Review: Journal of Multidisciplinary in Social Sciences

Volume 01 No 10 September 2024
E ISSN : 3031-6375
https://lenteranusa.id/

Analysis of the performance of operators who do not work according to the Standard Operating Procedure which causes Not Good products to be delivered to customers using the 5W + 1H method

Amar Syaifullah Hikam[1], Muhammad Naufal Ramadhani[2], Abdul Azis[3], Mhd Fachrur Rozi Nst[4], Varas Pratama Putra Kurniawan[5], Yudi Prastyo[6]
[1,2,3,4,5,6]Universitas Pelita Bangsa
Email: amarsyaifullahhikam@gmail.com

Abstract
PT QWERTY always strives to maintain production quality and quantity by paying attention to the performance of all employees, especially production operators. However, during the production process, NG / Abnormal is still often found, production targets are not achieved, and NG products are sent to customers (Customer Claims). This happens because human error such as employee performance that does not comply with SOPs, working in a hurry, and even in some cases, employees are sleepy, especially when working the night shift, are also the cause. This study aims to analyze the performance of operators who do not work in accordance with the Standard Operating Procedure (SOP) in the production process. This study uses the 5W + 1H method. The 5W+1H method is an information gathering and analysis technique that includes six basic questions, namely What, Who, When, Where, Why, and How. The results of the analysis show that violations of SOPs by operators can trigger errors in the production process, leading to NG products being delivered to customers. The main factors that trigger non-compliance with SOPs include lack of training, high workload, and lack of regular monitoring and evaluation of performance.

Keywords: Operator Performance, NG Products, Quality, Human Error, 5W+1H

Introduction

Manufacturing companies (PT QWERTY) engaged in the production of goods have strict Standard Operating Procedures (SOPs) to ensure the quality of the products produced. This SOP is designed to guide every stage in the production process, from the receipt of raw materials, the production process, to the packing and delivery of products to customers. The purpose of implementing SOPs is to minimize the risk of errors, ensure production efficiency, maintain customer satisfaction and company profits.

NG products that are delivered are often caused by negligence or mistakes made by operators on the production line who do not comply with the SOPs that have been set. This of course has a negative impact on the company, such as increased product return costs, decreased customer trust, as well as potential long-term losses in brand reputation.

Based on internal reports and interim analysis, it is known that non-compliance with SOPs is not only due to technical factors, but also related to human factors, such as employee performance that does not comply with SOPs, working in a hurry due to very high targets, and even in some cases, employees are sleepy while working night shifts are also the cause. Therefore, it is important to conduct a more in-depth analysis of the operator's performance

in the production process, as well as identify the factors that cause them to not work according to the SOPs.

This study aims to analyze the factors that cause non-compliance with SOPs by operators, as well as their impact on the quality of products delivered to customers. By understanding the root of this problem, it is hoped that the company can formulate the right solution to improve the work system and improve the quality of products received by customers so that they can maintain product quality and the company's good name.

Method

Operator Performance in Production Process

The performance of operators in the production line greatly affects the quality of the products produced. Operators function to run machines, monitor production processes, and ensure that the products produced meet the standards that have been set. According to Gaspersz (2015), operator performance can be affected by various factors, such as training, experience, tools used, and understanding of existing procedures. When operators do not work in accordance with the Standard Operating Procedures (SOPs), this can lead to production errors that have the potential to produce Not Good (NG) products, which are products that do not meet quality standards and are not suitable for delivery to customers.

Standard Operating Procedures (SOPs) in the Manufacturing Industry

An SOP is a clear and structured guide or instruction to carry out a process with the aim of maintaining product consistency and quality. Novianty (2016) stated that the implementation of SOPs in production aims to minimize human error, optimize efficiency, and improve the quality of the products produced. Without consistent SOP implementation, the production process will tend to experience high variation, leading to reduced quality and increasing the likelihood of NG products.

