

HibarkahOESim

by Inspirasi Publisher

Submission date: 25-Jan-2025 10:44PM (UTC-0500)

Submission ID: 2571520590

File name: Hibarkah_OE.pdf (1.07M)

Word count: 6720

Character count: 36310

Sigma Level Choice Examination in Executing Incline Six Sigma (LSS) within The Textile and Product Textile Industry

Hibarkah Kurnia^{1*}, Tri Ngudi Wiyatno¹, Bayu Hari Nugroho², Arif Nuryono³

¹ Faculty of Engineering, Industrial Engineering Department, Universitas Pelita Bangsa, Jl. Inspeksi Kalimalang No. 09, Cikarang, West Java 17530

² Faculty of Engineering, Industrial Engineering Department, Universitas Mercu Buana, Jl. Meruya, Kembangan, Jakarta 11650

³ Faculty of Engineering, Industrial Engineering Department, Universitas Bhayangkara Jakarta, Jl. Raya Perjuangan, Bekasi, West Java 17143

* Corresponding author: hibarkah@pelitabangsa.ac.id

ARTICLE INFO

Article history
Submission
Revised
Accepted

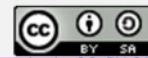
Garment
Industry
Lean Six Sigma
Literature Review
Textile



<https://doi.org/10.22219/oe.2024.v16i1001>

ABSTRACT

Many manufacturing industries in the world use the Lean Six Sigma (LSS) approach in analyzing and improving waste activities and reducing production defects. The Textile and Product Textile (TPT) industry can also be easily implemented because this industry is a labor-intensive industry. However, in its development, no one has analyzed the sigma level in the TPT industry by reviewing studies. The sigma level obtained from various sources and various types of TPT industries cannot yet be concluded about the sigma level value for each type of industry. This research points to look at writing articles related to LSS, particularly within the TPT industry. This inquire about employments the clustering strategy, specifically a refinement research strategy taken within the TPT industry within the writing review. This ask around found dispersions of 50 articles that were effectively studied inside the composing with the Six Sigma technique being the preeminent broadly utilized and more explore objects based on the tall quality of 29 articles. Gathering by industry section is the piece of clothing industry with 15 articles that reinforce the LSS. In the interim, based on nation groupings, the biggest number is Indonesia with 19 articles. It is trusted that this inquire about commitment can ended up a reference for anybody who will utilize LSS within the fabricating industry .



2
This is an open-access article under the CC-BY-SA license.

1. Introduction

Currently, the industrial sector's contribution to development in several countries relies heavily on the manufacturing industry. The manufacturing industrial sector plays an important role in contributing to the country's income to develop more advanced (Kurnia, Setiawan, et al., 2022). The manufacturing industrial sector promises high productivity results compared to other sectors. The manufacturing industry absorbs a lot of labor, especially the Textile and Product Textile (TPT) industries, which can create added value for the country (Hutama, 2022). So this added value can trigger competition between companies regarding productivity and quality which must be improved (Haviana & Hemadewita, 2019), including in the TPT industry which requires all activities to have benefits for the company (Chitichotpanya et al., 2022). Even though each activity has a different value, especially operational costs, every company must still think about increasing its profits by eliminating waste and reducing defects (Santos et al., 2019).

Please cite this article as: Please cite this article as: Bombang, S. (2024). The implementation of FMEA for analyzing the risk of natural disaster logistic activities (case study: CSER project childfund intemational). *Operations Excellence: Journal of Applied Industrial Engineering*, 15(3), 306-313. doi:<http://dx.doi.org/10.22441/oe.2023.v15.i3.096>

Every manufacturing industry must have a strategy specifically for improvement to increase customer satisfaction and meet customer demands (N. M. Ahmed et al., 2015; Kumia et al., 2023). Every company needs to implement an improvement approach that can increase productivity and quality so that operational costs can be reduced (Putri & Primananda, 2021). This improvement strategy also applies to the TPT industry, where to improve the performance of the industry and its workers, waste analysis must be carried out and reduce dominant defects that occur in each production process flow (Pereira et al., 2019).

Lean Manufacturing (LM) could be a strategy that centers on diminishing squander in all viewpoints of a company's generation exercises may be a procedure that centers on diminishing misuse in all points of a company's era works out (Siregar et al., 2018), by using a repair tool called VSM (Maria et al., 2019; Zahrotun & Taufiq, 2018). The Lean approach can be combined with Six Sigma to reduce defects and determine the sigma level (Kurnia & Hardi Purba, 2021). The Lean approach still includes LM, namely by doing things better using fewer resources, including energy, equipment, time, and space, which can provide benefits for the company (Engelseth & Gundersen, 2018). The Lean method can also be applied to reduce waste in every TPT production process (Mothilal & Prakash, 2019).

One sustainable strategy that can be used by various industries to improve performance and reduce waste is called LM (Jaqin et al., 2023; Kaneku-Orbegozo et al., 2019), the LM method can also be applied in the health industry (Sukma et al., 2022). Apart from that, this method can provide effective results to optimize production costs efficiently and effectively (Zulkamaen et al., 2023), and increase productivity by eliminating waste (Prayugo & Zhong, 2021).

