + 2.25 = 11.25 \text{ sq ft}$

#### 4.2.5.9 Grading

Pattern grading is a technique used to reproduce a pattern in other sizes, it must be done accurately, small errors unnoticed when one size is graded create problems when many sizes are required. An accurate method is to draft the smallest size and the largest size then stop off the sizes between lines drawn through the basic points. Although grading machines and computers are increasingly being used, it is still necessary to understand the principle of grading patterns in order to program machines.

#### General rules for grading

The garment is accepted in the collection.

- > The sample pattern must be perfectly adjusted and studied to avoid amplifying mistakes made during the grading.
- > State the size on all pieces of the graded pattern.
- > Mark straight grain, vertical and horizontal lines on all pattern blocks, (bust, cross - back, waist, hips etc)
- > Know the measurements of the sizes needed in order to establish the growth chart.

- > The grading axes will be usually parallel and perpendicular to the straight grain.
- > Be very precise with the measurements and the drawing through to avoid off- standard sizes.
- > Always keep front and back parallel to keep the value balanced.

## **4.3 Marking**

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### **4.3.1 Russ and small method:**

In 1922 two American accountants, Russ and Small, introduced their method of scaling. Their method consists of interlocking a pattern upon itself respectively, until 4 patterns are facing the same way and then joining like points on the patterns to form rectangle, a square or a parallelogram which enclosed one complete pair of patterns plus the unavoidable waste, which is termed 'first waste' . This is then the smallest possible area in which one pair of patterns could be cut. A set of tables were drawn up so that a percentage could be added to this area to allow for different materials which affects the positioning of patterns.

Advantages:

- Area of the perimeter shape is related to allowance.
- Differences allowed for that would affect layout of patterns.

Disadvantages:

- Not adjustable for size changes.
- Percentage added are based on past in accurate records.

Square Board Method:

Here a measurement board is used. This may be of wood, paper or hard-board and is rectangular 12" width the length being immaterial, but 24" should be the minimum. The board should be ruled each half inch and complete inch with horizontal lines, and each line will be clearly marked with the number of inches it is from base.

Then lay the complete patterns for one pair on the board in the most compact and economical arrangement.

A regarding can be made of area curved, and since the board is one foot in width the figure reached will be the basic area for one dozen pairs in sft. Of course there should be first or unavoidable waste is included.

Example:

$$12'' \times 14'' = 168 \text{ sqft} = 1.1\frac{1}{6} \text{ square feet / pair}$$

$$12'' \times 1.1\frac{1}{6} = 14 \text{ sqft} = 1.1\frac{1}{6} \text{ square feet / dozen pair.}$$

Although all of the above method may scientifically proved, but in an export oriented footwear factory we have conscious about the time and delivery schedule. So preferably we follow the square board method or Russ and Small method.

As most of the factory in Bangladesh is using the Russ and Small method so I am giving a brief description on that method:-

Russ and Small method depends on two ways

- 1)  $0^\circ$  Method
- 2)  $180^\circ$  Method

### **$0^\circ$ Method:**

Here, we have to carry on the consumption for the separate parts of the footwear. First of all take a pattern and draw a straight line on it. Then mark a reference point on any edge of the line. Now trace the pattern on graph paper or ruler paper. Mark as No. 1 then again that pattern set by touching any point of No. 1 pattern and set it same alignment as No. 1. Now the 3<sup>rd</sup> and 4<sup>th</sup> pattern of the same part should be set inversely following the instruction as to 3 will touch (1+2), and 4 will touch (1+3) or (3+2). In the same direction as the 1<sup>st</sup> and 2<sup>nd</sup> tracing pattern, that pattern will trace on the graph paper. Each time the pattern should be parallel to the drawn straight line on the pattern paper.

So in short we can say-

- 1 will touch 2 No. patterns
- 3 will touch (1+2), [inversely to the 1 & 2]
- 4 will touch (1+3)/ (3+2)-direction should be same as 3
- 5 will touch (4+3)-direction should be same as 1/2
- 6 will touch (5+3)/ (5+4) [do]

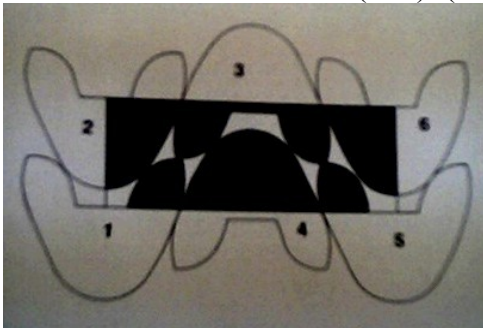


Figure:  $0^\circ$  Method

This picture is representing as an example of how the pattern would be trace on the paper in  $0^\circ$  method

### **$180^\circ$ Method:**

This is little bit complicated than the other method. Here each tracing will be set inversely to each other but the No. 6 tracing will be as same direction as No. 5. The basic rules will be the same as 0° method.

So, in short we can say

1 will inversely touch 2 No. patterns

3 will inversely touch (1+2)

4 will inversely touch (1+3)/ (3+2)

5 will inversely touch (4+3)

6 will touch (2+5)/ (5+4), but as the same direction of No. 5.

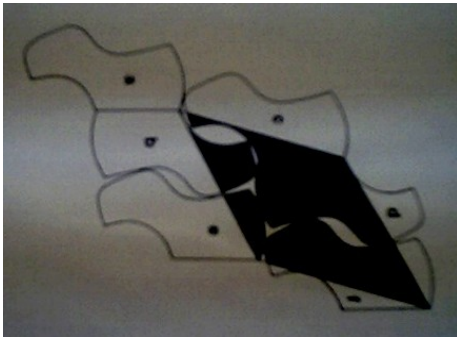


Figure: 180° Method

## 4.4 CUTTING

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### 4.4.1 Selection of leather

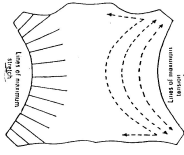
Each hide or skin vary in structure & chemical compositions quality from the species to species, & within the skin or hide. Hence it poses a greater challenge to the technologists in selection of good quality finished leather for particular type of leather good. It is always born in mind that the whole costing of leather goods depends on the way of cutting patterns in the cutting department, since saving leather (with least wastage) means saving in cost of production.

For successful cutting, the cutter must be aware of sections & quality variations of skin.

### 4.4.2 A good cutter must be well versed with the following

- Part of the hide/skin & their suitability for cutting of components of the products.
- Types of leather & their suitability for making different types of leather goods.
- Identification of common defects & stretch of leather.
- Assortment of leather for various thicknesses & their suitability for various components of the product.

#### 4.4.3 STRETCH



Stretch of leather is more on the direction when the animal grows as shown in the arrow. Majority of leather goods retain their shape due to the reinforcement they have. Therefore, the stretch of the leather is not that much of importance & it would not spoil the appearance of the article. The best part of articles demands the best part of hides & skins.

#### 4.4.4 GRAIN MATCHING

Most of the time the panel of leather goods is sectioned. In this case the grain of each component should be matched; otherwise the articles will appear odd & doesn't have good appearance.

#### 4.4.5 COLOR MATCHING

In aniline dye batch, the leather should have to be matched for shade & the components of the article have to be cut from the matched grain of same shade.

In case of pigment finished leather the defects would have been covered due to a thick color coating.

### 4.5 Machine work in cutting room:

In large-scale industries, different types of machines do cutting room operations. Those machines are mentioned below:

- 1) Clicking Machine
- 2) Splitting Machine
- 3) Skiving Machine
- 4) Strap Cutting Machine
- 5) Board Cutting/ Sharing Machine
- 6) Embossing

### 4.6 Bench operations /Pre-Assembly and Assembly / Preparation Process

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The work carried out on benches consists of:

- 1) Marking
- 2) Creasing
- 3) Edge dyeing or staining
- 4) Punching
- 5) Eyeletting
- 6) Cementing
- 7) Edge Folding

Some of the bench operations those are include in the manufacture of the skirt:

Marking:

After receiving each component in bulk quantity in bundled condition, by using of marking pattern on each component has been marked for placing reinforcement materials, fixing decoration, lock, buckle, frame and other fittings.

**Edge dyeing:**

In order to give bright appearance to the edges staining or dyeing of edges is done. The colouring is normally done by applying the dye with a wooden split with a piece of sponge, cloth or cotton can also be used. A group or bundle of cut components is taken at a time & one stroke, all the edges are stained. When the fibers are found to be a little coarse along the edges, a thin wax coat is applied before polishing with a cloth. A mixture of carnauba wax & bee wax is ideal for this purpose.

**Punching:**

Punching is the process of making hole in leather component using asset of a hole punches for various size of holes needed for fixing of buckles, locks, decoration, eyeleting and any other accessories and fittings.

