

# **Reducing the Defects using DMAIC approach in Garment Industry**

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## **Abstract**

This study aims to minimize the defect rate in the sewing section of a garment industry in Bangladesh using the Lean Six Sigma DMAIC methodology. The industry faces some of the major issues such as production imbalances, poor line efficiency, low productivity and high defect rates, as a result of these issues cause manufacturers to suffer losses, thereby harming the profitability and global competitiveness of the RMG industry in Bangladesh. To eliminate these inconveniences, this paper applies the DMAIC Methodology to identify, analyze and reduce defects in a sewing section of a Bangladesh garment industry. In order to deal with these problems systematically a data-driven DMAIC methodology was used to identify analyze and reduce defects in the sewing section. Following the use of DMAIC approach, the defects rate decreased from 15.52% to 14.93% and the sigma level raised from 2.51 to 2.54, indicating a statistically significant defect reduction confirmed by hypothesis testing. The garment industry should utilize the six sigma DMAIC methodology significantly to improve operational performance, enhance quality assurance systems and build a culture of continuous improvement significantly.

## **Keywords**

Garment defects, Pareto analysis, Fishbone Diagram, Sewing section

## **1. Introduction**

The study aims to reduce the defect rate to minimize rework rate by applying the DMAIC methodology. There are some common issues in garment sector such as poor efficiency, poor line balancing, and a high percentage of defects which result in reduced production efficiency, increased rework and rejection and affect customer satisfaction. As a result, the total profitability and global competitiveness of the industry suffer badly. So, it is essential to decrease defect rate in garment industry.

Quality improvement is a structured strategy focused on developing the products or processes in order to meet standardized criteria and consumers demands. In order to ensure that the finished goods constantly fulfill the requirements, quality improvement includes reducing variation, identifying the root causes of defects and applying continuous process improvement into work. Quality improvement assures that products will continue to fulfill needs by identifying issues, resolving them and making continuous improvement.

There are different quality tools to reduce the defect rate. For instance, lean six sigma, kaizen, root cause analysis and others. Defects are found and minimized with the use of these quality tools, which increases productivity. Therefore, the effective use of these quality tools helps attaining greater productivity and overall excellence in the organization.

We applied our approach to the apparel sector. The worldwide apparel business, estimated to be worth \$1.84 trillion in 2025, is a crucial sector that makes significant contributions to the global economy (worldwide Apparel business Statistics (2025) | UniformMarket, n.d.). Around 430 million people are employed globally and it contributes roughly 1.6% of the world's GDP (Global Apparel Industry Statistics (2025) | UniformMarket, n.d.). It really matters for trading across countries and helps economies grow, especially in places that are still getting bigger like Bangladesh, Vietnam, and India. The clothing industry still does a lot for worldwide increase and changes.

This study focuses on using DMAIC methodology and statistical analysis to validate defect reduction in the sewing section of RMG industry. Although several industries have already applied the DMAIC approach to minimize defects, most of them have not statistically verified the outcomes. In this research, DMAIC was systematically applied in the sewing section, and statistical analysis was performed to confirm the effectiveness of the results.

Our research question is “How to reduce defect rate in the sewing section of RMG industry using DMAIC methodology?” The research hypothesis is “Defect rate is reduced after adopting the DMAIC methodology compared to the existing defect rate.”

### **1.1 Objectives**

The research objective is to minimize the defect rate in the sewing section of RMG industry using DMAIC methodology and statistically validate the improvement. In specific, this study aims to identify and analyze the major sewing defects along with their root causes and to implement appropriate process improvements, followed by statistical validation of the significance of the improvements achieved.

Next section contains the review of the existing literature on the topic. Then we develop the methodology with the application of the methodology in the intended case. The result has been presented in the next section. Finally, we have discussed the important results and concluded the study.

## **2. Literature Review**

The DMAIC methodology is widely used to constantly improve quality and efficiency in a variety of industrial sectors, such as manufacturing, healthcare, and food. Lean six sigma DMAIC have been applied in many research across different industries. Furthermore, it focuses only on the garment industry, highlighting its particular production difficulties in wide range of products. The effective use of DMAIC to maximize the manufacture of different garments, including shirts, coats, and pants, in order to satisfy consumer needs and improve quality (Table 1).

