**Knowledge E**
enriching | engaging | empowering

**Conference Paper**

# Implementation of 5S (Seiri, Seiton, Seiso, Seiketsu, and Shitzuke) in Workers

## Ela Nurdiawati*, Ahmad Jubaedi, Alawia Afda Wada

Public Health Education Program, Health Faculty, Universitas Faletehan, Serang, Banten, Indonesia

**Abstract.**

The implementation of the 5S concept (Seiri, Seiton, Seiso, Seiketsu, dan Shitzuke) is one of the efforts to prevent accidents in the industry by making the work environment safe and comfortable. This research aims to analyze the implementation of 5S on workers. This study used a cross-sectional design with a total sample of 75 people. The results showed that 52% respondents applied the 5S concept well, 84% respondents were male, 76% respondents had new work period, 84% respondents had low education, 58.7% respondents had good knowledge, 92% respondents had a positive attitude, and 66.7% respondents had strong work motivation. The results of this research said that there was a correlation between gender (P-value = 0.007), and work period (P-value = 0.037) with the application of 5S to workers. The results of statistical tests also showed that there was no significant value between education level (P-value = 1,000), knowledge (P-value = 0.771), attitude (P-value = 0.099), and work motivation (P-value = 0.806) with the application of 5S to workers. Management needs to be more committed in implementing 5S by increasing supervision, making safety signs, and providing 5S training, especially for male workers and workers who have a long working period so that they can implement 5S properly.

**Keywords:** implementation of 5S, workers, work period

Corresponding Author: Ela Nurdiawati; email: elanurdiawati@yahoo.co.id

## 1. Introduction

The changes in the industrial world are getting faster, and more jobs companies want. The very rapid industrial growth is certainly accompanied by an increase in the use of machinery, equipment and hazardous materials. The use of machinery, equipment and hazardous materials in an industrial activity as well as interactions with the environment and workers have the potential to cause occupational diseases and accidents. Work accidents cause adverse effects not only damage to equipment, loss of property, cause environmental pollution and can even cause death. Accidents losses need to be prevented and minimized. Accident prevention efforts can be carried out through the development of a work culture so that it becomes a safety culture in the workplace.

**OPEN ACCESS**

The results of the study indicate that a safety culture has a significant impact on reducing unsafe behavior in the workplace[1]. Through a good safety culture, it will also support the realization of a safe, comfortable workplace and avoid hazard[2]. The existence of a work culture will reduce the incidence of work accidents, one of which is work culture, namely the 5S culture[3].

The 5S program is an adaptation of 5S *(Seiri, Seiton, Seiso, Seiketsu, Shitsuke)* which was developed in Japan by Hiroyuki Hirano and has been used by many countries around the world[4]. The simple 5S concept is often overlooked. Industry without 5S will not be able to perform properly. In Japan, people call 5S the foundation for all kinds of industries. *Seiri, Seiton, Seiso, Seiketsu, Shitsuke* (5S) has an understanding of a concise, neat, clean, caring, and diligent workplace. The application of the 5S concept is a solid foundation in welcoming the industrial era [5].

*Seiri, Seiton, Seiso, Seiketsu, Shitsuke* (5S) is a culture of how a person treats the workplace properly. If the workplace is neat, clean, and orderly, it will make it easier for individuals to work, and thus the 4 main target areas of the industry, namely efficiency, productivity, quality, and occupational safety and health, will be more easily achieved. 5S is a process of changing attitudes by implementing work arrangements and hygiene, or in general is Occupational Safety and Health (K3) [6]. Another research shows that there is a significant relationship between the application of concise, neat, and caring aspects with the incidence of work accidents among construction workers[7]. Previous research showed there is a relationship between gender, tenure with 5S behavior in nurses at Pasar Rebo Hospital Jakarta [8]. Other research states that there is a relationship between education level, work motivation, knowledge and attitude with the application of 5S to workers in the rambak cracker industry in the hamlet of Krajan [9], [10].