NG (Not Good) Products

NG products are a term used to describe products that do not meet predetermined quality standards, either in terms of dimensions, function, or appearance. Sianipar (2017) explained that NG products can be caused by various factors, including errors in the production process, inconsistencies in raw materials, or human error in carrying out SOPs. NG products delivered to customers can damage a company's reputation and lower customer satisfaction levels, which risks reducing customer loyalty and potentially harming the company.

5W + 1H Method

The 5W + 1H method is an analysis technique that is often used to analyze the cause of a problem by asking a series of questions in the form of: What, Why, Who, When, Where, and How. According to Yusuf (2018), the application of this method in problem analysis can help the team to dig deep into information about the root cause of the problem and find a more appropriate and effective solution. In the context of this study, the 5W + 1H method was used to analyze the factors that cause operators not to follow SOPs and their impact on the quality of products delivered to customers.

- What: What causes operators not to follow SOPs in the production process?

- Why: Why don't operators follow SOPs correctly? Are there any external or internal factors that influence?
- Who: Who is involved in the production process that has the potential to cause NG products?
- When: When do errors usually occur in the production process? Are there certain times or conditions that increase the likelihood of errors?
- Where: Where do errors often occur in the production process? Are there certain points in the production line that are more prone to errors?
- How: How do operators implement non-compliant SOPs? What are the procedures that are not followed and how does it affect product quality?

The Relationship Between SOPs, Operator Performance, and Product Quality

The implementation of good SOPs will have a direct effect on product quality. Fadhilah (2019) stated that proper training, consistent monitoring, and providing feedback to operators will improve their performance in following SOPs. Conversely, a lack of supervision and understanding of SOPs can increase the potential for errors in the production process, which can lead to the creation of NG products. Therefore, analysis of the performance of operators who do not follow SOPs is essential to find out the cause of the error and find effective solutions to reduce NG products.

Challenges in SOP Implementation

Ineffective SOP implementation is often affected by several challenges, including lack of training for operators, changes to procedures that are not well informed, and lack of clarity in the instructions provided. Nasution (2017) stated that non-compliance with SOPs is often caused by human factors, such as lack of motivation or understanding of the importance of product quality. Therefore, it is important for companies to not only document SOPs, but also provide ongoing training as well as strict supervision to ensure that SOPs are followed consistently.

Relationships Between Neighbors

Emotionally poor relationships between operators, leaders, foremen and supervisors affect the company's productivity. In some cases, there are moments where it works according to the mood. Poor mood comes from individual problems/external problems to internal/problematic problems with the boss. It is important to maintain good relationships between others in order to create an emotionally comfortable work environment.

Research Approach

This study uses a qualitative descriptive approach that aims to describe in depth the causes of operator performance that is not in accordance with the Standard Operating Procedure (SOP) and its impact on the delivery of Not Good (NG) products to customers. This study also uses the root cause analysis method with a 5W + 1H approach to obtain more information on the factors that cause non-conformity in the implementation of SOPs and identify steps that can be taken to improve operator performance.

Review: Journal of Multidisciplinary in Social Sciences

Volume 01 No 10 September 2024
E ISSN : 3031-6375
https://lenteranusa.id/

Types and Data Sources

This study uses primary data and secondary data.

- Primary data was obtained through interviews with production operators, leaders, foremen, and supervisors who were directly involved in the production process. This interview aims to explore information about operators' understanding of SOPs, challenges faced, and factors that affect non-conformity in the implementation of SOPs.
- Secondary data is obtained from company documents, such as production reports, product quality records, and SOPs that apply in the company. This data will be used to analyze the extent to which SOPs are implemented and how often NG products are recorded in shipments to customers.

Location and Time of Research

This research was conducted in a manufacturing company (PT QWERTY) that produces customer goods. The research will be conducted in several parts of the production line, focusing on the parts that most often involve operators in decision-making and actions that can potentially produce NG products.

The research period is estimated to last for 3 months, starting from October to December 2024, with the following stages:

- Month 1: Secondary data collection and initial observation at the research site.
- Month 2: Conduct interviews with related parties and initial analysis.
- Month 3: Preparation of research results report and recommendations.

