

# **Capstone Project 2**

**“Effects of Stitching faults on Productivity &  
Their Remedies in Denim (Bottom Wear)”**

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Chapter

ONE

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## Introduction

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## **Introduction**

In garment manufacturing, product has to pass through different processes like cutting, stitching, finishing and packing; each process is very important to get the final product and has different types of fault. Stitching process is the backbone of the garment industry which enables the manufacturers to take the semi-finished product for finishing process to get different special effects on final product. As stitching is very critical so same is the case with the faults of stitching, normally faults are repairable and can be removed by rework but some faults are very crucial and may cause the rejection of garments. These faults have different root causes like faults due to improper worker's handling, thread faults and seam faults etc.

## **Problem Statement**

The decision to work on the project, "Stitching faults and their remedies" was taken by two of us when we studied the courses "Merchandising" and "Sewing techniques". In merchandising, we have come to know that why our industry is losing customers. This is because customers want quality products within lead time but we take more time in the completion of orders due to more rejections and high wastage rates. In sewing techniques, we have learned about different type of stitching faults. These were the factors which built our interest into this and urged us to undertake this problem as for our final project.

## **Scope and Objectives**

The purpose of the project is to minimize the stitching faults by suggesting some remedies which would hopefully enhance the productivity of the sewing room and that would increase the overall productivity of organization.

Following are the objectives of proposed project:

- Gathering the actual data of industry.
- To identify the stitching faults.

- Try to minimize the rejection ratio
- To suggest some remedies for the identified faults
- Try to improve Productivity

We will suggest minimizing the sewing losses and improving productivity and if our suggestions work, it would be very obliging for industry in reducing the cost of production and extra consumption that could provide a competitive edge to our apparel industry to compete with other countries. Today our industry is suffering because of high production costs, high rejection and wastage rates and unskilled labor as compare to other countries. Grounds for these problems are unprofessional attitude, poor productivity, improper planning, carelessness, lack of education and ignorance. So by giving suggestions to the people of sewing industry, we think, our project would be very effective.

### **Action Plan**

We will emphasize on day to day planning. First of all we will visits sewing room of different factories. After the collection of data we'll analyze it to find the basic Reasons of the faults. This will be actually a deep down analysis to find out the Reasons of these faults. Then after this we will try to find out the remedies of these faults. At last we will try to find the impact of these remedies on productivity.

Chapter

Two

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Literature Review

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## Literature Review

American & Efir Inc. is an organization of America that provides solution services regarding textiles and clothing issues. They use to publish a magazine named as “Technical Bulletin” regularly. In their publication of 10/10/02, they included a study regarding thread and stitch which had the title,” Minimizing thread breakage and skipped stitches”. They claimed these two problems as “common aggravation” because these cause a frequent interruption in production, efficiency decline of operators and affect the quality of garments. They found out the common reasons of occurrence of these two problems which are written in a sequence below; [1]

- Wrong thread for the application
- Quality defects in the thread
- Improper needle and thread size relationship
- Defective thread guides
- Improper threading
- Excessive machine thread tension
- Defective needle or improper positioning of the needle
- Needle heat
- Defective or worn machine parts
- machine out of adjustment
- improper feeding
- improper operator handling
- flagging

In 1994, a team of researchers from college of textiles at North Carolina state university and Georgia institute of technology conducted a project on seam inspection. They said that in semi-automatic sewing stations; normally major faults could be detected like thread breakage but small defects like mis-stitches could not be and detected after the completion of the garment even sometimes after washing. According to the team, in the described situation, cost of manufacturers goes to a maximum level so there should be some sort of inspection system which can determine the faults before their occurrence. The team of researchers divided the project into two parts named as short term goals and long term goals; in the first part they aimed to get a new technology which could automatically monitor the sewn seams including all sort of defects, in the second part they used a term “black box” to be attached with the machine to describe the adjustment of machine settings for the optimum level of performance.

They conducted surveys of the industry and collected the data of knitwear and denim fabrics and indicated those stitch and seam types which needed more frequently monitoring and found out common defects which are shown in the following table;.....[<sup>3</sup>]

**Table 1. Major Stitch Types Identified for Study**

<u>Stitch Type:</u>	<u>Seam Type:</u>	<u>Fabric Construction</u>
401-2 needle chain stitch	felled inseam/riser	woven
	waist band	woven
Multiple-needle chain stitch		knit
		knit
301 lock stitch	leg hem	woven
		knit
516 safety stitch	side seam	woven
Overedge stitch		knit

**Table 2. Common Seam Defects for Both Woven and Knit Fabrics**

raw edges  
needle cuts  
non-inclusion  
seam allowance/hem width variation  
puckering  
mis-matched seam  
pleat in hem or hem double folded  
improper thread tension  
incomplete operations (out of thread, thread or needle breakage)  
mis-stitches/skipped stitches

In October 1991, Olson, L. H., Dorrity, J. L., Sikorski and Mathew E. four men produced a report on the topic of "In-Process Quality Control in Apparel Production: Sewing Defects". They divided the study into three phases; phase 1 "defect assessment", phase 2 "defect cause and detection", phase 3 "technology demonstration". They focused on the saying that prevention is better than cure so according to them if defects can be detected rapidly that will play an important role in the optimization of quality and productivity relationship. They claimed that defects found after the sewing operations impose a negative effect on cost and a major benefit of identifying defects before sewing is to avoid consuming extra time and reworking. [4]

Chapter

Three

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Methodology

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## Methodology

In sewing department we have to face many type of stitching faults. In these faults some are recoverable by reworking and some are not. Those faults which are not recoverable may cause the rejection of garment. In both cases we have a lot of wastage of time and resources. It actually affects the productivity and cost of production. We will try to find out the Reasons behind these problems and will suggest some remedies which could be helpful for the industry to reduce these faults and improve productivity.

Project will be based on two phases first we will collect the data about the faults and secondly by using the questionnaires we'll do the rejection analysis. This analysis will actually give us the percentage of the different faults regarding fabric, stitching, washing and finishing. Our methodology to achieve our states objective is that first of all we'll visit different factories to collect the actual data about the faults and rejection respectively. We will have to find the stitching faults and then we'll find out the remedies by consulting the literature and the knowledge we have got during our studies. Rejection analysis will give us the impact of these faults on cost of production and wastage of resources as well. After doing this analysis we would be able to find out that which area is more responsible for the rejection of the garment. Then we come up with the suggestions and remedies so that by keeping these points in view industry people could learn to avoid these faults. Hopefully productivity would be improved. This will be actually the impact of our project on industry.

# Chapter

# Four

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**Faults and Their Remedies w. r. t Material**

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## Faults and their Remedies w.r.t Material

Material losses are directly concern with the loss of the fabric, sewing thread, and accessories etc. used in sewing room for the completion of any production order in the garment industry. Major factor in the sewing room, which affects the cost of the final product, is the loss of fabric. As you can reduce the fabric wastage it will increase the factory revenue. Except this the other factors, which are wasted due to poor management, are basic accessories, sewing thread, and packaging material. These are the losses, which cause the cost of the unit to be increased due to wastage of clothing pieces and accessories. Any kind of material in the unit which is considering not suitable for any specific product due to poor quality, which is obtained by dirty environment of the unit or operator negligence known as wastage. The material wastage occur in the sewing room are listed below

- Fabric
- Sewing thread
- House keeping defects

### **Fabric:**

Fabric is the major factor which effect the cost of final product made for the customer. If there is too much wastage occurs in the fabric then it will become difficult to control the cost of the production. Hence it reduces the total revenue of the company. Fabric is wasted in a number of ways in the industry, some of them are listed below