Implementing the 5S culture will affect increasing efficiency and quality in the workplace. The 5S culture itself is a way or method to organize and manage a better and more sustainable workplace. One of the benefits of implementing a 5S culture is increasing productivity due to more efficient workplace arrangements [3], [6], [11]

The Reporting of Injuries, Diseases, and Dangerous Occurrences Regulations (RIDDOR) reports that in 2019 as many as 29% of injuries to workers were due to slips, trips, and falls. The Labor Force Survey estimates that in 2019 as many as 29% of 581,000 workers were injured for more than 7 days due to slips, trips, and falls [12]. Based on BPJS Employment data, in 2018 there were 114,148 workplace accidents and in 2019 there were 77,295 cases. This shows that there has been a 33.05% decrease in accident

cases in the workplace [13]. Banten Province is one of the provinces with a decrease in the number of work accidents and 250 companies in Banten were awarded the zero-accident award [14]. This research aims to determine the factors associated with the implementation of 5S on workers.

# 2. Methods and Equipment

## 2.1. Study design

This study uses a cross-sectional study design, by approaching, observing, or collecting data at the same time (point time approach) and being studied at the same time. This research was conducted in one company in Cilegon City.

## 2.2. Sample

The sample in this study was 75 workers of PT. Elincom Sukses Abadi Cilegon City, Indonesia and the sample of this study was the entire population.

## 2.3. Instrument

The research instrument was in the form of a questionnaire containing statements to explore the application of 5S, gender, years of service, education level, knowledge, attitudes, and work motivation. Questionnaire of this research had valid and reliable questions. Questionnaire adopted from Nurfitryan and Putri's research.

## 2.4. Data collection procedure

Data were colleted directly through interviews using a questionnaire. Questionnaire were spread to respondent by google form. Data of this research were primary and secondary data. All colleted data were prosessing with statistic software.

## 2.5. Data analysis

The research data was analyzed using univariate and bivariate methods. Univariate analysis is presented in tabulation. Bivariate analysis use chi-square approach.

# 3. Results

Based on research result, implentation of 5S and determine of it can show in table 1 and 2 below:

TABLE 1: Frequency distribution of determine and Implementation of 5S.

| Variable | F | % |
|---|---|---|
| **Application of 5S** Not Good Good | 36 39 | 48,0 52,0 |
| **Gender** Male Female | 63 12 | 84,0 16,0 |
| **Work Period** Long New | 18 57 | 24,0 76,0 |
| **Education Level** Low High | 63 12 | 84,0 16,0 |
| **Knowledge** Low High | 31 44 | 41,3 58,7 |
| **Attitude** Negative Positive | 6 69 | 8,0 92,0 |
| **Work motivation** Weak Strong | 25 50 | 33,3 66,7 |
| **Total** | 75 | 100,0 |

According table 1, it can be seen that 5S has not been implemented optimally. There are still 48% of respondents who stated that the implementation of 5S is not good. The education level of the majority of respondents belongs to low education (≤SMA) with more than 6 years of work period. The results also show that knowledge, attitudes and motivation are in the good category.

TABLE 2: Determine of 5S Implementation in Workers.

| Variable | Catagory | Implementation of 5S | | P Value | Odd Ratio |
|---|---|---|---|---|---|
| | | **Not Good** | **Good** | | |
| Gender | Male Female | 55.6 % 8.3 % | 44.4 % 91.7 % | 0.007 | 13,75 |
| Work Period | Long New | 72.2 % 40.4 % | 27.8 % 59.6 % | 0.037 | 3.84 |
| Education level | Low High | 47.6 % 50.0 % | 52.4 % 50,0 % | 1.000 | - |
| Knowledge | Low High | 51.6 % 45.5 % | 48.4 % 54.5 % | 0.771 | - |
| Attitude | Negative Positive | 83.3 % 44.9 % | 16.7 % 55.1 % | 0.099 | - |
| Work Motivation | Weak Strong | 52.0 % 46.0 % | 48.0 % 54.0 % | 0.806 | - |

Based on table 2, it is known that gender and work period are related to 5S implementation in works.

# 4. Discussion

Based on research result is known that 52% of workers apply 5S well. This research is in line with previous research, where in this study it can be concluded that as many as 96.2% of paper mill unit workers at Pura Barutama Kudus Ltd. have implemented 5S well.[11] (Rosnasari, 2017) Based on the opinion of other reseach, the application of 5S is an industrial culture and if the 5S culture is not applied in the industry or company, the workplace will become dirty, slippery, scattered, and irregular will result in a source of danger [9].