Table 1. Review of Existing literature on Lean Six Sigma

<b>Authors</b>	<b>Year</b>	<b>Contribution</b>	<b>Sector</b>	<b>Research Technique(s)</b>
Chandan Chandra Sheel et al.	2025	Developed integrated Lean Six Sigma DMAIC framework for textile production, quality and efficiency	Garment Manufacturing (Sewing)	Lean Six Sigma DMAIC, Survey, VSM, Process Capability
Md. Limonur Rahman Lingkon et al.	2024	Reduced sewing defects using Lean PDCA and 5S	Garment Manufacturing (Sewing)	PDCA, 5S, Pareto, Cause-Effect, OEE
Özge Ural, Canberk Elmali	2023	Applied SPC for defect reduction in denim garment production	Garment Manufacturing (Denim Production)	SPC, Flowchart, Control Charts, Pareto, Cause-Effect
Febriza Imansuria et al.	2024	Improved welding quality in automotive manufacturing using DMAIC	Automotive Manufacturing (Welding)	Six Sigma DMAIC, Fishbone, SIPOC, Statistical Analysis
Ni Putu Sania Sita Devi	2025	Optimized pants production by DMAIC & TRIZ to improve product quality	Garment Manufacturing (Pants Production)	DMAIC, TRIZ, DPMO, Pareto, Fishbone
Abbes Nedra et al.	2024	Combined Lean Six Sigma and simulation for SME garment manufacturing optimization	Garment Manufacturing (SME Sewing)	Lean Six Sigma, BPMN, Kaizen, Simulation
M. H. F. Arifin et al.	2021	Used DMAIC to reduce defects in potato chip production	Food Processing (Potato Chips)	DMAIC, Pareto, Control Chart, SIPOC
Lenny Fibriani, Dewi Riawati, Irma Dwi Nurhayati	2024	Waste reduction in garment manufacturing using Lean Six Sigma	Garment Manufacturing (Production Line)	Lean Six Sigma DMAIC, VSM, FMEA
Giuseppe Cesarelli et al.	2021	Reduced healthcare-associated infections using LSS DMAIC in rehab hospitals	Healthcare (Rehabilitation Hospital)	DMAIC, Process Mapping, Statistical Tests
Milena E. D. Mansur dos Reis et al.	2022	Literature review on DMAIC challenges in hospital patient care	Healthcare (Hospital Patient Care)	Systematic Literature Review
Brian Byrne et al.	2021	Improved pharmaceutical packaging efficiency and reduced downtime using LSS	Pharmaceutical Manufacturing (Packaging)	DMAIC, VSM, OEE, Pareto

<b>Authors</b>	<b>Year</b>	<b>Contribution</b>	<b>Sector</b>	<b>Research Technique(s)</b>
Taosif Ahmed et al.	2022	Reduced defects in knitting fabric by DMAIC implementation	Textile Manufacturing (Knitting)	DMAIC, FMEA, SPC, Pareto
Ali Akbar et al.	2024	Significant sewing defect reduction in garment manufacturing	Garment Manufacturing (Sewing)	DMAIC, Pareto, Fishbone, 5 Whys
Raihan Ahmed Joy et al.	2024	Enhanced sewing quality, productivity, and cost control in knit garments	Garment Manufacturing (Knit Garment Sewing)	TQM, Pareto, Cause-Effect, Control Charts, Cellular Manufacturing
Moin Uddin Mojumder, Hamza Saad	2025	Optimized cutting process reducing defects and downtime in garment production	Garment Manufacturing (Cutting Section)	DMAIC, Pareto, Fishbone, Poka-Yoke
Bambang Setiawan et al.	2021	Reduced PVC compound defects and improved process capability by DMAIC	Chemical Manufacturing (PVC Compounds)	DMAIC, FMEA, Fishbone, QC Patrol
Md. Ashraful Azad	2025	Improved supply chain performance in textile and garment manufacturing with LSS	Textile & Garment (Supply Chain)	LSS, DMAIC, VSM, Kaizen, 5S
Chowdhury Jony Moin et al.	2023	Identified critical knit garment sewing defects and developed TQM remediation strategies	Garment Manufacturing (Knit Garment Sewing)	TQM, Pareto, Cause-Effect, Focus Groups, WH Method

Table 1 is a systematic literature review on the use of Lean Six Sigma and DMAIC methodologies in different manufacturing industries. The studies reviewed are mostly aimed at reducing defects, improving productivity, minimizing waste, and improving quality with the help of such tools as DMAIC, SPC, VSM, FMEA, SIPOC, Pareto analysis, and control charts. Much of the literature focuses on garment production, especially sewing and production lines, although other studies have gone further into the automotive and food processing sectors. The results are always consistent to show that Lean Six Sigma is effective in enhancing the performance of processes and quality of products.

