Faculty of Engineering

Department of Textile Engineering

High-Value Woven Fabric Exported from Bangladesh

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

Advanced in Fabric Manufacturing Technology

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LETTER OF APPROVAL

24th March 2024

To

The Head,

Department of Textile Engineering,

Daffodil International University,

Daffodil Smart City (DSC), Ashulia, Savar, Dhaka-1216.

Subject: Approval of Project Report of B.SC in TE Program.

Dear Sir,

I'm writing to inform you that the students with IDs 201-23-892, Shreerup Bhattacharjee, ID-201-23-835, Md. Rakibul Hasan Zihad, and ID-201-23-872, Saju Kundu, created the project report named "High-Value Woven Fabric Exported from Bangladesh" for their final evaluation. The whole report is written using appropriate research methods and interruptions by a thorough examination of empirical facts and necessary materials. Because the students actively participated in their projects, the report was essential in providing the audience with a wealth of insightful information.

As a result, we would appreciate it if you would accept our report and consider it for final evaluation.

Yours Sincerely

Prof. Md. Mahbubul Haque

Professor,

Department of Textile Engineering,

Faculty of Engineering,

Daffodil International University.

DECLARATION

We now declare that the work contained in this thesis, **"High-Value Woven Fabric Exported from Bangladesh,"** is entirely original, hasn't been submitted for credit toward a degree from any other university, and has been properly acknowledged in all materials and resources utilized.

Shreerup Bhattacharjee

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

Supervisor

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Professor

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ACKNOWLEDGMENT

First, we want to start by giving thanks to God, who gave us the courage and willpower to continue the project. We think this project will undoubtedly aid us in our study of cutting sections in quality difficulties, as it has been a terrific experience for us.

We especially want to thank our esteemed supervising instructor, Prof. Dr. Md. Mahbubul Haque, PhD (UK) CText FTI, for his excellent leadership, unwavering encouragement, and assistance in seeing my research through to completion. He has given us the inspiration and concepts we need to keep improving the report. The obvious fixation of our supervisor on the subject of the **"Study on Report on High-Value Woven Fabric Exported from Bangladesh"** inspired us to study deeply.

We want to thank Daffodil International University's Honorable Vice Chancellor, Chairman, Register, and each Department for giving us the workspace we needed for our research.

We are grateful to all from the core of our heart.

ABSTRACT

This thesis aims to present a thorough analysis of Bangladesh's exports of high-value woven cloth. This study investigates the meaning and names of many categories of high-quality cloth by examining various theoretical frameworks, empirical research, and practical packaging. Using both qualitative and quantitative research techniques, the study uses a scientific methodology to collect and analyze data from various sources.

The study begins with a comprehensive review of the literature that includes all pertinent papers, theories, and concepts related to Bangladeshi exports of high-quality woven cloth. Ultimately, the research delves into the primary motivators, obstacles, and opportunities related to the attributes and qualities contributing to the fabric's increasing global demand.

Additionally, this study provides a thorough examination of the yarn and fabric construction, width, GSM, warp and weft counts, EPI, PPI, and fabric composition. These factors were assessed using data and woven fabric samples gathered from many well-known textile industries. The study also investigates the causes of the differences in fabric characteristics, such as GSM, yarn count, and composition, that lead to cost variance across the fabrics. The research illustrates the fabric's yearly sales based on end-use and production costs.

Through rigorous data collection techniques, such as surveys, interviews and case studies, the findings explore the real-world implications and practical applications of the high-value woven fabric.

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CHAPTER–1

INTRODUCTION

1. Introduction: Bangladesh is known as the 2nd highest leading country among the top textile-producing countries in the world. The textile and clothing industries provide growth and sustainability for the rapid economic development of Bangladesh. Such as the whole amount earned by Readymade Garments (RMG) exports from April to June of FY23 was USD 11739.17 million. The RMG industry contributed a noteworthy 10.35 percent to Bangladesh's GDP in FY23 and during the fiscal year, RMG earned USD 46991.61 million in total from exports. It is no surprise that Bangladesh has become a significant player in the global market. According to a report, there are over 1,430 textile mills including 796 woven fabric manufacturers around Bangladesh with an annual production capacity of around 3,850 million meters. Bangladesh's RMG exports increased by 13.07% year over year to US$ 11.61 billion in the July–September fiscal year 2023–24 from US$ 10.27 billion in the same period of FY 2022–2023.

The overall textile manufacturing in Bangladesh is based on two types of fabric- Woven and knit. These fabrics have different variations and depending on their variation the total production and export and import going on. However, in Bangladesh, the production rate of knit fabric is higher than the rate of woven fabric. Besides, the earning rate from woven fabric is lower than that of knit fabric. In FY23-24 knit export was $6.76bn with a 19.70% growth rate whereas the woven export was $4.85bn and the growth rate was 4.97% which was unsatisfactory with the comparison of knit. In 2022-2023 the value of Bangladesh’s apparel exports to the world, the export rate of the knit was 25738.20 million USD and the rate of woven was 21253.41 million USD. This is because the demand for knit is too much higher than for woven.

There are many reasons behind this. One of the reasons is that the manufacturers and the production rate of woven fabric is lower which is around 600. As to the BTMA, knitters' need for textiles is fulfilled by 75-80% of local textile millers, but only 35-40% of woven fabric demand is met by them. Hence most often woven fabric is imported from other countries. Bangladesh imported 552,859 tons of woven fabrics in 2021. For that reason, the raw materials cost for woven production is getting higher, which increases the cost of the end product and ultimately the manufacturers can’t meet the buyer's demand. Hence, the export rate of woven is getting lower. Concerning the yearly consumption for export, there is a need for around three billion meters of woven cloth. Given that, the local mill can only produce 45 million meters of

cloth or around 14–15% of the total demand. The nation imports fabric at a cost of over 4 billion USD annually.

But many textile industries still make efforts for the production of woven fabric and they produce a large amount of woven fabric which helps directly in the RMG sector, especially for the woven-based apparel, and also creates a great impact on export and import sides. Many renowned industries around Bangladesh produce various types of high-value woven fabric like- denim fabric, gabardine fabric, buckram fabric, casement fabric, velvet fabric etc. every year. With the variation of fabric construction, width, weave & composition many textile industries produce a large amount of woven fabric which adds value at a great level in this sector.

To overview all the above points, the thesis named "High-Value Woven Fabric Exported from Bangladesh" was done. To evaluate the names of various types of woven fabric what types of woven fabric's in demand around the world and the prices and characteristics of all that fabric around Bangladesh the total work was done via this thesis.

1.1. Objectives of the Study:

- To get ideas about various types of high-value woven fabric exported from Bangladesh.
- To compare the composition of yarn to make this fabric.
- To acknowledge the yarn count, EPI, PPI and GSM of the fabric.
- To analyze the cost of the fabric and compare the reason for the cost variation between the fabrics.
- To determine the demand for the fabric.

1.2. Scope of the Study:

This study has a broad emphasis on the textile sector. We should definitely make an effort to comprehend and commit to memory all of the methods and processes as it will surely help us in the future. Every process and method is very significant. We compare the woven fabric to determine the high-value woven fabrics based on different yarn counts, EPI, PPI, GSM, and fabric composition or content and the width of the fabrics during that method.

CHAPTER–2

LITERATURE REVIEW

2. Literature Review:

A renowned online marketplace connecting brand and manufacturer "**Sewport**" discussed a woven fabric named corduroy fabric via their website. This fabric is also known as Corded velveteen, Manchester cloth, elephant cord, or pincord fabric which has a fabric composition with Cotton, cotton-poly blend, wool, or fully synthetic. It is commonly used in Pants, overalls, jackets, uniforms, shirts, dresses, pillows and upholstery. In general corduroy fabric costs 10-20% more than other types of plain weave fabric made with the same fibers.