The method that can be applied to the TPT industry is the Six Sigma method where the sigma level can be determined for each product. This method also aims to improve quality and minimize defects (Hayajneh et al., 2020). Within the piece of clothing industry, this strategy can improve item quality within the form of men's formal coats by analyzing absconds within the overwhelming parts (Sjarifudin et al., 2022). The Six Sigma strategy can be connected to the material industry by optimizing quality control, minimizing the number of absconds, and guaranteeing wrapped up products meet quality guidelines (Sjarifudin & Mansur, 2018).

The Six Sigma strategy can be connected with the Define-Measure-Improve-Analyze-Control (DMAIC) approach which incorporates the estimation arrange in decreasing item absconds (Zaman & Zerlin, 2017), and can moreover increment the number of conveyances to clients (Hamdi et al., 2015).

A few approaches are as a rule connected by the TPT industry for enhancement, counting the Kaizen approach. This approach prioritizes assessment, planning, and taking remedial activity. Each enhancement procedure to kill exercises that don't have included esteem employments the Container Do Check Activity (PDCA), Factual Prepare Control (SPC), 5S, and other approaches. This approach has been made by numerous distributors in different diaries, counting the Incline Six Sigma (LSS) approach.

This LSS approach is a combination of Lean methods with Six Sigma which functions to reduce costs, improve quality, and encourage continuous improvement. All of this aims to achieve higher levels of customer satisfaction and profitability. The LSS approach is more broadly connected to the fabricating industry to overcome squander and imperfection issues within the fabricating industry including the TPT industry. The method stages within the TPT mechanical division start with the planning of normal filaments and fake strands planning for making yarn (Turning Plants). Then the next process is making woven fabric or clothing materials (Weaving and Knitting), and the last is making textile materials that are used as garment materials or accessories.

The phenomenon that has occurred so far has been experienced by the TPT industry and researchers have experienced difficulties in finding a bibliography as a reference in determining standards. The application of LSS in the TPT industry did not find a sigma level for each TPT, and little is still known about the scope of application of Six Sigma in the Textile Industry.

This new research approach not only examines literature reviews but also determines sigma reference levels for several products produced by the TPT industry. This is different from other research which only determines the sigma level of one product. This research summarizes all research results by reviewing the sigma level of each product so that it can be used as a reference for the sigma level in each TPT product. This research aims to detect systematic observations of literature related to LSS in all TPT sectors and make sigma-level conclusions in each TPT sector.

2. Methods

This inquire about incorporates expressive investigate utilizing auxiliary information, to be specific by collecting articles related to the utilize of the LSS approach within the TPT industry division. The articles that will be collected are constrained to the a long time 2015 to 2022 so the articles found are the most recent. Looks can be carried out on well-known distribution databases on Google Researcher, Elsevier, and other distributors. Revelation of TPT articles using keywords, specifically LSS, within the TPT industry. The inquire about stages are separated into 3 stages, the inquire about steps can be seen in Figure 1 .

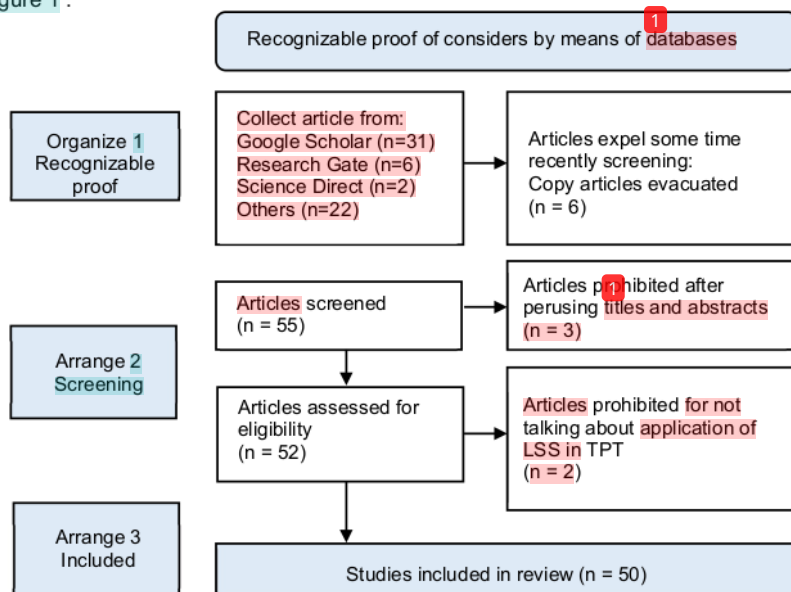


Fig. 1 Study framework

Based on Figure 1, this inquire about framework livelihoods three research stages. The essential step is recognizing distinctive articles collected from different distributor databases and after that cross-checking the articles to maintain a strategic distance from duplicate articles with the same subject. The moment step is to channel articles from a few articles to guarantee that nothing is out of the LSS subject within the TPT industry. The third step is to assess a few articles to examine how particularly the application of LSS is within the TPT fabricating industry.

3. Results and Discussion

This section discusses the results and discussions that have been obtained from data collection and processing during the research.

3.1 Article Analysis Result

After several articles have been collected, the next step is to analyze several articles within a parameter. Several articles have been collected according to the theme, namely LSS in the TPT manufacturing industry. The results of the analysis of several articles can be seen in Table 1.