Many industrial sectors regularly apply Lean Six Sigma and DMAIC methodologies to improve quality standards and optimize their overall processes. In manufacturing garments, textiles and apparel sectors, Taosif Ahmed et al., (2022) used the Six Sigma methodology for reducing fabric defects on the knitting production, Md. Ashraful Azad, (2025) used lean six sigma to waste reduction, process improvement and optimizing supply chain efficiency, Chandan Chandra Sheel et al. (2025) used lean six sigma DMAIC for textile production optimization, enhanced product consistency and quality in the field of industrial engineering management, Abbes Nedra et al., (2022) used developed structured framework using lean six sigma and simulation for SME garment manufacturing optimization, Raihan Ahmed Joy et al., (2024) used TQM approach to improve sewing quality, productivity, and cost control. In Pharmaceutical Manufacturing, Brian Byrne et al., (2021) applied Lean Six Sigma to improved pharmaceutical packaging efficiency and reduced downtime. In Healthcare, Giuseppe Cesarelli et al., (2021) used reducing the healthcare-associated infections in a rehabilitation hospital under the Guidance of Lean Six Sigma and DMAIC, Milena E. D. Mansur dos Reis et al., (2022) used DMAIC in improving patient care processes. In food processing, Arifin et al. (2021) used DMAIC to reduce defects to improve quality of potato chip production. In Chemical Manufacturing, Setiawan et al., (2021) applied DMAIC method to reduced PVC compound defects and improvement quality product. In Automotive Manufacturing, Febriza Imansuri et al., (2024) Applied DMAIC to improved welding

quality in automotive manufacturing. Industry leaders see DMAIC as an essential roadmap for continuous improvement. So, industries consistently improve performance and quality by applying lean six sigma and DMAIC.

Garment industries produce a many type of products such as shirts, pants, jackets and many varieties of apparel products as per consumer requirements. Each product type has unique production requirements. Özge Ural and Canberk Elmali (2023) applied statistical process control tools for defect reduction and quality improvement in denim production, Ni Putu Sania Sita Devi (2025) applied the DMAIC methodology combined with TRIZ to optimize pants production and enhance efficiency, Fibriani et al., (2024) improved the production process and waste reduction using lean six sigma DMAIC. DMAIC has been used as a valuable design tool for every type of product like pants, shirt assembly line refinement, reducing jacket sewing errors, and improving material utilization. DMAIC has an impact across various garment processes, helping to improve effectiveness and production efficiency while maintaining product quality.

The garment industry has different of types of sections such as cutting, sewing, finishing, packaging and others. Among these, some common defects which happens most of the time in the cutting and sewing sections, including inaccurate cutting, missing notches, uneven, edges, skip stitches, broken seams, puckering, and open seams .In sewing section, Lingkon et al., (2024)applied integrating lean methodology to Reducing sewing defects to improve productivity, Akbar et al. (2024) used DMAIC in the sewing section to pinpoint and rectify rework issues, optimizing time, reducing costs, and enhancing product excellence. Chowdhury Jony Moin et al. (2023) root causes of sewing defects using TQM tools for quality improvement. In cutting section, Moin Uddin Mojumder and Hamza Saad, (2025) Used Sig Sigma and DMAIC in cutting process to reduce defects and downtime. Although DMAIC has been used in the sewing sector of various industries, others have not statistically validated the results. We used DMAIC in sewing sections with statistical analysis to validate and prove the entire process.

#### Research gap

Although DMAIC has been used in the sewing sector of various industries, others have not statistically validated the results. We used DMAIC with statistical analysis to validate and prove the entire process.

### 3. Methods

#### 3.1 Lean Six Sigma DMAIC Methodology

In the context of Six Sigma, the method known as DMAIC offers a systematic framework that organizational members adhere to when addressing problems and enhancing processes, in which by following this structured approach, individuals can prevent premature conclusions and ensure a thorough exploration of alternative solutions. Outline of the Six Sigma and DMAIC framework in Figure 1 consists of five-step processes, that are: Define, Measure, Analyze, Improve, and Control(Sheel, 2025).

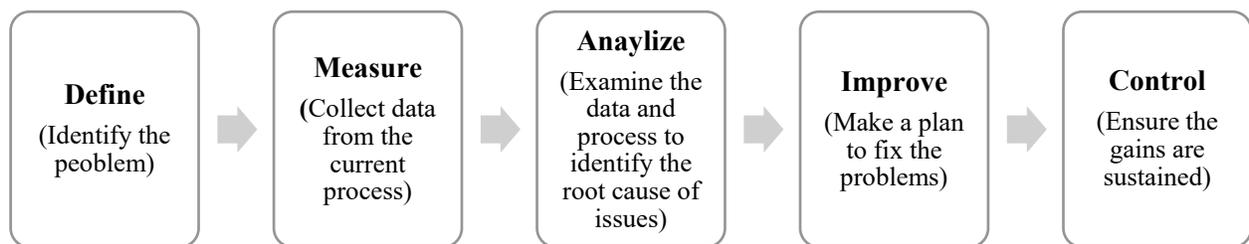


Figure 1. DMAIC flowchart

##### 3.1.1 Define stage

The Define stage identifies the key problems and project goals. Emphasized Lean Six Sigma adoption for identifying quality problems and productivity challenges in garment industries(Mojumder & Saad, 2025). In this study, the problem was the high defect rate in the sewing section of the garment industry. This stage establishes the projects strategy by defining sewing defects and relating them with measurable quality improvement plans. SIPOC is a process