Research Procedure

This research was carried out in several stages as follows:

- Stage 1: Data Collection
  At this stage, the researcher will collect data through direct observation in the production line and interviews with operators, leaders, foremen and supervisors. Researchers will also collect documents related to SOPs, production reports, and product quality data.
- Stage 2: Identify the Problem
  Based on the data obtained, the researcher will analyze the factors that cause the discrepancy between the operator's performance and the SOPs that have been set. The 5W + 1H method will be applied to answer key questions related to who, what, why, when, where, and how SOP non-conformity occurs.
- Stage 3: Root Cause Analysis
  Researchers will use the root cause analysis approach to explore the main cause of the problem. This analysis will be carried out by referring to interviews, observation results, and product quality data sent to customers.
- Stage 4: Preparation of Recommendations
  Based on the results of the analysis, the researcher will prepare recommendations to improve the performance of operators in following SOPs, as well as steps that can be taken by companies to reduce the number of NG products delivered to customers.

Review: Journal of Multidisciplinary in Social Sciences

Volume 01 No 10 September 2024
E ISSN : 3031-6375
https://lenteranusa.id/

Data Collection Techniques

The data collection techniques used in this study are as follows:

- Interview
  In-depth interviews will be conducted with operators, leaders, foremans, and supervisors to understand problems related to operator performance in following SOPs. This interview will also explore the factors that affect the delivery of NG products.
- Observation
  Researchers will make direct observations on the production line to see the implementation of SOPs by operators, as well as identify vulnerable points that can cause errors or omissions in the production process.
- Documentation
  Secondary data in the form of company documents such as production reports, quality records, and applicable SOPs will be collected to analyze the conformity between the established procedures and the implementation in the field.

Data Analysis Techniques

The collected data will be analyzed using qualitative analysis techniques to answer research questions. The analysis process includes the following steps:

- Data Categorization
  The data obtained from interviews, observations, and documentation will be categorized according to relevant themes, such as understanding SOPs, factors causing SOP non-compliance, and their impact on NG products.
- 5W + 1H Analysis
  The 5W + 1H technique will be used to dig deeper information regarding the causes of non-conformity in the implementation of SOPs by operators. This will help to identify the key factors that cause NG products.
- Root Cause Analysis (RCA)
  The root cause analysis technique will be used to identify the root cause of errors that occur in production. This is done to ensure that the solutions provided focus on preventive improvements.

Data Validity and Reliability

To ensure the validity and reliability of the data, the researcher will triangulation the data by comparing the results of interviews, observations, and company documents. In addition, interviews will be conducted with several different parties (operators, leaders, foremen, and supervisors) to get a more objective and complete perspective.

Research Limitations

This research has several limitations, namely:

- The research was only conducted on one specific manufacturing company that produces customer goods, so the results of this research may not be generalized to other industries.

- The study focuses more on operator performance and SOP implementation, without taking into account other external factors that may affect the delivery of NG products (such as raw material or equipment supply issues).

Result and Discussion

Primary Data

a) Interview with Production Operator
   - Interview 1: Operator A (Line Production 1)
   - Question: What causes you not to follow the SOP properly?
   - Answer: Sometimes, we feel rushed because the production target is very high so if we follow the SOP 100%, it is difficult to achieve and there is no spare time to repair NG products, or just drink/go to the toilet.

b) Interview 2: Operator B (Line Production 2)
   - Question: Why are the products you produce often considered NG?
   - Answer: Usually, errors occur when the machine encounters technical problems, but we are not provided with additional training on how to deal with them. Sometimes when I do SCW (Stop Call Wait), the Leader/Foreman never comes, so I decide to take action myself, considering the target that has not been achieved. I also feel that SOPs are not always properly updated when there is a change in machinery or process.

c) Interview with Leader-up
   - Interview 1: Leader-up A (Line Production 1)
   - Question: Do you feel that the operator is complying with the SOP well?
   - Answer: Not always. There are some operators who sometimes skip certain steps because they feel they are used to it or because of the pressure to meet production targets every hour.

d) Interview 2: Leader-up (Line Production 2)
   - Question: What steps are taken if there is an NG product?
   - Answer: Products that do not meet the standards will usually be repaired or discarded. We also try to analyze the causes of NG, but it is often difficult to find the exact root cause due to SOPs that are not always adhered to.