**Cementing:**

Cementing is an important operation the manufacture of school bag as at this stage only, the different components of leather and reinforcements are joined together by means of application of an adhesive and on the strength of the joints depend the very existence or in other words, the retention of the shape of the article, For further strengthening, the joined parts are invariably stitched.

**Edge Folding:**

It is simply an operation or devise of folding the edge of the leather uniformly along the edges to a pre-determined width either in straight line or in curves. The folding is done to improve overall appearance of the product.

Normally a skived edge is coated with cement as stated in the cementing operation and then with the help of the bone folder, the edge is folded over along the entire length of the edge of the leather.

#### **4.7 Assembling:**

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After pre-assembling (preparation) process is done, the next step is assembling various individual to get structure of articles. To assemble this component before cementing of edges that are folded at the stage of preparation, a grain part of fold edge are properly scratched to ensure bonding strength of adhesive and then is applied adhesives gently. Applying of adhesive on unnecessary part of component affects cost, time and quality of production. After a while component affects cost, time and quality of production. After a while components stack together and hammered gently and transferred to stitching operation.

##### **4.7.1 Stitching:**

Stitching is the most important operation that decides the quality of the end products. So, stitching is tested on a waste piece of leather before stitching on the product.

Basically flat bed, Post bed and Cylinder bed sewing machine are used.

To stitch this type of heavy goods, we have to use Heavy duty machines.

Flat bed sewing machines are provided with two needles to make two parallel lock stitch seams and also, flat bed machine is provided with a zigzag stitching operation for decoration.

Stitching length- 3 st/cm

Stitch gauge - 3m.m from the edge.

## **Functions of tailoring division**

### **Initial joining**

At first the separated panels have to be joined. Starting from the CF panel to the SS panel. And for this first CF panel join to the middle panel. Then middle panel to the SS panel. In the same way complete both the front panel. Then join the two front panel CF-CF. Again for back preparation starting from the CB panel and then join the CB panel to the back SS panel. In the same way complete both the back panel. Then join the both panel CB-CB. Now join the back and front panel in the left side SS-SS. Again for opening system keep 18 cm opening for zip attaching. And below this 18 cm the remaining portion have to be joined. After completion of joining the extra portion after stitching that is skiving section have to turn over properly with the help of hammering smoothly by applying adhesive.

### **Hem finishes**

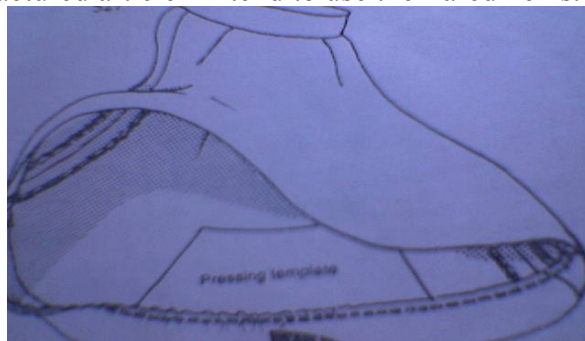
There are several points which need to be considered before finishing the hem for a garment.

1. The characteristics of the fabric must be identified, e.g. soft fabrics may stretch or drop resulting in an uneven hem line.
2. The cut shape of the hem line may cut across various grains, thereby encouraging some parts of the hem to drop, which will result in an irregular hem line.

There are many methods of finishing hems which includes:

- a) Flared hems
- b) Shaped hems
- c) Split hems

In my manufactured article I intend to use the flared hems.



**Flared hems**

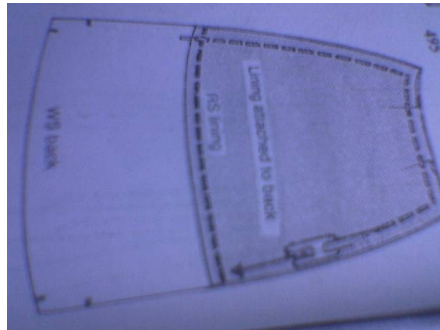
The important point to remember about shaped hems is that the hem edge when turned up measures far more than the area of the garment on which it will lie. This extra length has to be reduced in a controlled manner in order to produce a professional looking hem. Incidentally, the more flared the hem the narrower the hem allowance should be, otherwise the amount to be reduced becomes too great to control effectively.

1. First applying adhesive the extra 3 cm allowance properly so that there is not any bulginess.
2. Placing the lining inside the folding mark about 1.5 cm attach at properly.
3. Now neatening the folding area with a bone folder perfectly.
4. Stitch exactly on the markings.
5. Trim around the shapes, taking care not to make them so narrow they fray away.
6. Press properly.

### **Making and attaching linings to skirts**

Linings are used for a variety of purposes but when used in skirts their main purpose is to prevent the skirt losing its shape. Skirts have a tendency to 'seat' if lining is not inserted. In this section only three ways of lining will be dealt with, the three which are most commonly used

- a) Half lining
- b) Mounting a lining
- c) True lining



#### **Half lining**

This is used to prevent seating, and is exactly as its name implies, a lining which is cut to just below seat level (approximately half the total length of the back ).

Otherwise it is similar in shape to the back to which it will be joined.

The hem of the lining is neatened by turning up a narrow machine hem.

The suppression at the waist is controlled by tucks.

Finally the half lining is sewn to the back. After this it is treated as one section.

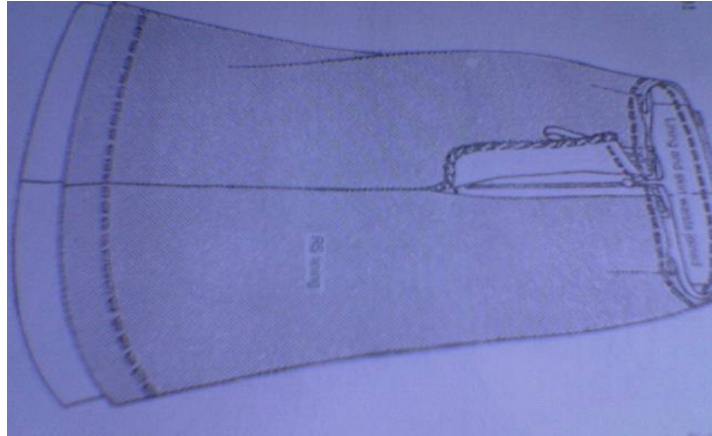
#### **Mounting**

Mounting is used when fabric either requires a little more stability, or is fairly transparent.

The lining is laid on to the WS of the fabric. ( it may be fractionally larger than the fabric. ) Keeping the raw edges together it is sewn flat on to the fabric all around the perimeter.

Dart positions are maintained by stitching the lining to the fabric, WS to WS, along the fold of the dart, e.g. from the centre of the notches marking the dart site to the end of the dart.

All sections are prepared in this way. The garment is then made up in the normal way treating it as one piece of fabric.



### **True lining**

A true lining is complete in form and is backed on to a garment which has been made up. It is cut slightly shorter than the garment and is usually slightly larger. When making a skirt lining the suppression is usually pleated instead of darted. This prevents any tightness occurring.

The seams are often left with raw edges unless the material frays very badly when partial neatening is desirable. The neatening is generally a third to a half the total length of the seam. This is the area that receives the most wear. (this applies to garment and lining.)

The hem is turned up and a second row of stitching is sewn on to the neatening row.

After the hem has been completed the hanging loops can be attached. The lining is then ready for insertion.

1. Turn the garment so that the WS is outside.
2. Turn the lining inside out (WS outside).
3. Pin the seam allowance of the lining opening to those of the garment. Make quite sure that when pinning the second side, the bottom of the opening sets evenly on either side.
4. Stitch the seam allowances only of lining and garment tighter.
5. Turn the lining through so that the WS is facing the WS of the garment.
6. Both waists should be divided equally into four. Matching these balance points, the two waists can be joined together.

### **Zip insertion**

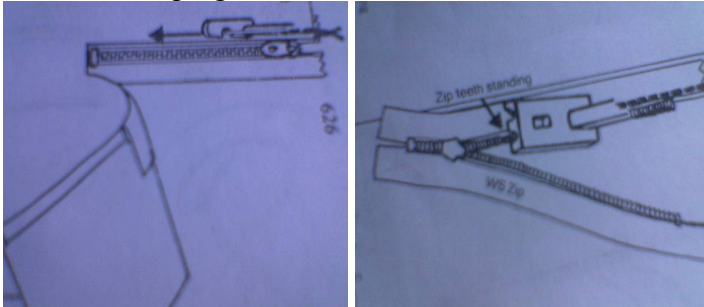
#### **Visible method**

This method of zip insertion results in the whole of the zip fasteners showing as a decorative feature of the garment. Because the zip is set into a single garment section it is necessary to face the bottom of the opening before putting in the zip. A small piece of self fabric or lining can be used for this purpose.

