Available at e-Journal Universitas Sultan Ageng Tirtayasa

JOURNAL INDUSTRIAL SERVICESS

journal homepage: http://jurnal.untirta.ac.id/index.php/jiss

eISSN 2461-0631

Case study article

Quality control analysis in tofu production using Lean Six Sigma and Design of Experiments to reduce defects

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ARTICLE INFO

Article history:
Received 15 November 2024
Received in revised form 27 February 2025
Accepted 10 March 2025
Published online 13 March 2025

Keywords:
Defects
Design of Experiment
Lean Six Sigma
Quality
Tofu

Editor:
Bobby Kurniawan

Publisher's note:
The publisher remains neutral concerning jurisdictional claims in published maps and institutional affiliations.

ABSTRACT

This research focuses on the quality issues faced by a micro, small, and medium enterprise (MSME) in the food sector, specifically in tofu production. The production process still generates defective products, with a defect rate of 2% to 3% per day. Further observations identified several types of waste in the production process, including overproduction, defects, motion, waiting, transportation, and overprocessing, with defects being the most dominant. To address this issue, this study applies to the Lean Six Sigma method to control product quality. Through analysis using a questionnaire on the seven types of waste, five Critical to Quality (CTQ) factors were identified: dirty defects, splitting defects, hole defects, size defects, and color defects. The study also analyzes the production cycle time, revealing a lead time of 9 hours and 50 minutes, with a total value-added time of 7 hours and 49 minutes. The Defects Per Million Opportunities (DPMO) value is 5,605.31, and the sigma value is 4.0364, indicating that product quality is at an average industry level. An improvement plan was formulated using an experimental design. The proposed improvements were implemented by setting the soybean soaking time to 4 hours, the boiling time to 30 minutes, and the coloring time to 2 hours. After implementation, the percentage of defective tofu products decreased from 2.13% to 0.32%. These results demonstrate that applying the Lean Six Sigma method significantly enhances product quality and production efficiency for the MSME.

1. Introduction

Quality is one of the key factors to consider when creating a product. It refers to the physical condition of a product that can satisfy consumer demands and desires. However, errors in the production process can occur, resulting in the product failing to meet the required specifications or quality standards. The quality of a product encompasses its overall features and characteristics, whether goods or services, that influence its ability to satisfy consumer needs, both directly through explicit statements and indirectly [1]. Therefore, it is the customer who determines and evaluates how well these traits and characteristics meet their needs [2]. One of the most significant factors influencing consumers' decision to purchase a product is its quality [3].

One of the most popular micro, small, and medium enterprise (MSME) products in Indonesia is tofu. Tofu is a traditional food made from soybeans and consumed by people from various backgrounds [4]. It has become an essential commodity in daily life, particularly in Indonesia. In addition to being a staple food ingredient, tofu is often used as a popular souvenir and is widely enjoyed. With increasing demand, tofu has become one of the most significant food products in the global economy. Therefore, ensuring its quality is crucial to meeting safety standards and enhancing consumer satisfaction. Optimizing tofu quality can be an effective strategy to improve public well-being and boost the competitiveness of tofu products in both domestic and international markets. This, in turn, can contribute to increased income for Indonesia's tofu industry [5].

A micro, small, and medium enterprise (MSME) in the food sector has been engaged in tofu production since 2021. Over the past three years, the business has produced approximately 75 to 125 trays of tofu per day, with each tray containing 120 pieces, resulting in a total daily production of 9,000 to 15,000 pieces. The tofu produced is yellow tofu, which is distributed to various regions.

The production process still relies on conventional equipment and small-scale machines, making the tofu products prone to defects. Based on interviews with the

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http://dx.doi.org/10.62870/jiss.v10i2.29642

owner, a significant number of defective products have been identified during production, including dirty tofu, split tofu, tofu with holes, non-uniform sizes, and uneven colors. From December 2023 to January 2024, the number of defective products ranged from 200 to 400 pieces per day, accounting for a defect rate of 2% to 3% of total daily production.

Observations also identified several types of waste in the production process, including overproduction, defects, unnecessary motion, waiting time, transportation, and overprocessing. Among these, product defects are the most dominant issue. Defective tofu that cannot be sold poses a serious problem for the business, leading to resource waste and a decline in sales and profits. Without proper handling, this issue could threaten the sustainability of the business. Although several improvements have been made, the quality problem remains unresolved. This research was conducted in response to ongoing complaints about defective tofu products, with the aim of finding effective solutions to address this issue.

One of the methods that can be used to analyze quality control and waste in a company is the Lean Six Sigma method. Lean Six Sigma is a process improvement methodology that combines techniques from Lean Manufacturing and Six Sigma to enhance performance by eliminating operational waste and reducing process variation [6], [7]. Statistically, Six Sigma targets less than 3.4 defects per million opportunities, which is equivalent to a success rate of 99.9997% [8], [9], [10]. The implementation of the Lean Six Sigma method involves steps known as DMAIC, which stands for Define, Measure, Analyze, Improve, and Control [11], [12]. This study applies the Lean Six Sigma method integrated with Design of Experiments (DoE). This approach is an innovation that is rarely used in previous research in the tofu industry at the SME scale. The Design of Experiment in this study is used to optimize the tofu production process by identifying key factors that affect tofu quality.