map that includes Suppliers, Inputs, Process, Outputs and Customers. Table 2 shows the SIPOC flow of the selected factory.

Table 2. SIPOC flow of X composite KNIT WEAR LTD.

<b>Suppliers</b>	<b>Inputs</b>	<b>Processes</b>	<b>Outputs</b>	<b>Customers</b>
X fabric limited	Unstitched cloth	Cutting	Pants	Bestsellers
	Machinery	Sewing	Jackets	Jack & Jones
	Thread	Washing		
Y Group	Needles	Ironing		
	Button	Finishing		
	Zipper	Packaging		
	Label			

### 3.1.2 Measure stage

The Measure stage collects data in order to understand the current performance of the process. In this research defects rate and sigma levels were measured which is indicated in Table 2. The frequency of defects of the inspected garments was also measured and documented in Table 3. Also, by using Pareto Chart major types of defects were identified which is shown in Figure 2. This phase educates us of the process's performance before the implementation of improvements.

Table 3. DPMO and Sigma level of existing process

Total checked pieces	239486
No of defectives	37173
% defectives	15.52199
DPO	0.1552199
DPMO	155219.9
Sigma level	2.51

Calculation of the Sigma level by using the following formula:

$$\text{Sigma Level} = \text{Normisnv}\left(\frac{1 - \text{Defects}}{\text{Total opportunities}}\right) + 1.5$$

Where,

- Defects = 37173,
- Total Opportunities = 239486,
- Sigma shift = 1.5

The following data shows defect types, defectives unit and their cumulative (%) (Table 4):

Table 4. Frequency of Defects of the Inspected

<b>Defects Name</b>	<b>Defects Occurrence</b>	<b>Percentage (%) of Occurrence</b>
Skip stitch	5350	14.4
Uneven	4895	27.6
Up-down & High-low	4697	40.2
Broken & Open stitch	4462	52.2
Down stitch	3698	62.1
Raw edge	3534	71.7
Pleated	2863	79.4
Over Stitch	2103	85
Revers	1845	90

Dirty, Oil & other spot	1364	93.6
Thread Tension & Gathering	1265	97.05
Others (Defects $\geq 0.15\%$ )	1097	100