Before facing the bottom of the opening, the width of zip which is intended to be visible must be calculated. Obviously the width of the zip teeth is the main guide but also a certain amount of the tape will be visible. This is necessary because there must be enough

room for the slide to operate smoothly. For the purpose of this description the width of the opening is 6 mm.

The following figure shows the insertion of a invisible type zipper



The opening in the garment is cut 5 mm shorter than the intended opening. Stitch the facing to the opening, taking 3 mm seam allowance at either side and taking the stitching 5 mm below the opening. Stitch across the bottom at right angles to the previous stitching and continue up to the other side 3 mm. notch into the corners of the stitching, taking care not to cut the stitching.

Pull the facing through on to the WS of the garment, and press carefully. The facing will automatically turn 3 mm over along the unfaced part of the opening. Press this back also. The pressed edge is placed on to the zip and a zip foot is used to top stitch it into place. Pivot on the needle at the corners. Attach zip guard to complete.

### Inserting an invisible zip



This method of zip insertion appears very difficult, but in fact is very easy when the proper presser foot is used. It is also the only method where the zip is joined to the garment sections before the sections are seamed up.

This type of zip prevents the last 1-2 cm of the zip teeth from functioning. Therefore, when purchasing the zip it must be bought 1-2 cm longer than the

intended opening.

Lay the first garment section in position in front of the presser foot.

Position the zip RS facing the garment section (RS uppermost) and with the zip teeth slightly past the notch on the garment side.

Move the fabric and feed the zip teeth into the right hand channel of the foot (the needle is now on the left on the zip teeth). Secure the bottom of the zip with a pin.

Commence stitching the zip, making quite sure that the zip teeth are vertical as they are fed into the foot channel. If this is not done the stitching will not be close enough to the

teeth and when completed will show too much of the zip tape on RS. Stitch as far as possible up to slider cap, then back tack to secure.

Follow the same procedure for the other side, making sure that the balance marks on both garment sections are level.

The final stage is the seaming of two garment sections. Pivoting the balance marks have been kept together during the application of the zip the seaming is relatively easy. Seam up to the stitching, when is holding the zip in position. Back tack to secure the stitching.

## Waist finishes

When finishing the waist of a garment a degree of preparation is required which varies according to the type of finish and the location on the garment (choose the finish from the chart)

Waist finishes reference chart

Types	Description	Method	Additional materials
Invisible	Plain edge to the top of the skirt	Petersham	Petersham
		Petersham and tape	Petersham tape
		Petersham lining	Petersham lining
		Faced	Interlining stay tape
		Lined	Lining stay tape

When preparing waist lines for finishing, remember that the waist of a skirt is usually 1 cm larger than the natural waist line. The neatening for the waist, whether it is petersham of a waistband is cut the same size as the natural waist line (plus the extension). It is therefore, necessary to ease the skirt waist on to the waistband, facing or petersham.

The preparation takes place after the zip guard has been attached to the skirt.

The waistband has to be divided into two or four equal parts exclusive of the seam allowance at each end.

The waistband and the skirt are held at those points and stitched with the waistband uppermost (the feed of the machine will control the fullness of the skirt waist).

## Button Fixing

A snap fastener is a pair of interlocking discs commonly used in place of buttons to fasten clothing. There are various methods of attaching snap fasteners to material: by hammering, plying or sewing them. For plying snap fasteners, there are special snap fastener pliers.

1. Mark where the button will take place.
2. Then place the cap on front section of the bodice and make hole by applying pressure.

3. Again place the post in the inner portion of the garment
4. Socket is attached with the cap and stud is to the post.
5. Finally, socket will fasten with the stud.

## **4.8 FINISHING AND PACKING**

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### **4.8.1 IRONING**

Ironing is an essential element in the production of a perfectly finished, garment. A little more time can be spent on pressing operations, where as in production, the time scale may be limited according to the cost and quality of the garment.

First it is important to differentiate between "Top pressings" and "under pressing" as the terms are used in the industry. Top pressing is the final pressing of the garment before it is dispatched to the customer. Under pressing on the other hand is the pressing of individual parts during the making up of the garment. Pressing each piece before joining to the next makes the subsequent tasks easier and usually more accurate.

### **4.8.2 THREAD BURNING**

After stitching, the articles are checked carefully. Excess thread is removed either by trimming with a scissor or soldering in case of nylon thread. Thread burning is done carefully in case the soldering stick damages the stitch of the articles.

### **4.8.3 TRIMMING**

At the stage of finishing some product, which is produced by fold, edge construction and binding edge construction may have excess material (leather) on the edge of articles. In this case edge trimming is done by using sharp knives. Highly skilled persons should do trimming in case it damages the whole product become waste.

### **4.8.4 COLOURING**

Trimmed edges and any part of articles that needs color are colored by hand or edge coloring machine. As mentioned in pre-assembly stage, coloring is done carefully and after coloring excess paints are cleaned immediately.

### **4.8.5 CREASING**

Creasing operation is applied in school bag for decoration. This operation is done by hand or in case of bulk production it has to be done by universal stamping (creasing) machine.

### **4.8.6 FINAL INSPECTION**

Before the articles are sent to packing, strict quality control is observed for perfection in assembling, stitching, accurate and smooth functioning of fittings. Strict quality control

mechanism is observed from the beginning to the end at every stage of operation for producing high quality product.

#### **4.8.7 PACKING**

Leather clothing items, which can be damaged, molded or chapped, must therefore be packed carefully and securely.

#### **PROCESS**

- To flat the garment
- To place thin tracing paper on the garment
- To fold the sleeves on body
- Place button cover for preventing impression on other area.
- To place ten garments like this into one carton
- To keep 3 or 4 packs of silica gel on bottom and top of the carton for moisture absorbing purpose.
- To cover the carton with polyethylene paper for protection purpose

#### **POINTS TO CONSIDER WHEN PACKAGE**

- Do not fill the boxes just with the product, but pack a number of similar items in smaller box, or use some cardboard layers.
- Carefully indicate which products and in which quality is packed in each box, so that it won't be a mystery to the importer.
- Before packing, products should be protected by plastic bags in order to avoid damage from rain or moisture.
- Each box should have a packing list, which gives a specification of all products in terms of quality, type color, etc

#### **4.9 Specification Sheet:**

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Article	Name: Client: Qty: Date: Art. No.	Gored Skirt B C L T 01 June/2008 St -01
Material	Upper:	Ship leather Colour: black Thickness: 0.3-0.5 mm

		Lining: Taffeta(Black) Zipper: Metal
Character	Med. Soft, fancy.	Fashionable appearance

Work	Seam Stitch Stitch density	Folded edge Lock Stitch 3/4 stitches per cm
Value	Fashionable	Cost: Tk 1652
Packaging	Tissue, Polybag, silica gel packet.	Logo: Place in the position as requirement.

#### **I) Outer-Leather**

Serial no.	Component	Folding allowance	No of pieces
01	Front Hip Back Hip	10mm-all side 30mm-bottom + 10mm-zipper extension	2*2=4
02	Bottom Panel	10mm-all side 30mm-bottom	3*2=6
03	Waist band	10mm-all side + 30mm at back	2

(ii) Lining materials:

Component	Materials	Colour	Type
Front part lining	Cloth	Black	Taffeta
Back part lining			

Note: Soft light weight, sufficient durability, uniformity of substances.

(iii) Thread specification:

Thread	Type	Thread No.	Ply	Colour
Top	Cotton	60	3	black
Bottom				

Note: Extensibility, sew ability, durable.

(iv) Needle specification:

Size	System	Point	Shank diameter.
38.5 mm	134	L/R	2mm

Note: Durability, adequate, strength, heat resistance, abrasion resistance.

(v) Stitch specification:

Types of stitch	Stitch distance	Stitch gauge
Lock stitch	3 stitches /cm	10 mm for panel and 1.5mm for waist band from the edge

Note: Decoration, joining, reinforces.

(vi) Button specification:

Types of button	Colour	Parts of button
Metal	Bronze alum	4

Note: Decoration, joining.

