

DESIGNING REWARD AND PUNISHMENT SYSTEMS TO SPUR AWARENESS OF THE USE OF PPE ON PT. XYZ WORKERS

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Abstract

Personal Protective Equipment is a tool that can protect a person whose function is to isolate part or all of the body from potential hazards in the workplace. Personal Protective Equipment is used in work in various fields, one of which is in building construction. At PT.XYZ, some workers are not disciplined in applying the regulations on Occupational Health and Safety, especially in Personal Protective Equipment. The cause of use Personal Protective Equipment is often due to forgetting to use, being uncomfortable in using, and damaged. The root of the problem that occurred in the West Sumatra flat construction project workers was the lack of occupational health and safety awareness, especially on Personal Protective Equipment use. Thus, this study aims to design a system of reward and punishment using Abraham Maslow's theoretical approach, which explains the level of human needs as motivation at work. Furthermore, the data processing method used in this research is the analytical hierarchy process. From the results of data processing obtained two factors that encourage work motivation to increase awareness of the use of Personal Protective Equipment, namely salary and health insurance. So, the reward for workers based on workers need are bonuses salary and health insurance. This research resulted in two designs, namely an awareness assessment of the use of Personal Protective Equipment and a reward and punishment system based on the needs of workers.

Keywords : Reward and Punishment System, Awareness, Personal Protective Equipment, Analytical Hierarchy Process, Abraham Maslow's Theory

I. Introduction

PT. XYZ is a construction services company that provides planning services, project supervisors, construction management and construction work implementers for buildings or structures, building utilities, industrial facilities and other physical forms. One of the projects undertaken by PT. XYZ is the construction of flats in West Sumatra. Based on the results of interviews in May 2021 with the project consultant, there were 35 workers on the project's construction of the West Sumatra flats project. From the results of observations in the field, it was found that workers were not disciplined in applying regulations on OHAS. Workers in the West Sumatra flats project still lack awareness of using personal protective equipment (PPE) at work. This can pose a risk that greatly affects project work because it can cause work accidents. The consultant has several times given warnings in the form of verbal and written warnings. The consultants have given warning letters several times until the project was temporarily suspended because the logistics contractor had to buy PPE for project workers to fulfil them. OHAS violations occurred in several work units, including structural work, painting walls, cutting iron pipes, installing ceilings, and casting. Meanwhile, the OHAS violations included not wearing a helmet, not wearing shoes, and not using gloves. These violations can cause fatal work accidents such as falling on tools or materials, head injuries, injuries to hands, splashed pipe pieces. Work accidents that occur can cause losses for workers and companies. For workers, they can lose working days, while for companies, additional costs can cause work delays. Based on the results of the interviews concluded, the causes of K3 violations (not using PPE) include, namely, the worker forgot to use PPE, was uncomfortable using PPE and damaged PPE. The workers have no concern for their work safety. Based on the results of interviews with project workers, the lack of awareness of the use of PPE is caused by a lack of motivation to use PPE for the project workers. So that the use of PPE on project workers is still not fully running well.

II. Literatur Review

II.1 Occupational Health and Safety (OHAS)

Work safety is the process of planning and controlling situations that can cause work accidents through the preparation of standard operating procedures that become a reference in work [1]

According to Government Regulation No. 88 of 2019 concerning Occupational Health, Occupational Health is an effort to protect everyone in the workplace so that they live healthy and free from health problems and bad influences resulting from work.

II.2 Personal Protective Equipment

According to Minister of Manpower and Transmigration Regulation No. 8 of 2010 article 1 paragraph 1, Personal Protective Equipment from now on, abbreviated as PPE, is a tool that can protect a person whose function is to isolate part or all of the body from potential hazards in the workplace. Then for the various types of PPE, it is explained in the Regulation of the Minister of Manpower and Transmigration No. 8 of 2010 article 3 paragraphs 1 and 2.