Numerous studies have applied Lean Six Sigma methodologies to improve quality and efficiency in the food industry, but significant differences exist in their scope, methodology, and focus. For instance, studies on Tahu Sumedang Permata and UMKM Tahu Pak Sugino focus on reducing product defects using Lean Six Sigma but do not integrate experimental designs, unlike this research. Research on PT Bangaji Citrarasa Lestari and a printing company also implemented Lean Six Sigma, but they emphasized waste reduction and improving process efficiency rather than optimizing process parameters through experimentation. The research gap lies in the scarcity of studies focusing on tofu-producing SMEs that combine comprehensive methodologies (DMAIC, FMEA, VSM, and experimental design) with measurable and specific recommendations for improvement. A unique aspect of this research is its in-depth focus on the root causes of defects using FMEA, the integration of experimental design to optimize production process parameters, and the validation of improvement results through a significant reduction in defect rates, making it a relevant and practical contribution to the tofu industry.

Through this research, it is expected that Tofu MSME can improve its product quality, significantly reduce waste, and increase customer satisfaction. This study can also serve as a guide for other SMEs wishing to apply the Lean Six Sigma principles integrated with DoE to improve their competitiveness and business sustainability.

2. Material and method

The method applied in this study is the Lean Six Sigma method. This research is a type of quantitative descriptive research. Quantitative descriptive research is a type of research that aims to describe or explain a phenomenon or situation by collecting numerical data that can be statistically analyzed [13], [14]. Quantitative descriptive analysis is used to assess the defect rate in Lean Six Sigma. This study was conducted over a period of 2 months, from December 2023 to January 2024.

In this research, both primary and secondary data were utilized. The primary data included a general overview of the company, raw materials, and the production process. Meanwhile, the secondary data consisted of production and product defect data collected during the research period.

In this study, the DMAIC cycle (Define, Measure, Analyze, Improve, Control) is applied. The Define phase is the initial stage for defining the issues that occur. In this phase, a SIPOC diagram is created, key quality characteristics (CTQ) are identified, waste is detected, VALSAT is performed, Process Activity Mapping is conducted, and Value Stream Mapping is created. The Measure phase is the second step in Six Sigma to carry out measurements. In this step, a P control chart is created to determine whether the production process is statistically controlled, and the DPMO value and sigma value are calculated to determine the sigma level.

Analyze is the third step in Six Sigma, aimed at identifying the root causes of the problems. In this phase, Pareto charts, fishbone diagrams, and FMEA are used. Improve is the fourth step in Six Sigma, which suggests improvements to enhance production quality. In the Improve phase, experimental design, proposed process activity mapping and proposed future state value stream mapping. Finally, the Control phase involves calculating the defect percentage of the tofu product after the implementation of the experimental design.

3. Results and discussions

3.1. *Define*

The Define phase is the first operational step in the Six Sigma implementation process, which includes identifying existing problems [15]. The initial step involves creating a SIPOC diagram. The SIPOC diagram is used to show major activities, or sub processes, in a business process, along with the framework of the process, represented by the Suppliers, Inputs, Outputs, and Customers. A SIPOC diagram is used to help define the boundaries and critical elements of a process without getting into so much detail that the big picture is lost [16]. Fig. 1 shows the SIPOC diagram of the tofu production process to be examined. Next, the most dominant type of waste in the production process is identified using the seven-waste questionnaire, as shown in Table 1. Based on Table 1, the most dominant waste is defect waste with a score of 18.

The next step is to identify critical-to-quality (CTQ) factors. Critical-to-quality (CTQ) factors are crucial attributes determined by customer needs. The purpose of identifying CTQs is to recognize the attributes that can lead to defects in the final product [17]. There are 5 types of Critical to Quality (CTQ) attributes in tofu products: dirty defects, splitting defects, hole defects, size defects, and color defects. Dirty defects refer to the presence of dirt or dust adhering to the surface of the tofu due to poor soybean quality, unclean tools, or an unsanitary storage environment. Splitting defects occur when the tofu has cracks or fissures due to poor raw material quality and inadequate production processes. Hole defects are characterized by the presence of holes in the tofu, resulting from poor raw material quality and incorrect production processes. Size defects refer to tofu pieces having different dimensions due to errors in the cutting process. Color defects are identified when the tofu has an uneven or excessively pale color due to an inadequate coloring process.

After obtaining the values for each type of waste based on the results of the seven-waste questionnaire, the next step is to determine the mapping tools to be used by applying the Value Stream Analysis Tools (VALSAT) method. Value Stream Analysis Tools (VALSAT). The Value Stream Analysis Tool (VALSAT) is a tool that can be used to minimize waste in the production process [18]. The results of VALSAT can be seen in Table 2.

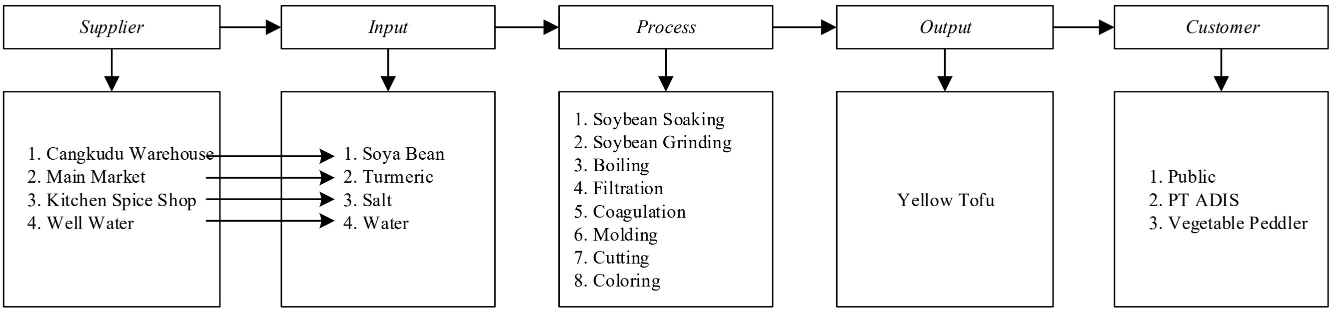

Figure 1. SIPOC Diagram

Table 1.
Seven waste questionnaire scores

Waste	Score				Total
	A	B	C	D	
Overproduction	4	4	4	4	16
Defect	5	4	4	5	18
Unnecessary Inventory	1	1	1	1	4
Unnecessary Motion	1	2	1	1	5
Waiting	3	3	3	3	12
Transportation	2	2	2	2	8
Excess Processing	2	3	3	2	10