Table 1 Existing literature review of the LSS in TPT industries

No	Article Identity	Sector	Research Object	Result
1	(Kurnia, Jaqin, & Purba, 2022b)	Knitting	Quality	Increase sigma-level to 3.96 3.70
2	(Kurnia, Jaqin, & Manurung, 2022)	Weaving	Waste	3.87
3	(Kurnia et al., 2021)	Knitting	Quality	3.96
4	(Kurniawan & Prestianto, 2020)	Garment	Waste	4.14
5	(Dey et al., 2020)	Garment	Waste	3.12
6	(Khan et al., 2020)	Weaving	Quality	2.91
7	(Fithri, 2019)	Weaving	Quality	3.07
8	(Henny et al., 2019)	Spinning	Quality	4.00
9	(Purnama et al., 2018)	Garment	Quality	Increase sigma-level to 3.86 3.61
10	(Shafira & Mansur, 2018)	Weaving	Productivity	3.32
11	(Sjarifudin et al., 2022)	Garment	Quality	Increase sigma-level to 3.78 3.57
12	(Syafwiratama et al., 2017)	Spinning	Quality	Increase sigma-level to 3.10 2.20
13	(Adikorley et al., 2017)	Spinning	Waste	Increase sigma-level to 4.32 3.74
14	(Zaman & Zerín, 2017)	Garment	Quality	2.30
15	(Pratiwi et al., 2016)	Weaving	Quality	3.57
16	(Alkatiri et al., 2015)	Weaving	Waste	4.09

1 Table 2 Normal sigma level based on case ponder

No	Sector	Product	Process	Average Sigma Level Based on Case Study
1	Spinning	Yarn	Spinning	4.00
		Fiber	Cutting	2.65
2	Weaving	Dim textures	Weaving	2.57
		Color textures	Assessment	5.00
3	Sewing	Tape	Weaving	3.87
		Socks	Sewing	2.83
4	Garment	Child dress	Wrapping up	4.14
		Formal jacket's	Wrapping up	3.68
		Shirts	Sewing	2.84
		Clothing	Sewing	2.75
		Sacks	Sewing	3.73
		Pants	Sewing	3.12

Based on Table 1, each division of the TPT industry has contrasts in terms of sigma level enhancement comes about. The Six Sigma strategy has come about in expanded sigma levels after enhancements have been made. It can be concluded that executing LSS can decrease generation absconds and increment the sigma level (Prahara & Nawangpalupi, 2021). A summary of sigma levels in several sectors of the TPT industry can be seen in Table 2.

Based on Table 2, it can be concluded that each TPT sector has obtained a sigma-level reference. This Sigma-level reference in each sector of the TPT industry can be used as an illustration of Six Sigma research by other researchers or business actors on TPT products and processes. This reference can make it easier for other researchers in comparative studies if the research results are too far from the results of other studies.

3.2 Article Classification

Gathering a few articles from the investigation comes about, a add up to of 50 articles have been collected. Based on the classification of a few articles that center on the year, mechanical division, distributor, nation, strategy, question, and sort of investigate that has been carried out. The nitty gritty comes about can be seen in Figure 2.

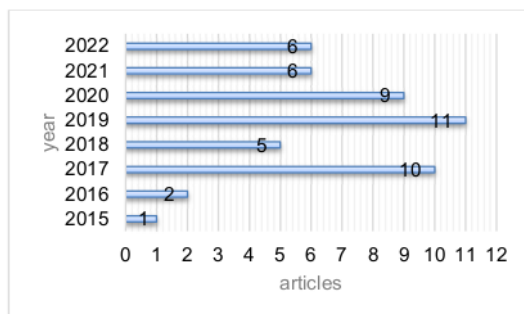


Fig. 2 Year of publication

Based on Figure 2, it shows that the collection of article publications is limited from 2015-2022. The most dominant year of publication on the LSS theme in the TPT industry was 2019 with 11 articles or 24%. Likely, this year many researchers from business actors in the TPT sector will conduct research to improve waste, non-value-added activities, and decreased productivity. Meanwhile, a grouping of several articles that focus on the segmentation of the TPT industry can be seen in Figure 3.

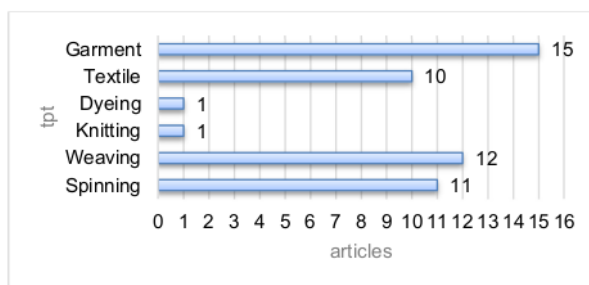


Fig. 3 Focus of segmentation

Based on Figure 3 which centers on industrial fragment division, it is found that the TPT fragment is the first overpowering in terms of the foremost vital number of distributed articles, to be particular inside the article of clothing portion with 15 articles or 30%. The piece of clothing industry fragment is the first curiously put for explore by various investigators since the division may be a uncommonly complex issue. The recognizable confirmation of many articles that center on the country where the ask almost was conducted can be seen in Figure 4.

Based on Figure 4, the comes approximately of the examination of conveyances that center on the first overpowering examine country are Indonesia with 19 articles or 38% . This outlines that Indonesia has numerous TPT industrial facilities, so numerous analysts conduct investigate related to LSS within the TPT industry in Indonesia. The comes about of the analysis of a few articles centering on research objects can be seen in Figure 5.

