Woven Fabric Sourcing and Operation Procedure of Readymade Garments Industry

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Abstract - Sourcing is the right fabric can be sometimes a tough challenge faced by apparel manufacturers. Out of the total cost of manufacturing a garment piece, the cost of fabric can contribute between 50 to 65 percent. Furthermore, even a minor oversight in selecting the right fabric and right manufacturer may spoil the entire apparel programme. Interestingly, though the fabric constitutes the main part of a garment, many of the apparel merchandisers have a very limited knowledge about fabric. They consider fabric as another component of raw material like buttons, care labels, and hang tags or packing materials. Unfortunately, describing a fabric in terms of specification to fulfill its end use is much more complicated than communicating the requirement of any other component of a garment and many apparel merchandisers do not have the necessary knowledge or training to order the right fabric from the right manufacturer at the right price. To be on the safer side, they simply ask various suppliers to bid for their lowest price and finally select the one who offers the lowest price or the most favorable term.

Keywords - AQL, Four Point Systems, FTD Analysis, Inspections, Fabric Test, etc.

I. INTRODUCTION

Consequently we often see the adverse effects of poor fabric sourcing strategy every day in the apparel industry. Garment air shipment cost is prohibitive and applied as penalty only when the apparel manufacturer fails to deliver the consignments beyond acceptable delays. The cost of air-freight is so high that air shipment of a single consignment of garments may wipe off the profit of a few months for the garment manufacturer. A study revealed that more than 80% of all garment air shipment is caused due to poor fabric sourcing management.

Fortunately, such critical errors can be avoided when sourcing woven fabric for manufacturing garments and the procedure is easier than we think about it. When discussing with the garment buyer, do not just talk about the target price he or she is giving us. Ask about the fabric in more detail. This is not only about the counts, construction and weight of the fabric but about some important and critical points. Here are certain things to keep in mind to ensure a trouble free fabric sourcing.

So it is crucial to sourcing the right Fabric on time. Fabric sourcing can change the whole scenario and total cost of the garments.

II. WOVEN FABRICS

Woven fabrics are made by using two or more sets of yarn interlaced at right angles to each other. Much variety is produced by weaving. Woven fabrics are generally more durable. They can be easily cut into different shapes and are excellent for producing styles in garments. However the raw edges ravel or fray easily and need to be protected. Fabrics having more fabric count (number of wrap and weft yearns present) keep the shape well. Low count fabrics are less durable and may snag or stretch.

Woven fabrics are manufactured in different widths depending on the end use. The fabrics used for apparels usually contain 90 cms width. The Sheeting materials are generally made having a width of 160 cm/140cms and 150cms/180 cms.

II.I. Woven Fabrics Characteristics:

Oldest & widely used method of construction, Made with two or more sets of yarns interlaced at right angles to each other. Yarns in lengthwise direction: warp/ends, yarns in crosswise direction: filling/weft/picks

Selvage: self-edge of fabric on both sides along the length of the fabric. Made with more closely placed warp yarns, width:1/4th inch. The selvedge prevents the fabric from raveling. It usually made more compact and stronger than the rest of the fabric. Plain, split, fringe, fused, leno & tucked selvage.

- Grain: indicates warp & weft positions in fabric.
- Lengthwise grain
- Crosswise grain
- Bias & True bias.

Identification of grain: selvage parallel to lengthwise grain, less stretch along warp yarns, warp yarns lie straighter & stronger, more twist in warp yarns, single yarn is used.

Fabric lengths & widths: length – 40 to 100 yards or more, width – 20 to 60 inches (hand-woven: 27 to 36 inches, Power loom: 40 to 60 inches) done on a machine called handloom or power loom.

II.II. Fabric Count/Thread Count:

No. of warp & weft yarns per square inch. Denotes closeness or compactness of fabric. Higher the count, better the quality of fabric, higher strength. E.g. 80 X 76 (80 warp yarns & 76 weft yarns in 1 inch). Fabric weight is measured in Grams per square meter (gsm).