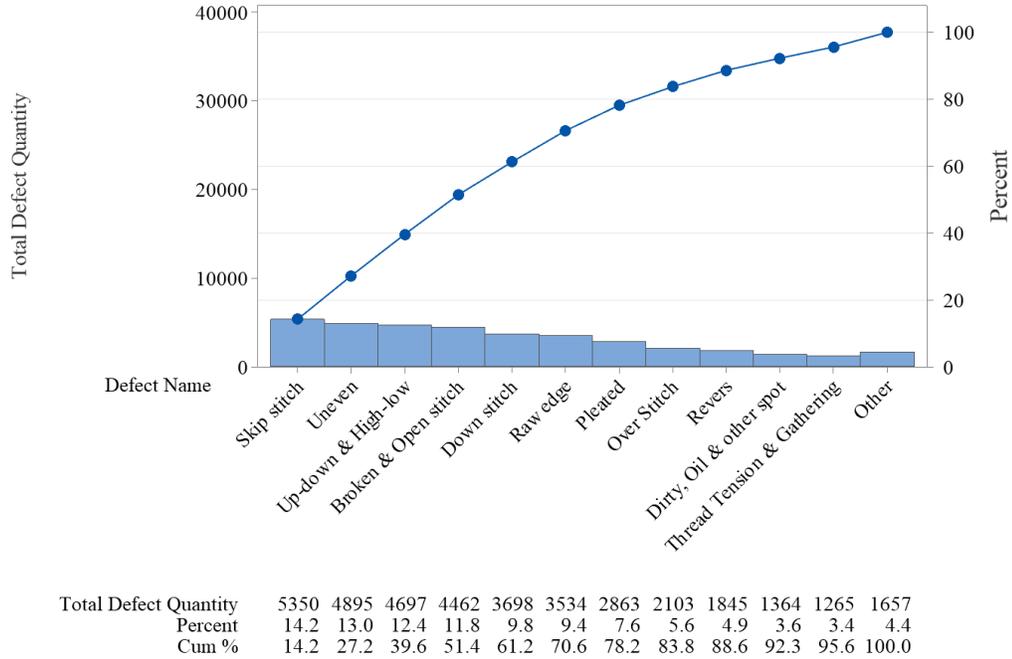


Figure 2. A Pareto Chart for defects for analysis based on priority of frequency

### 3.1.3 Analyze stage

The Analyze stage aims to determine the root causes of defects through cause-and-effect diagrams. Applied Lean Six Sigma tools such as Pareto and root cause analysis to find the main reasons behind waste and defects in garment production (Fibriani et al., n.d.). It helps determining the most common causes that occur most frequently. From Figure 3 to Figure 9 shows the cause and effect diagram for all major types of defects. This stage identifies the root causes of quality problems so that corrective actions to focus on the actual issues.