Note: A = MSME owner , B = Workers in the soaking, grinding and boiling sections, C = Workers in the filtering, coagulation and molding sections D = Workers in the cutting and coloring sections
Note: 1 = Never happened, 2 = Rarely occurs, 3 = Occurs quite often, 4 = Often occurs, 5 = Always happens

Table 2.
VALSAT calculation results

Waste	Score	PAM	SCRM	PVS	QFM	DAM	DPA	PS
Overproduction	16	16	48	0	16	48	48	0
Defect	18	18	0	0	162	0	0	0
Unnecessary Inventory	4	12	36	12	0	36	12	4
Unnecessary Motion	5	45	5	0	0	0	0	0
Waiting	12	108	108	12	0	36	36	0
Transportation	8	72	0	0	0	0	0	8
Excess Processing	10	90	0	30	10	0	10	0
Total	73	361	197	54	188	120	106	12

Table 3.
Value added

No	Activity	Time (min)
1	Soak the soybeans for several hours to soften them	180
2	Turn on the soybean grinding machine	2
3	Grind the soybeans until they form soy pulp	20
4	Stir the soy pulp until it is fully cooked	40
5	Filter the boiled soy pulp to separate the soy cake from the soy milk	10
6	Separate the soy cake from the filter	1
7	Add tofu starter into the boiled soy milk that has been filtered	3
8	Stir the soy milk continuously to ensure the tofu starter is evenly distributed and the soy milk becomes clear	30
9	Take the soymilk sediment	5
10	Pour the soymilk sediment into a wooden tofu mold	2
11	Cover the soymilk sediment with cloth and close the tofu mold with a lid	1
12	Press the soymilk sediment in the mold by placing a 25L bucket of water on top of the tofu mold to allow the remaining soymilk liquid to drain out completely	60
13	Flip the tofu mold and open it to release the formed tofu	15
14	Cut the tofu using a tofu ruler and a cutting knife	35
15	Place the cut tofu into turmeric broth	5
16	Boil the tofu until it turns yellow and floats	60
17	Soak the tofu in a brine solution to prevent it from becoming too soft	34
Total		469

Table 4.
Necessary non-value added

No	Activity	Time (min)
1	Take the soybeans from the warehouse	0.5
2	Weigh 10 kg of soybeans for each bucket	5
3	Place 10 kg of soybeans into the available buckets	2
4	Carry the buckets containing soybeans to the soaking area	1
5	Transfer the soaked soybeans to the grinding area	1
6	Gradually add 10 kg of soybeans into the grinding machine	5
7	Carry the bucket containing the soy pulp to the boiling area	1
8	Light the stove in the boiling area	5
9	Pour the soy pulp into the boiling pot	10
10	Bring the boiled soy pulp to the filtering area	1
11	Pour the boiled soy pulp liquid onto the filtering cloth	2
12	Once the soy milk has settled, discard the remaining tofu water that does not settle into the designated disposal area	5
13	Move the tofu to the tofu storage area	1
14	Take the tofu to the cutting area	1
15	Place the tofu into a tray	5
16	Take the tray containing the tofu to the storage rack	1
Total		46.5

Table 5.
Non-value added

No	Activity	Time (min)
1	Prepare the buckets for soaking the soybeans	1
2	Fill the buckets containing soybeans with clean water	10
3	Wait before the grinding process	5
4	Place the grinding funnel to channel the soybeans into the grinding machine	1
5	Prepare the buckets to store the ground soybeans	1
6	Fill the large pan with water for boiling the soybeans	10
7	Wait before the molding process	10
8	Wait before the cutting process	10
Total		48