BALANCE: Ratio of warp yarns to filling yarns in a fabric.

BALANCED FABRIC: Will have a ratio of warp to weft yarns as 1:1. E.g. Fabric count of a balanced fabric: 78 X 78 or 64 X 60. This fabric is more durable. UNBALANCED FABRIC: Will have a ratio of warp to weft yarns as 2:1. E.g. Fabric count of a unbalanced fabric: 144 X 76 or 100 X 60. It exhibits rib like structure. Weaves are represented on graph paper or point paper. Each square of the paper represents the yarn that appears on the top.

II.III. Fabric Selection and Quotation Analysis:

Fabric Selection Procedure worked in two ways, first Buyer Selection and other is Vendor Selection and Development. If Fabric selection by the vendor than we first collected the exact sample from buyer and distributed to different supplier to deliver the sample yards of fabric as per buyer requirements. After that we make Comparative quotation Analysis, in that stage few points are considered to make quotation analysis. Different supplier use different points when they provided their pricing. We have to convert it same because we have to compare apple to apple.

This below points are considered to make quotation,

1. Price

2. Length should be same desired, like as Yards, meter.

3. INCOTERM.(Payment method)

4. Shipping Term, like as FOB, C&F, Local

5. Quality and Delivery Date.

6. Insurance.

This above issues are considered when make comparative statement.

Broadly fabric sourcing procedures can be categorized as

a) Finished fabric sourcing procedure.

b) Greige fabric sourcing procedure.

c) Yarn dyed fabric sourcing procedure.

d) Knitted fabric sourcing procedure (greige yarns).

II.IV. *Finished Fabric Sourcing Procedure (WHITE OR DYED):*

While a factory directly source finished fabric from mills they usually follow below procedures,

Research for fabric suppliers: Fabric sourcing department research for available suppliers and shortlist some of them to work with for their fabrics.

Send fabric specification: Factory sends fabric sample or fabric specifications such as count and construction, GSM, weave structure and fabric width to the supplier.

Price negotiation and payment terms: Fabric sourcing department requests for the best price quote from fabric supplier and negotiate for the best price. Negotiation is also done for delivery lead time. Once cost negotiation is done, factory confirm supplier for lap-dip development.

Lap-dip approval: Fabric supplier develops sample for multiple shades as per required colors and send to factory for approval of most appropriate shade. Factory merchant sends those lap-dips to buyers or buying agents for approval.

Raising fabric demand note: Factory merchants calculate average fabric consumption and raise fabric demand note for the complete order. Fabric demand note is approved by authorized person and handed over to sourcing department for further processing.

Raise PO for bulk order: Factory sends purchase order (PO) to the fabric supplier. In some cases supplier ask for advanced payment (part of total invoice).

Received fabric delivery: Fabric supplier sends fabric to the factory fabric store in roll or than form.

Quality and quantity checking: Once fabrics are received, factory checks for quantity and quality of the fabric whether those are as per requirement. Quality means fabric properties such as shrinkage, dimensional stability, fabric weaving and processing defects etc. In case there is variation factory intimate fabric supplier and send back for reprocessing if required. Or raise a debit note if fabric quality is poor than the quality ordered at the time of contract.

Fabric approval for bulk production: Fabrics passed in quality inspection and testing are stored for bulk cutting. For some apparel buyers finished fabric lots need to be approved from buyers.

Payment is sent to the fabric supplier: Factory releases final payment for the fabric supplier once fabric is found ok.

II.V. Greige Fabric Sourcing Procedure:

To save money in processing (wet processing) medium and large size garment manufacturers (export houses) source greige fabric from mills or power looms instead of finished fabric. They process greige fabric by their own. So, there is small variation in fabric sourcing procedure than the procedure explained above.

From development of fabric supplier to price negotiation are same as the above. Factory sources greige fabric instead of finished fabric. So, prior to use fabric for garment production, fabrics are processed. Fabric sourcing department sends gerige fabrics to dyeing mills for wet processing (scouring, bleaching, dyeing or printing). Lap-dip approval is done in prior to bulk dyeing. Once lap-dip is approved by buyer, factory confirm for bulk dyeing. Finished fabrics are in-housed follow rests of the procedures as explained above.