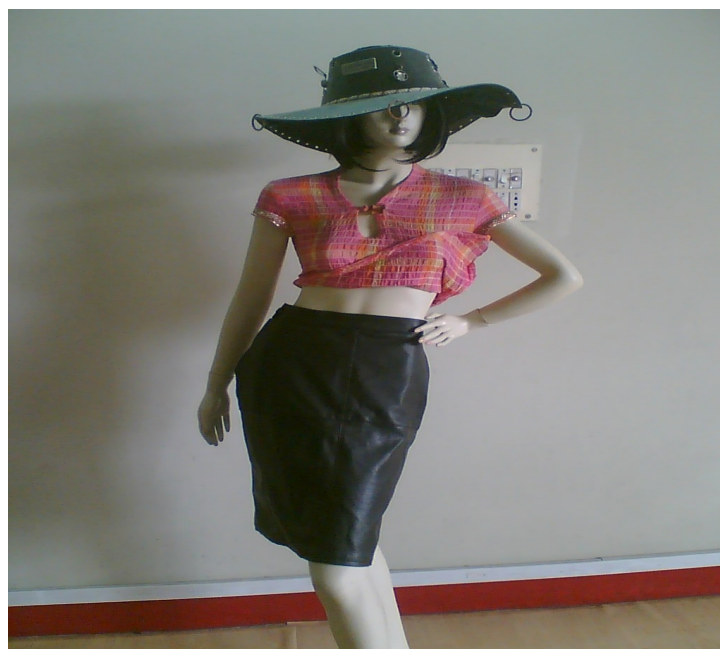
(vii) Quality specification:

- i. Edge stitching not to more then 1.5mm from the edge.
- ii. For lapped seam stitch density to be 3 stitch /cm.
- iii. No missed stitches acceptable.
- iv. No access thread loop acceptable.
- v. No dirty upper acceptable.
- vi. Use rubber solution for lining fitting with upper.

**Products Image**



Gored Skirt



Gored skirt

## Unit E

### 5 Testing of the Leather used in the specified flared skirt

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#### 5.1 PHYSICAL TESTING METHODS

The finished leather samples under the experiments were tested for their various physical properties. These properties indicate about the quality of the finished leathers produced. Due to limitations of time and the availability of instruments, selected physical tests were accomplished and these tests are briefly discussed here.

##### 5.1.1 Measurement of Tensile Strength and Percentage of Elongation at Break

The tensile strength and elongation at break was measured by electronic tensio meter. The process was followed by official method of analysis (1965), Ref./4(c)4(d)2, SLP-6, IUP/16.

###### a) Tensile strength:

Tensile strength is the force (Kg) per unit area of cross section (sq. cm) required to cause a rupture of the test specimen.

So, tensile strength of the specimen was calculated using following formula.

$$\text{Tensile Strength} = \frac{\text{Breaking Load}}{\text{Thickness in cm} \times \text{Width}}$$

###### b) Percentage elongation at break:

Elongation at break for these specimens was calculated from the distance of the jaws after breaking was occurred.

$$\text{Elongation at break} = \frac{\text{Distance increased by breaking}}{\text{Distance of the two jaws in normal}}$$

### 5.1.2 MEASUREMENT OF STITCH TEAR STRENGTH:

The double holes stitch tear strength can be defined as the load (Kg) required tearing the sample of the leather between two holes of 2mm. diameter each and whose centers are 6mm apart, expressed on its unit thickness (cm). So, stitch tear strength of the specimen was calculated by the following formula:

$$\text{Stitch tear strength} = \frac{\text{Tearing load in Kg}}{\text{Thickness in cm}}$$

The sampling for this test was carried out in both parallel and perpendicular directions to the backbone and the test specimen was a rectangular piece of size - 50 mm X 25 mm.

### 5.1.3 MEASUREMENT OF TEARING STRENGTH:

The tearing strength of leather can be defined as the load in Kg required tearing the leather sample if its thickness was one centimeter.

$$\text{Thus, tearing strength, Kg/cm} = \frac{\text{Tearing load (Kg)}}{\text{Leather thickness (cm)}}$$

For this test also the sampling is done both parallel and perpendicular to the backbone and the mean thickness of the test specimen is determined. A slot or a straight cut of 20 mm length is made on the leather test sample of dimension (50 X 25) mm.

### 5.1.4 WATER ABSORPTION OF SAMPLE LEATHER:

A disc of leather is cut with a circular knife of 2.5 cm diameter and weight is noted. A one-litter beaker is taken with water. The leather samples are immersed into for 24 hours. Then the specimen is taken out from the beaker and excess water is removed by filter paper and taken weight. The specimen is again put into beaker. After 2 hours and again 24 hours, it is taken out from the beaker and taken weight. After removing excess water the percentage of water absorption is measured.

#### 5.1.5 MEASUREMENT OF WATER PROOFNESS:

A square test specimen is folded and secured in two V-shaped clamps, which have closed ends so as to form a trough. The trough is then immersed in water and the clamps oscillate at a constant speed so that the specimen is repeatedly flexed. The test is stopped at the first sign of water penetration through the test specimen.

#### 5.1.6 TESTS FOR DRY AND WET RUB FASTNESS:

The tests were carried out by official's method analysis SLF 5. This is a very useful test for finished leather. A revolving pad is made to rub the leather for a successive number of revolutions and the effects of such rubbing under both the wet and dry conditions are studied using a Grey scale. While a 2.5 kg load is used for dry rubbing a 730 g load used for wet rubbing.

The numbers of revolutions for wet rub fastness are 32, 64, 128, 256, and 1024. Every time a fresh surface of the leather is used for rubbing. For dry rub fastness test the number of revolutions are 32, 64, 128, 256, 512 and 1024. The number of revolutions required to cause a contrast of grade 1 (if this is 1024 or less) and the contrast grading often 1024 revolutions are found out and a description of the nature such change is record.

#### 5.1.7 TESTS FOR COLOUR PERSPIRATION: SLF 426 (IUA 426)

By fastness of colour of leather to perspiration is meant its resistance to the action of human perspiration. A piece of specified undyed textile, wetted with artificial perspiration, is placed on the side of the specimen to be tested. The specimen is also wetted with artificial perspiration. The composite specimen is then left under pressure for a specific time in an appropriate apparatus. The specimen and the staining of the textile or assessed with standard Grey scale.

### 5.2 CHEMICAL TESTING METHODS

#### 5.2.1 DETERMINATION OF CHROMIC OXIDE CONTENT

##### Principle:

The chromium present in the leather or leather ash is oxidized to the hexavalent state followed by iodometric titration.

Calculation:

Calculating the following percentage, we get,  
Chromium oxide ( $\text{Cr}_2\text{O}_3$ ) in the leather,

$$\text{Percentage by mass} = \frac{\text{Ti} \times 0.00253}{\text{Mo}} \times 100$$

Where Ti is the volume, in milliliters, of 0.1 N thiosulphate solution used for the titration in the test. And

Mo is the mass, in grams, of the original sample of leather.

(1ml of exactly 0.1 N Thiosulphate solutions is equivalent to 0.00253 g of  $\text{Cr}_2\text{O}_3$ )

## 5.3 RESULT AND DISCUSSION

### 5.3.1 PHYSICAL TEST

TABLE NO – 1  
DATA FOR TENSILE STRENGTH AND PERCENTAGE OF ELONGATION  
AT BREAK

Sample No	Tensile strength and Elongation at break			
	Perpendicular		Parallel	
	Tensile strength (Kg / sq cm)	Elongation at break	Tensile strength (Kg / sq cm)	Elongation at break
A	400	41%	200	53.33%

TABLE NO – 2. DATA FOR STITCH TEAR STRENGTH

Stitch Tear Strength		
Sample No	Perpendicular (Kg/cm)	Parallel (Kg/ cm)
A	276	256

TABLE NO – 3. DATA FOR TOUNGE TEARING STREANTH

Sample No.	Perpendicular (kg/cm)	Parallel (Kg/ cm)
A	83	66

TABLE NO – 4. DATA FOR WATER ABSORPTION OF SAMPLE LEATHER

Sample	Initial	Weight after (gm)			% of water absorption		
No	Weight				after		
		hours	2 hours	24 hours	hours	2 hours	24 hours
A	0.42	0.86	.98	1.02	73	78	80
B	0.58	0.96	1.2	1.3	65.52	107	124.13

TABLE NO – 5. DATA FOR WATER PROOFNESS TEST

Sample No	After 500 cycles	After 1000 cycles	After 2000 cycles	After 3000 cycles
B	No penetration	No penetration	Slightly	Full

TABLE NO- 6. ADHESION OF FINISH FILM TEST

1. Leather finish film stacked with the sheet.
2. Leather finish film torn after 24 hours at the weight of 2.75 kg

So adhesion of finish film is not so good.

