Analysis of the influence of 5S work implementation culture on employee performance

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Abstract. Employee performance is a determining factor in achieving company goals. One of the factors that influence employee performance is the work culture in the company. This research focused on the application of 5S work culture (Seiri, Seiton, Seiso, Seiketsu Shitsuke) and its influence on employee performance. The purpose of this study is to determine the effect of the application of 5S work culture on employee performance. The method used is a survey with SmartPLS 3.0. The survey was conducted in the service industry, especially hospitals that have applied 5S work culture. The questionnaire was distributed to employees in the industry. The analysis carried out is (1) Test the validity of the questionnaire (2) Test the outer and inner models (3) Test the hypothesis. The results obtained from this study are from the five hypotheses there are three variables that have a significant effect on employee performance including seiso, seiketsu, and shitsuke.

1. Introduction

Recent studies emphasize the importance of the service industry on the performance of a country's economic growth [1]. The service industry is divided into three categories, namely: rented goods service, owned goods service, and non goods service [2]. This study focuses on the service industry in the non-goods service category, namely hospitals that have an obligation to know the level of performance achieved. Work measurement needs to be done by the company to improve performance in the labor or environmental section.

Performance can be influenced by the work culture that is applied in the company [3]. Based on the literature review that work design and organizational culture can influence work motivation which can then influence employee work performance [4]. In order for employee performance to be consistent, the company must pay attention to the environment in which employees carry out their duties. The cultural problem itself is closely related to the activities that exist in the company [5].

The work culture of the company must be comprehensive so that it can be implemented by employees and have an impact on their performance. The work culture that can be applied in the company is 5S culture (Seiri, Seiton, Seiso, Seiketsu, Shitsuke). 5S is a form of work culture originating from Japan. The 5S culture focuses on creating and maintaining a clean, effective, efficient and high-quality workplace and can be a benchmark for whether a job will work or not. If 5S is implemented well then the work will run well and if not then it will experience difficulties [6].

From the description above, it was obtained a clear picture to conduct research on any factors in 5S work culture that have a significant influence on employee performance.
2. Literature Review
A study of work performance needs to be done to determine the performance of a job's function. The study can be in the form of factors that influence employee work performance. Factors that can influence work performance can be seen from individual factors and situational factors. In addition, work performance can also be influenced by work resources and human resources [7]. Work resources such as autonomy, feedback, social support, and opportunities to develop in the work environment and supported by optimism and self-efficacy from workers can improve work performance.

Work design and organizational culture can influence work motivation which can then affect work performance [8]. For example, in a company implementing a structured work design and applying a good organizational culture will affect the work motivation of employees so that employee performance increases.

Research on the effect of organizational citizenship behavior on work performance to determine the relationship between organizational citizenship behavior to work performance and examine the role of social capital as a mediator of the relationship between the influence of organizational citizenship behavior and work performance [9]. The results of this study are organizational citizenship behavior affecting work performance and social capital as a mediator between organizational citizenship behavior and work performance.

Based on the literature review, this research has a level of renewability that can be justified. The research that will be carried out has a focus on the service industry in the health sector that has implemented the 5S work culture, one of which is the Yogyakarta Panti Rapih Hospital. The service industry that applies the 5S concept is expected to improve employee work performance, therefore a research study on the relationship between the application of 5S work culture to employee performance has never been done.

3. Research Methodology
3.1. Conceptual Model
Performance is the result of the work of a worker in carrying out tasks in accordance with the specified target [10]. Companies must have quality employees to be able to produce a good performance so that it has an impact on the quality of the company itself. Good performance not only comes from workers but also can be achieved from habituation or work culture that is applied to the company.

Work culture is a value and effort that is carried out by all members of the organization that provides an understanding of behavioral guidelines in order to achieve predetermined goals [11]. One of the most basic work cultures is 5S (Seiri, Seiton, Seiso, Seiketsu, Shitsuke). 5S is an activity carried out to organize work areas so that employees feel more productive in carrying out their duties.