1. PPE as referred to in Article 2 includes:
 - head protector;
 - eye and face protection;
 - ear protector;
 - respiratory protection and equipment;
 - hand protection; and
 - foot protector.
2. In addition to PPE as referred to in paragraph (1), including PPE:
 - Protective clothes;
 - Personal fall protection equipment; and
 - Lifebuoy

II.3 Self-Awareness

Self-awareness is the ability to monitor one's feelings and emotions, and the feelings of others, to distinguish between the two [2]. Self-awareness (self-awareness) is focused attention on the self that encourages a person to pay attention to self-discipline to motivate to run away from self-awareness or change behavior. [3]

II.4 Abraham Maslow's Theory of Motivation

According to Abraham Maslow, basic human needs consist of five levels: physiological needs, security needs, love needs, esteem needs, and self-actualization. These five levels are called Maslow's Hierarchy of Needs, which is the motivational theory of Abraham Maslow. [4]



Figure 1 Hierarchy Needs

II.5 Performance assessment

Performance is the result of work achieved by a person or group of people in an organization, following their respective authorities and responsibilities, to achieve the goals of the organization concerned legally, not violating the law, and following morals and ethics [5]. From the company side, the assessment is carried out to increase work results in this case, it can increase profits for the company, while in terms of employees work evaluation can be the basis of employees in developing themselves, implementing incentive targets and in increasing work productivity. [6]

There are several benefits of performance appraisal, which are as follows :

1. Improved work performance
2. Compensation adjustment
3. Placement decisions
4. Training and development needs
5. Career planning and development
6. Deviation from staffing process
7. Informational inaccuracies
8. Worker design error

9. Fair job opportunities
10. External challenges

There are three kinds of employee performance evaluation criteria: fairness (fairly), objectivity, and transparency. The following is an explanation of employee performance evaluation criteria [7]

1. Objectively
The objective is that the assessment must be carried out following the established criteria. To carry out an objective assessment, it is done by:
 - a. Measurable, each job can use certain standards to measure performance achievement.
 - b. Realistic, assess what is following what has been done.
 - c. By the priority scale, doing a job is made first, which must be done first and then the next.
 - d. Challenging, given work, can motivate workers.
2. Fairly
Fair, namely assessing according to what is done, providing equal opportunities to be assessed to not cause social inequality among workers. To carry out an assessment that is carried out fairly, it is carried out by:
 - a. The assessment is adjusted to the employee's contribution to the organization's success.
 - b. The assessment is carried out objectively supported by information data.
 - c. The division of work is adjusted to the position and competition held.
3. Transparently
Transparent, namely conducting an assessment, must have good openness in the assessment process and provide the assessment results to employees. To carry out an assessment that is carried out transparently, it is carried out by:
 - a. Announce the results of the assessment openly.
 - b. Giving a reply in the form of a reward or punishment based on the assessment results.

II.6 Reward and Punishment

A reward is a form of appreciation for the effort to get a professional workforce by the demands of the position. Rewards can also motivate someone to do activities or work. The reward can also be called an appreciation for an achievement that has been achieved. [8] There are two types of rewards [9]

1. Extrinsic Rewards
Extrinsic rewards are rewards that come from outside the person.
 - a. Financial Rewards:
 - Salary is remuneration in the form of money received by employees due to their position as an employee who contributes energy and thoughts in achieving company goals or can be said to be a fixed fee received by someone from a company.
 - Employee benefits such as pension funds, hospitalization, and vacations. In general, this is not related to employee performance but is based on seniority or attendance records.
 - Bonuses/Incentives are additional rewards above or beyond the salary/wages provided by the organization.
 - b. Non Financial Reward:
 - Interpersonal rewards Or commonly referred to as interpersonal rewards. Managers have several powers to distribute interpersonal rewards, such as status and recognition.
 - Promotion Managers use promotion awards to put the right people in the right jobs. Performance, when measured accurately, often provides significant consideration in the allocation of promotional rewards.
2. Intrinsic rewards
Intrinsic reward is a self-regulated reward consisting of.
 - a. Completion (completion). The ability to start and finish a job or project is very important for some people. Such people value what they call task completion. Some people need to complete tasks, and the effect of completing tasks for someone is a form of self-respect.
 - b. Achievement is an award that arises in oneself, obtained when a person achieves a challenging goal.
 - c. Autonomy. Some people want jobs that give them the right to make decisions and work without close supervision. Feelings of autonomy can result from the freedom to do what employees do best in certain situations.

Punishment is defined as the act of presenting unpleasant or unwanted consequences as a result of performing certain behaviors [9]. Punishment is punishment to individuals or organizations who have violated the applicable regulations. The purpose of giving punishment is the same as giving rewards that can trigger motivation for employees and companies or organizations.