Figure-1: Corduroy Fabric

A well-known textile organization "**ACME MILLS**" upholds the name of various types of woven fabric and their characteristics via their website such as Aertex Fabric, Aida cloth Fabric, Baize Fabric, Batiste Fabric, Bombazine Fabric, Brocade Fabric, Buckram Fabric, Calico Fabric, Charmeuse Fabric, Cheese Cloth etc.

- **Buckram Fabric:** It is an impregnated lightweight loosely woven cloth with a stiff coating that is created by fillers and adhesives. This fabric is used as an interface to support and maintain the form of buttons, belts, waistbands, collars, cuffs, and other clothing details. Additionally, they serve as reinforcement for other items like purses.

Figure-2: Buckram Fabric

- **Bombazine Fabric:** The silk warp and worsted weft used to weave bombazine are twilled or corded and are used as clothing fabrics.

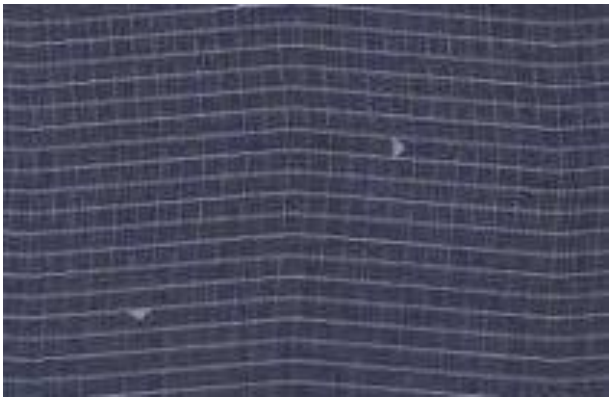

Figure-3: Bombazine Fabric

- **Cheese Cloth:** It's a widely used transparent fabric with an open weave that's lightweight. It's a widely used transparent fabric with an open weave that's lightweight. It is utilized for curtain materials in addition to garments for women and youngsters.

Figure-4: Cheese Cloth

- **Denim Fabric:** Denim is often made of a rough cotton twill, which is used to make jeans. The denim fabric has a typical diagonal ribbing that is visible on the reverse of the fabric, which is produced when the weft passes beneath two or more warp strands. The denim fabric and cotton duck are distinguished from one another by the diagonal ribbing. Although blue jeans were originally identified with a lighter cotton textile, the denim fabric is typically dyed with indigo to achieve this hue. Every country in the world uses a lot of denim fabric.

Figure-5: Denim Fabric

- **Drill Fabric:** The drill, also known as Khakhi, is a kind of twill woven fabric that is used for uniforms, workwear, sailcloth, furniture, tents, and other durable items**.**

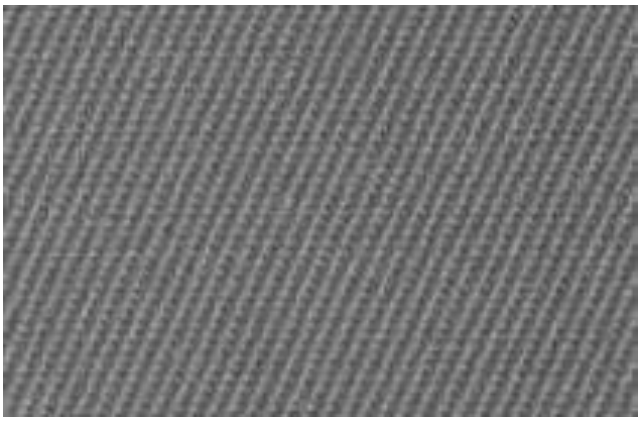

Figure-6: Drill Fabric

- **Flannel Fabric:** Flannel is a type of plain or twill fabric that is favored for its cozy and soft qualities. Flannel clothes are perfect for pajamas, bedspreads, coats, shirting, and suits.

Figure-7: Flannel Fabric

- **Gabardine Fabric:** Cotton or twill-woven worsted cloth is used to make gabardine. The fabric is created by keeping the twist on the warp threads higher than the weft,

which creates a noticeable, delicate twill line. Gabardine is a very durable fabric that is used a lot to make suits, shirts, and pants.

Figure-8: Gabardine Fabric

An exclusive information portal on textiles- "**Textile School**" has mentioned various types of woven fabric via their portal like Buckram Fabric, Cambric Fabric, Casement Fabric, Cheese Cloth, Cheese Cloth, Chintz Fabric, Corduroy Fabric, Crepe Fabric, Denim Fabric, Drill Fabric, Flannel Fabric, Gabardine Fabric, Georgette Fabric, Lawn Fabric etc. on October 8, 2022. Via their portal, they uphold the characteristics, design, demand and the main use of these fabrics.

- **Lawn Fabric:** The lawn is a crisp, lightweight, fine-sheet material that is either linen or cotton. This fabric is given several finishes; it is referred to by the name of the finish. Its primary application is as a dress's lining.

Figure-9: Lawn Fabric

- **Poplin Fabric:** Poplin is a medium-weight fabric with a fine weft rib made of cotton. Typically, it's utilized for upholstery, dresses, and shirts.

Figure-10: Poplin Fabric

- **Sheeting Fabric:** These are mostly utilized as bed linens. These are densely woven, medium-weight textiles that can be produced in twin or plain weaves. There are several widths available for sheeting textiles. Premium cotton sheetings come in two widths: 64 x 58 inches for plain weave and 60 x 72 inches for twill weave.

Figure-11: Sheeting Fabric

- **Taffeta Fabric:** Taffeta is a clear, crisp, silky fabric with a little rib. Although rayon is currently used as well, silk fibers were used in its original construction. It has a distinct sharpness due to its polish. It is worn by women on formal occasions.

Figure-12: Taffeta Fabric

Velvet Fabric: It was first fashioned of silk and has a warp-cut pile. Additionally, Rayon produces it. It is extremely glossy and silky because of the densely cut pile. It is used as clothing material for kids and ladies. Additionally, unique high-twisted single- or ply-twisted yarns are used in its production. They are referred to as semi violes (single yarns, 1x1) complete voiles based on the yarns used and the twist provided. (ply yarns 2×2) or half voile (2×1), which is made up of double warp and single weft.

Figure-13: Velvet Fabric

A famous textile organization "**Dhaka Fareast Ltd**." mentioned the name of the most popular fabrics a clothing exporter from Bangladesh. According to their report Satin fabric, Cotton fabric, Chiffon, Denim fabric, Georgette, Linen and Velvet are the seven most popular fabrics exported from Bangladesh. They also mentioned the demand & features of the fabrics that the buyers want.

"**Fabric Lagbe**"- the textile company denoted the name of different types of woven fabric on their social site on 28th March 2022. According to their list-corduroy fabric, crepe fabric, denim fabric, drill fabric, flannel fabric, gabardine fabric, georgette fabric, Kashmiri silk fabric, lawn fabric and muslin fabric were enlisted as the most popular woven fabric in Bangladesh. They mentioned plain woven fabrics, crepe woven fabrics and jersey woven fabrics as the three main types of woven fabrics produced in Bangladesh.

- **Plain woven fabrics:** Plain woven fabrics are the most popular kind of woven fabrics in Bangladesh. It is a flat cloth that was woven on a draw-loom and a long loom. Cotton is the primary raw material used to make simple woven textiles. Several techniques, including warp-knitting, twist-looming, flat-looming, and stretch-looming, are used to manufacture them.
- **Crepe woven fabrics:** Crepe is a semi-transparent, lightweight, and incredibly durable fabric. Crepe materials are excellent for creating skirts, dresses, blouses, and other clothing items.
- **Jersey woven fabrics:** Jersey woven textiles are among the unique varieties of woven fabrics produced in Bangladesh. Cotton jerseys are typically created by weaving two or

more threads together. Jersey is well-liked for its brevity, comfort, and toughness. It is renowned for its capacity to retain its size and form after washing and drying.