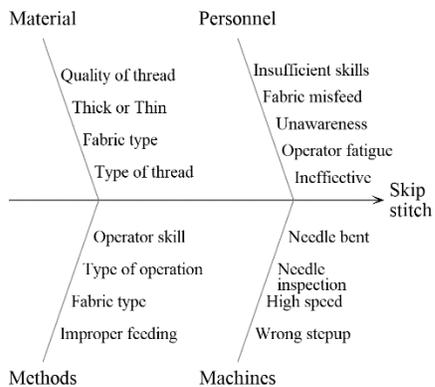


Figure 3. Fish-bone diagram for Skip Stitch

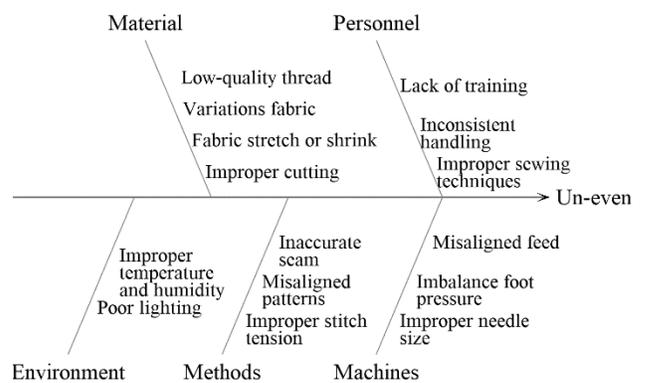


Figure 4. Fish-bone diagram for Un even

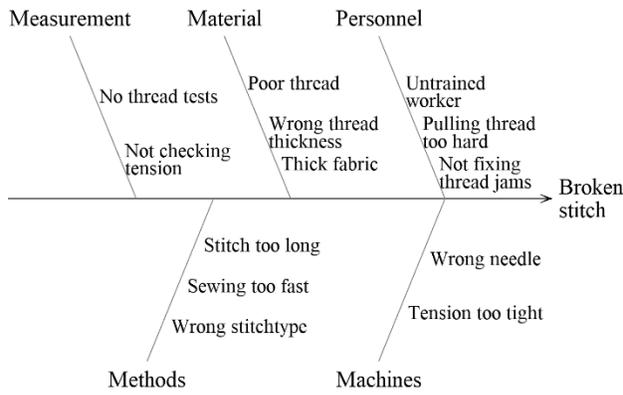


Figure 5. Fish-bone diagram for Point Broken stitch

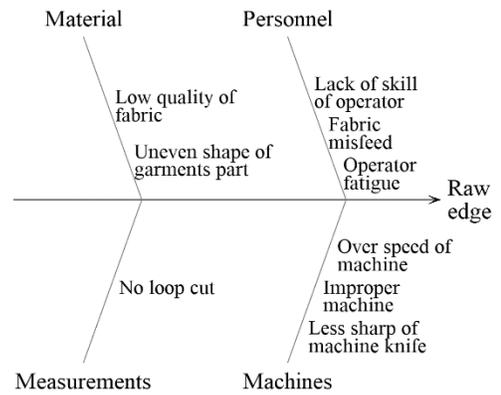


Figure 6. Fish-bone diagram for Raw edge

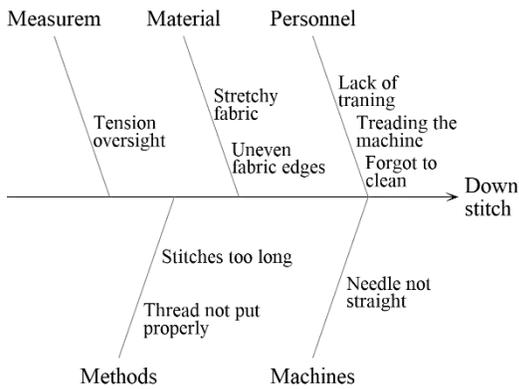


Figure 7. Fish-bone diagram for Point Down stitch

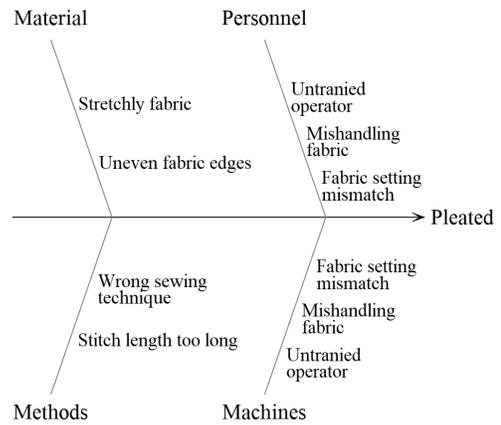


Figure 8. Fish-bone diagram for Pleated

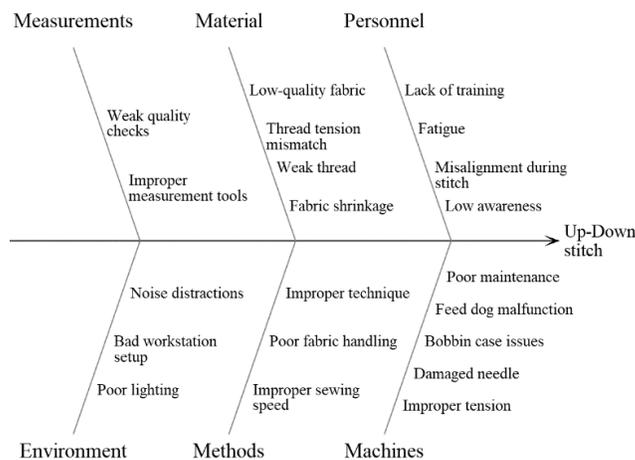


Figure 9. Fish-bone diagram for Up-down

### 3.1.4 Improve stage

The Improve stage involves developing and implementing feasible solutions into operation based on analysis results. To improve quality and minimize variance, potential solutions are evaluated and successful ones are implemented in the production procedure. This research aimed to propose some possible remedies for reducing the factors that lead to defects by utilizing brainstorming, direct observation, and a review of existing literature. The solutions along with their related causes are presented in Table 5. This phase implements focused optimizations that reduce failure rates and increase throughput.

Table 5. Suggested solutions against causes of defects

<b>Defects name</b>	<b>Causes</b>	<b>Solution</b>
Skip stich	<ol style="list-style-type: none"> <li>1. Improper needle and sewing thread according to fabrication.</li> <li>2. Improper loop formation.</li> <li>3. Due to defective needle.</li> </ol>	<ol style="list-style-type: none"> <li>1. Need to use proper needle and sewing thread according to fabrication.</li> <li>2. Need to use good rotary hook and looper during sewing.</li> <li>3. Should use non-defective needle.</li> </ol>
Uneven	<ol style="list-style-type: none"> <li>1. If sewing allowance not maintain properly.</li> <li>2. Operator poor sewing handling.</li> <li>3. Fabric stretch or shrinkage.</li> </ol>	<ol style="list-style-type: none"> <li>1. Need more counseling and training.</li> <li>2. Implement a fabric relaxation process before cutting.</li> <li>3. Use appropriate stitch tension.</li> </ol>
Up down & high low	<ol style="list-style-type: none"> <li>1. Pattern marking not followed properly.</li> <li>2. Improper handling of operator.</li> </ol>	<ol style="list-style-type: none"> <li>1. Follow mark properly</li> <li>2. point have to adjust according to mark.</li> <li>3. Ensure fabric alignment before stitching.</li> </ol>
Broken stich	<ol style="list-style-type: none"> <li>1. Excessive thread tension.</li> <li>2. Needle frictional heat during sewing.</li> <li>3. Poor quality thread.</li> </ol>	<ol style="list-style-type: none"> <li>1. proper tension adjustment according to fabric.</li> <li>2. Apply needle lubrication for heat resistance.</li> <li>3. Use high-quality suitable for the fabric.</li> </ol>
Raw edge	<ol style="list-style-type: none"> <li>1. Cut panel measurement bigger than required.</li> <li>2. Uneven fabric thickness affecting seam edge.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure pattern accuracy and confirm measurements before cutting.</li> </ol>
Pleated	<ol style="list-style-type: none"> <li>1. Fabric too stiff or too soft.</li> <li>2. Cutting length problem.</li> <li>3. Operator method problem.</li> </ol>	<ol style="list-style-type: none"> <li>1. Conduct fabric testing before production.</li> <li>2. 100% cut mark follows.</li> <li>3. Provide structured training for operators.</li> </ol>
Down stich	<ol style="list-style-type: none"> <li>1. Stitching alignment not follow properly.</li> <li>2. Old or damaged needle.</li> <li>3. Wrong stitch type for fabric type.</li> </ol>	<ol style="list-style-type: none"> <li>1. Have to stitch over actual alignment.</li> <li>2. Use correct needle type and size for the fabric.</li> <li>3. Adjust tension settings to match the stitch type and fabric.</li> </ol>

