

Work behavior analysis using do it method on the daily check officers at the locomotive depot of operation area VI Yogyakarta, Indonesian railway company

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ABSTRACT

Background: One of the efforts to reduce accidents is to use the Do It method. Work accidents caused by incorrect work behavior. One of the theories used for the ABC theory uses the Do It method to perform maintenance. The purpose of this study is to determine the behavior of workers in the Daily Check section at the Locomotive Depo PT. Kereta Api Indonesia (Persero) Operation Area VI Yogyakarta using the Do It method.

Method: This type of research is qualitative research. Subjects in the study were 5 people consisting of 4 officers of the Daily Check section and 1 leader of the Quality Control Section. Data collection is done by observation, reviewing documents, and interviews.

Results: The results of the study revealed that the status of workers' behavior in the Daily Check section officer in the category behaved safely. Judging from the predetermined and observed behavioral targets, the safety briefing activities have a percentage of 90% behavioral status, 62,5% percentage of Personal Protective Equipment (PPE) use behavior, and 94,2% percentage of compliance procedures.

Conclusion: The behavior status of workers in the Daily Check section officer behaves safely. Behavioral targets and observations were carried out namely safety briefing activities, PPE use behavior, and compliance with work procedures.



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1. Introduction

In general, safety and health of Indonesian employees will be protected (assured) if the internationally recognized standards are implemented in every workplace throughout the country. With reference to Law No. 1 of 1970 (Undang-Undang No. 1 tahun 1970) on Occupational Safety, it is stated that every employee (worker) is entitled to the protection of his/her safety in performing the work for the welfare and improvement of production and national productivity (Daryanto, 2010).

Data collected from the investigation of railway accidents during 2010 showed that there were 10 cases of accidents, 42 fatalities, and 125 injuries. In 2011, there were 1 accident, 5 fatalities and 35 injuries. In 2012 there were 3 accidents, 4 fatalities, 42 injuries. In 2013 there were 2 accidents. In 2014 there were 6 accidents, 3 fatalities, and 10 injuries. In 2015 there were 7 accidents. In 2016 there were 6 accidents. The investigation of railway accidents for the period of 2010-2016 showed that 68% were derailing/rollover, 26% collision between trains, and 6% others (KNKT, 2016).

Cooper, as cited in a study by Ningsih (2013), states that 96% of current accidents are caused by unsafe acts, while 4% are by unsafe conditions. Unsafe behavior is ignorant behavior by human beings which frequently leads to the occurrence of accidents in a workplace. Hence, every company should start implementing knowledge regarding behaviors which would be used as one of the efforts to change the unsafe behaviors to safe behaviors. This is done to minimize or even eliminate the financial budget allocated for the loss due to work accidents both as material and non-material loss (Anizar, 2010). Based on the references, unsafe behaviors constitute the biggest contributor of work accidents. Hence, efforts to minimize work accidents and to improve safety performance can only be done by focusing on the minimization of unsafe behaviors using the Do It method (Health and Safety Protection, 2011).

Daerah Operasi VI Yogyakarta PT Kereta Api Indonesia (Operation Area VI Yogyakarta of Indonesian Railway Company) is one of the largest railway operation areas in Indonesia. To be a consistently trusted means of transportation, PT Kereta Api Indonesia (Indonesian Railway Company) should improve its service quality for betterment. One of the efforts is the continuous maintenance of locomotives in the Daily Check section. Daily Check (DC) section of Locomotive Depot is a workshop where locomotives are checked before and after their operation. This section operates for 24 hours non-stop daily and consists of 3 working shifts. The works conducted in this section include: (1) Air component inspection, (2) Diesel component inspection, (3) Electrical inspection, and (4) Mechanical inspection.

Based on the preliminary research on the Daily Check section of the Locomotive Depot of Operation Area VI Yogyakarta of Indonesian Railway Company, it was found that there had been some problem regarding work accidents occurring frequently which included among others: (1) being pinched, scratched, and hit by hammers, (2) eyes being splashed by dust under the locomotives, and (3) noise from the engine component of the locomotive. Some of the causes of the work accident occurrence in this section were the lack of direct supervision of the workers and some unsafe acts, among others were: performing the jobs in a rush, incorrect working position, and working procedures were not according to the determined work instruction.