"**Sweguide**" a renowned textile-based newsletter denoted the types of woven fabric, count, weave and the size of those types of woven fabric through their social media page on December 25, 2023. According to their information, three types of weave can be found in plain woven fabric (Cotton Poplin, Chambray, Broadcloth, Calico, Gingham, Linen, Oxford Cloth, Percale, Shirting, Muslin, Chiffon, Gingham, Canvas, Chintz): satin woven fabric; twill woven fabric (Gabardine, Herringbone, Tweed, Chino, Drill, Cavalry Twill, Satin Weave, Bengaline, Twill Suiting). The count found in woven fabric 64 * 64 (Warp count x Weft count) is found on average and the woven textiles often have widths of 48 or 63 inches.

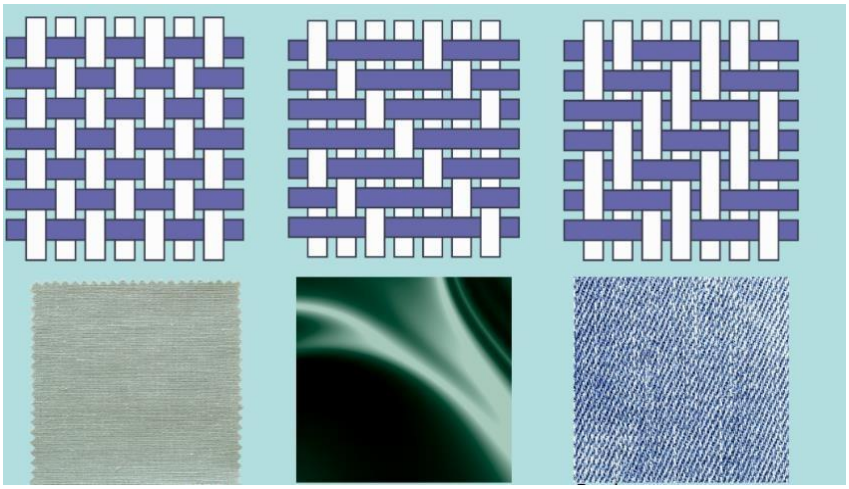

Figure-14: Plain woven fabric(cotton); Satin woven fabric, Twill woven fabric (denim)

CHAPTER–3

EXPERIMENTAL DATA

3.1. Parameters of the Fabric Applied in the Fabric:

EPI (Ends Per Inch): The quantity of warp threads per inch of woven fabric is known as ends per inch or EPI. Weavers use ends per inch extensively because they need to know how many ends there are to choose the proper reed for weaving. The design to be woven and the thread thickness affect how many ends there are per inch.

PPI (Picks Per Inch): The number of weft threads per inch of woven fabric is known as picks per inch or PPI. The phrase "pick" refers to a single weft thread. Overall, finer fabric is indicated by a larger number of picks per inch.

Process of measuring EPI and PPI:

- Start by taking the woven fabric and using a ball pen to mark one inch in both the warp and weft directions.

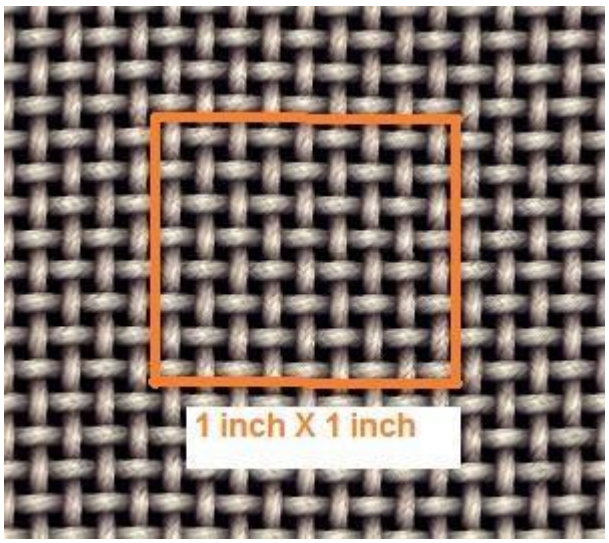

Figure-15: Fabric Sample

- Next, use the multiplier scale to establish the marking point and tally the woven fabric's EPI and PPI in one inch.
- Using the magnifying counting glass, the last steps involve counting the Ends Per Inch (EPI) and Picks Per Inch (PPI).

Figure-16: Magnifying Counting Glass

Yarn Count: The density of the yarn—whether it is thick or fine—is indicated by the yarn count. A yarn's count is a number that indicates how thick it is—very fine, coarse, or in the middle. When a certain object needs to have a certain size, durability, or look, the yarn count becomes crucial to all of these efforts. Weight and length are the two main variables in determining yarn count, as stated in the definitions for the various yarn units. Nonetheless, the direct and indirect systems are the two primary methods utilized for such computations. Using the direct approach, the formula to get the yarn counts of Tex, Denier is N = (W/l) divided by (L/w). The formula N = (L/w) divided by (W/l) is used to measure the yarn counts of the English cotton number, the metric number, or worsted weight through the indirect system. The letters N, W, L, and W represent the many variables in the two formulas: N is the resultant yarn count; W is the weight of a yarn sample; L is the length of the unit of measure; and W is the weight of the unit of measure.

GSM: The term "grams per square meter," or GSM, describes how much a cloth weighs. A cloth is generally expected to be thicker and more durable the greater its GSM. For example, denim has a much higher GSM than chiffon.

GSM calculation is one kind of material physical test. There are two methods for calculating a fabric's GSM.

- GSM calculation with GSM Cutter.
- GSM calculation via formula.

GSM calculation with GSM Cutter: Essential items needed to use a GSM cutter to figure out a fabric's GMS:

- ✓ **GSM Cutter:** An instrument for cutting cloth with a unit weight of 1/100 m2 or 100 cm2. Fabric that is knitted, woven, or non-woven may be cut using this tool.
- ✓ **Sample fabric:** Selected fabric that needs to calculate GSM.
- ✓ **Cutting mat/pad:** Fabric is laid out on a single, unique kind of mat or pad to ensure consistent cutting.
- ✓ **Balance/Electric balance:** Used for taking the weight of the sample fabric.

Figure-17: GSM Cutter and Digital Balance

Process flow Chart:

Taking the sample of fabric from bulk and conditioning for 4.30 to 06 hours

↓

Take the conditioning fabric for test on the G.S.M. cutter pad so that no crease or crinkle is formed.

↓

Cutting the fabric with G.S.M. cutter (GSM Cutter Diameter 11.2 cm)

↓

Take the weight of the cut fabric (Length & Width 11.2 cm) in balance and multiply by 100.

↓

Get the GSM of the fabric in oz/yard²

GSM calculation via the formula: We can calculate GSM via the following formula-

EPI=Ends Per Inch

PPI= Picks Per Inch

Warp Count= The count of the yarn along the horizontal / warp direction

Weft Count= The count of the yarn along the vertical / weft direction

Constant value=25.6

$$\mathbf{GSM} = \left(\frac{\mathbf{EPI}}{\mathbf{Warp\ Count}} + \frac{\mathbf{PPI}}{\mathbf{Weft\ Count}}\right) \times \mathbf{25.6}$$

3.2. Characteristics of Yarn Used in Fabric Composition:

Ring Spun Yarn: Ring spun yarn is manufactured by twisting and thinning cotton strands to create a delicate, robust, and soft rope of cotton fibers. Ring-spun yarns are often produced from staple fibers. Although ring-spun yarns are more costly than normal yarns, they are also more resilient and long-lasting.