TABLE NO – 7. DATA FOR DRY AND WET RUB FASTNESS

Dry Rub fastness rating								Wet Rub fastness rating					
Sample No		32 Rev	64 Rev	128 Rev	256 Rev	512 Rev	1024 Rev	8 Rev	16 Rev	32 Rev	64 Rev	128 Rev	256 Rev
A	L/R	5	5	5	5	5	4/5	5	5	5	4/5	4/5	4
	Felt	5	5	5	5	5	4/5	5	5	5	4/5	4/5	3/4

TABLE NO – 8  
DATA FOR COLOUR FASTNESS OF LEATHER TO PERSPIRATION

Test specimens	Grey Scale Rating
Sample	A
Wool Washed	4
Acrylic (courtelle)	3/4
Polyester (Terylene)	3/4
Nylon 6,6	3/4
Bleached Unmercerized Cotton	4
Secondary Cellulose Acetate	4
Total Leather specimen	4/5

### 5.3.2 CHEMICAL TEST: TABLE NO – 1

DATA FOR CHROMIC OXIDE CONTENT DETERMINATION

Sample No	% Of Chromic oxide content
A	2.8 %

**Unit F**

**6 Costing sheet of the Gored skirt**

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**Standard Costing sheet for Ladies Gored Skirt**

Style no: 106

omer: Ladies

Costing for: 100 Pieces

Price Validity: From June to December 2008

Currency Rate:

Material Name		Quantity	Unit	Rate	Cost Tk
Article					
Upper: Goat		1125	Sq.ft	100	112500
Runner		100	pieces	5	500
Needles 90/100		5	pieces	10	50
Thread 40/3		400	meter	5tk/Meter	2000
Lining-Taffeta	Article	100	Yard	40	4000
Zipper Size-5		100	metal	5	500
Snap Button	Article	100	pieces	2	200
Pattern Paper		3	pieces	17	50
Consumables (Adhesive for folding, Rubber solution etc)		40	pat	50	1500
Packing Box		100	pieces	2	200
Bag Carton		10	pieces	100	1000
Finishing materials ( Wax, Lacquer etc)		10		50	500
Others					400
<b>Total Materials</b>					123400
<b>Labour</b>					
Cutting					1000
Assembling					2500
Stitching					1500
<b>Total Labour</b>					5500
<b>Direct Expenses</b>					
Dies					1500
Punches					500
Others Tools					200
Miscellaneous					500
<b>Total Direct Expenses</b>					2700
<b>Prime Cost(Materials +Labour +Direct Expense)</b>					131600
<b>Forwarding &amp; Clearing Cost ( 5% of Prime cost )</b>					5432
<b>Production Over Head</b>					
Machine Depreciation cost					1000
Samples					500
Rejects & repairs					800
Govt. tax					100
Light					400
Fuel					450
Power					500
Cost of Design					200
Cost of pattern Making					50
<b>Total production O/H</b>					4000
<b>Administration Over head</b>					
Salaries					2500

## **Unit G**

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### **7 Leather and Leather goods Sector In and Out and the Recommendations for the Improvement of this Sector**

#### **17.1 Historical Background**

Before the birth of Bangladesh the country inherited a small number of tanneries engaged in the production of Wet Blue Leather mainly for the requirement of big domestic tanneries. After the emergence of Bangladesh, the sector suffered a sudden vacuum at the management level of the then existing tanneries. But the Government succeeded in overcoming the crisis through formulation of suitable policy of privatization of industries. After the initial period of 1980s, the production of crust and finished leather was emphasized extending certain incentives to the entrepreneurs. This resulted into the positive development of the sector in switching over to producing crushed/finished leather.

Bangladesh has the abundant supply of raw hides and skins which are the basic raw materials for the leather industry. Therefore, leather and leather products including footwear has been regarded as a major export sector of this country. For the last couple of years, the leather sector has been grouped by the Govt. as a “Thrust Sector” in view of the great potential. As a result, the annual production of this sector has already crossed the level of 200 million square feet, out of which only 20% is required to meet domestic demands and the rest is exported. The export earning of the sector during the recent past is shown in the following table.

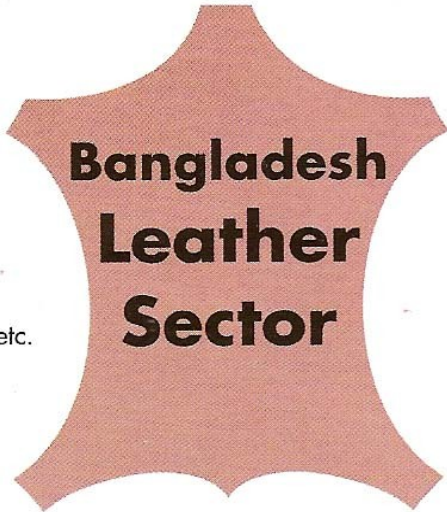
<b>Year</b>	<b>In Million US\$</b>
1999 – 2000	246.89
2000 – 2001	290.68
2001 – 2002	252.49
2002 – 2003	229.72
2003 – 2004	265.91
2004 – 2005	220.93

Source: Export Promotion Bureau

## Synoptic View of Leather Sector in Bangladesh

### Finished & Crust Leather

- ◆ Bovine
- ◆ Water Buffalo
- ◆ Goats Skin
- ◆ Sheep Skin
- ◆ Kangaroo (Raw & Pickles Imported & then exported as finished leather and shoes as well)



## Bangladesh Leather Sector

### Leather Goods

- ◆ Bags, Wallets
- ◆ Over Nighter
- ◆ Brief Case
- ◆ Shoulder Bags etc.
- ◆ Luggage

### Leather Footwear

- ◆ Closed Shoes
- ◆ Men's & Ladies
  - Derby
  - Oxford
  - Casual
  - Moccasin
  - Winter Boots
- ◆ Sandals/Slipper
- ◆ Espadrille (Combination of Jute & Leather Upper)

### Other Leather Articles

- ◆ Leather Garments
- ◆ Waist Belts
- ◆ Wrist Watch Belt
- ◆ Hand Gloves (Dress & Industrial)
- ◆ Organizers and similar articles

## 7.2 Global Leather Garments Industry

The global import of leather garments remained almost stagnant during 1992 – 2003 but for a marginal movement from US\$ 4321 million to US\$ 4131.86 million. In terms of its share in the total global import of leather and leather products during this period, it represents a negative movement from 8% to 6%

India's export of leather garments increased from US\$ 326 million in 1992 to US\$ 379 million in 2001, accounting for a share of 20% in India's total leather and leather products export of US\$ 1936 million.

India's share in global leather garments import increased marginally from 7.53% in 1992 to 8.00% in 2001.

**The statement showing global import of leather garments and India's export and its shares during 1999 to 2003 is given below.**

Details	1999	2000	2001	2002	2003
World Import of Leather Garments	3162	4456	4737	4223.19	4131.86
India's Export of Leather Garments	347.28	460.45	378.75	272.08	301.08
India's Share	10.98%	10.33%	8%	6.44%	7.29%

Source: ITC, Geneva,

(Value in Million US\$)

From the above statement, it can be seen that India holds a meager share of 4.89% in the USA's total import of leather garments, which along accounts for 39% of the global leather garments import trade. During 2002, there has been a decline in the USA's import to leather garments to US\$ 1487 million as well as India's export of leather garments at US\$ 47 million, further reducing India's market share to 3.13%.

Though the share of India in some major markets is quite significant, it is yet to improve the share in certain other markets like Japan. India's share in Japan is a meager 0.83% only.

The USA is the largest importer of leather garments. During 2001, the USA's import of leather garments stood at US\$ 1851 million, accounting for a major share of 39% in the global leather garments import. This is followed by Germany holding a share of 11%, Japan 7% France 7%, the UK 6%, Hong Kong 4%, Italy, 4% Spain 4%, Canada 2%

Netherlands 2% Switzerland 2%, Belgium 2% Austria 1.37% Denmark 1.22%, Sweden 1.08%, Russia 0.68% and Greece 0.63%

<b>Trend in World Trade in Leather and Leather Products and share of India and certain other competing countries 1999-2003</b>					
			(Value in million US\$)		
	1999	2000	2001	2002	2003
World Import	71701.37	77330.00	80784.13	81876.84	88182.07
Export from China	11432.01	13741.54	14691.95	16160.70	19240.56
China's share in world import%	15.94%	17.77%	18.19%	19.74%	21.82%
Export from Italy	11527.92	12286.64	13124.72	12942.28	13985.29
Italy's share in world import%	16.08%	15.89%	16.25%	15.81%	15.86%
Export from Korea Rep.	2275.28	2465.84	2160.13	1828.85	1627.95
Korea's share in world import%	3.17%	3.19%	2.67%	2.23%	1.85%
Export from Brazil	1985.05	2427.44	2616.38	2564.01	2778.62
Brazil's share in world import%	2.77%	3.14%	3.24%	3.13%	3.15%
Export from Thailand	1293.48	1304.27	1302.76	NA	1272.36
Thailand's share in world import%	1.80%	1.69%	1.61%		1.44%
Export from Indonesia	1761.49	1923.00	1737.69	1309.95	1325.68
Indonesia's share in world import%	2.46%	2.49%	2.15%	1.60%	1.50%
Export from Taiwan	1588.17	1527.00	1312.88	1300.98	1238.11
Taiwan's share in world import%	2.21%	1.97%	1.63%	1.59%	1.40%
Export from Turkey	404.60	448.50	485.18	461.05	533.14
Turkey's share in world import%	0.56%	0.58%	0.60%	0.56%	0.60%
Export from Mexico	803.30	870.28	707.40	640.53	667.37
Mexico's share in world import%	1.12%	1.13%	0.88%	0.78%	0.76%

Source : ITC, Geneva

These sixteen countries together holds a major share of about 95% in the global leather garments import. India's export of leather garments to these sixteen countries during 2001 – 2002 stood at US\$ 355 million, out of their total import US\$ 4461 million, accounting for a share of 8%.