In the gender variable, the results were dominated by male workers as much as 84%. This is because the need for male workers is more than for females. All-male or female workers who work in the same place with the same facilities and the same rules, when men and women work in the same place, they will apply certain patterns of interaction and different types of people. gender also plays a role in this interaction [8]. Based on research result, it can be seen that respondents who are male are mostly not good at implementing 5S (55.6%), while female respondents are good at implementing 5S (91.7%). The results of the analysis showed that there is a relationship between gender and the application of 5S to workers. Male respondents have 14 times the chance not to apply 5S compared to female respondents. This study is in line with previous research which states that there is a relationship between gender and 5S behavior. The existence of male gender differences also determines their respective roles in work. Men have physical and psychological differences. The difference between men and women can be seen in the physical such as muscle ability, endurance, posture, and so on. So that it can be related to the incidence of certain work accidents[2], [8].

According of research, respondent who have long work period are not good at implementing 5S (72.2%) than respondents who have new work period. The results of the analysis show that there is a relationship between work period and the implementation of 5S to workers. Respondents with long work period have 4 times the opportunity to not apply 5S well than respondents with new work period. The results showed that work period dominated by workers who have a new work period (< 6 years working). The working period can have a positive or negative impact on a worker[15].Worker with new work period has high motivation to increase knowledge, experience and productivity. Previous research also said that there is relationship between motivation with productivity[16]. Positive influences that will be received by the workforce include

increasing experience and better skills after working for a long time in the worker's place of work. While the negative impact that workers can receive is being exposed to potential hazards every day from the place or environment they work. This study is in line with research which states that there is a relationship between work period and 5S behavior [8].

Based on Table 2, it can be seen that respondents who have a high level of education have balanced results in implementing the 5S (50%). The results of the analysis show that there is no relationship between the level of education and the application of 5S to workers. This study is in line with previous research which stated that there was no relationship between education level and 5S behavior [8]. This study also in line with previous research with state that there is no relationship between education level with accident in workers[17].On the variable level of education, the results are dominated by workers who have a low level of education as much as 84%. It is said that the level of education is low if it has elementary, middle, and high school education. Meanwhile, it is said that the level of education is high if it has tertiary education. Education is a process of changing the attitudes and behavior of a person or group to teach and train. Education is needed to get information, for example, something that can support health so that it can improve the quality of life[18]. The level of education is very influential in the program to increase knowledge directly and indirectly on behavior[19].

A person's education affects a person's mindset in dealing with the work entrusted to him, besides that education will also affect the level of absorption of the training provided to carry out work and work safety. The relationship between education level and available fields is that workers with low levels of education, such as elementary school or even never attending school, will work in fields that rely on physical activity[20].

Based on research, it can be seen that respondents who have low knowledge are not good at implementing the 5S (51.6%), while respondents who have high knowledge and are good at implementing the 5S (54.5%). The results concluded that there is no relationship between knowledge and the application of 5S to workers. This research is in line with previous research which states that there is no relationship between knowledge with 5S behavior [8]. This research isn't supported by previous research with statistical test results which show that there is significant relationship between knowledge and 5S practice [21].

Knowledge is the result of knowing, and this occurs after people have sensed a certain object. Sensing occurs through the human senses, namely the senses of sight,

hearing, smell, taste, and touch. Most human knowledge is obtained through the eyes and ears [22]. Knowledge is a very important aspect of a person's behavior, when a worker has extensive knowledge about the application of 5S, then every time he does his job the worker will always apply the 5S aspect, so that it can improve the culture of 5S implementation and can reduce the number of work accidents, especially due to poor implementation of 5S. The higher the knowledge of workers, the more likely they will apply the 5S culture at work. In this research, knowledge is not significantly related with 5S implementation. Knowledge is not the only one factor causing implementation of 5S. There are many things cause of behavior change, include education, perception, motivation, facilities and infrastructures, policy and etc.

In the attitude variable, almost all workers have a positive attitude of 92%. This is in line with previous research which stated that the paper mill unit workers at Pura Barutama Kudus Ltd. almost entirely had a positive attitude of 96.2% [10]. Attitude is an evaluation or reaction to feelings. A person's attitude towards an object is a feeling of supporting or taking sides as well as feelings of being unsupportive. Attitude is not always correlation with behavior. Attitude are influenced by knowledge and education level although other research mention that there is no significant correlation between attitude with behavior especially unsafe behavior [17], [23].