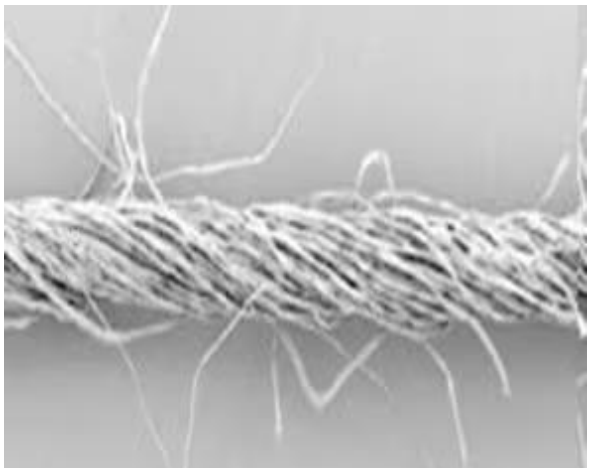

Figure-18: Microscopic view of Ring Spun Yarn

Figure-19: Cone package of Ring Spun Yarn

Rotor Yarn: Rotor spun yarns include a strong twist in the middle that gets less as the yarn moves toward the surface. Comparable ring-spun yarn is stronger than rotor-spun yarn. This is due to the ring spun yarn's straight, parallel fiber arrangements and denser packing of fibers, which contrast with the rotor spun yarn's higher number of folded fibers that are disoriented, lower levels of fiber migration, less packing, and the presence of belt fibers and non-load bearing wrappers. In general, ring-spun yarns are less extensible than rotor-spun yarns.

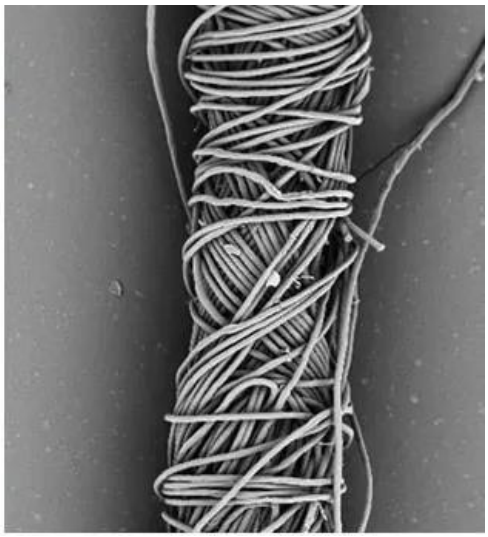

Figure-20: Microscopic view Rotor Yarn

Figure-21: Cone Package of Rotor Yarn

Open-End Yarn (OE): One kind of yarn that may be made without a spindle is called open-end yarn. One of the most important tools for spinning yarn is the spindle. We use an open-end spinning technique to obtain yarn with ends. It's also referred to as OE Yarn. Open-end (OE) also known as rotor spinning, is a procedure that produces yarn that is less carded and less combed.

Figure-22: Cone package of Open-End Yarn

Slub Yarn: Yarn that has been intentionally spun with slubs-thicker areas along the length of the yarn is known as slub yarn. Slub yarn was formerly thought to be a flaw, but it is now purposefully made to give fabrics more character. Slub yarns are not smooth and uniform from end to end; instead, they feature color splotches throughout the fiber length.

Slub yarn is divided into two categories based on its thickness and length. The two kinds of slub yarns are as follows:

- **Multi-Count Yarn:** This kind has a variable number of twists but a variable number of threads. It creates pleasing color combinations and yields a variety of goods throughout the spinning process.
- **Multi-Twist Yarn:** In the multi-twist yarn procedure, the number of twists changes, and the number of threads remains unchanged. The multi-twist yarn produces different textures and colors in the fabric.

Figure-23: Cone Package of Slub Yarn

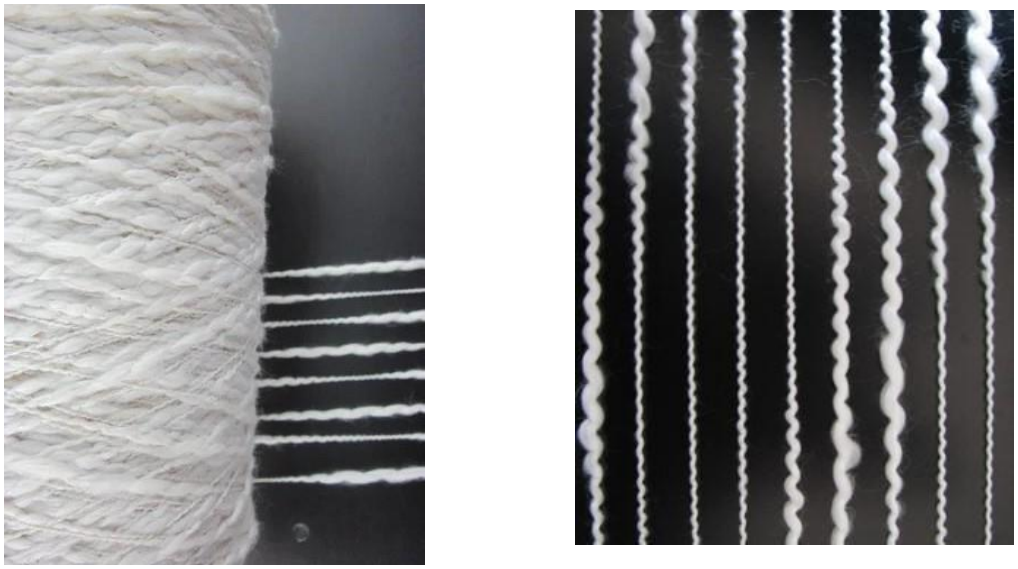

Figure-24: Slub Yarn

BCI Cotton: BCI (Better Cotton Initiative)-is a non-profit, multi-stakeholder governance organization that advocates for higher standards in 22 nations for cotton growing and practices. It's a cultivation technique that makes large-scale production possible. BCI cotton is traditional cotton that is primarily cultivated using genetically modified organisms (GMOs) and chemicals (fertilizers, pesticides, and insecticides). The designation ensures that the use of chemicals is managed fairly, protecting the farmer and allowing for manual but also moderately regulated water irrigation.

Recycled Cotton: Converting cotton fabric into cotton fiber that may be utilized again in textile goods is the broad definition of recycled cotton. Other terms for recycled cotton include regenerated cotton, recovered cotton, and shoddy.

Recycling of textiles comes from two main sources:

- Pre-consumer: It includes scraps made from yarn and fabric byproducts.
- Post-consumer: Post-consumer goods include upcycled clothing, upholstery, towels, and home products.

Figure-25: Recycled Cotton (Pre-Consumer)

Figure-26: Recycled Cotton (Post-Consumer)

Linen: Linen yarn is one of the oldest textiles in the world, made from fibers spun from the stems of flax plants. The material known as linen, which is derived from flax, is mostly used for household goods. While linen and cotton are similar, linen is created from flax plant stem fibers rather than the bolls that surround cotton seeds. Because it is costly and requires a lot of work to create, linen is now considered a luxury fiber and is only made in limited quantities. One of the most resilient natural fibers is linen. Because of its ability to get softer with usage and give off a refreshing, cool feeling in hot weather, it is valued in the clothing industry.

Figure-27: Linen

LEA: Linen count (lea) is the number of 300-yard hanks in a pound. It's specifically employed to convey the fineness of linen (flax) yarn. In this approach, as the count rises, the yarn gets finer.