Based on Figure 5, appears that the LSS method research protest within the TPT industry is more overwhelming within the quality angle with 29 articles or 58%. Usually since the Six Sigma strategy may be a strategy at the Sigma level in lessening surrenders within the generation handle. In terms of actualizing this strategy, is simple to do in terms of decreasing production defects (Tjandra et al., 2018). The results of the analysis of several articles that focus on research types can be seen in Figure 6.

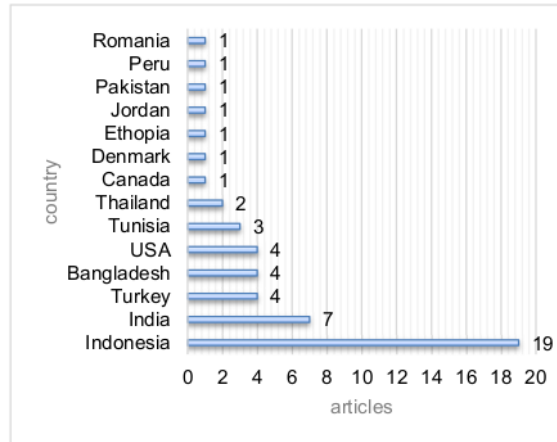


Fig 4 Focus of country

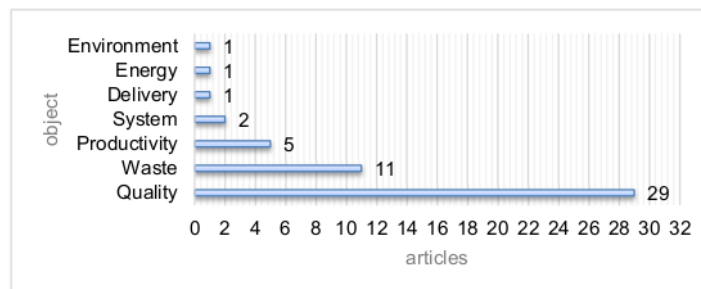


Fig. 5 Object of research

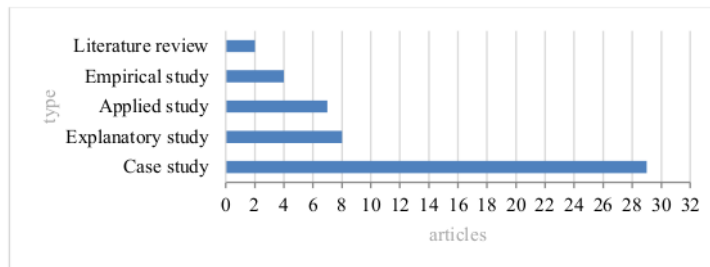


Fig. 6 Type of research

Based on Figure 6, shows up that the comes almost of the examination of some articles that center on the sort of inquire about are more centered on case considers, 29 articles equal 58%. This demonstrates that with this sort of case ponder, the article is more centered and looks for remedial arrangements to generation imperfection issues. This sort of case think about centers more on applying the LSS approach through coordinate perception within the field by collecting information, handling information, and taking remedial activity.

3.3 Article Focus Summary

The comes approximately of this ask almost have recognized 50 articles related to the application of LSS inside the TPT industry gotten from conveyed journals. The assurance get ready for a number of articles is outstandingly clear, centering on the application of LSS within the TPT industry. The gathering of many chosen articles will be summarized and analyzed based on the fabric industry portion, checking Turning, Weaving, and Weaving. Within the cruel time, the piece of clothing division is assembled based on the additional items utilized .

This LSS approach includes the basic concept of Kaizen in terms of improving problems in the manufacturing industry. The improvement parameters are based on the Lean method to analyze waste in non-value-added activities. Apart from that, it also analyzes non-value-added processing time waste using the Value Stream Mapping (VSM) method (Carvalho et al., 2019). Meanwhile, to apply the sigma level, the DMAIC approach can be used, meaning that the DMAIC approach is a stage of the improvement process where each stage uses an improvement tool (M. S. Khan et al., 2020). Then, the Total Quality Management (TQM) approach is all forms of total quality improvement which also calculates the percentage of production defects (Hardono et al., 2023).

The comes about of this inquire about relate to the overwhelming writing audit of a few articles that apply the LSS approach to the TPT industry utilizing the DMAIC approach. The DMAIC approach capacities to decide the sigma level and decrease generation abandons (Kurnia, Jaqin, & Purba, 2022b). The demonstrate found in this ask around is that there were 18 articles equal 36% that utilized the DMAIC approach in coherent work .

3.4 Benefits Implementation of LSS

LSS is a combination of LM and Six Sigma, which means it has a double meaning, each of which aims to reduce non-value-added activities. The Lean method more often uses the VSM method to map all activities in each section. VSM is a system that can eliminate all types of waste. The advantages of the Lean method can increase production while making the process more effective (Zulkarnaen et al., 2023). Meanwhile, by implementing Six Sigma, companies will be able to reduce production defects and increase sigma levels.