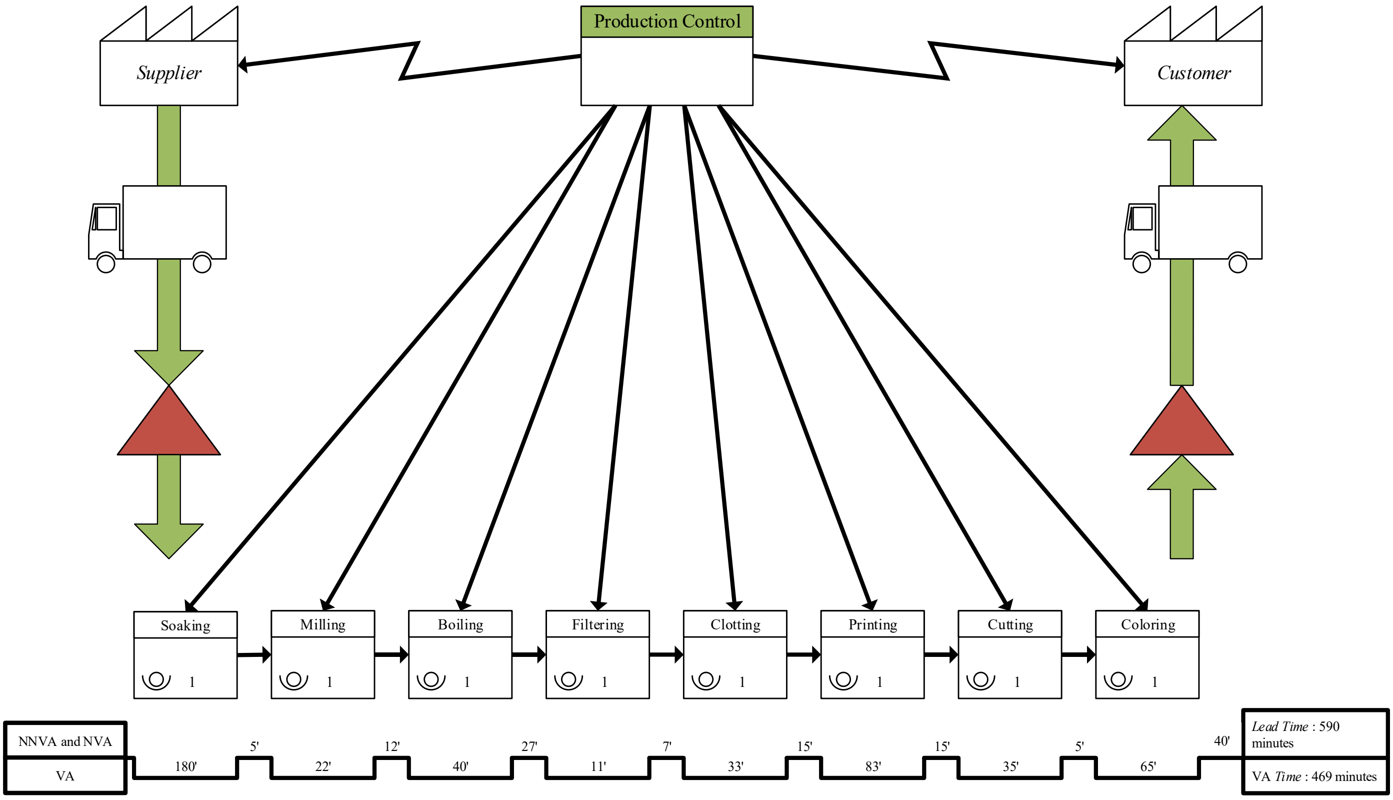

Figure 2. Current state Value Stream Mapping

Based on the VALSAT calculation in Table 2, the highest mapping tool value is achieved by Process Activity Mapping (PAM) with a score of 361. Therefore, PAM was created to identify each activity in the tofu production process. Process Activity Mapping (PAM) is a tool used to analyze all activities within a system. It provides information on physical flow or data flow, activity types, distances, activity durations, and personnel involved in the system [19].

To simplify the identification process, activities are categorized into five types: operation, transportation, inspection, waiting, and storage. Operations and inspections are value-added activities. Meanwhile, transportation and storage are necessary but do not add value (necessary non-value-added). Delays, on the other hand, should be minimized as they fall under non-value-added activities [20].

Table A1 (see Appendices) presents Process Activity Mapping. The analysis of tofu production at the MSME reveals a total of 41 activities, consisting of 29 operational activities, 8 transportation activities, 3 waiting activities, and 1 storage activity, with a total processing time of 590 minutes (9 hours and 50 minutes).

Next, the Value Added (VA) activities, Non-Value Added (NNVA) activities, and Non-Value-Added activities are identified, as shown in Table 3, Table 4, and Table 5. Based on these three tables, it is found that there are 17 activities in the value-added (VA) category with a total time of 469 minutes or 7 hours and 49 minutes, 16 activities in the necessary non-value added (NNVA) category with a total time of 73 minutes or 1 hour and 13 minutes, and 8 activities in the non-value added (NVA) category with a total time of 48 minutes.

The next step is to create the Current Value Stream Mapping to depict the entire ongoing production process and to determine the waiting time and the value-added time required for the production process [21]. Figure 2 shows the Current Value Stream Mapping. Based on Fig. 2, the Current State Value Stream Mapping illustrates the flow of the tofu production process from the supplier to the customer. There are 8 stations in the tofu production process, with one worker at each station. In addition, the Current State Value Stream Mapping shows the lead time and value-added time. The lead time required for tofu production is 590 minutes or 9 hours and 50 minutes, while the total value-added time is 469 minutes or 7 hours and 49 minutes. This indicates that there is a significant amount of time that does not add value to the production process, which is 121 minutes or 2 hours and 1 minute. NNVA activities should be reduced or eliminated, if possible, although this may not need to be done immediately. On the other hand, NVA activities should be prioritized for immediate elimination.

3.2. *Measure*

The Measure phase involves performing measurements and assessing the defect level in the production process [22]. In this phase, a P-chart is created to determine whether the production process is under statistical control, and the DPMO and sigma values are calculated to measure the sigma level. A P-chart is an attribute control chart that shows the proportion of defective products in a sample being inspected [23]. Based on the P-chart results, the average P-value is 0.02758, the UCL (Upper Control Limit) is 0.03207, and the LCL (Lower Control Limit) is 0.02310.