Secondary Data

Product Quality Report (Weekly)

The following report is an example of product quality data sent to customers over a specific period.

Review: Journal of Multidisciplinary in Social Sciences

Volume 01 No 10 September 2024
E ISSN : 3031-6375
https://lenteranusa.id/

Table 1. Production Report of Line 1-3 (November 2024)

Date	Production Line	Total Products Shipped	NG (Not Good) Products	NG Percentage (%)	Main Causes of NG Products
November 1, 2024	Line 1	1,200	40	3.33%	The operator did not comply with the SOP in the final product check.
November 2, 2024	Line 2	1,500	60	4.00%	The machine is not properly adjusted as per SOP, operator error.
November 3, 2024	Line 3	1,000	30	3.00%	SOPs are not updated after engine changes.
November 5, 2024	Line 1	1,300	25	1.92%	Operators are in a hurry due to the pressure of very high production targets
November 7, 2024	Line 2	1,100	50	4.55%	Operator ignorance regarding the SOP of the new engine.
November 10, 2024	Line 3	1,400	35	2.50%	Operator fatigue, sleepy operators during the night *shift*, lack of supervision.

Rework and Product Returns Report This report shows the number of NG products that were reworked or returned by customers due to errors in the production process.

Table 2. NG Line 1-3 Product Report (August 2024)

Date	Reworked NG Products	Returned NG Products	Main Cause
November 1, 2024	10	15	The operator did not follow the SOP for final product checking.
November 2, 2024	20	40	The machine error is not set according to the SOP.
November 3, 2024	15	10	SOPs are not updated after engine changes.
November 5, 2024	5	10	Operators are in a hurry because of the time target.
November 7, 2024	15	30	Lack of operator training regarding new engines.
November 10, 2024	12	20	Lack of supervision at the end of the shift.

Review: Journal of Multidisciplinary in Social Sciences

Volume 01 No 10 September 2024
E ISSN : 3031-6375
https://lenteranusa.id/

Observation data on the production line

Line Production 1:

- Observation 1 (November 1, 2024): Operators A and B were seen ignoring several SOP steps in the final quality check process, such as visual/dimensional product checks and functional testing. This is due to the pressure to meet very high production targets.
- Observation 2 (November 3, 2024): The engine on Line 1 appears to be poorly maintained. The operator did not follow the SOP in terms of cleaning the machine at the end of the shift, which caused damage to the machine and NG products.

Line Production 2:

- Observation 1 (November 2, 2024): Operators C and D did not adjust the engine settings according to the latest SOPs after the engine design change. As a result, the resulting product has dimensional defects.
- Observation 2 (November 5, 2024): Operators are seen rushing to implement SOPs due to the pressure to complete the daily target is very high. Some important procedures such as final checks are not done carefully.

Line Production 3:

- Observation 1 (November 7, 2024): Operators do not understand the new SOPs related to engine settings. They seemed to have difficulty following the procedure because the SOP was not properly socialized after the machine was replaced.
- Observation 2 (10 November 2024): During the shift change, there was a negligence in supervision that caused some NG products to not be detected and delivered to customers.

5W+1H Analysis and Fishbone Diagram

Table 1. 5W+1H Cause NG Part

Category	Related Causes/Factors
What	• NG products are produced because operators do not follow SOPs consistently in the production process, especially in checking the final quality and machine settings.
Why	• Operators feel rushed due to very high production targets and lack of adequate training on the new SOPs. In addition, some SOPs are not updated or properly socialized after the engine change.
Who	• Production operators, especially those who are new or not well trained, as well as leaders-up who lack supervision over the implementation of SOPs.
When	• NG products often occur during shift changes, operators feel tired, rushed when pursuing production targets and are poorly supervised.