LSS is presently one of the foremost sought-after quality change approaches by organizations in many businesses. This is often since this approach can give benefits in terms of trade decision-making. All choices are made based on existing marvel information, successful compared to choices that as it were depend on hypothesis. Separated from that, the advantage of LSS is that it can spare time in getting fast arrangements and can diminish operational costs. Fetched investment funds in diminishing generation squander, and picking up benefits for the company so that the company can still work (Raja Sreedharan & Raju, 2016).

Table 3 Existing Rundown of LSS within the TPT Industry

No	Parameters	Authors	Amount of Articles
1	LM defects	(Adikorley et al., 2017) (Mohan Prasad et al., 2020) (Palange & Dhatrik, 2021) (Kaswan & Rathi, 2020) (Nørup et al., 2019) (Mothilal & Prakash, 2019) (Roesmasari et al., 2018) (Kaswan & Rathi, 2019)	8
2	LM processing time	(Dinulescu, Ruxandra Dima, 2019) (Martinez-Condor et al., 2020) (Bharath et al., 2017)	3
3	DMAIC Six Sigma	(Kurnia, Jaqin, & Purba, 2022b) (Kurnia et al., 2021) (Kurnia, Jaqin, & Manurung, 2022) (Karabulut & Yildiz Kumru, 2019) (Kumar et al., 2020) (Vermaelen & Kovach, 2021) (Dey et al., 2020) (Khan et al., 2020) (Hayajneh et al., 2020) (Purnama et al., 2018) (Nurprihatin et al., 2017) (Syafwiratama et al., 2017) (Zaman & Zerín, 2017) (Suwanich & Chutima, 2017) (Pratiwi et al., 2016) (Alkatiri et al., 2015) (Mukhopadhyay, 2015) (Kurnia, Jaqin, & Purba, 2022a)	18
4	DMAIC Kaizen	(Amira & Nejjib, 2021) (Sukwadi et al., 2021) (Sakti et al., 2021) (Ahmed & Ayele, 2020) (Ahmed, 2019) (Sjarifudin et al., 2022) (Sjarifudin & Kurnia, 2022)	7
5	Kaizen Six Sigma	(Putri & Primananda, 2021) (Fithri, 2019) (Shafira & Mansur, 2018) (Henny et al., 2019) (Bhargava, 2019) (Kurniawan & Prestianto, 2020) (Kurnia, Jaqin, & Purba, 2022c)	7
6	TQM	(Abbes et al., 2018) (Lajoie et al., 2019) (Uluskan et al., 2018) (Bakar et al., 2017) (Sihombing & Sumartini, 2017) (Maralcan & Ilhan, 2017) (Uluskan et al., 2017)	7
Total of Articles			50

3.5 The Gap Analysis of Review on LSS and Future Research Suggestions

The analysis gaps in article studies that use the LSS approach are very diverse. These gaps have been grouped according to the TPT industry sector. In the interim, the comes about of the investigation of a few articles that prioritize the LSS approach that has been connected so faraway transcendently utilize the Six Sigma strategy compared to the LM strategy.

The comes about of the examination with respect to the hole between mechanical divisions between the sewing segment and the article of clothing segment appear that the LSS strategy is more overwhelmingly connected within the article of clothing division compared to the weaving division. Usually since the number of piece of clothing industries is more prominent than the weaving segment. The number of distributions within the weaving area is still exceptionally little since there are few sewing production lines. This gives an opportunity for other analysts to conduct investigate within the sewing division so that the publication can give edification for other analysts.

The measures of this ask almost are based on different composing considers inside the TPT portion by making sigma-level references from diverse divisions such as turning, weaving, sewing, and articles of clothing. It is trusted that the commitment of this ask approximately can be utilized as a reference for the sigma level of the TPT segment. So that investigators or exchange on-screen characters can compare the comes almost with past explore. This explore joins a body of data on operations ask almost and examination which joins examine and examination related to the application of LSS inside the TPT segment.

It is trusted that this investigate will proceed to be carried out with more challenging topics related to Industry 4.0 within the fabricating industry within the same segment, specifically the TPT industry. The government has begun to encourage the implementation of Industry 4.0 in various sectors so that it can compete with other countries (Alcácer & Cruz-Machado, 2019). The sectors that have started implementing Industry 4.0 are the automotive, food, chemical, household needs, and the TPT industries. In future research, the TPT industry implementing Industry 4.0 can make decisions faster, more reliably, and more satisfactorily with diverse data collection. The relationship between the LSS approach and the Industry 4.0 approach can be seen in Figure 7.

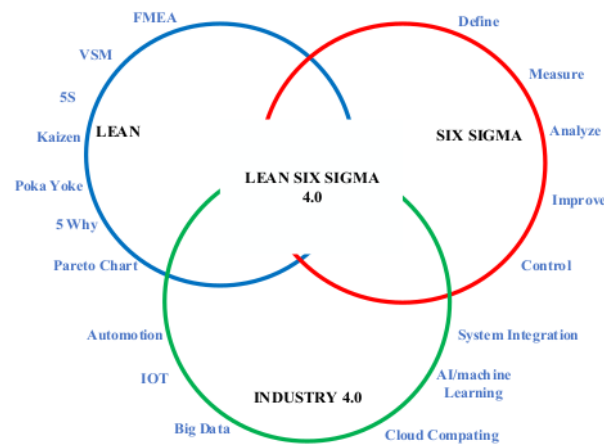


Fig. 7 Future research framework

4. Conclusion

A literature survey of articles related to the application of LSS within the TPT industry in article distributions brought about in 50 articles. This research too found a classification of a few articles that centered on the year of distribution, specifically 2019, totaling 11 articles. In the interim, the center on mechanical division is the article of clothing industry with 15 articles. In the interim, the analysis of articles that centered on most nations was Indonesia with 19 articles. At that point the crevice examination centered on the investigate goals, finding quality destinations totaling 29 articles. This inquire about come about that the type of inquire about that's most broadly utilized is the case think about sort where each company employments this approach to settle its issues. In the mean time, with respect to sigma-level references for a few TPT items that have been considered based on the comes about of case considers, they can be utilized as a direct in assist investigate.