5S culture which is applied jointly to the company can influence employee performance [12]. In the following chapters below, it will be discussed how 5S work culture can affect employee performance which can then be made into a conceptual model that can be seen in Figure 1

3.1.1 H1: Seiri has a significant effect on performance
Seiri or concise is the activity of sorting out items that are needed and not needed. Efforts that need to be done are making a list of names of goods and tools in the work area, and selecting items that are still used and items that have not been used for disposal. This can make workers more effective in doing work so that it can improve performance.

3.1.2 H2: Seiton significant effect on performance. Seiton is a structuring activity by determining the storage of goods that pay attention to efficiency, safety, and optimal storage methods. From the implementation of structuring activities, it is expected that workers do not feel tired and can save time searching for goods so that this can improve performance.

3.1.3 H3: Seiso has a significant effect on performance Seiso is the activity of cleaning goods or tools that are in the workplace. Cleaning is also a form of commitment in all aspects to ensure that goods and
equipment in the work area are in good condition. Clean conditions can be maintained regularly and continuously. Clean work areas make workers feel comfortable so they can improve performance.

3.1.4 H4: *Seiketsu has a significant effect on performance.* Seiketsu is a consolidation and repetition activity in implementing the previous 3S. If it is implemented consistently, it can create a regular work area and influence performance.

3.1.5 H5: *Shitsuke* has a significant effect on performance. Shitsuke is a habitual activity in doing positive things as well as maintaining a work area. Getting used to 5S activities can affect performance.

![Conceptual Model](image)

**Figure 1.** Conceptual Model

### 3.2. Research Variables and Indicators

From the conceptual model that has been compiled, then in Table 1 will explain the related variables and attributes in this study

| No. | Variable | Variable type | Indicator          | Code | Source                           |
|-----|----------|---------------|--------------------|------|----------------------------------|
| 1   | Seiri    | Independent Variable | Listing of Goods | SI1  | (Kartika & Hastuti, 2011)       |
|     |          |               | Sorting of Goods  | SI2  | (Puspaningrum, et al., 2018)    |
|     |          |               | Storage Method    | SI2  | (Kartika & Hastuti, 2011)       |
| 2   | Seiton   | Independent Variable | Storage           | ST1  | (Kartika & Hastuti, 2011)       |
|     |          |               | Storage Label     | ST2  | (Kartika & Hastuti, 2011)       |
| No. | Variable | Variable type | Indicator | Code | Source |
|-----|----------|---------------|-----------|------|--------|
| 3   | Seiso    | Independent Variable | Cleanliness Responsibility | SS1  | (Kartika & Hastuti, 2011) |
|     |          |               | Cleaning of Material Tools | SS2  |        |
|     |          |               | Maintain Work Area | SS3  |        |
| 4   | Seiketsu | Independent Variable | First 3S Maintenance | SK1  | (Puspaningrum, et al., 2018) |
|     |          |               | Checking Equipment Storage | SK2  | (Kartika & Hastuti, 2011) |
| 5   | Shitsuke | Independent Variable | Routine Activities | SH1  | (Kartika & Hastuti, 2011) |
|     |          |               | Discipline | SH2  |        |
|     |          |               | Repair | SH3  |        |
| 6   | Performance | Independent Variable | Quality | K1  | (Anggriawan, et al., 2015) |
|     |          |               | Teamwork | K2  | (Evita, et al., 2017) |
|     |          |               | Timeliness | K3  | (Anggriawan, et al., 2015) |

3.3. Collecting Data
Data collection uses survey methods with questionnaire tools. The questionnaire used has passed the item test with the number of 17 question items according to the indicator. The scale of the answers used in the questionnaire is Likert (1 - 5). Test item questionnaire using SPSS software, while processing data using PLS SEM assisted Smart PLS 3.0 software with 61 respondents.

4. Result
4.1. Outer Model
In evaluating the outer model is done to determine the value of the validity and reliability of each indicator on latent variables. To assess the outer model can use the Convergent validity test, Discriminant Validity, and Reliability

4.1.1. Convergent Validity
If the value of the loading factor for each variable is more than 0.7 then it is declared valid [13]

| Table 2. Loading factor Value |
|-------------------------------|
|Indicator | Loading factor |
| SI1     | 0.898          |
| SI2     | 0.910          |
| SI3     | 0.899          |
| ST1     | 0.925          |
| ST2     | 0.898          |
| ST3     | 0.918          |
The table above shows that all indicators are valid because they have a value of loading factor $\geq 0.7$. The second step is to find the value of the Average Variance Extracted (AVE). AVE is the average percentage variation explained by items in a construction. A high AVE value indicates that the indicator has represented well from the developed variable formed [14].