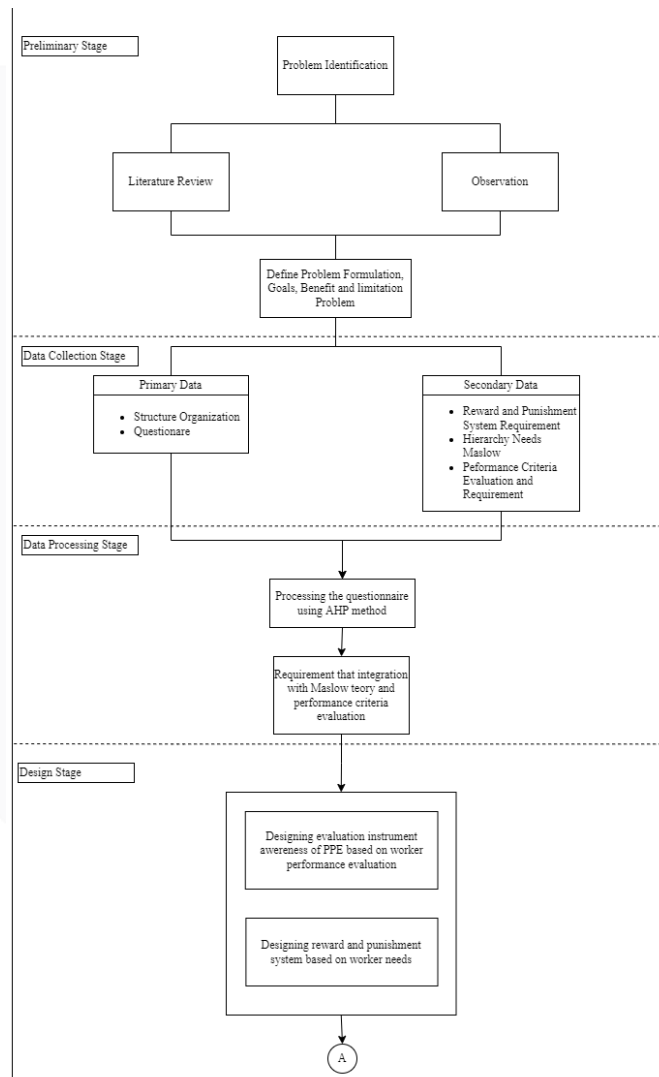
II.7 Analytical Hierarchy Process (AHP)

Analytical Hierarchy Process is a decision support method developed by Thomas L. Saaty. In this study. In using the AHP method, there are steps carried out in the AHP method as follows [10]:

1. Define the problem and determine the desired solution.
2. Create a hierarchical structure with general goals, followed by criteria and alternative choices.
3. Create a pairwise comparison matrix that describes each element's relative contribution or influence on the goals or criteria at the level above. Comparisons are made based on the choice or judgment of the decision-maker by assessing the level of importance of an element compared to other elements.
4. Normalize the data by dividing the value of each element in the paired matrix by the total value of each column
5. Calculate the eigenvector value and test its consistency. If it is not consistent, the data collection (preference) needs to be repeated. The eigenvector value in question is the maximum eigenvector value obtained.
6. Repeat steps 3, 4, and 5 for all hierarchy levels.
7. Calculate the eigenvector of each pairwise comparison matrix. The eigenvector value is the weight of each element.
8. Test the consistency of the hierarchy. If it does not meet the $CR < 0.100$, the assessment must be repeated.

III. Problem Solving Systematics

Systematic problem solving is made with a framework of thinking that describes the steps of solving problems with the method used. This research consists of four stages: introduction, data collection, data processing, and analysis.



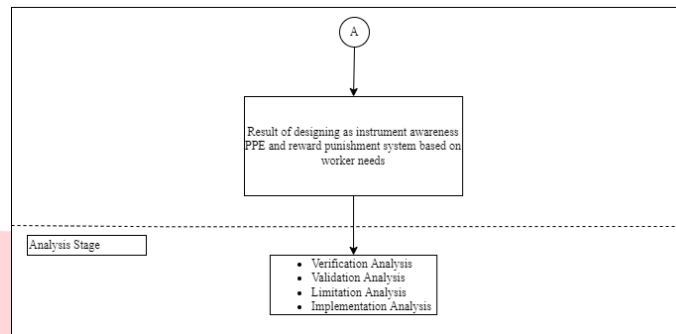


Figure 2 Conceptual Models

the input data used are primary and secondary data described previously. Furthermore, the researchers distributed questionnaires to the construction project workers at PT.XYZ in West Sumatra flats. The statement contained in the questionnaire relates to the motivation for awareness of PPE use following Maslow's theory. Then the data processing uses respondent data using the Analytical Hierarchy Process (AHP) method. The use of the AHP method aims to find out which needs to encourage motorists to be more concerned with awareness of the use of PPE to minimize OHAS violations that occur at PT.XYZ especially in the West Sumatra flats project.