The lea count of yarn may be calculated as follows if its weight is **W** grams and its length is **L** meters-

$$\text{Number of hanks of 300 yards} = \frac{L \times 100}{2.54 \times 36 \times 300}$$

$$\text{Weights in Pounds(lbs)} = \frac{W}{453.6}$$

$$\text{Linen-Count (lea)} = \frac{\text{Number of hanks of 300 yards}}{\text{Weights in Pounds(lbs)}}$$

$$= \frac{\frac{L \times 100}{2.54 \times 36 \times 300}}{\frac{W}{453.6}}$$

$$= \frac{L \times 100 \times 453.6}{W \times 2.54 \times 36 \times 300}$$

$$= \frac{L \times 1.653}{W}$$

So, Linen-Count (lea) $= \mathbf{\frac{L \times 1.653}{W}}$

TENCEL: TENCEL is an incredibly durable, glossy, and smooth yarn. It is excellent for warps. Wood cellulose, or eucalyptus wood, is used to make it. Its absorbent and thermoregulatory qualities are outstanding. It releases extra moisture into the surroundings as soon as it has swiftly absorbed it from the body. Sensitive skin types can use this yarn. Additionally, it inhibits the development of bacteria due to its distinctive features. TENCEL is a biodegradable, chemical-free yarn that is also kind to the environment. It is very color-absorbing when dyed using reactive dyes. Yarn works well for both weft and warp.

Figure-28: TENCEL

CHAPTER–4

METHODOLOGY

4. Methodology:

4.1. Selected factory:

The study is done based on collected pieces of information and samples from three reputed textile organizations. The study was conducted by the Shasha Denims Ltd. founded in 1996, Paramount Textile founded in 2002 and NZ Fabrics Ltd. founded in 1982. In this industry woven and denim are manufactured and machines of various origins, brands and companies are equipped at there. Here samples of different woven fabrics were collected and via that sample GSM, EPI, PPI, weave design, count of warp and weft yarn were evaluated. Then information about the fabric content and composition also collected through the organization. People of those industries were interviewed for this department as a whole, and other production-supporting employees were considered when gathering the samples and information.

Table-01: Information about various types of high-value woven fabric and their parameters and fabric construction collected from Shasha Denims Ltd. Bangladesh.

Serial No.	EPI	PPI	Warp Count	Weft Count	Weight (GSM)	Weave	Width	Yearly Sale of the Fabric (YDS/Year)	Cost of Production (USD/YDS)
1	56	42	6	6	418.13	3/1 RHT	63-64	(2,40,00,000-3,00,00,000)	3.56-3.96
2	65	48	7	6	418.13	3/1 RHT	63-64		
3	60	48	6	6	460.8	3/1 RHT	64-65		
4	66	45	8	6	403.8	3/1 RHT	64-65		
5	66	45	9	10L40+9	425.6	3/1 RHT	69		
6	66	50	12(RSL)+12OE+10OE	10L40D	440.3	3/1 RHT	69		
7	66	57	10R	150L40D	419.3	3/1 RHT	68		
8	60	42	9OE	8OE+8Ring	410.5	3/1 RHT	68		

Figure-29

Figure-30

Figure-31

Figure-32

Figure-33

Figure-34

Fabric Sample Collected from Shasha Denims Ltd. (croped image shown above)

Table 02: Information about various types of high-value woven fabric and their parameters and fabric construction Collected from NZ Fabrics Ltd. Bangladesh.

Serial No.	Composition	EPI	PPI	Warp Count	Weft Count	Weave	Width (inch)	Weight (GSM) (Before Wash)	Weight (GSM) (After Wash)	Price (USD/YDS) (App.)
1	100% Linen	56	54	50 LEA	50 LEA	1/1 plain	59/58	150	162	6.5
2	79% TENCEL+21% LINEN	102	54	20	20+44LEA	1/1 plain	60/59	200	210	5.1
3	52% Linen+ 28%BCI Ctn.+ 20% Recycled Ctn.	74	50	21	21	1/1 plain	58/57	127	132	3.5
4	55% Linen+45% Cotton	63	51	22	14	1/1 plain	57/56	140	150	3.5
5	100% Linen	58	56	60LEA	60LEA	1/1 plain	62/61	129	132	6.5
6	100% Linen	54	48	40 LEA	40 LEA	1/1 plain	62/61	176	188	7
7	57% TENCEL + 21.5% LINEN + 21.5% BCI	104	64	20	20+44LEA	Broken Twill	61/60	208	224	5
8	55% Cotton + 45% Linen	136	76	30	56LEA	2/2 S Twill	56/55	190	200	3.25
9	55% Linen + 45% BCI Cotton	66	52	16	16	1/1 Plain	58/57	154	163	4.5
10	100% Linen	46	40	9	9	2/1 Z Twill	58/57	199	214	6.2
11	55% Linen + 45% BCI Cotton	69	52	16	16	1/1 plain	62/61	201	221	3.63

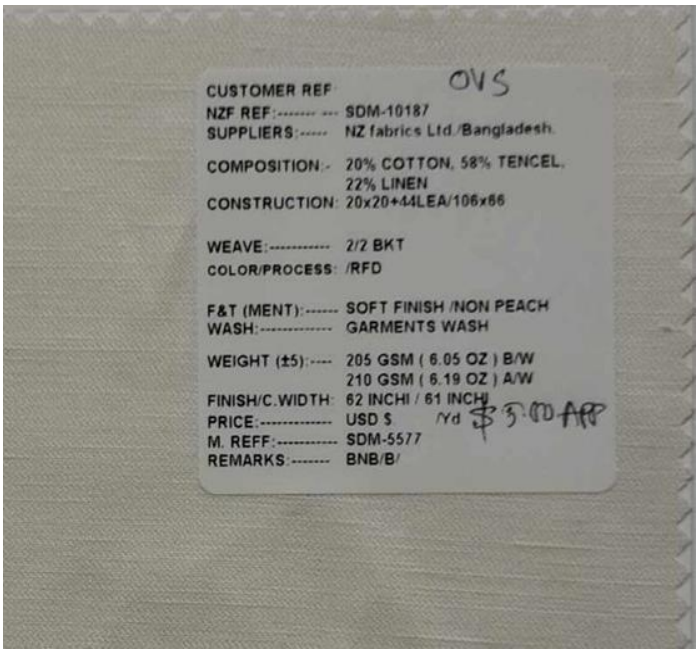

Figure-35

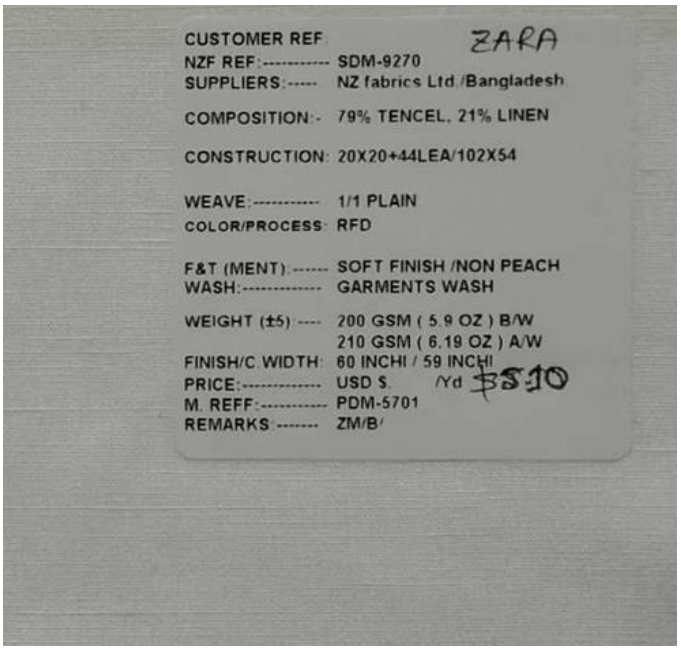

Figure-36

Figure-37

Figure-38

Fabric Sample with Specification Collected from NZ Fabrics Ltd. (cropped image shown above)