**A Statement showing major exporters of leather garments during 1998 – 2001.**

Importing Country	1998	1999	2000	2001
USA	969.85	1057.16	1810.09	1850.82
GERMANY	69.18	571.60	526.22	522.94
JAPAN	94.79	151.41	334.83	312.75
FRANCE	187.57	187.41	222.79	311.57
UK	178.72	173.26	255.06	264.65
HONG KONG	145.30	137.48	238.39	196.40
ITALY	151.94	124.34	141.32	190.65
SPAIN	88.65	108.01	149.06	185.00
CANADA	63.15	64.69	102.29	106.49
NETHERLANDS	117.26	87.76	91.20	99.87

Source : ITC, Geneva,

(Value in Million US\$)

**7.2 1. Export performance:**

Source: EPB

Leather manufacturing enterprises produce a variety of leather (e.g. wet-blue, crust and Finished) and leather goods (e.g. shoes, bags, readymade leather garments etc.)."

Bangladesh produces about 220.70 million square feet leather including 117.54 million square feet crust leather for export and 1069.17 million square feet various type of finished leather for exp-ort and local consumption. Export of leather, Leather Footwear and Leather Goods

Bangladesh earned 265.91 million US dollar from the leather, leather footwear and leather goods in the year 2003-2004.

Table-5: Export of Leather, Leather Footwear and Leather Goods

Year	Leather		Leather Footwear		Leather Goods		Total
	Export	%Of total	Export	%Of total	Export	%of total	
1998-1999	168.25	76.69%	46.55	21.22%	4.59	2.09%	219.39
1999-2000	195.05	79.00%	48.26	19.55%	3.58	1.45%	246.89
2000-2001	253.93	87.36%	33.63	11.57%	3.12	1.07%	290.68
2001-2002	207.33	82.1%	41.29	16.4%	3.87	1.5%	252.49
2002-2003	191.23	83.2%	35.06	15.3%	3.43	1.5%	229.72
2003-2004	211.41	79.50%	50.86	19.13%	3.64	1.37%	265.91
2004-2005	232.48	76.64%	87.55	33.87%	70.85	23.36%	390.88
2005-2006	257.27	88.13%	95.44	39.75%	7.12	2.29%	349.83

Source: Export Promotion Bureau

**Leather, Leather goods & Footwear (Export oriented) Projection of Production, Export Earning and Employed Generation by the year 2015 AD**

Sector	No. of unit	Production (Total)	Domestic use	Available for export	Export earnings in US \$	Employment Generation		
						Admin	Production	Total
1	2	3	4	5	6	7	8	9
Tannery for finished leather production	250	300m sft	45m sft	128ms ft	256	3500	24.500	28.000
Footwear industry	400	47m sft. (15.66pcs)		47 m sft (15.66	235	3200	91.600	94.800

				m pcs)				
Leather goods industry	400	50 m sft (2m pcs)		50m sft. (2m pcs)	208	2000	40.400	42.400
Leather goods industry	500	30m sft. (8.57mpcs)		30 m sft (8.57 m pcs)	85.7	2500	47.500	50.00
Total	1550	300 m sft	45m sft	255m sft	784.7	11.200	2.04.00	2.15.200

N.B.The domestic uses will be 45 m sft. This portion is not identified on projection. It depends on type of units to be set up for local requirements.

### 7.3 Export Policy 2006-09

#### Steps toward Export Diversification

##### Highest Most Priority Sectors

Most priority sectors will refer to those product sectors which have special export potentials yet could not be utilized properly due to certain constraints, but more success is attainable if adequate support is rendered to them. For example:

- 1) Agro-products and agro-processing products;
- 2) Light engineering products (including auto-parts and bicycles);
- 3) Footwear and leather; products
- 4) Pharmaceuticals products;
- 5) Software and ICT products; and
- 6) Home textile.

##### Special Development Sectors

Product sectors which have export potentials but whose production, supply and export base are not well organized will be included in special development sectors so as to strengthen their export base. The following product sectors will be included in the special development sectors:

- 1) finished leather production;
- 2) frozen fish production and processing;
- 3) handicraft products;

- 4) electronic products;
- 5) fresh flower and foliage;
- 6) jute products;
- 7) hand-woven textiles from hill areas
- 8) uncut diamond; and
- 9) herbal medicine and medicinal plants.

## **Product-Specific Export Facilities**

### **Leather Industry**

Weak leather industries will be given credit **punoTOF**SHILIKORON facilities through policy support;

Initiatives will be taken to increase export through increased competitiveness of leather and leather products in the international market by introducing productivity increase and product development activities;

Local production of import-substitute necessary chemicals for leather processing, different components for footwear and different accessories for leather industry will be encouraged. Foreign investment or joint investment will be encouraged in this regard;

In order to reduce to losses during leather collection, preservation and processing levels, different awareness building initiatives will be taken regarding the removal of the skin from the animal, preservation, transportation etc. Separate training courses and workshops for butchers and leather traders will continue to take place.

Several steps will be taken by the Leather Sector Business Promotion Council for the overall development of this sector , and business entrepreneurs and exporters will be affiliated to these activities;

Foreign investments and joint venture investments in leather products and footwear industry will be encouraged;

The existing bond facilities will be further simplified and updated for 100% export-oriented leather industries;

Existing duty and tax return procedures will be simplified;

For the development and diversification of leather products, an integrated “plan of action” will be taken to increase the productivity of the leather industry by strengthening research activities and undertaking certain activities such as BMRE for weak leather industries.

To create markets, cooperation will be provided to entrepreneurs for participation in international fairs and exhibitions;

Initiatives will be taken to establish slaughter houses in the major cities of the country with the help of divisional municipalities;

All possible cooperation will be rendered for transferring the factory unit in the under-construction Tannery Village in Savar;

Initiatives will be taken to establish a centralized waste management plant in the Tannery Village in Savar, and installation of clean technology will be encouraged;

The initiative to establish modern chemical laboratory and service centers to ensure the quality of leather and leather products will be implemented;

Steps will be taken to provide trainings for entrepreneurs at home and abroad so as to get rid of the management crisis in the leather industry;

Cattle farming and import of raw hide/ skin during lean season will be encouraged to make raw hide/ skin easily available;

Lower use of nitrogen and sodium chlorate in the leather industry will be encouraged;

In order to increase the sales negotiation and marketing capacity of tannery owners, cooperation will be rendered to improve the business relations between tannery owners and agents;

While transferring factory units from Hajaribag to Savar Tannery Village, tannery owners will be cooperated in their plans to produce finished leather from crust leather.

Initiatives will be taken to make the design development center more dynamic so as to bring diversity to footwear and leather products;

For the development and betterment of export-oriented leather products, several steps including the establishment of design and fashion institutes and modernization of the Leather Technology College will be taken;

Necessary steps will be taken to establish backward/ forward linkage industries for the production of spare parts used in the production of leather products including footwear; and

Necessary measures will be taken to ensure the easy availability of chemicals and other materials for the leather industry.

#### **7.4 Recommendations for the improvement of the leather goods sector**

Export oriented leather products industries could be termed as highly value added sub-sector in the leather field of Bangladesh. Bangladesh has fine quality cattle hides and top quality goat skins along with valuable water buffalo and one of the cheapest labors in the world. We need to overcome the weakness of the industry and only then our dream of “Brown Revolution” in Leather goods field of Bangladesh will turn into reality.

An international magazine recently published the following keypoints:

- South East Asia will continue to dominate global Leather goods manufacture
- Brand Image is increasing in importance
- Sourcing companies are increasing their influence on manufacturers worldwide
- Clothing stores and super markets are selling an increasing proportion of Leather garments.
- Consumers are demanding greater comfort, quality and service
- Environmental issues will be a key influence on technological developments
- New material developments will concentrate on high performance and quality
- Effective application of information technology developments is extremely important throughout the industry.

If we study each of these recommendations in the context of the Bangladesh leather goods industry we can distil certain concrete policy directions for our sector, which if properly formulated and implemented, can help bring about the much – awaited “brown revolution” in Bangladesh.

First, the overwhelming dominance of the Far East i.e., china as a threat but also as an opportunity as a lot of buyers feel over dependence on china and look for reliable alternative suppliers. These fears often manifest themselves in the form of quota restrictions, antidumping duties or tariff barriers on products from Far East, which can be an opportunity for us. So we need to become aware of the global situation and use it to our advantage. Furthermore we can learn from the Chinese model where appropriate, for example by studying how they have developed their components industry, or by identifying segments or market niches where they are not predominant –e.g., leather moccasins. Their government policy in terms of duty examples, tax breaks, foreign exchange benefits and even infra structural support such as low cost housing for migrant labor and training facilities should serve as a blue print for us.

