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# Analysis of 5R Implementation (Compact, Neat, Resik, Rawat, Rajin) with P.D.C.A (Plan-Do-Check-Act) and R.C.A (Road-Cost-Analysis) Approach in Hangar 2 Part Division TLH-7 and TLH-8 Pt. GMF Aeroasia Tbk.

Nanda Razin Pratama, Erry Rimawan, Andri Goklas, Nurcholis
Mercu Buana University

**Abstract:- In Indonesia, the number of work accidents is still relatively high. One of the efforts in minimizing the number of work accidents is by applying a culture of 5R. 5R culture can be applied in all types of industries to improve the quality of safety and quality, therefore the implementation of 5R culture is very important for all industrial workers. The purpose of this study is to find out the level of quality of 5R implementation conducted by workers using PDCA (Plan-Do-Check-Act) and RCA (Root-Cause-Analysis) approach. The method of data collection used is a questionnaire with a total of 40 respondents who are all workers of PT. GMF AeroAsia Tbk. The results of the study with the Likert scale index show that most of the attributes are well-category and there are 2 priority attributes. This indicates that there is still a slight deficiency in the application of 5R in the work. The final results of the study produced 2 recommendations of improvements formulated from the root of the problem obtained from the analysis of why analysis on priority attributes. Furthermore, from the implementation of improvement recommendations, an increase in the Likert scale index on the priority attribute shows the improvement of 5R quality in the working environment of PT GMF AeroAsia Tbk.**

***Keywords***:- *5R, PDCA, RCA, Likert Scale Index, , Why Why Analysis.*

## I. INTRODUCTION

A work accident or work accident is an unplanned and uncontrollable event resulting from an action or reaction of an object, material, person, or radiation resulting in injury or other possible consequences.

According to the ILO(International Labour Organization), every year there are more than 250 million workers in workplace accidents and more than 160 million workers become ill due to workplace hazards. In addition, it is also noted that 1.2 million workers are dying from accidents and workplace illnesses (ILO, 2013). In Indonesia, the number of work accident cases is still relatively high. In 2017, the number of reported work accident cases reached 123,041, and in 2018 reached 173,105 cases (BPJSTK, 2019). In 2019 the number of reported work accident cases reached 77,295 cases (Menaker,2020). Furthermore, BPJSTK reported that the number of work accident cases until October 2020 reached 129,305 cases (BPJSTK, 2020).

**Table 1.** Number of work accident cases in Indonesia

| Year | Number of Cases |
|---|---|
| 2017 | 123.041 |
| 2018 | 173.105 |
| 2019 | 77.295 |
| 2020 | 129.305 |

The 5R principle can be applied in all types of industries, including aircraft maintenance. Therefore, civil aviation authorities pay attention to the importance of cleanliness, neatness, segregation, tagging, and others for MRO (Maintenance Repair and Overhaul) organizations. This provision is because the implementation of 5R is very helpful MRO organizations improve the quality of safety and quality. (Aero Asia, 2016)

PT GMF AeroAsia is one of the MRO companies and aircraft maintenance industry in Indonesia. PT GMF AeroAsia is a subsidiary of BUMN PT. Garuda Indonesia. As one of the main actors of manpower, PT GMF AeroAsia also implements K3 and especially 5R. The 5R program implemented by PT GMF AeroAsia is not only related to the cleanliness of the work area but also related to safety. Therefore, the 5R program is also the run-up to the unit level.

## II. LITERATURE REVIEW

According to (Scarlet, 2013),, PDCA is a continuous feedback cycle in which a system, process or individual carries out a process that is planned, evaluated, then gets feedback, makes improvements and returns to planning that is cyclically continuously making improvements(Scarlet, 2013).