Review: Journal of Multidisciplinary in Social Sciences

Volume 01 No 10 September 2024
E ISSN : 3031-6375
https://lenteranusa.id/

Where	• This problem is most common in production lines 1 and 2, where the machines used require more careful arrangements according to the latest SOPs.
How	• Operators do not follow SOP measures closely, either due to lack of understanding, rush to meet targets, or lack of strict supervision from the leader-up.

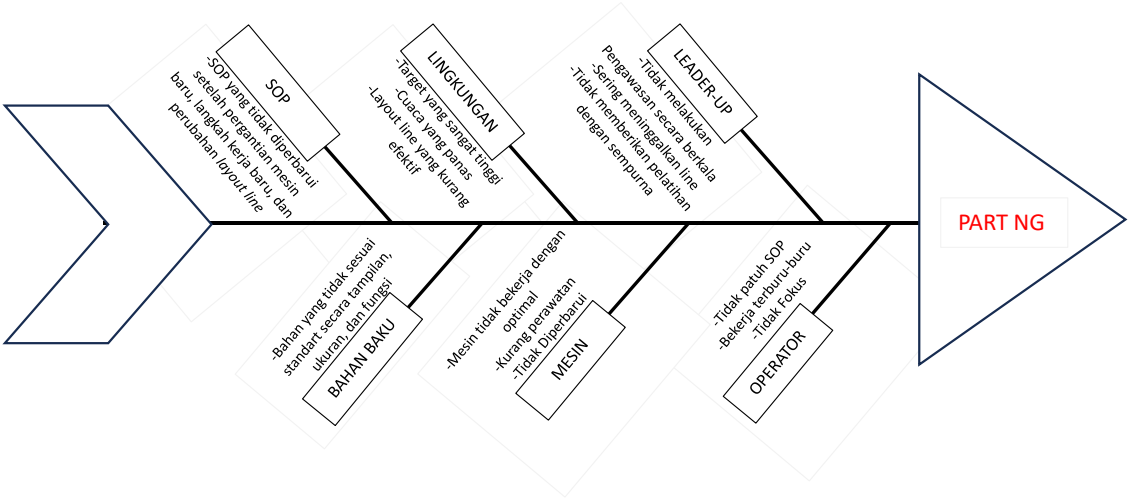

Figure 1. Fishbone

Actions Taken

To reduce the percentage of NG products due to operators not working in accordance with the Standard Operating Procedure (SOP), several actions that must be taken can be divided into several preventive and corrective steps. Based on the findings from the 5W+1H analysis, here are the steps to take:

Repair and Enhancement of SOPs

- Repeat Existing SOPs
- Unclear or inadequate SOPs can lead to non-conformities in the production process. Therefore, it is necessary to review and improve the existing SOPs, so that they are easier to understand and apply by all operators.
- Simplify and Standardize Procedures
- If the SOP is too complicated or does not correspond to the reality on the ground, the procedure must be simplified and made more standardized to make it easier to follow.

Operator Training and Development

- Scheduled Training: Operator training on the importance of compliance with SOPs and product quality should be conducted on a scheduled and periodic basis. The training also covers ways to identify and address problems that can cause NG products.
- Simulation and Practical Learning

- To ensure that operators understand SOPs in depth, conduct simulations or practical training that directly involves production activities, where operators can learn how to follow SOPs in practice.

Improved Supervision and Quality Control

- Implement Stricter Supervision
- Stricter supervision and supervision are essential to ensure operators follow SOPs properly. Supervision can be carried out by the Leader-up who is in charge of the production area to ensure that the process is carried out according to procedures.
- Strict Quality Control (QC) Improving QC activities at every stage of production is a crucial step. Conducting more frequent and rigorous quality inspections, especially at the final inspection and packing stages, can help minimize NG products being delivered to customers.

