



5S Work Culture (Seiri, Seiton, Seiso, Seiketsu, Shitsuke) to Improve Occupational Safety and Health at Textile Company

Nico Plamonia*, Ayuning Tyas Nurkusuma Wardani, Linggar Riana, Rahil Septian, Henny Henny

Department of Industrial Engineering, Universitas Komputer Indonesia, Bandung, Indonesia
*nico.10322002@mahasiswa.unikom.ac.id

Abstract. This study aims to design and implement the 5S work culture of Seiri, Seiton, Seiso, Seiketsu, and Shitsuke in order to improve Occupational Safety and Health (OSH) in a textile company, a complex textile industry and production facility. Based on the company's internal reports, workplace accidents are caused by disorganized workplaces, including improper equipment layout and suboptimal cleanliness levels. As a solution to these issues, the 5S system is implemented to create an organized, clean, and safe work environment. This study employs the 5S and Kaizen approaches as continuous improvements toward OSH. The implementation of 5S at the facility includes sorting necessary items (Seiri), arranging equipment (Seiton), regular cleaning (Seiso), maintaining cleanliness and accountability standards (Seiketsu), and fostering a disciplined behavioral culture (Shitsuke). The results of the study indicate that the implementation of the 5S culture in the textile company improves operational personnel efficiency, reduces the risk of workplace accidents, and creates a safe, healthy, and comfortable workplace. Company support and active worker participation are also key factors in the success of 5S implementation. Therefore, this study can serve as a reference for other companies seeking to systematically and continuously improve various aspects of OSH.

Keywords: 5S Kaizen, Work Culture, Work Accidents, Productivity.

1 Introduction

A clean and disciplined work culture is desired by all enterprises, both service and production enterprises. The production and service industries are taking part in the era of global markets, and enterprises are engaged in violent competition. In order to achieve better results, companies need to strive for further development and development. If the company cannot make changes, it cannot improve its products to remain competitive. Therefore, the company must strive to improve the quality of the services and products it offers because it can easily be defeated by its competitors [1]. Occupational safety and health (OHS) is a key element in improving productivity, efficiency, and sustaina-

bility of industrial operations. According to data from the International Labor Organization (ILO), more than 2.78 million deaths and 374 million cases of occupational accidents occur each year due to the lack of implementation of effective safety systems. In Indonesia, a report from the Employment Social Security Agency in 2022 showed an increase in work incidents of up to 5% compared to the previous year, underscoring the urgency of improving the OHS system. The 5S method (Seiri, Seiton, Seiso, Seiketsu, Shitsuke) is a structured approach to creating a clean, organized, and safe workplace [2]. A study by (Bassiouni 2024) showed that implementing 5S kaizen technique and their perception of psychosocial safety climate improving efficiency and management of work facilities [3]. However, the implementation of 5S work culture in Indonesian companies still faces significant challenges, especially in terms of cultural adaptation and long-term sustainability.

Manufacturing company educational equipments of laboratory glassware and research. Based on internal reports, work accidents in this company are related to workplace disorganization, such as inadequate arrangement of tools and lack of cleanliness. In addition, the low level of employee awareness of the importance of OHS is a major obstacle in creating a safe and productive work environment [4].

The 5S concept originated and implementation of kaizen for overall improvement and agricultural organisation. The term 5S consists of the first initials Seiri (screening), Seiton (organization), Seiso (cleaning), Seiketsu (standardization) and Shitsuke (discipline). 5S serves as a tool for identifying issues that, if properly implemented, will become part of a well-planned control process [5].

Seiri (Compact): Separating necessary and unnecessary items and removing unnecessary items from the workplace, Seiton (Tidy): Organizing necessary items so that they are easy to find and use, Seiso (Clean): Cleaning the work area and equipment regularly to ensure cleanliness and operational readiness, Seiketsu (Care): Standardizing organization and cleaning processes to maintain consistency and quality, Shitsuke (Diligence): Instilling self-discipline to maintain and improve 5S practices on an ongoing basis [6].

The implementation of the 5S method has been proven to improve operational efficiency, product quality, and work safety in various industries. For example, research conducted by (Moi and Sing 2021) showed that the implementation of 5S for developing in a steel construction factory [7].

In addition, (Burçin and Ulusam 2024) found that the implementation of 5S was able to reduce waste and improve work efficiency [8]. They also emphasized the importance of training and management commitment in ensuring the success of 5S implementation.

Overall, the 5S method is an effective tool for improving operational efficiency, product quality, and work safety. However, its successful implementation requires commitment from all members of the organization and full support from management [9].

His scholarly investigation delves into the influence of the methodologies employed and the circumstances surrounding the adoption of Kaizen principles on the enduring viability and operational effectiveness of production-oriented enterprises located in Ethiopia, the study follows the frame work of kaizen practices as the application of kaizen tools. The result should emphasize working on promoting the kaizen culture and

empowerment of employees. as well as a guide for other companies in creating a safe and productive work culture [10].