Validation:

Hypothesis Testing for Defect Rate Reduction: Since the total number of checked pieces dropped significantly throughout the Improve phase so that both defect percentage and absolute defect counts were taken in order to prevent biased interpretation.

Step-1: State null and alternative hypothesis:

$$H_0: \mu_a \geq \mu_b \text{ (no changes in defect rate)}$$

$$H_1: \mu_a < \mu_b \text{ (reduction in defect rate after DMAIC)}$$

Where,

- Sample mean before implementation  $X_b = 4214.14$
- Sample mean after implementation  $X_a = 1713.29$
- Sample standard deviation before implementation  $S_b = 875.88$
- Sample standard deviation after implementation  $S_a = 564.34$
- Sample size before implementation  $n_b = 102$
- Sample size after implementation  $n_a = 43$

Step-2: Level of significance:

$$\alpha = 0.05$$

Step-3: Test statistics:

The pooled t-test: Unknown population standard deviations

Step-4: Rejection rule:

$$\text{Reject } H_0 \text{ if, } t < t_{\alpha}$$

The pooled variance was computed as:

$$sp^2 = \frac{(n_b - 1)(s_b)^2 + (n_a - 1)(s_a)^2}{(n_b + n_a) - 2}$$

$$sp^2 = \frac{(102 - 1)(875.88)^2 + (42 - 1)(564.34)^2}{(102 + 42) - 2}$$

$$sp^2 = 636498.63$$

The test statistic was then calculated as:

$$t = \frac{X_a - X_b}{\sqrt{sp^2 \left( \frac{1}{n_b} + \frac{1}{n_a} \right)}}$$

$$t = \frac{1713.29 - 4214.14}{\sqrt{636498.63 \left( \frac{1}{102} + \frac{1}{43} \right)}}$$

$$t = -17.25$$

Step-5: Conclusion:

The calculated value,  $t = -17.25$  is far less than the critical value,  $t_{\alpha} = -1.653$ , and rejects the null hypothesis. It can be concluded that the improvement measures were effective in significantly reducing defects in the production process. As a result of the implementation of the suggested solution for improvement attempts, the number of defects has decreased statistically significantly. Due to the short implementation period, machine and operator variability, high product and defect variety, and insufficient maintenance control, the improvement remained limited even though the result was statistically significant. Therefore, the improvement measures worked well and reduced defects in the production process.

### 3.1.5 Control stage

The Control stage ensures that improvements are maintained over time. Highlighted the importance of sustainability and continuous control in maintaining defect free textile production (Arifin et al., 2021). The performance of the new

process is maintained by standard operating procedures, monitoring plans and regular training. This stage ensures stability over the long term through performance monitoring and defect elimination.

- To help workers make less mistakes, they will receive training and have the appropriate process chart on their tables.
- Supervisors will guide staff members, ensure that defect charts are followed and offer quick feedback in order to maintain quality.
- Make sure every necessary equipment is prepared and in good condition before starting the operation.
- An effective quality management system is needed which will be effective for the industry.

## 5. Result and Discussion

### 5.1 Numerical results:

We implemented a defective percentage measuring method to improve solution quality. After analyzing seven weeks of data using the previous sigma level formula, we calculated the DPMO and Sigma Level as shown in Table 6. The sigma level increased from 2.51 to 2.54. Future developments will be far greater if the organization keeps up this strategy.