**Table 3. AVE Value**

| Variable   | (AVE) |
|------------|-------|
| Performance| 0.854 |
| Seiketsu   | 0.726 |
| Seiri      | 0.814 |
| Seiso      | 0.809 |
| Seiton     | 0.835 |
| Shitsuke   | 0.751 |

Table 3 shows that all values of AVE $> 0.5$ so that the results can be said to be valid. These results indicate that the convergent validation requirements have been fulfilled so that the proposed model is appropriate and feasible to use.

**4.1.2. Discriminant Validity**

After converging validation, the next step is discriminant validation. Discriminant validation is done by looking at the cross-loading value. If the cross-loading value for each variable is more than 0.7 then it is declared valid [15].

**Table 4. Cross Loading value**

| Performance | Seiketsu | Seiri | Seiso | Seiton | Shitsuke |
|-------------|----------|-------|-------|--------|----------|
| K1          | 0.930    | 0.579 | 0.685 | 0.655  | 0.741    | 0.759    |
| K2          | 0.921    | 0.473 | 0.641 | 0.699  | 0.666    | 0.686    |
| K3          | 0.921    | 0.541 | 0.646 | 0.702  | 0.705    | 0.720    |
| SH1         | 0.577    | 0.799 | 0.624 | 0.496  | 0.616    | **0.865**|
| SH2         | 0.561    | 0.769 | 0.575 | 0.576  | 0.591    | **0.882**|
| SH3         | 0.823    | 0.587 | 0.630 | 0.696  | 0.711    | **0.852**|
| SI1         | 0.691    | 0.589 | **0.898** | 0.683  | 0.856    | 0.669    |
| SI2         | 0.568    | 0.565 | **0.910** | 0.745  | 0.784    | 0.550    |
| SI3         | 0.652    | 0.583 | **0.899** | 0.664  | 0.836    | 0.684    |
Based on Table 4, it can be seen that each variable has a value of \( > 0.7 \). Therefore the requirements for discriminant validation have been fulfilled. This shows that the proposed model is valid and feasible to use.

### 4.1.3. Reliability

The last stage is reliability by knowing the value of Cronbach's Alpha and Composite Reliability. Using the menu construct reliability and validity in SmartPLS 3.0.

|           | Cornbach's Alpha | Composite Reliability |
|-----------|------------------|-----------------------|
| Kinerja   | 0.914            | 0.946                 |
| Seiketsu  | 0.623            | 0.841                 |
| Seiri     | 0.886            | 0.929                 |
| Seiso     | 0.883            | 0.927                 |
| Seiton    | 0.901            | 0.938                 |
| Shitsuke  | 0.839            | 0.9                    |

From Table 5 above, it can be seen that Cronbach's Alpha and Composite Reliability are more than 0.7, so it can be concluded that the measurement model for all variables has good reliability. From these results, the model estimation meets the criteria of the outer model.

### 4.2. Inner model

Inner Model measurement is done to find out the relationship between latent variables and other variables. In the inner model testing, the coefficient of determination R\(^2\), Predictive Relevance (Q\(^2\)) and Goodness of Fit index (GoF) were tested.

#### 4.2.1. Determinant coefficient (R-Square)

To determine the level of the relationship between the independent variables on the dependent variable can see the value of the determinant coefficient (R-Square).

|           | R Square | R Square Adjusted |
|-----------|----------|-------------------|
| Kinerja   | 0.732    | 0.708             |

Table 6 shows that 73.2% of the dependent variable is influenced by the proposed model (independent variable). While the remaining value is owned by variables that are outside the model.
4.2.2. Predictive Relevance (Q-square)
The value is obtained by using the Q\(^2\) square equation and the following is the result of the calculation:

\[
Q^2 = 1 - (1 - R^2) \quad (1)
\]
\[
Q^2 = 1 - (1 - 0.732) 
\]
\[
Q^2 = 0.732
\]

Based on the above calculations it can be concluded that the proposed model can be predicted because it has a value > 0

4.2.3. Predictive Relevance (Q-square)
Calculation of GoF values uses the following equation:

\[
GoF = \sqrt{AVE} x R^2 \quad (2)
\]
\[
GoF = \sqrt{0.798} x 0.732
\]
\[
GoF = 0.764
\]

The above calculation shows a value of 0.764. Based on this value it can be said that the model is very good and reasonable because it has a value > 0.36.