2 Method

This research begins by conducting a literature study as a foundation for further research. After that, observations were made in the field to understand the condition of the object to be studied. This research was conducted at a textile company located on Jl. Raya Rancaekek, Kec. Jatinangor, Sumedang, and still has not implemented the 5S system in its operations. The design of 5S implementation in the work environment requires careful planning to ensure the success of the process. In the context of occupational safety and health (OHS), one effective approach is to apply the 5S method [11]. The 5S method, which originated in Japan, stands for five Japanese terms: Seiri (Sort), Seiton (Arrange), Seiso (Clean), Seiketsu (Standardize), and Shitsuke (Discipline). 5S idea and focus on users by looking into what is an effective and user-friendly method to remove activities that do not add value and enhance safety, usability, and productivity in a manufacturing area by applying the 5S approach [12].

This method emphasizes the importance of building neat, orderly, clean, and disciplined work habits, which in turn can improve work safety and create a more comfortable working atmosphere for research that focuses on the application of the 5S method in a work environment, the following are some suitable methods:

Kaizen (Continuous Improvement) Method

Kaizen emphasizes continuous improvement in company operation [13]. In the context of 5S, this method helps in:

- (i). Increase worker awareness and participation in maintaining cleanliness and tidiness.
- (ii). Provide a periodic evaluation system to ensure 5S standards remain in place.
- (iii). Encourage innovation and new ideas from employees to improve work efficiency.

This research will use the kaizen method where the method is very suitable for the 5s research that is being undertaken because it focuses on very continuous improvement.

3 Results and Discussion

3.1 Identification of Work Environment Conditions

When observing the work environment and conditions in the warehouse of a textile company, based on the results of the observation, unused items were found to be scattered and the conditions appeared dirty. The work area was free of food and unnecessary items, which could cause disruption to the continuous work process. Work environment cleanliness can begin with waste management and the provision of adequate cleaning equipment, and tidiness can be maintained by complying with rules regarding the placement of unused items. The results of the observation show the need for a clean

work culture in order to reduce the risks that cause workplace accidents and improve work process efficiency, as well as create a work environment that supports the sustainable running of work processes [14]. A clean work culture will be implemented through method analysis and proposals that help companies create a clean, disciplined work environment and raise employee awareness of the importance of occupational safety and health, which are the main obstacles to creating a structured work culture. The condition of the warehouse can be seen in Fig. 1:



Fig. 1. Warehouse section condition.

3.2 Proposed 5S Method Analysis

The Kaizen 5S method comes from the first letter, namely Seiri (concise), Seiton (neat), Seiso (clean), Seiketsu (care) and Shitsuke (diligent), the proposed analysis of the 5S method in the warehouse section of the textile company. This design aims to produce warehouse conditions that are more structured, neat, and make it easier for operators to recognize goods [15]. Operators have not shown a sense of responsibility to keep the warehouse area clean and the equipment used. The purpose of 5S is to create a clean and organized work environment, as well as to facilitate the search and placement of production equipment. The analysis and planning of the 5S method are written in detail so that all employees are aware of, implement, and help to raise employee awareness to maintain, clean, and tidy up the work area to create a clean and disciplined work culture.

Proposed 5S Method Analysis in Improving Operational [16].

Seiri (Compact) Analysis Elimination of Unnecessary Items.

- (i). Item Identification: Categorize items based on frequency of use. Items that are rarely used can be moved to storage or removed if not needed.
- (ii). Impact: Reduced time searching for items, increased workspace, and reduced potential for errors due to unorganized items.

Seiton (Neat) Analysis Systematic Organization of Goods.

- (i). Storage Methods: Establish clear storage locations with labels and color coding to make searching easier.
- (ii). Impact: Improve operational efficiency by speeding up access to required equipment and materials.

Seiso (Clean) Analysis Cleanliness of the Work Environment.

- (i). Cleaning Schedule: Determine a regular schedule for cleaning the work area and production machinery.
- (ii). Impact: Reduced risk of work accidents, extended equipment life, and improved work comfort for employees.

Seiketsu (Care) Analysis Process Standardization.

- (i). Cleaning Schedule: Determine a regular schedule for cleaning the work area and production machinery.
- (ii). Impact: Reduced risk of work accidents, extended equipment life, and improved work comfort for employees.

Shitsuke (Diligent) Analysis Habituation and Supervision.

- (i). Training and Evaluation: Conduct periodic training and evaluation of 5S implementation on a regular basis.
- (ii). Impact: Instilling a culture of discipline and responsibility among employees to maintain the sustainability of the 5S method.

3.3 Planning Stages of the 5S Method and Proposed Operational Improvements

Furthermore, 5S Planning, an activity carried out with the 5S method and presents details regarding information and structural appearance. The purpose of 5S planning is to improve the condition of the company for the better so that employees are easier to find the necessary tools and the company becomes cleaner. 5S design in Textile Company includes several aspects including [17]:

Seiri (Summarize): By sorting, companies ensure that in the workplace, only relevant and useful items and information remain [18]. This approach contributes to the creation of more organized and effective working conditions.

Seiton (Tidy): By designing a systematic layout for goods and equipment, companies can improve operational effectiveness and minimize time lost searching for necessary items. A systematic arrangement also contributes to creating a safer and more pleasant workplace [19].