Based on Table 2, it can be seen that respondents who have a negative attitude are more likely to be not good at implementing the 5S (83.3%), while respondents who have a positive attitude (55.1%) are good at implementing the 5S. Attitude in a narrow sense is a mental view or tendency. Attitude is a tendency to react to a thing, person, or thing with likes, dislikes, or indifference.[25] (Sabri, 2010) Attitude is one of the basic aspects that are very important in a person to determine whether he will act or implement 5S or not, because then the workers already know the management's commitment to implementing the safety aspects of workers starting from the basics, namely always keep the work environment concise, neat, clean, caring and diligent. minimize work accidents and occupational diseases. In this research, there is no relationship between attitude with 5S implementation. This is because attitudes are influenced by education level and knowledge[23].

In the work motivation variable, the results are dominated by workers who have strong work motivation as much as 66.7%. The strong motivation of workers is due to a salary that is in accordance with the Regional Minimum Wage (UMK), a timely salary schedule, a sense of security and social needs that are met, and also the fullfill off need

for self-esteem and self-actualization. This research is in line with previous research which stated that the paper mill unit workers at Pura Barutama Ltd. almost all have good work motivation as much as 94.2% [10]. Work motivation is important because with this motivation it is expected that every individual employee is enthusiastic and wants to work hard to achieve high work productivity [24].

Based on Table 2, it can be seen that respondents who have weak work motivation are mostly not good at implementing the 5S (52.0%), while respondents who have strong work motivations (54.0%) are good at implementing the 5S. The results of the analysis show that there is no relationship between work motivation and the application of 5S to workers. This research is in line with that carried out on paper mill unit workers at Pura Barutama Kudus Ltd. It's stated that there was no relationship between work motivation and the implementation of the 5S program[10]. Motivation is the process of influencing or encouraging from outside a person or workgroup so that they want to carry out something that has been determined [25]. Work motivation is important because with this motivation it is expected that every individual employee is enthusiastic and wants to work hard to achieve high work productivity [24]. In this research, motivation is not significantly related with 5S implementation because the most of workers have strong work motivation.

## 5. Conclusion

Based on research result, can be concluded that gender and work period are related to 5S implementation in works. Male workers and those who have a new work period have good 5S implementation. For future studies, its recommendation to analyze bout 5S implementation with accident in the work place.

## 6. Funding

## Acknowledgement

# Conflict of Interest

There is no conflict of interest in this research.

# References

[1] Bilqis K, Sultan M, Ramdan IM. "The correlation between occupational health and safety (OHS) culture with the unsafe behavior of construction workers at PT. X Kutai Kartanegara Regency." J Kesehat Masy Mulawarman. 2021;3(1):19. doi: 10.30872/jkmm.v3i1.6271.

[2] Naji GMA, Isha ASN, Mohyaldinn ME, Leka S, Saleem MS, Syed Abd Rahman SMNB, et al. "Impact of safety culture on safety performance; mediating role of psychosocial hazard: An integrated modelling approach." Int J Environ Res Public Health. 2021;18(16). doi: 10.3390/ijerph18168568.

[3] Japanese T. "5S as the culture of Japanese Work." 2 Februari, 2018. https://www.lensasoftware.com/5s-as-the-culture-of-japanese-work/.

[4] Setiawan PA, Penerapan 5S di Tempat Kerja: Pendekatan Langkah-Langkah Praktis. 2010.

[5] Sandika OD, Wijayanto DS, Harjanto B. "Implementasi Budaya 5R (Ringkas, Rapi, Resik, Rawat dan Rajin) Di Unit Machinery and Tool (UMT) PT. Mega Andalan Kalasan." J Chem Inf Model. 2019;53(9):1689–1699.

[6] Kanamori S, Sow S, Castro MC, Matsuno R, Tsuru A, Jimba M. "Implementation of 5S management method for lean healthcare at a health center in Senegal: A qualitative study of staff perception." Glob Health Action. 2015;8(1). doi: 10.3402/gha.v8.27256.