II.VI. Yarn Dyed Fabric Sourcing Procedure:

There is slight variation in sourcing procedures when garment factory sources yarn dyed fabrics. Instead of lap-dip factory develops bit loom for fabric design (weave of checks or stripes). Colors of the dyed yarns are approved in fabric. Rests of the procedures is same as the above.

III. NEGOTIATION SKILLS

One of the most important skills a buyer and a seller must muster is the ability to negotiate. As most high street fashion selling prices are very competitive. The greatest scope for improving profit in a product is the reduction of cost price. There are many factors that influence the final cost price of a product including fabric. Garment construction, order volume, lead time, and delivery terms. These particular issues are discussed in more detail throughout the book.

Negotiation is a process of communication and exchange through which the interested parties make a series of demands and compromises; it involves the trading of benefits between parties. The basic principal is to trade what is of low value to you but of greater value of the other party, thereby reducing the cost of success to you. However the aim of a negotiation should be to ensure that both parties are happy with the final outcome or agreement .otherwise one or the other will not continue to participate.

The old scenario of the retailer always winning and supplier always losing result in both parties effectively losing. Traditionally, the dominant fashion retail groups have seen the availability of large number of supplies as a means of trading one off against another to achieve a cheaper cost price consequently many of the suppliers who lost out ceased to do business with those retailers again. Short-time cost price gains resulted in short term relationships with many suppliers. With the end result being a large unwieldy and diverse supplier base operating as efficiently as it should.

III.I. The Process Of Negotiation:

A Successful negotiation outcome does not generally occur through luck by following a clear process. The Process reflects the different levels of knowledge of the subject of Negotiation, Various parties and the way they communicate at various stages in the Negotiation. The following is an outline of steps essential to effective negotiation.

III.II. Researching the Needs Of Both Parties:

The Greater the knowledge a buyer has of their own and the supplier's requirements. The better able they are to construct an acceptable solution. The buyer must be clear about both the department mark-up to be placed on the product cost price and the intended retail selling price so that she or he can judge the viability of the supplier's products. She or He should also have sufficient product construction knowledge to understand how changes can be made to achieve better value in the product.

Frequently the supplier will make suggestion to try to bring the cost price closer to the buyer target. However an experienced buyer can speed up the process by making suggestion which will be acceptable to her. Lead-time is another lever for negotiation with differing operational issues for both parties. If the buyer starts the sourcing process early enough she may have enough time in hand to use ended lead-time as a bargaining tool.

The process of researching needs does not stop once the negotiation is underway as the body language and facial expression of both parties will signal their reactions of the ongoing discussion. Successful buyers will listen to and watch suppliers carefully, making judgments about how to proceed when meeting a supplier. Closed questions can be used to generate specific responses.

III.III. Preparation:

Effective preparation is also vital to successful communication. The Particular preparation required will vary according to the nature of meeting. But some factors are always important. Meeting should begin on time and follow a clear agenda with a realistic amount of time to accommodate the work. Where there is an existing relationship with a supplier, a file containing the relevant notes and documentation relating to the orders should be read prior to the meeting and taken in for reference. Suppliers meeting are usually held in uncluttered or empty rooms or offices to avoid any distraction from the business of the meeting. It is also usual there to be two people from buying in the meeting. So that buyer can have an objective view point available while personally involved in

negotiation. It is essential that the buyer also has identified the maximum and minimum positions that she will accept foe a range of factors including.

- Product Price
- Order Size
- Lead-time.

IV. FABRIC INSPECTION CUTTING APPROVAL

Fabric is the main raw material for apparel industry and it takes 60-70% of total garment manufacturing cost. Once any fabric consignment received by factory material department, they have to sent those to cutting QC within 48 hours to make shade separation, lab test and physical inspection etc. To ensure that only quality fabric is using in garments, we should take some protective action and grow up fabric inspection department's strength with qualified personnel. When quality team receives any fabric consignment for inspection from store then they will start below three different steps simultaneously to minimize finished garments rejection, increase production capability, increase factories goodwill and quality team faith etc.