Seiso (Clean): The establishment of cleaning procedures for all employees. Through regular cleaning activities, companies can ensure that work areas remain hygienic and well-maintained. A clean work environment not only gives a positive impression to employees and visitors, but also reduces the likelihood of hygiene-related accidents and health problems [20].

Seiketsu (Care): The development of SOPs to ensure that working conditions remain organized and clean. By creating standards for sorting, arranging, and cleaning, companies can create a consistent and organized work environment. The implementation of standards plays an important role in maintaining the quality of the work environment while encouraging employees to follow the prescribed procedure [21].

Shitsuke (Diligent): Through regular practice and ongoing training, companies can ensure that all employees understand the significance of implement [22].

3.4 Proposed Standard Operation Procedure (SOP)

By considering the results of observations in the field, a proposed Standard Operating Procedure (SOP) was prepared which aims to improve and standardize work processes that have not been well organized. This proposed SOP is designed to be easily understood and implemented by all related parties, as well as a reference in supporting the improvement of performance and operational quality in the work environment (see Table 1).

Table 1. Standard operating procedure for factory cleanliness.

STANDARD OPERATING PROCEDURES (SOP) CLEANLINESS IN THE WAREHOUSE SECTION OF A TEXTILE COMPANY
Destination:
<ol style="list-style-type: none"> 1. Maintain an optimal level of cleanliness in textile factory facilities. 2. Ensure product quality is maintained. 3. Create a comfortable and healthy environment for all workers.
Procedure:
<ol style="list-style-type: none"> 1. Clothing and Equipment: <ol style="list-style-type: none"> a) All employees are required to wear clean work clothes in accordance with factory regulations. b) Wear a head covering (such as a hat or headscarf) in accordance with the guidelines. 2. Hand Wash: <ol style="list-style-type: none"> a) Before starting work, employees must wash their hands using soap and clean water. b) After eating or after touching dirty objects, employees are required to wash their hands. 3. Work Area Sanitization: <ol style="list-style-type: none"> a) Each individual is responsible for maintaining the cleanliness of their workplace. b) Clean the tools and machines used in accordance with established procedures. 4. Raw Material Handling: <ol style="list-style-type: none"> a) Ensure that the tea raw materials used during production are clean and uncontaminated. b) If you find contaminated raw materials, inform your supervisor immediately. 5. Waste Management: <ol style="list-style-type: none"> a) Dispose of garbage at designated locations in accordance with factory regulations. b) Perform regular cleaning of work areas and trash bins (daily/weekly), document the cleaning schedule. 6. Personal Hygiene: <ol style="list-style-type: none"> a) Employees must maintain personal hygiene, including maintaining nail length and avoiding excessive jewelry. No smoking, eating or drinking in the production area. 7. Examination and Audit: <ol style="list-style-type: none"> a) Regular checks and audits will be conducted to ensure compliance with the hygiene SOP.

3.5 Proposed Operational Improvement Layout

This proposal is designed to answer various problems found in the previous layout, such as material accumulation, inefficient movement, and suboptimal use of space. Hopefully, the implementation of this layout can support the achievement of better and sustainable operational performance (see Fig.2).

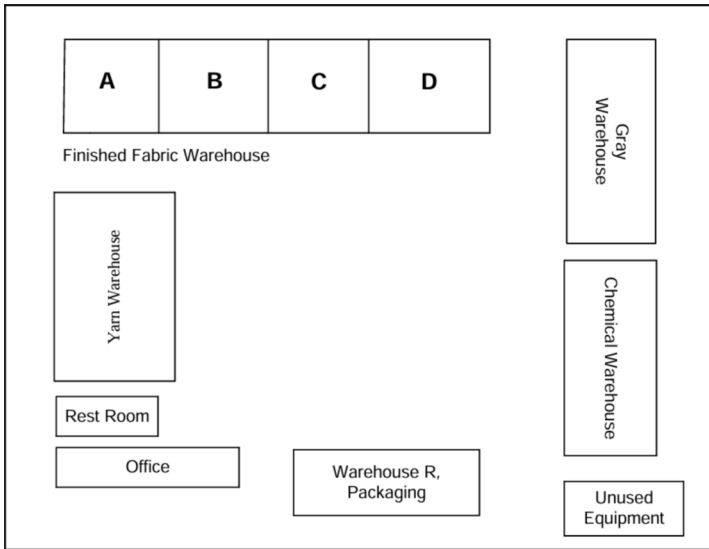


Fig. 2. Warehouse section proposed layout.

4 Conclusion

This research highlights the importance of implementing the 5S work culture (Seiri, Seiton, Seiso, Seiketsu, Shitsuke) in improving occupational safety and health (OHS) in a textile company, a company that faces challenges in workplace organization and employee awareness of OHS. The results showed that the implementation of 5S can provide significant benefits in improving operational efficiency, reducing the risk of work accidents, and creating a cleaner and more organized work environment. The Kaizen method was used as the main approach as it emphasizes continuous improvement and active employee participation.

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