The PDCA cycle consists of 4 steps ("Fitriani," 2018) namely:
1. *Plan* means plan, collect problem data, identify causes, decide solutions or countermeasures, develop a plan with targets
2. *Do* means to implement the planned process
3. *Check /Study* means to check the results of the implementation of countermeasures against the standards set out in the plan
4. *Act* means if countermeasures are successful, standardize or input a series of processes within standardized operational standards

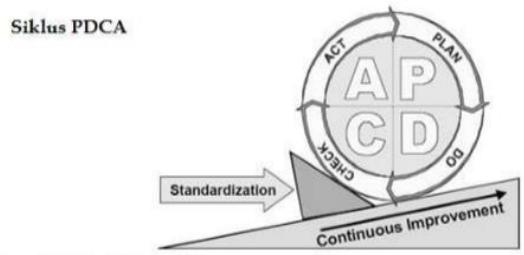


Figure 1 PDCA Cycle
Source : (Fitriani,2018)

According to (Kuswardana et al., 2017), RCA(Root Cause Analysis)is a method for problem-solving, trying to identify the causative factors of a problem or an unexpected event Root Cause Analysis is a method to help answer the questions 'what happened?', 'how can it happen?', and 'why did it happen?'

The main purpose of this method is to identify the stated factors in their natural form, magnitude, location, and time as a result of certain habits, actions, and conditions that must be changed to avoid unnecessary mistakes.

## III. RESEARCH METHOD

This study uses a descriptive exploratory approach using interviews and discussions in data collection. PDCA (Plan-Do-Check-Act) and RCA (Root Cause Analysis) and use FGD (Focus Group Discussion) in selecting the largest to use during interviews by using questionnaires to determine which parts of 5R should be corrected immediately.

questionnaire

**Table 2** Questionnaire concepts and sources

| Attribute Concept | Attribute Number | attribute | source |
|---|---|---|---|
| Sorting stuff, unused files to the dump. | A1 | Sorting out unused items and unused items | (Septiani, &Pratiwi, 2020) |
| | A2 | Separating items by classifying them | |
| | A3 | Frequently used items are placed in nearby places | |
| | A4 | No useless items around the work area | |
| Ensure everything is placed according to the set position, making it easy to use when needed | B1 | Organize useful items correctly | |
| | B2 | Dispose of unused items | |
| | B3 | Labeling in the form of color or anything to the goods according to their usefulness and type | |
| | B4 | Placing goods according to the classification and label given | |
| **Attribute Concept** | **Attribute Number** | **attribute** | **source** |
| Cleaning the workplace, work space, equipment and work environment | C1 | Cleaning and mop the entire workplace area | (Septiani, &Pratiwi, 2020) |
| | C2 | Collecting garbage neatly | |
| | C3 | Dumping trash in the trash | |
| Establish the standardization and consistency of each individual to perform the stages (Compact, Neat, Resik) | D1 | There are random impromptu tests or inspections in the work area | |
| | D2 | There is a hygiene checklist applied to workers | |
| | D3 | Setting high standards for cleanliness around the work area | |
| | D4 | Implementation of 5R (Compact, Neat, Resik) has been implemented | |
| Disciplinary maintenance efforts that include a habit and maintenance of the 5R program that is already running. | E1 | Motivating workers towards the implementation of 5R in the work environment | |
| | E2 | Generating self-discipline sensiri in implementing 5R in the work environment | |
| | E3 | Worker attitude has shown a positive attitude (Use of work attributes, on time, discipline) | |

The method used for data analysis is RCA and to find out which parts are most needed immediate improvements possible.

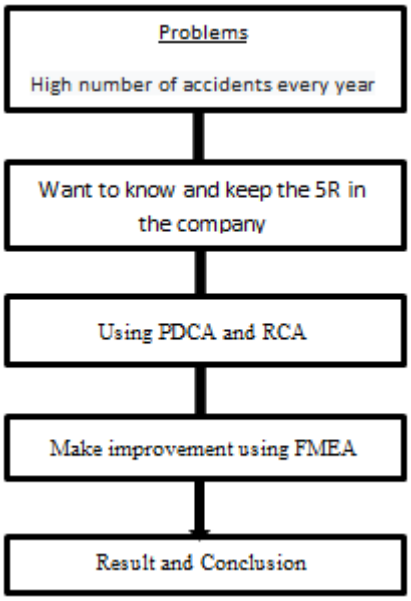


**Figure 2** Research Framework

## IV. RESULT AND DISCUSSION

In this study to determine how many people are eligible to participate in filling out questionnaires needed a formula that can calculate to produce a total sample that can fill out the questionnaire.