The hypothetical suggestions of the comes about of this research can be utilized as a reference for those who are inquisitive about inquiring about the same or comparative issues. In the mean time, the viable suggestions of the comes about of this investigate can make it less demanding for trade performing artists to supply an diagram and data with respect to the LSS strategy connected to the TPT industry.

References

- Abbes, N., Ser, C., & Sci, M. (2018). *Application of Six Sigma in Clothing SMEs: A case study Application of Six Sigma in Clothing SMEs: A case study*. <https://doi.org/10.1088/1757-899X/460/1/012009>
- Adikorley, R. D., Rothenberg, L., & Guillory, A. (2017). Lean Six Sigma applications in the textile industry: a case study. *International Journal of Lean Six Sigma*, 8(2). <https://doi.org/10.1108/ijlss-03-2016-0014>
- Ahmed, F. (2019). Implementation of Six Sigma to Minimize Defects in the Sewing Section of the Apparel Industry in Bangladesh. *Global Journal of Researches in Engineering*, 19(3), 1–14.
- Ahmed, A. S., & Ayele, M. (2020). In-Depth Analysis and Defect Reduction for Ethiopian Cotton Spinning Industry Based on TQM Approach. *Hindawi Journal of Engineering*, 20(1), 1–8.
- Alkatiri, H. A., Adiarto, H., & Novirani, D. (2015). Implementation of Control To Reduce The Number Of

- Defective Products Of Cotton Fabric Textiles Using The Six Sigma Method At Pt. SSP. *Jurnal Online Institut Teknologi Nasional, Vol 03(03)*, 148–159.
- Amira, L., & Nejib, S. (2021). Study of parameters influencing the production and improvement of the launch system in a production department: A case study in the clothing industry in Tunisia. *Fibers and Textiles in Eastern Europe*, 29(6–150), 4–10. <https://doi.org/10.5604/01.3001.0015.2715>
- Bakar, A., Suprianto, O., & Yuniati, Y. (2017). Proposed Productivity Improvement Based on Mundel and APC Methods at PT Raffsya Media. *Journal of Industrial Engineering Management*, 4(3), 212–226. <https://doi.org/10.33536/jiem.v2i2.147>
- Bharath, S., Arvind, V., & Prashanth, A. (2017). *Minimizing Reworks, Rejection Rate, and Time Waste in a Textile Industry Using Six Sigma Tools*. 5(2), 70–75. <https://doi.org/10.21276/ijet.2017.5.2.7>
- Bhargava, M. (2019). Process Improvement in the Textile Industry using Six Sigma. *International Journal for Research in Applied Science and Engineering Technology*, 7(12), 136–141. <https://doi.org/10.22214/ijraset.2019.12023>
- Dey, P. R., Shaim, M., & Injamamul, H. (2020). *Six Sigma DMAIC approach with uncertainty quantification and propagation in the garments industry RECEIVED*. 70–83.
- Dinulescu, Ruxandra Dima, A. (2019). Improving Performance in the Romanian Garment Industry by Using the Lean Six Sigma Methodology. *Proceedings of the 13th International Management Conference "Management Strategies for High Performance*, 711–721.
- Fithri, P. (2019). Six Sigma as a Quality Control Tool in PT Unitex, Tbk. Raw Fabric Production. *J@ti Undip : Jurnal Teknik Industri*. <https://doi.org/10.14710/jati.14.1.43-52>
- Hayajneh, M., Bataineh, O., & Altawil, R. (2020). *Applying Six Sigma Methodology Based On " DMAIC " Tools to Reduce Production Defects in Textile Manufacturing*. 19–24.
- Henny, H., Agnia, N., & Hardianto, H. (2019). Analysis Quality Control of Carded and Combed Yarns Using Six Sigma Method. *IOP Conference Series: Materials Science and Engineering*, 662(6), 1–9. <https://doi.org/10.1088/1757-899X/662/6/062008>
- Karabulut, M., & Yildiz Kumru, P. (2019). Six Sigma Methodology and an Application in the Textile Sector. *Kocaeli Journal of Science and Engineering*, 2(1), 7–20. <https://doi.org/10.34088/kojose.453692>
- Kaswan, M. S., & Rathi, R. (2019). Analysis and modeling of the enablers of Green Lean Six Sigma implementation using Interpretive Structural Modeling. *Journal of Cleaner Production*, 231, 1182–1191. <https://doi.org/10.1016/j.jclepro.2019.05.253>
- Kaswan, M. S., & Rathi, R. (2020). Green Lean Six Sigma for sustainable development: Integration and framework. *Environmental Impact Assessment Review*, 83(November 2019), 106396. <https://doi.org/10.1016/j.eiar.2020.106396>
- Khan, S. I., Sushil, S., & Tushar, S. R. (2020). *Minimization of Defects in the Fabric Section Through Applying DMAIC Methodology of Six Sigma: A Case Study*. 9(July), 16–24.
- Kumar, P., Khan, M. A., Mughal, U. K., & Kumar, S. (2020). Exploring the potential of Six Sigma (DMAIC) in minimizing production defects. *International Conference on Industrial & Mechanical Engineering and Operations Management*, 1(12), 1–11.
- Kumia, H., Jaqin, C., & Manurung, H. (2022). Implementation of the DMAIC Approach for Quality Improvement in the Elastic Tape Industry. *J@ti Undip: Jurnal Teknik Industri*, 17(1), 40–51. <https://doi.org/10.14710/jati.17.1.40-51>
- Kumia, H., Jaqin, C., & Purba, H. H. (2022a). Quality improvement with PDCA approach and design of experiment method in single socks industry in Indonesia. *International Conference on Informatics, Technology, and Engineering 2021 (InCITE)*, 2470(1), 1–12. <https://doi.org/10.1063/5.0080179>
- Kumia, H., Jaqin, C., & Purba, H. H. (2022b). Quality Improvement with the DMAIC Approach Using the Implementation of Benchmarking and KPI Methods. *Industrial Engineering and Operations*