4.3. Hypothesis testing
In this test, it was conducted to find out whether the hypothesis in the study used was significant or not significant. This significance test uses the bootstrapping feature in SEM PLS 3.0 software to find out the p-value of each hypothesis.

| Table 7. Value of t count |
|--------------------------|
| t count  | p values  |
| **Seiketsu** | 2.046 | 0.021 |
| **Seiri** | 0.142 | 0.444 |
| **Seiso** | 1.999 | 0.023 |
| **Seiton** | 1.307 | 0.096 |
| **Shitsuke** | 4.288 | 0 |

Table 7 is the result of bootstrapping test, from these results it was found that there are three variables with p-value < 0.05, which means that the three hypotheses formed have a significant effect and there are two variables with p-value > 0.05 which means that the two hypotheses formed have no significant effect to performance.

5. Discussion
The first step in this research is to collect data by distributing offline questionnaires. Validity testing is done on the questionnaire so that it can be used in the data processing stage. The questionnaire was distributed to 31 respondents, and all questions were declared valid. Questions on the questionnaire are designed based on indicators related to the research variable.

The variables used are independent and dependent, where there are five independent variables, namely: Seiri, Seiton, Seiso, Seiketsu, Shitsuke, and one dependent variable namely performance. The variables used are supported by 17 indicators.

Valid questionnaires are then processed using SmartPLS 3.0 and through several stages of testing including:

1. Outer model
This test consists of convergent validation, discriminant validity, and reliability. The test results show that all testing phases of the outer model have met the requirements.

2. Inner model
This test consists of R-square, Q-square and GoF. Based on the R Square adjusted value, it is known that 70% of the dependent variable is influenced by independent variables while the rest comes from other variables originating from outside the model. The Q-square value obtained is > 0 which is 0.732 and the model can be said to be predictive. While the value of GoF obtained is 0.764.

3. Bootstrapping test results show that there are three out of five variables that have p-value < 0.05 which means the hypothesis has a significant effect on performance, namely seiso, seiketsu, and shitsuke.

Partially seiri and seiton variables do not significantly influence performance. This shows that employees still do not care about the conciseness and neatness of the work area. It is expected that employees will increase awareness of the brevity of the work area by sorting out the items that are still used and unused and maintaining neatness by placing the items in accordance with the specified place. The non-significant hypothesis can also be caused by several factors including the selection of indicators that are not appropriate and the outlier data on data processing carried out with SmartPLS [16]. This research was conducted during the respondent's working hours so as to allow a decrease in concentration when filling out the questionnaire. Therefore further research can be added to the interview method and data collection when the respondent does not work. The influence of the three accepted hypotheses (Seiso, Seiketsu, Shitsuke) on the organization is:

1. Seiso
   Clean and tidy work areas make employees feel comfortable at work so that they increase their concentration in completing work.

2. Seiketsu
   Supervision is carried out on the application of 5S work culture with the aim that the work area remains conducive and can be seen from the collaboration between employees and top management in being responsible for maintaining the work area.

3. Shitsuke
   Habituation and evaluation of the application of 5S can form employees to be more disciplined in maintaining the work area.

6. Conclusion and Recommendation
The results of the study provide the following conclusions: (1) Variables that have a significant effect on employee performance are: Seiso Seiketsu and Shitsuke. (2) The concept of the research model created has been tested and the results are valid. In this study there are still shortcomings, so more in-depth research needs to be done regarding the indicators and rejected research variables, Seiri and Seiton. It can also be done by changing the new indicator on that variable. As well as adding interview methods in retrieving data so that the results obtained are more maximal.

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