1. Make shade swatch card to identify if there are any different shade within a consignment.

2. Select some rolls randomly if there is any running shading within the roll.

3. Send every shade to laboratory to get shade variation report.

4. Shrinkage Test also required taking a cutting approval.

After that Factory Qc considered below issues and my responsibility is he done the right way,

1. Visually inspects and grade from a viewing distance of one yard while the fabric is in motion. Fabric may be stopped to grade when necessary to affirm marginal defects and defects may be flagged.

2. Inspect and grade the total lengths of each role or bolt sample.

3. Assign points to the defects based upon their length within the plane of the fabric according to the following option.

4. Assign no more than a total of 4 points to any one linear yard of fabric, regardless of the number or size of the detected individual defects.

5. Assign 4 points to each consecutive linear yard in which a continuous running defect exceeds 9".

6. Assign the 4 points to each linear yard of fabric where the useable width is less than the minimum specified.

7. Assign 4 points to each seam or other full width defect or seam if applicable.

IV.I. Insepection Result And Decided To Which Fabric Is Good For Cutting:

Pass: Maximum 25 points per standard length (where standard length is 100 yards).

Yellow tag: if reject points over 25 and up to 36 point out of 100 yd. will be yellow tag based on defect conditions, location and nature by considering the following things.

1) The roll can be cut by special marker.

2) Replacing defective yd. can cut the roll, (by 100% panel inspection)

Red tag: If reject points over 36 out of 100 yd. &worst than yellow tag roll, which we can't use by above yellow tag's terms & condition this is considered as red tag.

In that Stage cutting approval given below issues considered:

Inspection at cutting section we have to monitored carefully is they done their responsibility in right way.

To reduce the defect fabrics and save the production cost for smooth production quality team are doing inspection in two steps.

Layer inspection: The main object of this inspection is whether the layers are lying properly and as per request length. Also during fabrics layering if there is any major defect in fabrics QC stop the layer for layering. QC team doesn't accept any overlapping layer in this stage. For re-placing the reject parts QC use to keep about five yards of fabrics from every roll.

Quality inspector makes this report and submitted to cutting QC, concern cutting chief and merchandising team.

Cut panel inspection: After placing the serial number in every component of cut panel, inspection process is started from this stage. Though rolls are accepted in initial inspection still there are some defects on the roll. So quality team does sort out those defective components during cut panel inspection. QC replace the defect component from the balance fabrics, which QC kept from each roll, depends on numbering. It is mentionable that QC does record how many layers have completed from each roll to identify the fabric for replacement. The report we are following call "cut panel inspection report".

IV.II. *Fabric FTD Analysis And Different Fabric Testin*:

Basically we worked different buyer and different types of fabric. FTD depends on fabric characteristics and Buyer requirements basis.

First we visually checked the fabric that is supplier delivered the exact fabric what we needed. In that stage we

check the fabric construction in manually. We check EPI, PPI and count also.

Because of if we input quality fabric in our cutting section than ultimately our output should be quality goods. In FTD there is also some testing requirements are needed and buyer also check this issue restrict so it is important to pass the entire test.

IV.III. *Laboratory Test of Fabric*:

Quality team compares that laboratory test report with buyer/customer standard and if lab report failed to meet that standard, quality team hold that fabric for cutting until get any response from buyer/customer.

For lab test purpose quality team will take 1/2 yard of fabric from different roll and send to laboratory for following tests.

1. Colorfastness for all types of fabric

2. PH Test

3. Shade variation test (through spectrophotometer)

4. Rubbing Test

5. Tensile, Tear, Seam slippage Test.

6. Other tests.

IV.IV. AQL:

The limit, as described above, is called the 'AQL'. It stands for 'Acceptance Quality Limit', and is defined as the "quality level that is the worst tolerable" (source: ISO 2859-1 standard).