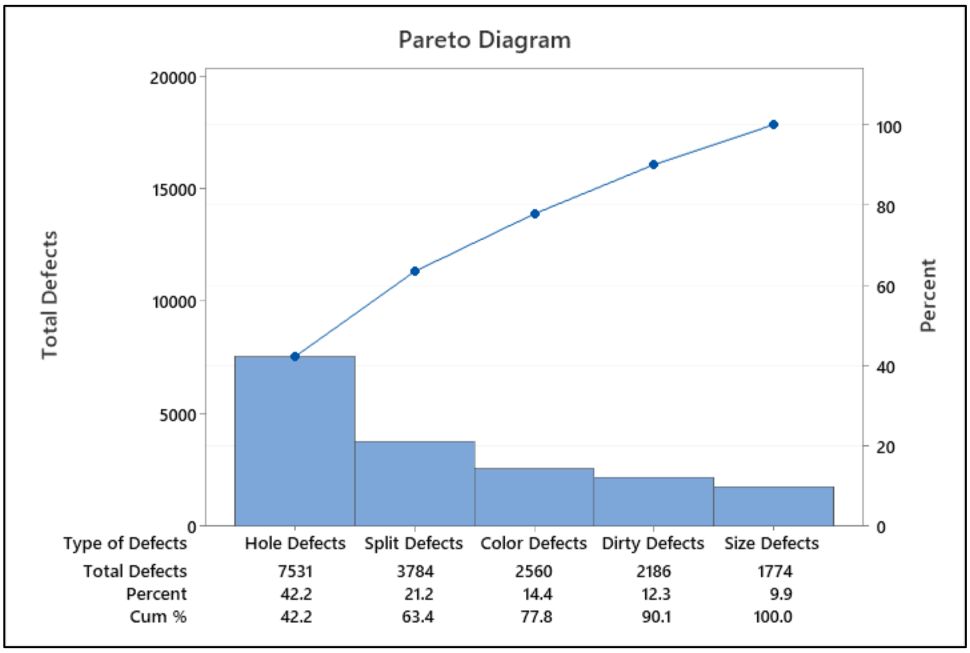

Figure 3. Pareto Diagram

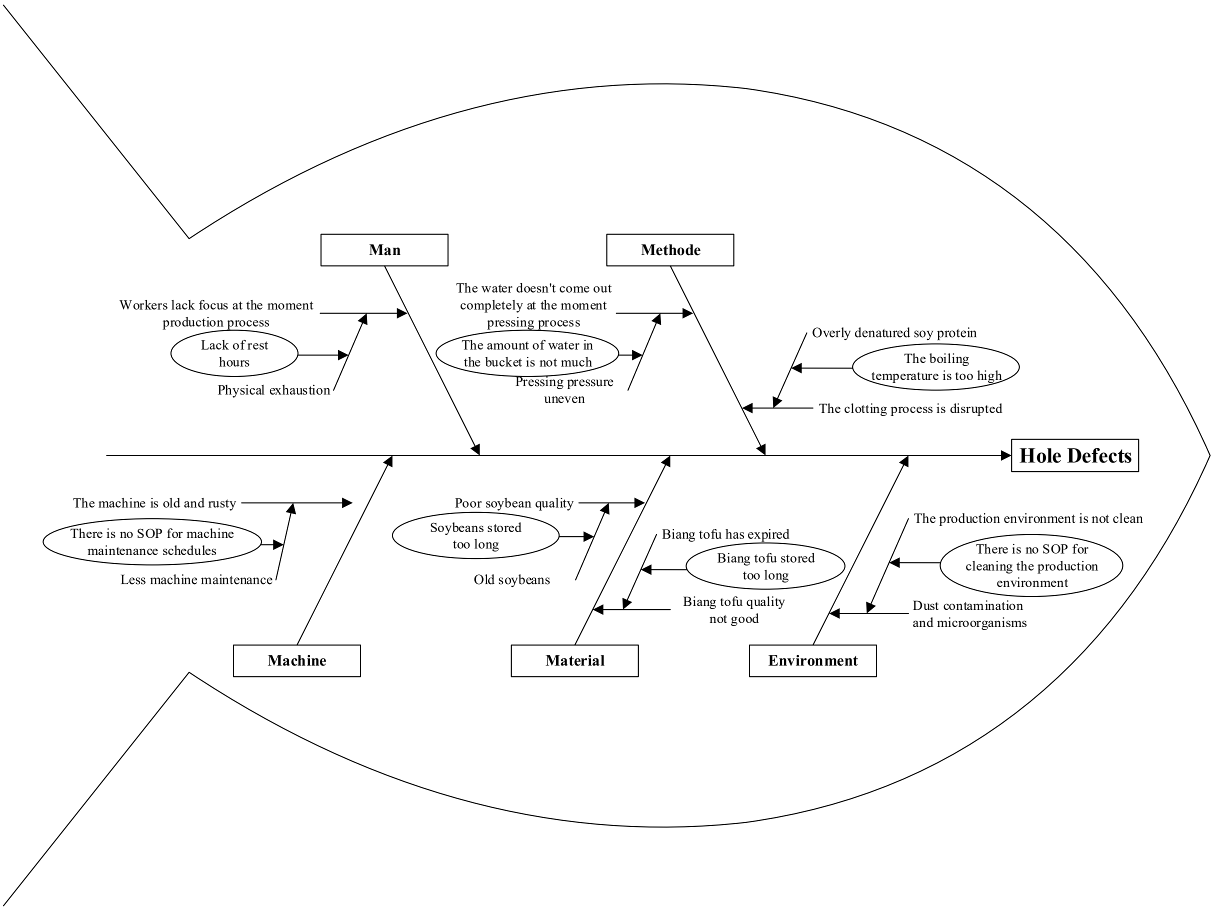

Figure 4. Fishbone diagram for hole defects

Additionally, five data points fall outside the control limits: data point 8 (08/12/2023), data point 9 (09/12/2023), data point 11 (11/12/2023), data point 13 (13/12/2023), and data point 22 (22/12/2023). Therefore, it can be concluded that the production process is not yet statistically controlled, as there are still several special cause variations that need to be eliminated. These variations may stem from factors such as human errors, methods, machinery, raw materials, and other process-related issues.