Evaluation and Strengthening of the Incentive System

- Providing Incentives for Compliance with SOPs
- To increase operator motivation in following SOPs, companies can provide incentives or rewards for operators who demonstrate high compliance with the set standards.
- Sanctions or Disciplinary Actions for operators who do not follow SOPs consistently, disciplinary actions must be applied. This can be a verbal warning to a written warning, or for more serious offenses, it can include a demotion or termination of employment.
- Improved Communication System: Clear and effective communication between management, operators, and the QC team is essential to explain changes in SOPs or new policies implemented. The use of digital communication platforms such as internal company applications can help improve the flow of information and reduce miscommunication.
- Giving Feedback
  Whenever an error occurs, it is important to provide feedback to the operator and the relevant team so that they know where the error is and how to fix it.
- Application of Technology in the Production Process
  Automation of the production process, the use of automated technology or machines with quality control can reduce human error and increase efficiency. This technology can help ensure compliance with SOPs and reduce variation in production output.
- Monitoring and Reporting System
  The implementation of a technology-based monitoring system to monitor the production process in real-time can help detect problems faster. With a digital reporting system, issues can be reported and addressed immediately before NG products are delivered to customers.
- Improved Packaging Quality and Effectiveness
  Improve the Packaging Process, improper packing can cause the product to be defective or damaged before it reaches the customer. Therefore, it is necessary to improve the packing process with clearer SOPs and special training for the packaging team.
- Quality Assurance at the Packaging Stage
  Make sure there is a quality check at the packaging stage, to ensure that the products delivered are products that meet quality standards.
- Creating a Comfortable Work Environment and Environment

Ventilation and Room Temperature: Make sure the workspace is well-ventilated and has a comfortable temperature. A room that is too hot or too cold can make employees feel uncomfortable, which can affect their productivity and always keep the stock of goods at a safe level so that production is not rushed which has the potential to ignore the applicable SOPs.

Conclusion

Based on data obtained from interviews, observations, and production reports, it was found that the discrepancy between operator performance and SOPs was caused by several factors, such as lack of training, pressure to meet very high production targets, and SOPs that were not always updated or properly socialized. This has a direct impact on the increase in the number of NG products delivered to customers. Poor relationships between operators and leader-ups also affect performance/production.

References

Agus, A., & Sutrisno, H. (2019). Application of Standard Operating Procedure (SOP) in the Production Process to Improve Product Quality in the Manufacturing Industry. Journal of Industrial Engineering, 20(2), 121-130.

Amin, M., & Rizal, M. (2021). Evaluation of Operator Performance and Its Influence on Product Quality Using the 5W + 1H Approach at PT ABC. Journal of Industrial Engineering and Management, 16(2), 85-97.

Fadhil, M., & Mulyono, D. (2021). The Effect of Standard Operating Procedures on Production Efficiency and Product Quality at PT DEF. Journal of Management and Quality, 15(1), 24-33.

Hidayat, A., & Suryadi, I. (2022). Implementation of Standard Operating Procedure (SOP) to Improve Operator Compliance in Producing Quality Products in the Manufacturing Industry. Journal of Quality Control and Industrial Processes, 11(3), 102-111.

Kurniawan, D., & Prabowo, R. (2018). Analysis of Operator Performance and Its Influence on Product Quality in the Manufacturing Industry: A Case Study on PT X. Journal of Industrial Management and Engineering, 6(1), 45-59.

Lestari, D., & Hidayat, T. (2020). Evaluation of Operator Performance in the Production Process to Reduce NG Products with the 5W + 1H Method Approach. Journal of Industrial Engineering and Management, 10(2), 99-108.

Nugroho, F., & Wibowo, E. (2017). Improving Product Quality Through Monitoring Operator Performance and SOP Implementation on Production Lines. Journal of Management and Quality, 15(1), 78-85.

Prasetyo, B., & Oktaviana, D. (2020). Application of the Root Cause Analysis Method to Improve Product Quality by Identifying the Cause of Problems in the Production Process. Journal of Industrial Engineering and Management, 12(4), 115-123.

Suryanto, E., & Setyawan, D. (2020). The Effect of SOP Compliance on Product Quality in the Manufacturing Process at PT XYZ. Journal of Industry and Management, 14(3), 201-212.

Wahyuni, L., & Kurniawan, M. (2019). Analysis of the Causes of Product Defects with a 5W + 1H Approach in the Production Process at PT XYZ. Journal of Industrial Systems and Engineering, 7(1), 45-56.