Second, the importance of brand image is an area where all the parties involved, suppliers, government, political parties need to sit down and address this issue. We have already been saddled with a very poor world image that has now been beamed all over the world by satellite TV and the internet. If we cannot find a way to agree on a long-term strategy to repair, improve and transform this image we can never succeed. The example of Japan once known as a producer of only cheap automobiles and now seen as one of the global leaders in technology, development and safety can serve as a role model. We have the advantage In Bangladesh where some of the biggest brands in the world are already sourcing garments because primarily of the Quota advantage. We need to ensure that these brands and buyers act as image ambassadors for Bangladesh in

general by ensuring that we provide them with a competitive and facilitative workplace. This means an absolute stop to the HARTAL culture, revamping the support government agencies such as Customs, NBR, Dhaka Airport, Chittagong Port to name but a few. This can only be done if there exist political will at the highest level, a spirit of co-operation and tolerance, and a willingness to put Nation before self or party.

Third, the growing influence of buyers on markers mean that we need, work more as partners rather than adversaries. The enabling environment mentioned above is critical for success, as is the development of the necessary linkage industries. Govt. and policy makers need to study how this growth can be accelerated and supported.

Fourth, the increasing importance of supermarkets and clothing stores as a major sales channel means once again the need for faster response capability, shorter lead times and greater synergistic opportunity for Bangladesh through its garments base. The critical need is to build up the necessary human resources as well, such as designers, pattern cutters etc. which given the high level of unemployment amongst educated youth should be very feasible.

Fifth, demand for more comfort, quality and service is an extremely important driving force for the Bangladesh footwear sector as will have to realize that there is no long term future to being merely the lowest cost manufacturer. Today even when the consumer buys a low priced article he /her demands minimum levels of comfort, quality and service. These minimum levels are constantly being raised and we need to respond to that. On time delivery in this day of just in time inventory is taken as a given and the penalties for failing are very high. It will be fallacy to think that buyers will flock to Bangladesh just because we have cheap leather and labour. We need to create value addition in our products be it through utilization of more labour, or use of special materials or design innovation – as well as offer competitive price and service.

Sixth, the “green” factor is becoming more and more important as the end consumers are becoming more aware of environmental degradation and the links with industrialization especially in developing countries. The power of the media takes the images of damage to the environment caused by unplanned growth right into the homes of the end customers, and we cannot hide. It is therefore imperative, particularly for industries like leather and footwear, to be environmentally responsible to the extent possible. The environment is not limited only to the air, water and soil but also to working conditions, occupational safety and hazard as well as labor practices. Bangladesh needs to have a clear position on these issues for the short term, medium term and long term, which will allow us to retain competitive advantage and still adhere to the global standards.

Seventh, the development of new materials driven by the demand for high performance and quality means that we have to be able to access and resource new materials quickly, efficiently and competitively. This requires a high level of awareness of the market place as well as a very efficient import procedure as well as a liberal import regime. High

tariffs on shoe components or raw materials serve no purpose and merely hold back the improvement of standards in the domestic industry. Bangladesh needs to do away with the currently prohibitive duty structure on components and raw materials as it earn almost no revenue for the exchequer; rather it makes smuggling, under invoicing and other illegal forms of trade lucrative for some business people. In the face of competition local quality will be forced to increase, pricing will be more competitive, joint ventures will take place and the support infrastructure for the footwear industry will be created. This also means that we will have to reinvent our existing system of import through Master L/C, back to back L/C etc all of which are time consuming and expensive. In these days of shorter and shorter lead times and constant pressure on margins, buyers are no longer willing to tie up funds in advance on letters of credit for several weeks which are then used to finance L/C's to suppliers on deferred terms. This procedure was relevant when the garment industry just started in Bangladesh and the buyers were also the suppliers of all the trims. But today buyers just want to buy, they do not want to get involved in the logistics of sourcing raw materials etc; the supply function is totally independent from the buying function. Therefore if we insist on these points our potential buyers will merely say that they do not need to deal with all this if they buy from china, India or Eastern Europe and so that is where they will go.

Eighth, the effective application of information technology in this industry as in other industries can open up a whole new dimension to this sector. Particularly for distant producers like Bangladesh the advent of the Internet for collecting market information, sourcing materials, promotion and advertising can be a tremendous boon. We need to learn how to harness this power and develop the skills to utilize it. The opportunity now exists to completely bypass the middlemen, but we have to overcome the handicap of distance and lead times.

In order to make the above recommendations effective we have to take some steps as soon as possible. We have to give the industrialists necessary opportunities. For this I recommend the following ways of solution to overcome the Barriers of Leather goods Business of Bangladesh:

1. Good Relation between Tannery Owners and Leather Goods Manufacturers should be established:

Proper policies have to be developed to influence integration between finished leather producing tanneries and leather goods industry's entrepreneurs to ensure supply of quality finished leather at reasonable prices. The high profit making tendency of finished leather supplier has to be minimized through formulating of certain incentives.

Entrepreneurs of export oriented leather goods factories that do not have tanneries, have to themselves produce finished leather, Phoenix Leather Complex and some other tanneries are now extending complete processing services through most modern tannery machines from soaking to finishing on job work basis. Entrepreneur of export oriented leather goods factories can come forward to buy raw hide and chemicals

and employ skilled Leather Technologist and produce finished leather as per their requirements and standard at reasonable price. The entire quality of raw hides could be utilized, by producing required lining leather with low grade wet-blue, which remains after producing finished upper leather. As a result, they would be able to produce high quality finished leather and after wards export leather goods to international market with competitiveness in their favor.

## 2. Establishment of Leather Goods and Development Centre

In order to overcome the lack of skilled manpower of leather goods industries of Bangladesh, one of the greatly self needs is to establish a leather goods Design and Development Centre. This institute can provide practical knowledge of pattern cutting, design and production phenomenon to the youths of S.S.C level. Then the country will get the efficient manpower for the development of its leather goods sector and a true brown revolution will be happened.

In view of the required infrastructure facilities and also the fact that, leather goods industries are located around Dhaka city, the centre of institute should be set up within the radius of say 50 km. from the Dhaka city centre. Most suitable location could be around Shafipur, Joydebpur etc. say 4-5 acres of land should be reasonably adequate to accommodate the complex.

The centre should have training department, market analysis department, quality testing and certification depart and promotion and technology transfer department. The envisaged FDDI/LSC would entail as illustrated below:

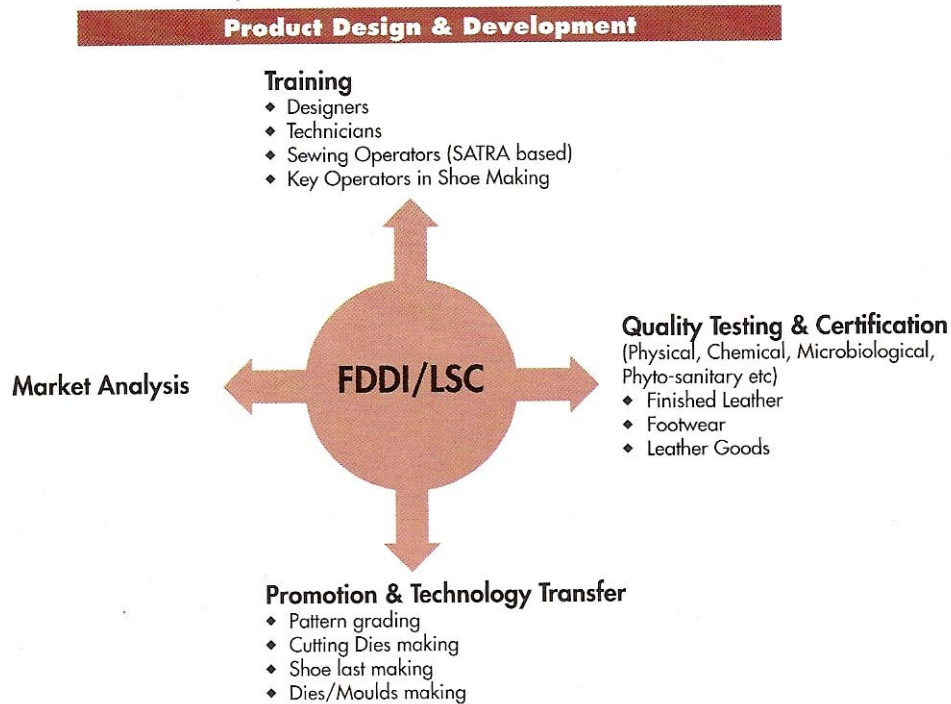


Figure-2: Suggested diagram of FDDI/LSC

So our Govt. as well as all the concerned authorities should take proper steps to set up such kind of Institute in the country as early as possible.