2. Materials and Method

The research was and observation research. Based on the data analysis method, the research was descriptive in nature, where data were analyzed by describing the collected information and the conclusion was drawn (Notoatmodjo, 2012). The research was conducted at the Locomotive Depot of Operation Area VI Yogyakarta of Indonesian Railway Company. The research utilized the purposive method for its subject selection. There were 20 subjects and 5 of them were selected for interviews consisting of 4 officers at the daily check section and 1 supervisor of the Quality Control section as the triangulation informant.

The instruments used in the research were observation sheet or checklist, interview guidance, and other supporting items such as handphone recorder, and handphone camera for the documentation. The data collected in this research were primary data obtained from the observation on the work behaviors and in-depth interviews to get the description of the work behaviors. In addition, secondary data from the company were used as the complementary component.

This research had a single variable, i.e., behavior analysis on the Daily Check Officers at the Locomotive Depot of Operation Area VI Yogyakarta, Indonesian Railway Company. There were a number of limitations in the research such as target behavior, observation, and condition/status of workers' behavior. The research was conducted through the steps of preparation of instruments and equipment, and the execution which included among others: (1) determining target behaviors to be analyzed by discussing them with the Quality Control Section Head, (2) conducting closed

observation on the workers using checklist guidance, (3) collecting supporting data by interviewing the workers and Quality Control Section Head, (4) measuring the status of safe and unsafe behaviors among the workers, and the last was finalizing by presenting the results.

The research applied descriptive methods for its data analysis. The analysis consisted of the stages of: data reduction, data presentation, and conclusion drawing which were carried out in continuous manner until the data were considered saturated. The validity of the data in the research was determined using source triangulation and method triangulation (Moleong, 2015). The limitation of the research was that it only conducted the “define” and “observe” without intervention and test.

3. Results

3.1. Defining target behaviors (*define*)

In this research, upon discussion with the Quality Control Section Head, the target behaviors among others were:

- a. Application of Personal Protective Equipment
- b. Execution of *safety briefing*.
- c. Compliance with operational procedures

3.2. Observing the workers' behaviors (*observe*)

After the definition of target behaviors, closed observations were carried out on the workers of the Daily Check section. The observations were conducted using observation guidance and the presentation was calculated using the Critical Behavior Checklist formula (Geller, 2001).

$$\% \text{ Safe} = \frac{\text{Total Safe Observations}}{\text{Total Safe} + \text{Risk Observations}} \times 100\%$$

3.2.1. Results of observation on the application of Personal Protective Equipment

Table 1. Observation results on the application of Personal Protective Equipment

PPE Application Behavior	Total	Percentage (%)
Safe	75	62,5
Unsafe	45	37,5
Total	120	100

The observation results showed that the workers had safe behaviors in the application PPE equipment such as safety helmet, wear pack, safety shoes, and gloves. However, there were some workers who had unsafe behaviors in the application of PPE such as safety glasses and ear plug so that the rate of PPE application among the workers was 62.5%. This was supported by the interviews with a worker that:

“The company has provided the PPE and has made it mandatory for the workers to apply them such as safety helmets, safety shoes, safety glasses, wear pack, gloves, and ear plugs. However, for comfortability reasons and regarded as reducing effectiveness, ear plugs and safety glasses were rarely used.”

3.2.2. Results of observation on the execution of safety briefing

Table 2. Observation results on the execution of safety briefing

Execution of Safety Briefing	Total	Percentage (%)
Safe	18	90
Unsafe	2	10
Total	20	100

Based on the observation results, it was found that, with regard to the execution of safety briefing, most workers had shown safe behavior (90%). Safety briefing was conducted at the Daily Section of the Locomotive Depot. This was supported by the result of the interview with a worker that:

“During the first time of working, safety briefing was conducted. However, it was then rarely made after that since we felt it already a habit. This means that it has become a culture which has been developed through training.”

3.2.3. Observation results of compliance with operation procedures

Table 3. Observation results of compliance with operation procedures

Compliance with Operational Procedure	Total	Percentage (%)
Safe	113	94,2
Unsafe	7	5,8
Total	120	100

Based on the observation, with regard to the compliance with operational procedure, most of the workers had shown safe behavior and had complied with the operation procedures set by the company (94.2%). This was supported by the interview with a worker that:

“The company, especially the Daily Check Section, has the operational procedure called the check sheet. The check sheet is work procedure that includes all of the jobs covering the air component, electricals, diesel, and mechanicals. In addition, the check sheet also includes the tools to be used and the layout of the tool placement. The check sheet is the guidance to be complied with by all of the workers.”