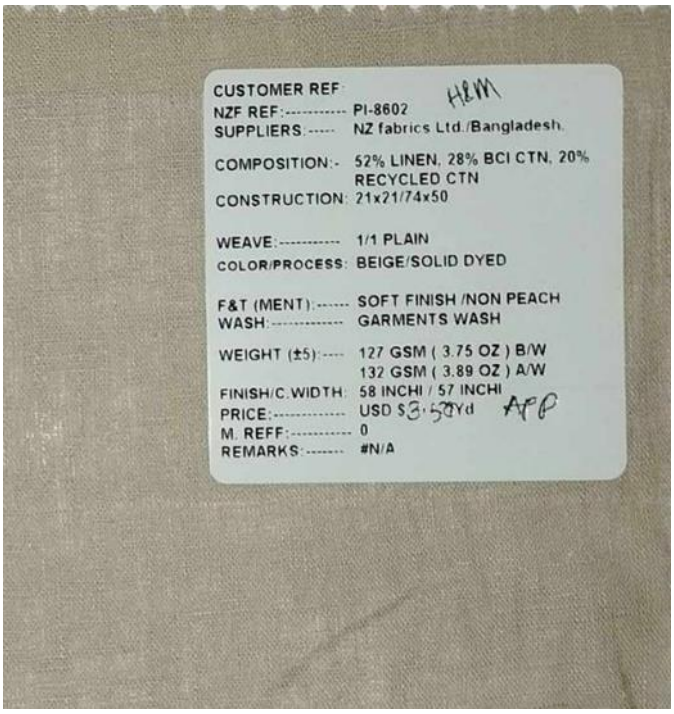

Figure-39

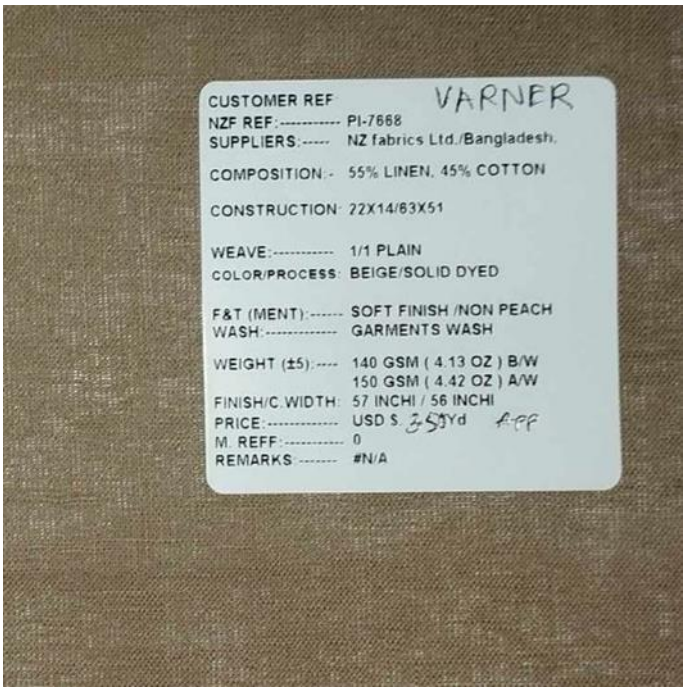

Figure-40

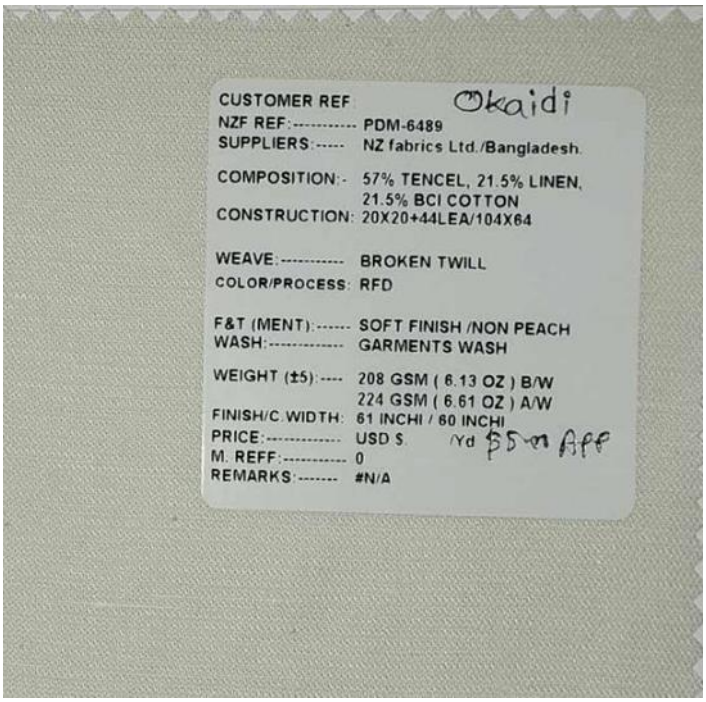

Figure-41

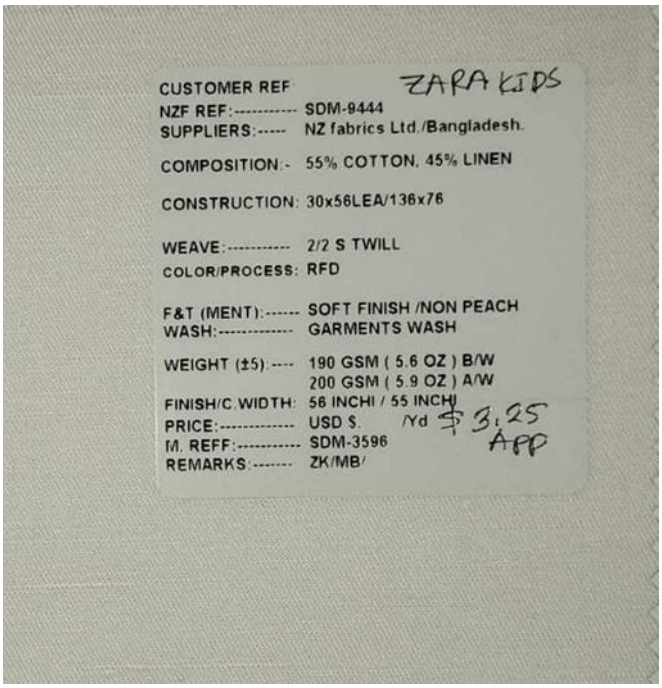

Figure-42

Fabric Sample with Specification Collected from NZ Fabrics Ltd. (cropped image shown above)