- Management (IEOM)*, 2(9), 2122–2133.
<http://ieomsociety.org/proceedings/2021indonesia/400.pdf>
- Kumia, H., Jaqin, C., & Purba, H. H. (2022c). The PDCA Approach with OEE Methods for Increasing Productivity in the Garment Industry. *Jurnal Ilmiah Teknik Industri: Jurnal Keilmuan Teknik Dan Manajemen Industri*, 10(1), 57–68. <https://doi.org/10.24912/jitiuntar.v10i1.15430>
- Kumia, H., Jaqin, C., Purba, H. H., & Setiawan, I. (2021). Implementation of Six Sigma in the DMAIC Approach for Quality Improvement in the Knitting Socks Industry. *Tekstilvemuhendis*, 28(124), 269–278. <https://doi.org/10.7216/1300759920212812403>
- Kumiawan, A. R., & Prestianto, B. (2020). Perencanaan Pengendalian Kualitas Produk Pakaian Bayi dengan Metode Six Sigma Pada CV. AGP. *Jemap*. <https://doi.org/10.24167/jemap.v3i1.2632>
- Lajoie, P., Gaudreault, J., Lehoux, N., & Ali, M. Ben. (2019). A data-driven framework to deal with intrinsic variability of industrial processes: An application in the textile industry. *IFAC-PapersOnLine*, 52(13), 731–736. <https://doi.org/10.1016/j.ifacol.2019.11.202>
- Maralcan, A., & Ilhan, I. (2017). Operations management tools to be applied for textiles. *IOP Conference Series: Materials Science and Engineering*, 254(20). <https://doi.org/10.1088/1757-899X/254/20/202005>
- Martinez-Condor, B., Mamani-Motta, F., Macassi-Jaurequi, I., Raymundo-Ibañez, C., & Perez, M. (2020). Lean Production Model Aligned with Organizational Culture to Reduce Order Fulfillment Issues in Micro- and Small-sized Textile Businesses in Peru. *IOP Conference Series: Materials Science and Engineering*, 796(1). <https://doi.org/10.1088/1757-899X/796/1/012016>
- Mohan Prasad, M., Dhiyaneswari, J. M., Ridzwanul Jamaan, J., Mythreyan, S., & Sutharsan, S. M. (2020). A framework for lean manufacturing implementation in the Indian textile industry. *Materials Today: Proceedings*, 33, 2986–2995. <https://doi.org/10.1016/J.MATPR.2020.02.979>
- Mothilal, B., & Prakash, C. (2019). *Implementation of Lean Tools in Apparel Industry to Improve Productivity Fashion Technology & Textile Engineering Implementation of Lean Tools in Apparel Industry to Improve Productivity and Quality. July 2018.* <https://doi.org/10.19080/CTFTTE.2018.04.555628>
- Mukhopadhyay, A. R. (2015). Reduction of Yarn Packing Defects Using Six Sigma Methods : A Case Study. *Quality Engineering*, 1(12), 1–14. <https://doi.org/10.1080/08982110600567533>
- Nørup, N., Pihl, K., Damgaard, A., & Scheutz, C. (2019). Quantity and quality of clothing and household textiles in the Danish household waste. *Waste Management*, 87, 454–463. <https://doi.org/10.1016/j.wasman.2019.02.020>
- Nurprihatin, F., Yulita, N. E., & Caesaron, D. (2017). Proposed Reducing Waste in the Sewing Process Using the Lean Six Sigma Method. *Profesionalisme Akuntan Menuju Sustainable Business Practice*, 4(3), 809–818.
- Palange, A., & Dhatrik, P. (2021). Lean manufacturing is a vital tool to enhance productivity in manufacturing. *Materials Today: Proceedings*, 46(2), 729–736. <https://doi.org/10.1016/j.matpr.2020.12.193>
- Pratiwi, A. I., Husna, S., & Syukri, A. (2016). Lean Six Sigma (DMAIC) and Cumulative Sum Method Approaches to Improve the Quality of Gray Fabric in the Shuttle II Department (Case Study at PT GKBI Yogyakarta). *Seminar Nasional IENACO –*, 213(53), 1689–1699.
- Pumama, D. A., Shinta, R. C., & Helia, V. N. (2018). Quality improvements on the creative industry by using Six Sigma: A study case. *MATEC Web of Conferences*, 154. <https://doi.org/10.1051/mateconf/201815401088>
- Putri, A. S., & Primananda, F. (2021). Quality Control on Minimizing Defect Product on 20 OE Yam. *Jurnal Ilmiah Teknik Industri*, 20(1), 81–88. <https://doi.org/10.23917/jiti.v20i1.12443>