This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation as well as the experimental conclusions that can be drawn.

4. Discussions

Based on the research, it was found that there were behavior objects which were defined through the discussion with the Head of the Quality Control Section. Among others, they were the safety briefing execution, personal protective equipment application, and compliance with work procedures. The following is the discussion on the analyzed behaviors:

4.1. Application of Personal Protective Equipment

With regard to the compliance in terms of provided OSH equipment and application of personal protective equipment among the workers, it was found that most of the workers at the Daily Check Section in the Locomotive Depot of the Operation Area VI Yogyakarta, Indonesian Railway Company, has consistently applied the PPE in accordance to safety signs and hazard signs in the workplace. This might be due to the fact that the workers had been reminded of a number of antecedents, among others the company regulation regarding PPE mandatory application, PPE provision by the company, presence of work safety signs in all areas of workplace, and inspection by the Section Head of Quality Control which had made the workers feel inspected and resulted in safe behaviors.

This is in line with a previous study by Indriani stating that all of the workers in her research site had applied appropriate PPE according to the hazard in the workplace. Workers' awareness by reminding visitors with insufficient PPE was also good. The intervention done in relation to the PPE application was the installation of safety signs. Installation or placement of safety signs could become communicative media presenting advice to work safely, one of them was the application of

appropriate PPE. In the research site, various safety signs were placed, one of them was the caution to apply PPE in the workplace with specific hazards (Indriani, 2012).

All of these are reinforced by the RI Manpower and Transmigration Minister Regulation No. PER.08/MEN/VII/2010 on Personal Protective Equipment (Peraturan Menteri Tenaga Kerja dan Transmigrasi RI, Nomor PER.08/MEN/VII/2010, Tentang Alat Pelindung Diri). It is mentioned in Chapter 2 and 3, paragraph (1) that the company should provide PPE for the employees/laborers in the workplace, where such PPE mentioned includes among others head protectors, eye and face protectors, ear protectors, breath protectors with the complementaries, hand protectors, and foot protectors (Ministry of Manpower and Transmigration, 2010). Further, in the Chapter 5 it is stated that the company or the management should announce in writing and put signs with regard to the obligation to apply PPE in the workplace (Ministry of Manpower and Transmigration, 2010).

However, there were some PPE items which were rarely applied by the workers at the Daily Check section such as ear plugs and safety glasses due to workers' reasons that they were not comfortable and regarded as reducing effectiveness in detecting unusual noise in the locomotive engine. This is in line with a study by Novianto that the uncomfotability was caused by the PPE application which was considered disrupting the work. Due to the uncomfotability, some workers decided to remove the PPE. Based on the Green theory, something attached to a person as a predisposing factor, in this case is the comfortability of PPE application, can influence the person's behaviors (Novianto, 2015).

4.2. Execution of Safety Briefing

Safety briefing is discussion on work preparation which is conducted before a work is started in each section. Most of the workers at the Daily Check section had shown safe behavior with regard to the execution of safety briefing. There had been a safety briefing activity at the Daily Check section of the Locomotive Depot, however this activity was not done on a daily basis. This might be due to the understanding of the supervisor that each of the workers of the Daily Check section had been accustomed to and capable of their jobs. However, the Section Head kept on monitoring and giving reminders on the application of complete PPE and on the operation procedures of the Daily Check section. According to Cooper in Irlianti, an Activator becomes the basis of every person's behavior which will always occur before the existence of a behavior. An Activator becomes the "trigger" in doing something, as well as the reason behind someone's restraint from repeating such action (Irlianti, 2014).

This is in line with a previous study by Indriani that Toolbox Meeting is a discussion regarding the preparation for work which is done on a daily basis prior to the execution of work at each department. However, sometimes Toolbox Meeting is not made every day (Indriani, 2012).

4.3. Compliance with Operational Procedures

Compliance is defined as an act of how a worker fulfills or obeys prevailing rules with regard to occupational safety. Workers should comply with the rules/regulations determined by the company. A worker is considered compliant when he/she obeys the prevailing rules and procedures of the company. The Daily Section of Locomotive Depot of Operational Area VI Yogyakarta, Indonesian Railway Company, had written operational procedures called Check Sheet.