Figure-43

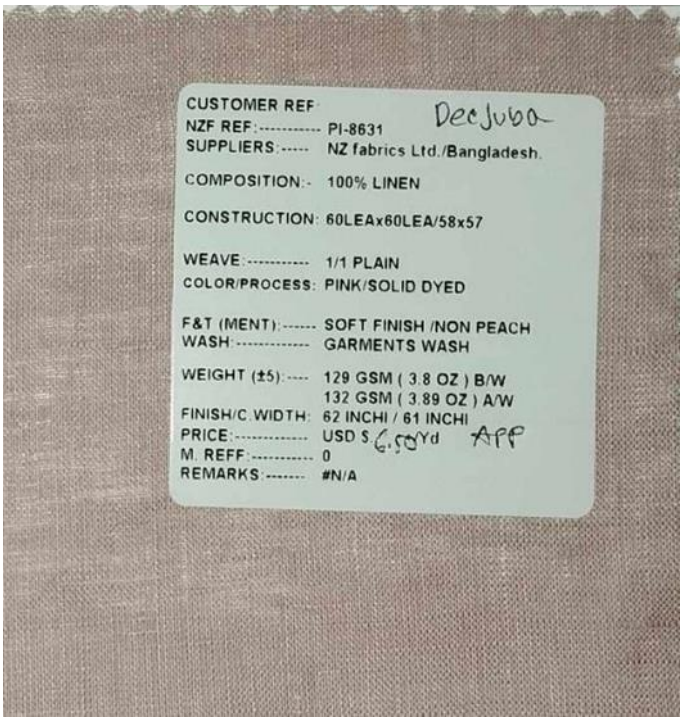

Figure-44

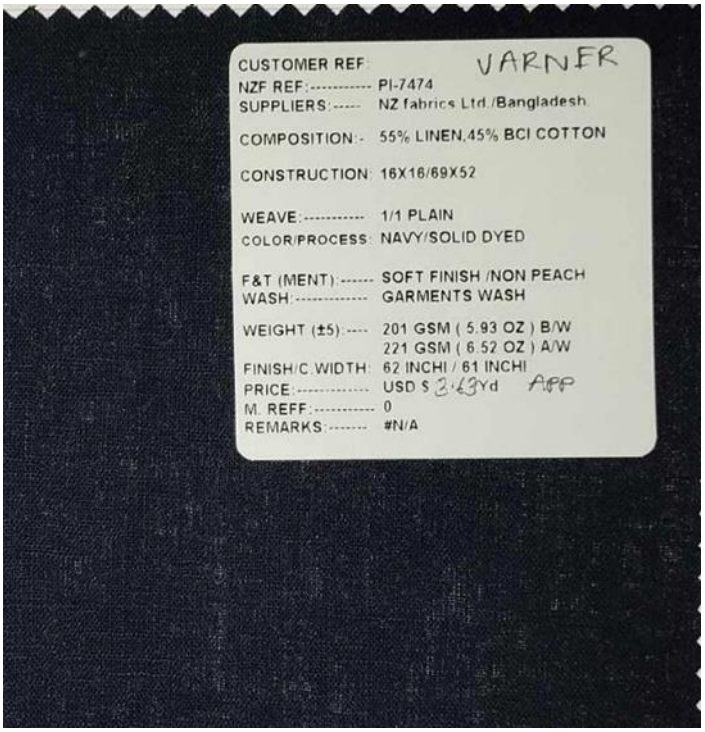

Figure-45

Fabric Sample with Specification Collected from NZ Fabrics Ltd. (cropped image shown above)

Table 03: Information about various types of high-value woven fabric and their parameters and fabric construction Collected from Paramount Textile. Bangladesh.

Serial No.	Content	EPI	PPI	Warp Count	Weft Count	Weight (g/m^2)	Width (inch)	Weave	Price (USD/ yds)	Quantity yds/ Month
1	100% BCI Cotton	170	80	50	50	125±5%	56/57	Plain	2.3	5-6 lakh
2	100% BCI Cotton	154	114	60	60	112±5%	56/57	Plain	2.2	7-8 lakh
3	100% BCI Cotton	133	100	40	40	138±5%	56/57	Plain	2.3	8 lakh
4	53% Linen 27% BCI cotton + 20% Recycled	50	50	15	15	171±5%	56/57	Plain	2.4	7-8 lakh
5	100% BCI Cotton	176	104	60	60	116±5%	56/57	Dobby	2	7-8 lakh
6	55% Linen+ 20% BCI cotton + 25% Recycled Ctn.	54	50	15	15	186±5%	56/57	Plain	3	7-8 lakh
7	50% BCI Cotton + 50% Linen	70	66	16	16	138±5%	56/57	2/2 Matt	4	7-8 lakh
8	100% Linen	56	46	16	21	142±5%	56/57	Plain	6.1	6 lakh
9	100% Linen	60	48	21	16	144±5%	56/57	Plain	6	6 lakh

Figure-46

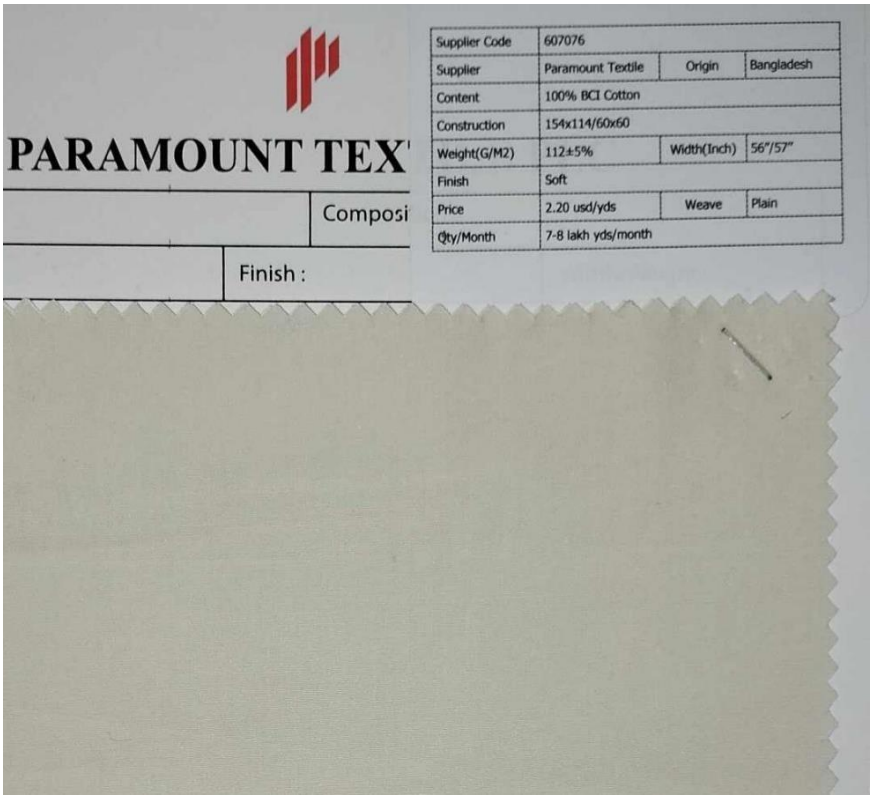

Figure-47

Fabric Sample with Specification Collected from Paramount Textile (cropped image shown above)

Figure-48

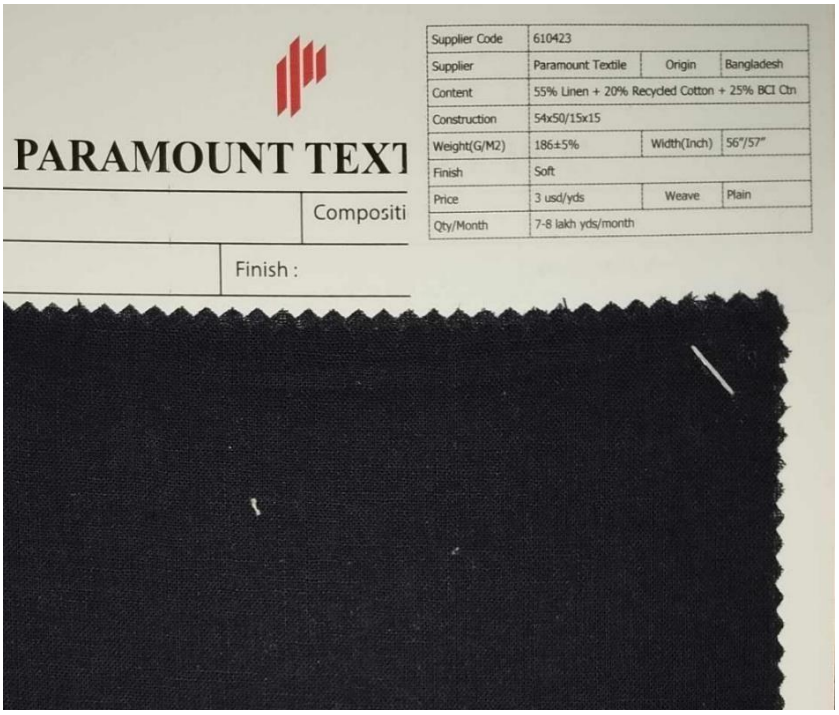

Figure-49

Fabric Sample with Specification Collected from Paramount Textile (cropped image shown above)