[7] Umroh AH, Indah MF, Anam K. "The relationship between aplication of 5R programe with accident in constraction worker in PT. PP-WIKA," Banjarmasin, 2019. [Online]. Available: http://eprints.uniska-bjm.ac.id/547/2/ARTIKEL-dikonversi %281%29.pdf.

[8] Elyanti N. "Determinan Perilaku 5R (Ringkas, Rapi, Resik, Rawat, Rajin) Pada Perawat Kelas III Di RSUD Pasar Rebo Jakarta." Progr Stud Kesehat Masyarakat Fak Kedokt dan Ilmu Kesehatan Univ Islam Negeri Syarif Hidayatullah Jakarta. 2017;6.

[9] Putri GDP. Motivasi Kerja Dengan Penerapan 5R Pada Pekerja Di Indudtri Kerupuk Rambak Dusun Krajan Kelurahan Mangli Kecamatan Kaliwates Jember. 2019.

[10] Rosnasari AD, Dewi ER. "Hubungan Pengetahuan Motivasi Dan Sikap Kerja Dengan Pelaksanaan Program 5R Unit Paper Mill 5/6/9 PT. Pura Barutama Kudus." Sekol

Tinggi Ilmu Kesehat Cendekia Utama Kudus, 2017.

[11] Rantung AR, Pinontoan OR, Suoth L. "Ratulangi oleh pt. Adhi Karya (PERSERO) TBK Pendahuluan Salah satu upaya dalam pelaksanaan K3 yaitu dengan menciptakan tempat kerja yang aman , dan dari pemerintah Indonesia . PT. Adhi Karya (Persero) Tbk memulai proyek pembangunan gedung Universita." 2018;7(5).

[12] Bate J, Rasmussen E. "Health and safety at work." The Health and Safety Executive, 2019.

[13] Kemenaker. "Menaker: Jadikan K3 Sebagai Prioritas Dalam Bekerja." kementrian Ketenagakerjaan Republik Indonesia. 2019.

[14] Redaksi. "Pemrov Banten Minta Utamakan Keselamatan dan Kesehatan Kerja." EksisBanten.com, 2020.

[15] Khaqiiqudin MG, Wahyuni I, Kurniawan B. "Relationship among characteristic of workers housekeeping. Availability and use personal protective equipment against minor injury events." J Kesehat Masy. FKM UNDIP. 2019;7(4):239–245. [Online]. Available: https://ejournal3.undip.ac.id/index.php/jkm/article/view/24385.

[16] Laminia D, Muniroh L. "Relationship of motivation and work period with workers productivity at home industry." Indones J Occup Saf Heal. 2018;7(2):240. doi: 10.20473/ijosh.v7i2.2018.240-248.

[17] Widyanti R, Pertiwi WE. "Analysis determine of minor accidents at operator and maintenance worker." J Ilm Kesehat. 2021;20(2):58–65. [Online]. Available: https://journals.stikim.ac.id/index.php/jikes/article/view/753.

[18] Notoatmojo S. Promosi Kesehatan dan Perilaku Kesehatan. Jakarta: Rineka Cipta, 2012.

[19] Pradono J, Sulistyowati N. "Correlation between education level, knowledge of environmental health, healthy behavior with health status." Bul Penelit Sist Kesehat. 2013;17(1):89–95.

[20] Akbar RF. "The analysis of active learning with collaborative learning in education management course in STAIN Kudus." J IAIN Kudus. 2017;53(9):19–38. [Online]. Available: www.journal.uta45jakarta.ac.id.

[21] Septaviani R. "Factors related with 5S (Seiri, Seiton, Seiso, Seiketsu, Shitsuke) aplications in motorcycle shop technician, Semarang City." J Kesehat Masy. 2012;1(2):785–792.

[22] s Notoatmodjo. Ilmu perilaku kesehatan kesehatan. jakarta: rineka cipta, 2014.

[23] Wahyudi D, Pertiwi WE. "Sikap Pengemudi Dump Truck Terhadap Safety Driving." Media Kesehat Masy Indones. 2021;20(2):134–138. doi: 10.14710/mkmi.20.2.134-138.

[24] Hasibuan MS. Organisasi dan Motivasi Dasar Peningkatan Produktivitas. Jakarta: Sinar Grafika Offset, 2014.

[25] Samsudin S. Manajemen Sumber Daya Manusia. Bandung: Penerbit Pustaka Setia, 2010.