The next step is to calculate the DPMO and sigma values. The data used consists of 55 samples from December 2023 to January 2024. From the DPMO and sigma calculations, the DPMO for the tofu production process is 5605.3131. This means that, for every one million opportunities, there is a possibility of 5605.3131 defective tofu products, with an average sigma value of 4.0364. This indicates that the tofu production process is at an average industry level in the USA. A sigma value of 4 means that the SME still has significant defects in the production process, around 5605.3131 defects per one million opportunities (DPMO). Although this achievement looks good, it is still considered problematic in the context of modern industry competition. Furthermore, this continuous improvement will not only enhance product quality but also increase customer satisfaction and competitiveness in an increasingly competitive market. However, Tofu MSME still needs to make improvements to reduce these defects and improve product quality until it reaches a 6-sigma level. If the sigma value approaches 6, the performance of the SME can be considered excellent.

Then, a CFMEA diagram is created to examine in detail the factors contributing to the problems, based on the analysis from the previously created cause-and-effect diagram. The CFMEA diagram is used to identify the most fundamental root causes of a problem before it is analyzed with FMEA [26]. Fig. 5 shows the CFMEA diagrams for hole defects. Based on the CFMEA diagram for hole defects, there are 7 root causes identified for the occurrence of hole defects.

Next, the failure mode ranking based on the RPN (Risk Priority Number) in FMEA (Failure Mode and Effects Analysis). Failure Mode and Effects Analysis (FMEA) is a structured approach used to identify and prevent problems within a system [27]. It is implemented through discussions among various divisions within a company to analyze the causes of failure in components and subsystems of a process or product [28]. The results of the FMEA analysis indicate that the priority for improvement should focus on the causes of failure, which include the soybean boiling process being too long, the soybean soaking process being too short, and the tofu coloring process being too brief.

3.3. Improve

The fourth stage in Lean Six Sigma is the Improve stage. Improve is the phase where improvement suggestions are made to enhance production quality [29]. In this stage, factorial experiments are conducted.

Based on the results of the FMEA, factors such as the duration of soybean boiling, soybean soaking, and tofu coloring processes are identified as areas that need improvement. The factorial experimental design used in this study is a 2^3 design, consisting of 3 factors with 2 levels, replicated 4 times. This data will be subjected to an ANOVA test to determine the impact of each treatment on the reject count. Analysis of Variance (ANOVA) is a statistical technique widely used in experimental research. R.A. Fisher developed this approach [30]. The ANOVA results are shown in Figure 10. Treatments found to have a significant effect will undergo further testing after the experiment to determine the optimal process conditions using the Newman-Keuls range test. Based on the experimental test results, the optimal process conditions are achieved with a soybean boiling time of 30 minutes, a soybean soaking time of 240 minutes, and a tofu coloring time of 120 minutes.