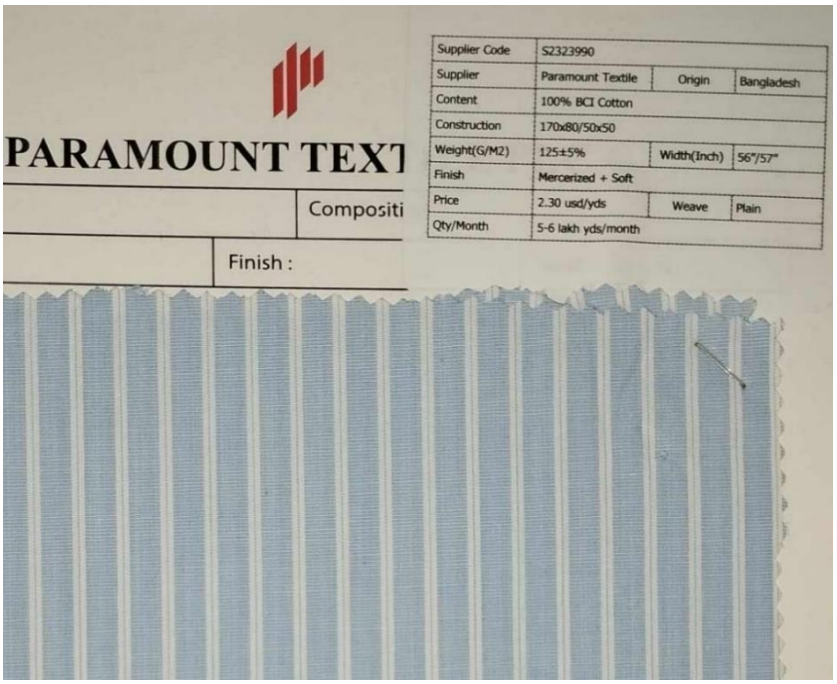

Figure-50

Figure-51

Fabric Sample with Specification Collected from Paramount Textile (cropped image shown above)

Figure-52

Figure-53

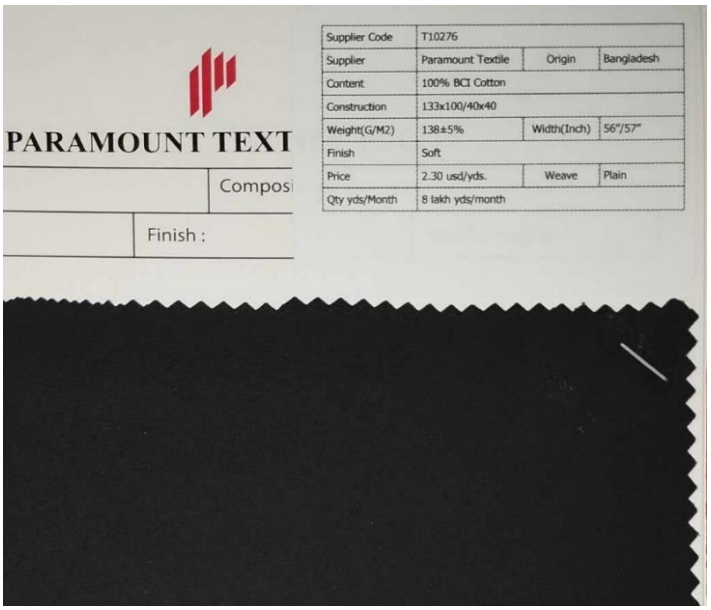

Figure-54

Fabric Sample with Specification Collected from Paramount Textile (cropped image shown above)

CHAPTER–5

RESULT & DISCUSSION

5. Results and Discussions:

5.1. Effect of content/composition of the fabrics on the price: The composition/content of the fabric makes a variation among the fabric. In this composition of the fabrics, variations of yarn can be seen like- Linen, Tencel, Recycled Cotton, Cotton, BCI Cotton. As we know all these yarns have distinct traits from each other. Because of their features, it makes a variation on the price of this which we can see around the collected data.

If we have a look at table-02 and table-03, here on thing cast our eyes that Linen-based fabrics cost more than the other types of fabric. Even whenever the fabrics with the same GSM or finer count are applied the composition is different between the Linen and the other yarn at that time fabric with 100% Linen being higher than the others. But if Linen is blended with other yarn that's the time the cost is lower than the 100% used Linen. If we have a look at Table-01, Table-02 (Serials no- 1, 5, 6 and 10) and Table-03 (Serials no and 9), here the Linen based fabric costs are higher.

Secondly, the blended composition of Tencel and Linen maximized the price of the fabric more than the other types of blended composition of the fabric which can be seen in Table-01, Table-02 (Serial no-2,7), Table-03.

Even if one that thing cast our eyes on table -02, at serial no-4 and 8 that in the fabric composition of these two fabrics that the usage percentage of Linen is higher at serial no-4 than the serial no-8, hence the price of the fabric (serial no-4) is also higher.

5.2. Effect of GSM of the fabric on the price of the fabric: The GSM of the fabric creates a great impact on the price of the fabric. Fabric with higher GSM costs is higher than the other types of fabric even if lower GSM fabric is prepared with the same composition.

If we have a look at Table-01 here we can see the variation of GSM of woven fabrics (Denim). In Table-02, at serial no-1 and serial no-7 both fabric composition is done with 100% Linen but the GSM of the fabric of serial no-07 is higher than the fabric of serial no-01, hence the price of the fabric of serial no-07 is getting higher.

On table-03, at the serial no-1,2,3 and 5, the composition of fabric is same. But the GSM of the fabrics are not same at all. Here as the fabric's GSM of serial no-5 is lower than the others, hence its price is lower than the others. Even same point is also evaluated at serial no-1 and 2.

5.3. Effect of EPI and PPI of the fabric on the price: As we know the fabrics which have higher EPI and PPI cost more than the others. But if we have a look at the information that we collected from different sources here we can't find the reason for increasing or decreasing the price of the fabrics because of the higher and lower number of EPI and PPI. It is because here most often the GSM rate and the composition of the fabric and the others factor balance it, that's why the EPI and PPI of the fabrics can't make any effect on the price of the fabric.

5.4. Effect of count on the price of the fabric: A fabric quality also depends on the used yarn that the yarn is coarser or finer. As much the count the yarn is finer the fabric gives more comfort. Hence the finer count yarn costs higher. As a result, the cost of the fabric is getting higher. That's why in this study we have done an evaluation on the effect of count of the yarn. But here the others factor like GSM (Table-1, 2 and 3) and the composition of the fabric (Table-2 and 3) creates a great impact on the price of the fabrics. Hence the effect of count can't be seen at there.

CHAPTER–6

CONCLUSION

6. Conclusion:

Overall the study represents an overview of the woven fabrics which has interesting traits and characteristics. Here some fabrics add value via their yarn composition or their weaving designs. EPI, PPI, GSM of the fabrics creates new addition among the fabrics. Data and sample collected from the reputed textile industries uphold it. Studies of high-value woven fabric open the door to know about the elegant fabrics and it also helps to find out the opportunity to add value which may make it more innovative. Hence, analysis of GSM, count, composition is evaluated at there. Moreover, the study upholds the name of the fabrics which help to maintain a sustainable export system with the renown buyers or the consumers.

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