Based on the results of the analysis, it was found that most of the workers at the Daily Check section had complied with the operational procedures prepared by the company. The SOP (Standard Operating Procedures) applied in the company was the Check Sheet. The types of jobs included in the Check Sheet were among others air components, electrical, diesel, and mechanical works. The operating procedure prepared for each of the jobs had been made complete. The workers followed every step of the work and used appropriate tools/equipment. In addition, every work done was monitored or inspected by the Section Head of Quality Control.

This is reinforced by the Decision Letter of the Director of Indonesian Railway Company No. KEP.U/KS.102/VIII/1/KA-2016 on the Guidance for the Implementation of Occupational Safety and Health System. It is stated in the Chapter 8 Paragraph (1) that implementation of OSH program is

done by the local management by providing sufficient facilities including operating procedures, information, reporting and documentation, and work instruction ([Directors of PT Kereta Api Indonesia, 2016](#)).

The results of this research were in line with the previous study by Dewi stating that most of the workers of PR SIM R4, Plant Tambunan II, who became the research respondents or 56.9% had shown good procedure compliance, whereas as many as 43.1% were not compliant. This means that some of the workers already complied with the prevailing company procedures. The similarity in the results of the research might be related to the presence of the Standard Operational Procedures and job instructions in each of the companies which were obeyed by and made compulsory to the workers. Therefore, the workers in general had complied with the SOP and job instruction ([Dewi, 2010](#)).

The description of work instruction is workers' compliance at work to be more careful, follow work instruction or work regulation, work according to procedures, and presence of inspection from the safety section or supervisor. This is in line with the RI Government Regulation No. 50 of 2012 on the Implementation of OSH Management Standard (Peraturan Pemerintah RI Nomor 50 tahun 2012 tentang Penerapan SMK3) Chapter 10 paragraph (2) which states that in implementing OSH plan the company is supported by human resources in the OSH, facilities, and supporting components. The facilities and supporting components are the SOP, information, reporting and documentation, and work instruction ([Ministry of Manpower and Transmigration, 2012](#)).

According to Heinrich, the actions or changes of a person or a number of workers could minimize the potential of work accidents. Examples of safe behaviors include working according to the assigned responsibility, giving precaution of the presence of hazards, succeeding in securing work area and the people around it, maintaining safety equipment to keep functioning, applying appropriate safety equipment, applying PPE properly, and putting tools/equipment according to assigned place ([Suriani, 2013](#)).

The results of this research were in line with the theory of Antecedent, Behavior, Consequences (ABC) model. ABC model explains that a behavior is triggered by a set of antecedents (something that precedes a behavior and a cause related to behavior) and followed by a consequence (the result of individual behavior) which would increase or reduce the possibility of such behavior to be repeated. ABC analysis facilitates the way to identify and change a behavior to rearrange and change the pattern of the antecedent and the consequence to increase the frequency of expected behavior. According to Cooper, the role of an activator may cause the performing of a behavior, but can also prevent such behavior from performing ([Sirait, 2016](#)).

5. Conclusion

Based on the analysis of the work behaviors among the workers at the Daily Check section of the Locomotive Depot of the Operation Area VI Yogyakarta, Indonesian Railway Company, using the Do It method, it can be concluded that:

1. Target behavior objects which were determined through the discussion with the Section Head of Quality Control included among others execution of safety briefing, application of personal protective equipment, and compliance with operational procedures.
2. With regard to the compliance with the operational procedures, PPE application, and safety briefing execution, the workers have shown safe behaviors.
3. Safe behaviors among the workers in the forms of compliance with operational procedures, PPE application, and safety briefing execution were triggered by the antecedents including the need for occupational safety (provision of PPE and OSH signs), roles of the management as well as the Head of Quality Control section, and the company regulation related to OSH and operational procedures.

It is suggested that the management of the Locomotive Depot of the Operation Area VI Yogyakarta, Indonesian Railway Company, reinforce safety briefing activities on a daily basis prior to work execution, or at any spare time after locomotive checking, in order that the workers are constantly reminded and more careful in working in the Daily Check section. In addition, it suggested that more effective equipment is provided to measure unusual noise in the diesel engine and air

component of the locomotive so that the workers can apply the ear plug PPE during the work, without causing disruption the execution of the work.