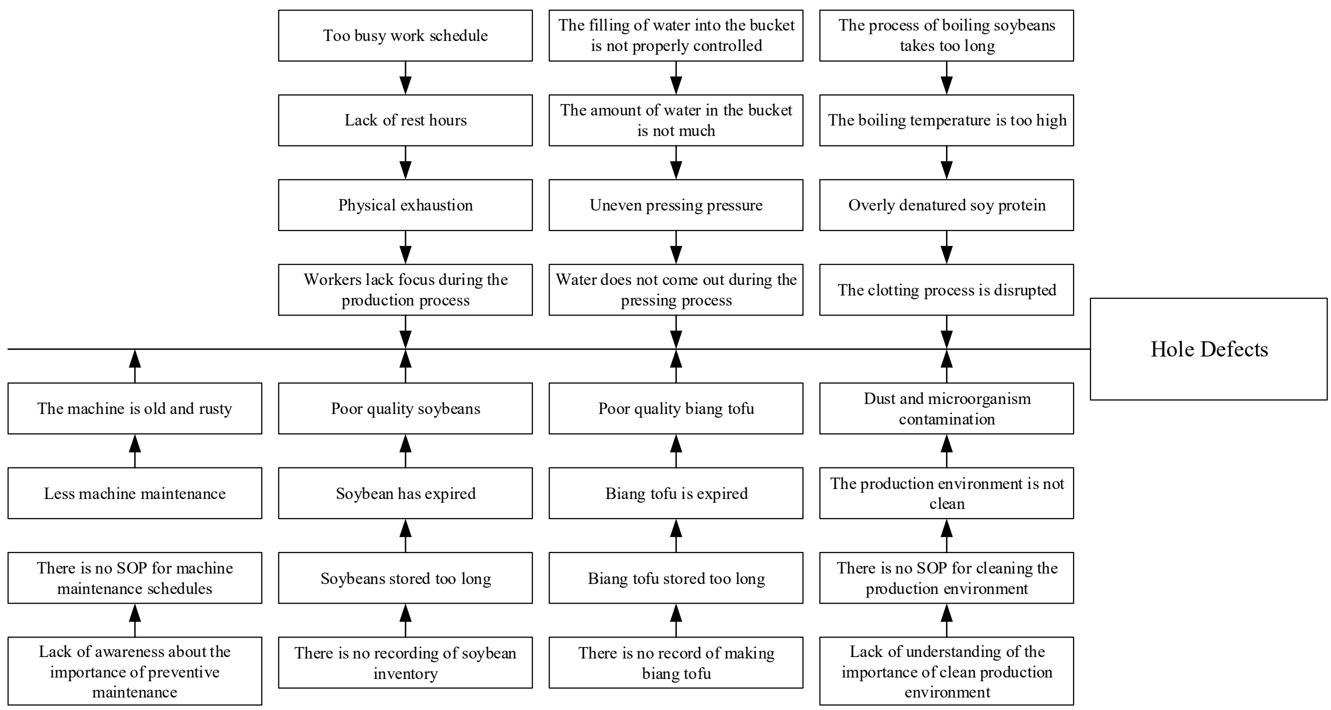

Figure 5. CFMEA diagram for hole defects

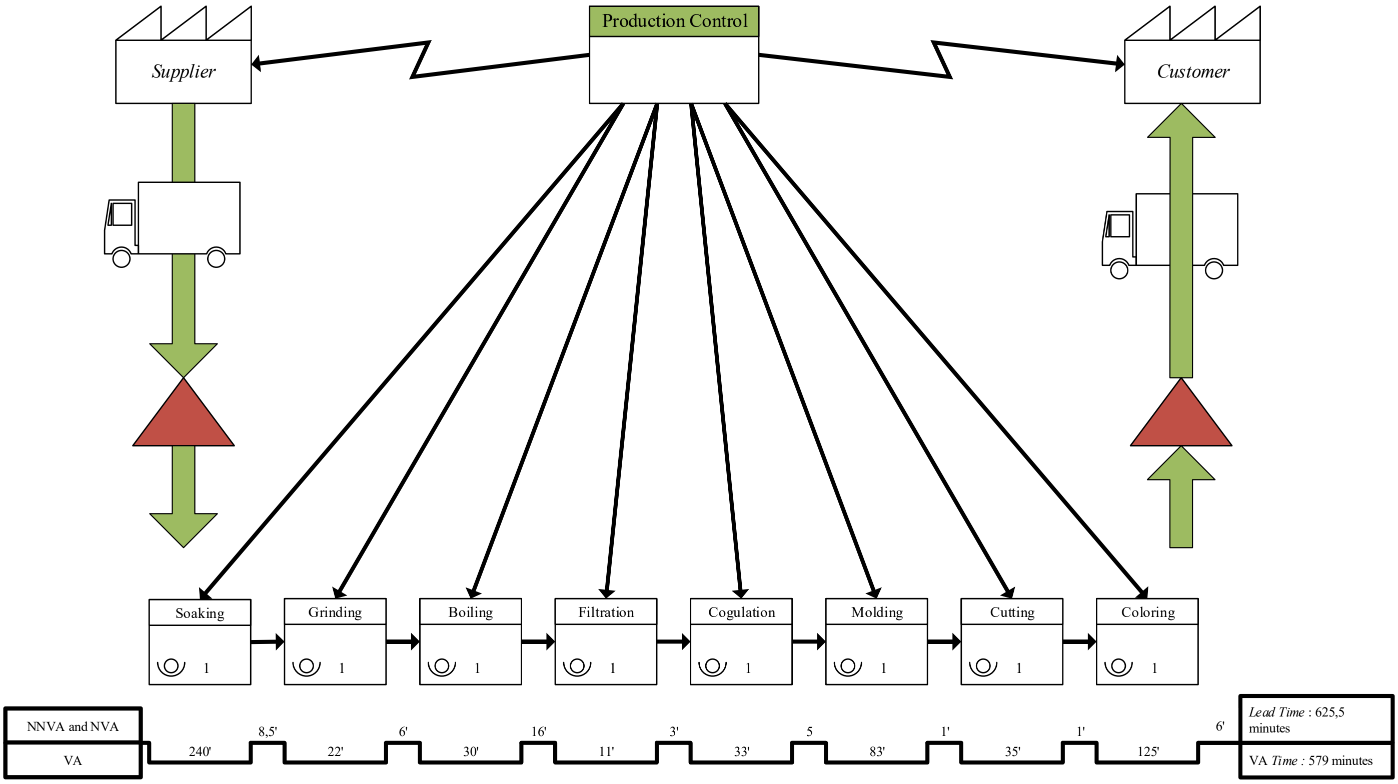

Figure 6. Current Value Stream Mapping

Table 6.
Percentage of time for each type of production activity

No	Total Production	Total Defects	Defects Percentage	CTQ	DPU	DPO	DPMO	Sigma
1	9000	206	2.29%	3	0.0229	0.0076	7629.63	3.9262
2	12000	250	2.08%	3	0.0208	0.0069	6944.44	3.9601
3	15000	301	2.01%	3	0.0201	0.0067	6688.89	3.9736
Total	36000	757	6.38%	9	0.0638	0.02126	21262.96	11.8598
Mean	12000	252.33	2.13%	3	0.0213	0.0071	7087.65	3.9533

Table 7.
Percentage of time for each type of production activity

No	Total Production	Total Defects	Defects Percentage	CTQ	DPU	DPO	DPMO	Sigma
1	9000	29	0.32%	3	0.0032	0.0011	1074.07	4.5689
2	12000	31	0.26%	3	0.0026	0.0009	861.11	4.6344
3	15000	34	0.23%	3	0.0023	0.0008	755.56	4.6725
Total	36000	**94**	0.81%	9	0.0081	0.0027	2690.74	13.8759
Mean	12000	**31.33**	0.27%	3	0.0027	0.0009	896.91	4.6253

Table 8.
Comparison between before and after lean sixma impelementation

No	Parameters	Before Repair	After Repair
1	Defects Percentage	2,13%	0,32%
2	DPMO	7087.65	896.91
3	Sigma	3.9533	4.6253

The next step is to create a proposed process activity mapping. Based on the proposed PAM in the tofu production process, several activities were identified as non-value-adding (NVA) activities that need to be eliminated. In addition to NVA activities, there are also some non-necessary value-adding (NNVA) activities in the tofu production process that should be minimized. This aligns with the research by [30], which states that activities classified as NVA, such as waiting, should be eliminated to ensure smooth production processes.