$$n = \frac{N}{1 + N\,\alpha^2}$$

**Table 3** Number of workers

| *Type of* | **Number of Workers** |
|---|---|
| Manager | 2 |
| Engineer | 10 |
| Senior Aircraft Maintenance Technician | 53 |
| Aircraft Maintenance Technician | 2 |
| **Total** | **67** |

$$n = \frac{67}{1 + 67\,(0{,}10)^2}$$

According to the results of the calculations that have been done, the sample to be used in this study is as manyas 40 workers.

The following are the results of questionnaires in the Index likert scale

**Table 4 I**ndex Likert Scale

| **No. Attributes** | **Likert scale index** | **Index interpretation based on interval criteria** |
|---|---|---|
| **A1** | 74,5 % | good |
| **A2** | 59 % | Good Enough |
| **A3** | 74,5 % | good |
| **A4** | 66,5 % | good |
| **B1** | 74,5 % | good |
| **B2** | 81,5 % | Excellent |
| **B3** | 76 % | good |
| **B4** | 76,5 % | good |
| **C1** | 66,5 % | good |
| **C2** | 74 % | good |
| **C3** | 78,5 % | good |
| **D1** | 63,5 % | good |
| **D2** | 59 % | Good Enough |
| **D3** | 65 % | good |
| **D4** | 73 % | good |
| **E1** | 73,5 % | good |
| **E2** | 76 % | good |
| **E3** | 72,5 % | good |

After the data is processed it is seen that the attributes A2 and D2 the result is good enough which the result is the lowest compared to other results then A2, and D2 are selected and continued with the RCA to know the root of the problem and to understand what is needed and prevent it from repeating itself

**Table 5** RCA

| **Attribute Code** | **W1** | **W2** | **W3** | **W4** | **W5** | ***Root Cause*** |
|---|---|---|---|---|---|---|
| **A2** | • | • | | | | There needs to be a briefing every time they enter so that employees always remember it. |
| **D2** | • | • | • | | | Pickets are required for each entry to perform a hygiene checklist |

After knowing the Root Cause, it is necessary to search to know which attributes need handling first compared to others, then staged improvement done FGD (Focus Group Discussion) for interviews again but with workers who have experienced in their field, by looking for RPN (Risk Priority Number) value with formula SxOxD (Severity x Occurrence x Detection) can know which attributes are first rushed to perform actions, with the result being:

**Table of 6** Results

| Failure Mode | Effect of Failure Mode | Cause of Failure Mode | Severity | Occurence | Detection | RPN | RPN Ranking |
|---|---|---|---|---|---|---|---|
| 5R | concise | Separating items by classifying them | 4 | 3 | 4 | 48 | 2 |
| | nurse | There is a hygiene checklist applied to workers | 5 | 4 | 4 | 80 | 1 |

As can be seen from table 6, D2 is the most needed attribute of the action first with a value of RPN 80 and attribute A2 with a value of RPN 48.

## V. CONCLUSION AND SUGGESTION

➢ *Conclusion*

Based on research that has been conducted on quality analysis of 5R implementation in PT. GMF AeroAsia Tbk with PDCA approach (Plan-Do-Check-Act) and RCA (Root-Cause-Analysis) obtained the following conclusions:

1. Based on the results of interpretation of the value of the Likert scale index at the interval range, it was obtained that the application of 5R (Compact, Neat, Resik, Rawat, and Rajin) has been done by pt GMF AeroAsia workers and companies well.
2. Recommendations for improvement suggested to the company to be applied is to hold a briefing every entry so that employees always remember their duties and make pickets every entry to perform a hygiene checklist to keep the implementation of 5R always running well.

➢ *Suggestion*

Based on the research that has been done there are suggestions, namely:

1. Research on the quality of 5R implementation should be conducted periodically so that the quality of 5R implementation can be maintained.
2. After this study, it is expected that future researchers can research 5R anywhere so that your workplace environment can be better.

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