References

- Anizar, 2010, *Teknik Keselamatan dan Kesehatan Kerja di Industri*, Yogyakarta: Graha Ilmu, Hal. 11.
- Daryanto, 2010, *Keselamatan Kerja Peralatan Bengkel dan Perawatan Mesin*, Bandung: Alfabeta, Hal. 1, 2, 4.
- Dewi, N, 2010, *Faktor-Faktor yang Berhubungan dengan Kepatuhan Pekerja dalam Melaksanakan Standar Prosedur Kerja (Standard Operasional Procedure/SOP) di PT Suzuki Indomobil Motor Roda 4 Plant Tambuh II Bekasi Tahun 2010*, Skripsi, Jakarta: FKIK UIN.
- Geller, L.K., 2001, *The Psychology of Safety Handbook*. Boca Raton, FL: CRC.
- Health and Safety Protection, 2011, *Behavior Based Safety*, www.health-safetyprotection.com, diambil tanggal 18 Maret 2018, Yogyakarta.
- Indriani, F, 2012, *Gambaran Penerapan Behavior Based Safety (BBS) Dengan Metode Do It di Central Processing Area (CPA) Job Pertamina - Petrochina East Java*, Skripsi, FK USM, Surakarta.
- Irlianti, 2014, Analisis Perilaku Aman Tenaga Kerja Menggunakan Model Perilaku ABC (Antecedent Behavior Consequence), *The Indonesian Journal of Occupational Safety and Health*, Vol. 03, No. 01 Hal. 94-106.
- Kementerian Tenaga Kerja dan Transmigrasi RI, 2012, *Permenaker RI Nomor 50, Tahun 2012, Tentang Penerapan Sistem Manajemen Keselamatan dan Kesehatan Kerja*, www.bpkp.go.id, diambil tanggal 31 Juli 2022. Yogyakarta.
- Kementerian Tenaga Kerja dan Transmigrasi RI, 2010, *Permenaker RI Nomor PER.08/MEN/VII/2010, Tentang Alat Pelindung Diri*, www.gmf-aeroasia.co.id, diambil tanggal 31 Juli 2022. Yogyakarta.
- Direksi PT Kereta Api Indonesia, 2016, *Keputusan Direksi PT Kereta Api Indonesia (Persero) Tahun 2016, Nomor: KEP.U/KS.102/VIII/1/KA-2016, Tentang Pedoman Penerapan Sistem Manajemen Keselamatan dan Kesehatan Kerja*, Jakarta.
- Komite Nasional Keselamatan Transportasi, 2016, *Data Investigasi Kecelakaan Perkeretaapian Tahun 2010-2016*, www.knkt.dephub.go.id, diambil pada tanggal 8 Mei 2022, Yogyakarta.
- Moleong, L.J., 2015, *Metodologi Penelitian Kualitatif*, Bandung: PT Remaja Rosdakarya, Hal. 187.
- Ningsih, A. 2013, Evaluasi Pelaksanaan Behavior Based Safety pada Program Stop dalam Membentuk Perilaku Aman Tenaga Kerja di PT X Tahun 2013, *The Indonesian Journal of Occupational Safety and Health*, Vol. 2, No. 1, Hal. 35 – 44.
- Notoatmodjo, S, 2012, *Metode Penelitian Kesehatan*, Jakarta: PT Rineka Cipta, Hal. 26, 124, 137, 139.
- Novianto, 2015, Penggunaan Alat Pelindung Diri (APD) Pada Pekerja Pengecoran Logam PT. Sinar Semesta (Studi Kasus Tentang Perilaku Penggunaan Alat Pelindung Diri (APD) Ditinjau Dari Pengetahuan Terhadap Potensi Bahaya dan Resiko Kecelakaan Kerja Pada Pekerja Pengecoran Logam PT Sinar Semesta Desa Batur, Ceper, Klaten, *Jurnal Kesehatan Masyarakat (e-Journal)*, Vol. 3, No. 1, 23 – 30.
- Sirait, F, 2016. *Analisis Perilaku Aman Pada Tenaga Kerja Dengan Pendekatan Behavior-Based Safety (Studi di Workshop 8 Unit Produksi PT Duta Hita Jaya Bekasi, Jawa Barat)*. Skripsi. Surabaya, FKM Universitas Airlangga.
- Suriani, 2013, *Faktor-Faktor yang Berhubungan Dengan Perilaku Aman Karyawan di PLTU Nagan Raya*, Skripsi, Meulaboh: FKM UTU.