For example: "I want no more than 1.5% defective items in the whole order quantity, on average over several production runs with that supplier" means the AQL is 1.5%.

In practice, three types of defects are distinguished. For most consumer goods, the limits are:

a) a)0% for critical defects (totally unacceptable: a user might get harmed, or regulations are not respected).

b) 2.5% for major defects (these products would usually not be considered acceptable by the end user).

c) 4.0% for minor defects (there is some departure from specifications, but most users would not mind it).

These proportions vary in function of the product and its market. Components used in building an airplane are subject to much lower AQL limits.

V. CONCLUSION

When it comes to production of garments Bangladesh managed to hold a good position in world market for many years. But it has been good but never been better or excellent of the competition is growing in the world garments sector. Bangladesh is now facing huge competition from countries like china, India and Thailand. To stay on high position by competing with those countries she needs to develop their business by opening new product with a high quality with minimum price. To do that they needs to follow couple of practice and procedure by which they could earn maximum profit in the end.

In that stage Bangladesh woven garment manufacturing company imported a huge amount of raw materials from different countries. Fabric is one of them, in garments total costs of 50 to70% cost in fabric, So Fabric sourcing in locally will help us to make increase foreign currency and cash incentive also. Whenever we source the fabric we must conscious about price delivery, and quality.

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First Author: Mithila Kabir completed her MBA in Product and Fashion Merchandising and also accomplished of her B.A. (Honors) in Fashion Design and Technology from Shanto-Mariam University of Creative Technology, Bangladesh. She is also completed her Higher National Diploma in Fashion and Clothing from Bangladesh Institute of Art and Design .She is functioning as a Lecturer, Department of Fashion Design and Technology at Shanto-Mariam University of Creative Technology, Bangladesh and engaged with BTEC Fashion and Clothing Programme for last Five years. Her area of interest is Pattern Construction and Development, Garment production, Printed Textile and Design. Production Technique. And also she is involved as an entrepreneur and freelancer Designer.

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Third Author: Rajib Das completed his Masters on Industrial Relation and Labor Studies year of 2016 from Institute of Social welfare and Research, University of Dhaka, Bangladesh. He has accomplished his MBA Degree with the specialization on Apparel Merchandising from the BGMEA University of Fashion and Technology in the Year of 2014 with outstanding triumph. He started his under graduation in Apparel Manufacturing Management and Technology at Shanto-Mariam University of Creative Technology and received his B.A (Hon's) Degree in the Year of 2011 with Cum laude Award. Although Rajib Das had a doable opportunities to set his career in dissimilar conglomerate but still he has clearly resolute his mind to be an Educator and serve the pioneers accordingly. As its significance, very firstly he joined at Kassim Textile (BD Office) in 2011 as a Marketing Executive (Fabric). After that he worked in Al Muslim group as a Sourcing Co coordinator during the Year of 2013-2014. At the Beginning of 2015 He joined as a Sr. Merchandiser at Sky Apparels and performed until 1st May 2015 with expected audacity and so on. The matter of righteousness, Rajib Das recently functioning as a Full Time Faculty Member (Lecturer) at Shanto-Mariam University of Creative Technology which is valued as "The First Design University in this Region". He also engaged as an Adjunct Faculty in some of the notable Fashion Institute like College ofFashion and Technology and so on and also involved with compliance Development project under Accord Bangladesh as a research analysis. He has already internationally published a number of Journals/Manuscripts from several countries and in globally recognized Editions. Since 2012 to till now He has been Operating a garments merchandising related blog. His area of interest is Tools and Techniques of Merchandising, Computer Aided Design and Manufacturing, Social Compliance, Fashion and Apparel Marketing, Apparel Production Planning and Control. He participated in a number of professional Trainings and Workshops and frequently participates as a Trainer to contribute the business phenomenon. He engaged with several types of social and cultural activities. He attained some Conferences, Trainings and Workshops in, Thailand and India.