- Roesmasari, R. A., Santoso, I., & Sucipto, S. (2018). Leather Quality Improvement Strategy With Lean Six Sigma And Fuzzy Fmea Methods (Case Study In Sumber Rejeki). *Jurnal Teknologi Pertanian*, 19(3), 183–192. <https://doi.org/10.21776/ub.jtp.2018.019.03.5>
- Sakti, S., Sopha, B. M., & Saputra, E. S. T. (2021). Energy Efficiency Analysis in a Textile Company Using DMAIC Approach. *IOP Conference Series: Materials Science and Engineering*, 1096(1), 012007. <https://doi.org/10.1088/1757-899x/1096/1/012007>
- Shafira, Y. P., & Mansur, A. (2018). Production quality improvement analysis of grey cambric using the Six Sigma Method. *MATEC Web of Conferences*, 154, 0–3. <https://doi.org/10.1051/mateconf/201815401090>
- Sihombing, M. I. S., & Sumartini, S. (2017). Effect of Raw Material Quality Control and Production Process Quality Control on the Quantity of Defective Products and Its Impact on Quality Costs (Cost of Quality). *Jurnal Ilmu Manajemen Dan Bisnis*. <https://doi.org/10.17509/jimb.v8i2.12665>
- Sjarifudin, D., & Kurnia, H. (2022). The PDCA Approach with Seven Quality Tools for Quality Improvement Men's Formal Jackets in Indonesia Garment Industry. *Jurnal Sistem Teknik Industri (JSTI)*, 24(2), 159–176. <https://doi.org/10.32734/jsti.v24i2.7711>
- Sjarifudin, D., Kurnia, H., Purba, H. H., & Jaqin, C. (2022). Implementation of the Six Sigma approach for increasing the quality of formal men's jackets in the garment industry. *Jurnal Sistem Dan Manajemen Industri*, 6(1), 33–44. <https://doi.org/10.30656/jsmi.v6i1.4359>
- Sukwadi, R., Felicia, Y., & Muafi. (2021). TOC, Lean, and Six Sigma: An integrated model to increase the productivity of the textile industry. *Journal of Mechanical Engineering Research and Developments*, 44(1), 327–336.
- Suwanich, T., & Chutima, P. (2017). Process Improvement of Reactive Dye Synthesis Using Using Six Sigma Concept. *IOP Conference Series: Materials Science and Engineering*, 215(1). <https://doi.org/10.1088/1757-899X/215/1/012006>
- Syafwiratama, O., Hamsal, M., & Purba, H. H. (2017). Reducing the nonconforming products by using the Six Sigma method: A case study of a polyester shortcut fiber manufacturing in Indonesia. *Management Science Letters*, 7(3), 153–162. <https://doi.org/10.5267/j.msl.2016.12.001>
- Uluskan, M., Godfrey, A. B., & Joines, J. A. (2017). Integration of Six Sigma to traditional quality management theory: an empirical study on organizational performance. *Total Quality Management and Business Excellence*, 28(13–14), 1526–1543. <https://doi.org/10.1080/14783363.2016.1150173>
- Uluskan, M., McCreery, J. K., & Rothenberg, L. (2018). Impact of quality management practices on change readiness due to new quality implementations. *International Journal of Lean Six Sigma*, 9(3), 351–373. <https://doi.org/10.1108/IJLSS-05-2017-0049>
- Vermaelen, N., & Kovach, J. V. (2021). Driving meeting effectiveness through organizational process improvement—A Lean Six Sigma case study. *Organizational Dynamics*, 2019, 100827. <https://doi.org/10.1016/j.orgdyn.2021.100827>
- Zaman, D. M., & Zerín, N. H. (2017). Applying DMAIC Methodology to Reduce Defects of Sewing Section in RMG: A Case Study. *American Journal of Industrial and Business Management*, 07(12), 1320–1329. <https://doi.org/10.4236/ajibm.2017.712093>

HibarkahOESim

ORIGINALITY REPORT

20%

SIMILARITY INDEX

20%

INTERNET SOURCES

4%

PUBLICATIONS

1%

STUDENT PAPERS

PRIMARY SOURCES

1	www.tlr-journal.com Internet Source	9%
2	publikasi.mercubuana.ac.id Internet Source	9%
3	repository.stmi.ac.id Internet Source	1%
4	Hibarkah Kurnia, Dwi Irwati, Sukron Makmudah, Irgi Sofani. "Production Control Using the Kanban System in the Manufacturing Industry in Indonesia: Systematic Literature Review", Proceeding International Pelita Bangsa, 2023 Publication	1%

Exclude quotes On

Exclude bibliography On

Exclude matches < 1%