3. Required infra-structure facilities should be increased in marketing of leather goods.

The initial step to enter into the international leather goods market is to participate in international leather goods fairs with proper preparation. Because it is well known to all that participating in the international fairs and expositions is always beneficial for the producers of fashionable items. Here they can present their products and also see the products of others in one complex. They can see the fashion trend, changes in designs and color for technological development and so on. Export Promotion Bureau (EPB) and the Embassy of Bangladesh in the foreign country can play an important role to arrange the participation of industrialists of Bangladesh held at different countries. Along with Government and other Non-government Organization (NGO) can also expand their hand in this case.

4. Government incentives and opportunities should be increased:

To survive in the competitive international market bigger incentive must be provided on leather goods export. Here it is worth mentioning that previously there was no incentive, now the authorities have introduced 15% incentive. Bonded ware house

facility tax holiday facility should offer more and more industry according to their commitment and production capacity.

Special facilities should be given to the entrepreneurs who want to set up new production unit. At present in India no licensing is required for setting up production units in leather sector including leather goods. Bangladesh government can also follow this example to promote the leather goods industry of Bangladesh.

5. High import duty on the import of leather goods component and accessories should be decreased:

Most of the machineries accessories leather goods industries are to be imported from the foreign country. The major supplier of Bangladeshi leather goods industries are Italy, Germany, Canada, China, Hong Kong and India. To import the machine, the entrepreneurs have to pay high import duty. But to promote the footwear industry of Bangladesh government should decrease the high import duty as early as possible. The present duty (25% + vat) 62.5% should be decreased to (5% + vat) 28% to import leather goods component.

6. Introduction of information technology:

Now it is the age of information technology. So being an exportable item our leather goods industry should not remain detached from this global way of communication.

Internet, a strong media of communication should be introduced in leather goods business. This can be used in searching world leather market, latest fashion and design trend, and also to communicate with buyers, to receive order and so on.

7. Duty on import of wet-blue leather should be exempted:

It is true that our country has abundant supply of hides and skins and consecutively a large volume of finished leather. The quality on leather is of course world class and buyers attractive but not for all purpose. For the leather goods manufacture different thickness, colour, feel, appearance is essential and so that the question of import leather from foreign countries come. So that, the government should exempt the high rate duty on the import of raw hides skins and wet-blue leather. The Indian government has done this many years ago.

8. A balanced Leather Policy should be adopted:

Leather and leather goods are the promising and prospective sector of Bangladesh. Every year a large volume of foreign exchange is earned by this sector. The contribution of this sector in GDP is 0.31%. But it is a matter of great regret that after passing 34 years of our independence we have not got yet a balanced leather policy.

Nevertheless Leather and Leather goods, being exportable items, a balanced leather policy is very much essential for the development of this bright sector.



Export Promotion Bureau, Bangladesh

Export performance for the period of July-March, 2007-08

Overall position  
Mn. US \$

Products	Export Performance 2006-07	Export target 2007-08	Strategic export target July-March 2007-08	Export performance July-March 2007-08	% Change of export performance over strategic export target	Export performance July-March 2006-07	% Change of export performance July-March 2007-08 Over July-March 2006-07
1	2	3	4	5	6	7	8
All products	12177.86	14500.00	10518.30	10159.78	-3.41	9036.45	+12.43

Products recorded growth over last year's performance and also over target :

Petroleum by products	83.90	95.00	68.91	117.46	+70.45	76.37	+53.80
<b>Agri. products:</b>	<b>87.82</b>	<b>100.00</b>	<b>72.54</b>	<b>90.38</b>	<b>+24.59</b>	<b>65.57</b>	<b>+37.84</b>
a) Vegetables	35.64	40.00	29.02	45.55	<b>+56.96</b>	24.99	<b>+82.27</b>
b) Tobacco	18.03	20.00	14.51	17.76	<b>+22.40</b>	12.95	<b>+37.14</b>
c) Others	34.15	40.00	29.01	27.07	<b>-6.69</b>	27.63	<b>-2.03</b>
Tea	6.94	8.00	5.80	13.52	<b>+133.10</b>	4.29	<b>+215.15</b>
Ceramic products	29.95	35.00	25.39	28.43	<b>+11.97</b>	23.07	<b>+23.23</b>
Foot wear	<b>135.94</b>	<b>165.00</b>	<b>119.69</b>	<b>120.74</b>	<b>+0.88</b>	<b>99.52</b>	<b>+21.32</b>
<b>Other primary Com:</b>	<b>75.04</b>	<b>87.00</b>	63.11	<b>122.09</b>	<b>+93.46</b>	<b>56.57</b>	<b>+115.82</b>
a) Cut flower/foilage	32.71	40.00	<b>29.02</b>	47.97	<b>+65.30</b>	25.34	<b>+89.31</b>
b) Agro. process food	22.94	<b>26.00</b>	18.86	27.15	<b>+43.96</b>	16.23	<b>+67.28</b>

c) Others	19.39	21.00	15.23	46.97	<b>+208.40</b>	15.00	<b>+213.13</b>
Textile fabrics	36.08	40.00	29.02	43.92	<b>+51.34</b>	28.28	<b>+55.30</b>
Raw jute	147.15	175.00	126.95	127.94	<b>+0.78</b>	112.65	<b>+13.57</b>

**Products recorded growth over last year's performance but not over target :**

Knitwear	4553.60	5465.00	3964.31	3913.63	<b>-1.28</b>	3335.22	<b>+17.34</b>
<b>Woven garments</b>	4657.63	5400.00	3917.16	3770.23	<b>-3.75</b>	3505.73	<b>+7.54</b>
Home textile	256.97	310.00	224.87	211.25	<b>-6.06</b>	192.85	<b>+9.54</b>
Electronics	2.91	4.00	2.90	2.32	<b>-20.00</b>	2.11	<b>+9.95</b>
Terry towel	105.98	120.00	87.05	82.41	<b>-5.33</b>	80.07	<b>+2.92</b>
Leather	266.08	295.00	213.99	212.75	<b>-0.58</b>	198.37	<b>+7.25</b>
<i>Frozen food</i>	515.32	600.00	435.24	408.87	<b>-6.06</b>	381.02	<b>+7.31</b>
<b>Other mfd. goods:</b>	<b>409.38</b>	<b>691.00</b>	<b>501.25</b>	<b>346.69</b>	<b>-30.83</b>	<b>337.99</b>	<b>+2.57</b>
a) Melamine tableware	0.31	0.34	0.25	0.17	<b>-32.00</b>	0.25	<b>-32.00</b>
b) Camera parts	21.37	25.00	18.14	14.16	<b>-21.94</b>	16.05	<b>-11.78</b>
<b>c) Leather bags &amp; purses</b>	<b>11.03</b>	<b>13.00</b>	<b>9.43</b>	<b>6.54</b>	<b>-30.65</b>	<b>6.18</b>	<b>+5.83</b>
d) Others	376.67	652.66	473.43	325.82	<b>-31.18</b>	315.51	<b>+3.27</b>

**Products recorded decline over last year's performance and also over target :**

<b>Engineering Products :</b>	<b>236.91</b>	<b>285.00</b>	<b>206.74</b>	<b>156.34</b>	<b>-24.38</b>	<b>173.47</b>	<b>-9.87</b>
a) Bicycle	54.05	60.00	43.52	39.01	<b>-10.36</b>	37.31	<b>4.56</b>
b) Iron chain	9.66	11.00	7.98	1.83	<b>-77.07</b>	8.26	<b>-77.85</b>
c) Others	173.20	214.00	155.24	115.50	<b>-25.60</b>	127.90	<b>-9.70</b>
Jute goods	320.78	350.00	253.89	242.89	<b>-4.33</b>	246.33	<b>-1.40</b>

**Limitations:**

The limitation of my project work is given bellow:

- I have used only one piece of garments so there is some fault remains which i can overcome in the vast production.
- I could not collect the softy type colorful nappa or garments leather that is the primary requisite for garments manufacturing like skirts.
- I have tried for matching the thread with the upper, but I could not acquire 100% success.
- Shape retention property of the leather is poor.
- Pattern making is very tactical
- The zip insertion which is one of the critical techniques has some problem.

**Conclusion**

After a close observation over the manufacture of the gored skirt, I have learned about different techniques of clothing manufacture which are really very fruitful for anybody who wish to intend himself in this sector. The desires of customers are changes so minutely that

you have to adapt these techniques. Besides, i have a thorough knowledge about materials, quality control and most of all the product development system. I also hope through my technique what I learn from this college as well as from my teachers I can do something for my country economical development

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