Table 6. DPMO and Sigma level of after improve

	<b>Before</b>	<b>After</b>
Total checked pieces	239486	136623
No of defectives	37173	20403
% Defectives	15.52	14.93
DPO	0.1552	0.1493
DPMO	155219.9	149300
Sigma level	2.51	2.54

### 5.2 Graphical Results

A bar chart is a graphical representation used to display and compare discrete categories of data through rectangular bars, where the length or height of each bar is proportional to the frequency or value of the corresponding category (*Bar Graph: Definition, Examples and How to Create One*, n.d.). In Figure 10. total checked pieces, number of defective units, defect rate (%), DPMO, Sigma level are shown on the Y-axis, while the two scenarios (before and after DMAIC) are represented on the X-axis. The quality improvement is shown in the bar chart, where the number of inspected units decreased from 239486 to 155219.9 and the number of defective units decreased from 31773 to 20403 as well as lowering the defect rate from 15.52% to 14.93%. As a result, the process sigma level increased from 2.51 to 2.54, and Defects Per Opportunity (DPO) improved from 0.1552 to 0.1493. Here we have used this quality control tool to visualize how process enhancements resulted in a reduction of defects and a minor rise in the sigma level.

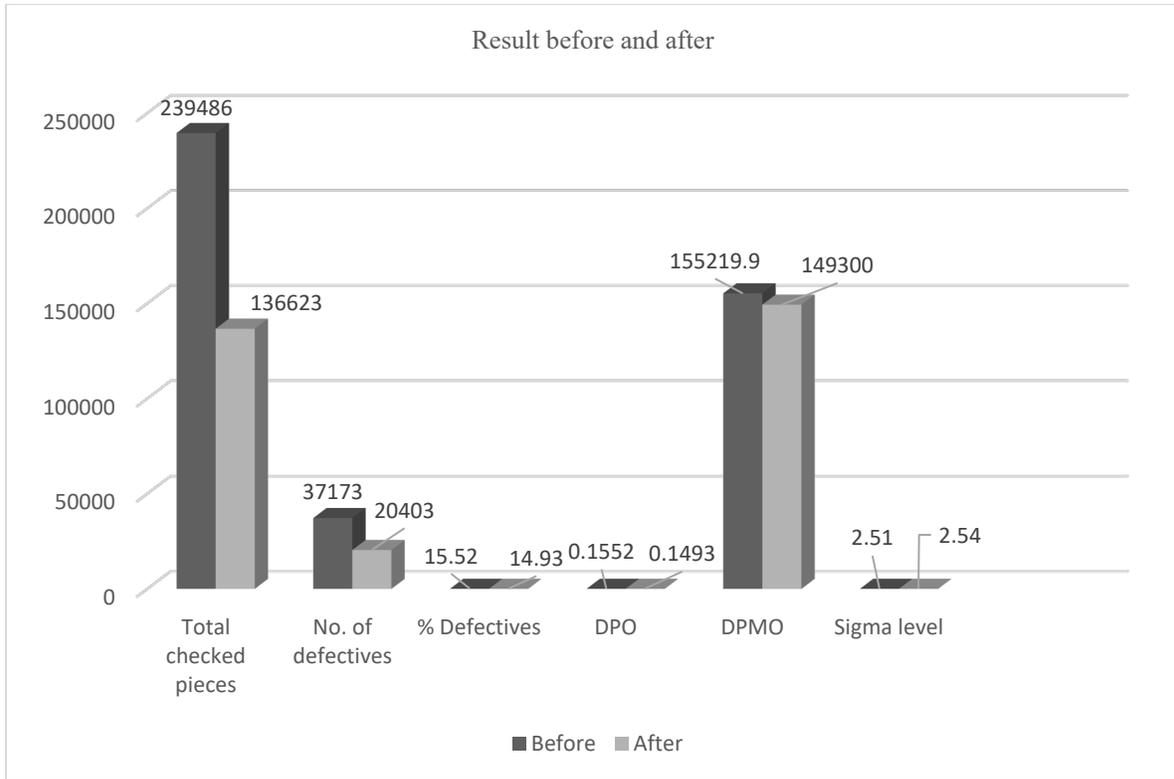


Figure 10. Result before and after DMAIC implementation

## 6. Conclusion

DMAIC methodology was used to decrease the defect rate in the sewing section of the garment industry. Therefore, as the defect rate decreased from 15.52% to 14.93% and the sigma level increased from 2.51 to 2.54, it indicates that the improvement strategies were effective in achieving the research objective. The observation period was only a few weeks, and the implementation was limited to one floor. As a result, the outcomes could change due to the size of the data collection and the production setting. Moreover, additional factors like operator skills and maintenance of the equipment were not entirely manageable, which could influence the overall performance outcomes. In future, the DMAIC methodology can be applied to other sections of the garment industry such as cutting, finishing and packaging in order to achieve comprehensive quality improvement throughout the production chain. Furthermore, by involving multiple factories with a long-term study can confirm the defect reduction improve the DMAIC framework's applicability to Bangladesh's larger RMG industry.

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