The results obtained from the future value stream mapping calculation show an improvement in PCE up to 92.57%. Future State Value Stream Mapping is shown on Fig. 6. In the Future State Value Stream Mapping, the proposed tofu production process flow from the supplier to the customer is depicted. The proposed lead time required for tofu production is 625.5 minutes or 10 hours, 25 minutes, and 30 seconds, while the total Value-Added time is 579 minutes or 9 hours and 39 minutes. Thus, there is an improvement in lead time by 35.5 minutes from the previous 579 minutes (9 hours and 39 minutes), and an increase in VA time by 110 minutes from the previous 469 minutes (7 hours and 49 minutes). The implementation of VSM at the Tofu MSME shows that by using VSM, SMEs can increase VA time, thereby optimizing the production process and reducing waste.

3.4. Control

In the Six Sigma methodology, the Control stage is the final phase, aiming to ensure that the improvements made in the production process can be sustained and continue to deliver consistent results in line with the desired targets [31]. Table 6 shows the production data and the number of defective tofu with hole defects, split defects, and color defects before implementation. Based on the recommendations from the factorial experiment improvements, implementation was carried out on the production process over 3 observation cycles, with results presented in Table 7. A comparison of the production process before and after the implementation of the factorial experiment can be seen in Table 8. It can be observed that the defect percentage decreased from 2.13% to 0.32%, the DPMO value reduced from 7,087.65 to 896.91, and the sigma value increased from 3.9533 to 4.6253.

4. Conclusions

The waste occurring in the tofu production process at Tofu MSME includes overproduction, defects, motion, waiting, transportation, and overprocessing, with defects being the most dominant. The critical quality factors for tofu products include foreign defects, split defects, hole defects, size defects, and color defects. The dominant factors at risk of causing potential defects, based on the RPN (Risk Priority Number) values, are the soy boiling duration with an RPN value of 150, the soaking duration with an RPN value of 125, and the coloring duration with an RPN value of 125.

Improvement proposals were made using factorial experiments. The experimental design proposal suggests setting the soybean boiling time to 30 minutes, the soaking time to 240 minutes (4 hours), and the coloring time to 120 minutes (2 hours). As a result, the defect percentage in tofu products decreased to 0.32%, down from the previous 2.13% after implementing the experimental design improvement plan.

Declaration statement

Asep Ridwan: Methodology, Supervision, Validation, Formal Analysis. Dyah Lintang Trenggonowati: Data Curation, Writing-review & Editing. Nur'aini: Collecting Data, Resources, Writing, Visualization.

Acknowledgement

The authors wish to thank anonymous referees for their constructive feedback.

Disclosure statement

The authors declare no conflicts of interest.

Funding statement

The study was conducted independently without external financial support.

Data availability statement

The authors confirm that the data supporting the findings of this study are available within the article or its supplementary materials.

AI Usage Statement

Generative AI and AI-assisted tools were used to enhance the language and readability of this manuscript. The authors have reviewed and revised all AI-generated content to ensure its accuracy and alignment with the research. The authors remain fully responsible for the work's scientific content, conclusions, and integrity, and disclose the use of AI to ensure transparency and adherence to publisher guidelines.

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Appendices

Table A1.
Process Activity Mapping

Process	Activity	Category Activity					Distance (m)	Time (min)
		O	T	I	D	S		
Soaking	Take the soybeans from the warehouse		T				1	0.5
	Weigh 10 kg of soybeans for each bucke	O						5
	Place 10 kg of soybeans into the available buckets	O						2
	Carry the buckets containing soybeans to the soaking area		T				1	1
	Soak the soybeans for several hours until they become soft	O						240
Grinding	Transfer the soaked soybeans to the grinding area		T				1	1
	Turn on the soybean grinding machine	O						2
	Gradually feed 10 kg of soybeans into the grinding machine	O						5
	Grind the soybeans until they form soy milk	O						20
Boiling	Carry the bucket of soy milk to the boiling area		T				1	1
	Light the fire in the boiling stove	O						5
	Pour the soy milk into the boiling pot	O						10
	Stir the soy milk until it is fully cooked	O						30
Filtration	Take the boiled soy milk to the filtering area		T				1	1
	Pour the boiled soy milk through the filtering cloth	O						2
	Filter the boiled soy milk to separate the pulp from the soy milk extract	O						10
	Remove the tofu pulp from the filte	O						1
Coagulation	Add the tofu starter to the filtered soy milk	O						3
	Stir the soy milk continuously to evenly distribute the starter and allow the soy milk to become clear	O						30
	Once the soy milk has settled, discard the remaining water (whey) into the designated containe	O						5
Molding	Take the settled soy milk extract	O						5
	Pour the soy milk extract into wooden tofu molds	O						2
	Cover the soy milk extract with cloth and close the tofu mold with the mold lid	O						1
	Press the tofu mold by placing a bucket on top to drain the excess soy milk and ensure no liquid remains	O						60
	Invert the tofu mold and open it to release the formed tofu	O						15
	Move the tofu to the tofu storage area		T				1	1
Cutting	Carry the tofu to the cutting are		T				1	1
	Cut the tofu using a tofu ruler and cutting knif	O						35
Coloring	Place the cut tofu into the turmeric boiling solution	O						5
	Boil the tofu until it turns yellow and floats	O						120
	Place the tofu into the tray	O						5
	Carry the tray of tofu to the storage rack		T				1	1
Storage	Soak the tofu in a brine solution to prevent it from becoming soft					S		
Total Time								625.5