IV. Discussion

IV.1 Data Processing

At the data processing stage, data processing was carried out using the analytical hierarchy process (AHP) method from the results of the questionnaire recapitulation of the selection of the motivation needs of project workers following Abraham Maslow's theory. Then the results of the data recapitulation carried out geomean calculations on each relationship of each criterion and continued by determining the priority vector value for each criteria requirement. Next, calculate the matrix value multiplied by the priority vector value of each criterion and, after that, look for the consistency value of each criterion. Then we can proceed to the next step by finding out which criteria are the most dominant to encourage employee motivation using the excel RANK function. After determining the priority vector value, the maximum lambda (λ) value, consistency index (CI), consistency ratio (CR) value of each criterion can be calculated.

After getting the consistency ratio (CR) calculation, the next step is to sort the criteria based on the priority vector value from the largest to the smallest. The following is a ranking of the criteria for the needs of project workers to increase work motivation.

Table 1 Ranking Criteria

Criteria	Priority vector	Ranking
Salary	0,39	1
Health Insurance	0,26	2
Work Colleague	0,13	3
Appreciation	0,12	4
Training Opportunities	0,10	5

Based on table 3, it can be concluded that the criteria needed by project workers as motivation to work are salary and health insurance, which have priority vector values of 0.39 and 0.26, respectively.

IV.2. System Integration Design

In conducting employee performance appraisals, several performance appraisal indicators are used to reference employee performance. The indicator for assessing awareness of PPE use is taken based on the factors of using PPE in workers from several previous studies. These indicators can describe several aspects of the use of PPE. The following are indicators of project worker performance assessment on awareness of the use of PPE that the author designed :

Indicator	Previous Research
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Knowledge	[11], [12], [13], [14]
know what is meant by Personal Protective Equipment (PPE)	[15], [16]
know the purpose and function of personal protective equipment (PPE)	[15]
Know the instructions for using Personal Protective Equipment (PPE)	[15]
know the consequences if not using PPE	[15]
Attitude	[11], [12], [13], [14]
Use Personal Protective Equipment (PPE) at work.	[15], [16]
Using Personal Protective Equipment (PPE) to reduce the danger of work accidents.	[15]
Follow safety briefings before starting work.	[15]

The reward and punishment system is a follow-up result of the awareness assessment of PPE use. After conducting an awareness assessment of the use of PPE, rewards and punishments are given to project workers according to the category of assessment obtained by each worker. The following is a design of a reward and punishment system based on employee profiling of PT.XYZ :

Table **Error! No text of specified style in document.**2 Reward System based on Worker Needs

No.	Rating Category	Reward
1	A	Get a salary bonus from the company and proper health insurance.
2	B	Get a salary bonus from the company.

Table **Error! No text of specified style in document.**3 Worker Punishment System

No.	Punishment Type	Information
1	Verbal warning (reprimand)	If a worker gets an assessment score below the standard with a value of <70.
2	Warning Letter I + salary deduction	If the worker gets a 2nd warning from the results of the assessment.
3	Warning Letter II + salary deduction	If the worker gets a substandard rating of <70 for the third time.
4	Warning Letter III + salary deduction	If the worker gets a substandard rating of <70 for the fourth time.
5	Termination of Employment	If the worker gets a substandard rating of <70 for the fifth time.

V. Conclusions

Based on the research that has been done regarding the design of a reward and punishment system to increase worker awareness of the use of PPE at PT.XYZ, the following conclusions are obtained :

1. In designing an integrated system, the reward and punishment requirement system used in designing the assessment system is to use employee performance evaluation criteria. From the design results, it has met the three criteria, namely objective, fairness, and transparency. The objective criteria can be shown from the assessment made by the inspector or supervisor in the field on the project workers. At the same time, the fairness criteria are shown from the statements in the assessment indicators. Furthermore, in the awareness assessment procedure, the use of PPE shows that there is transparency between the assessor and the worker. The requirements used in the reward and punishment procedure are rewards, including extrinsic and extrinsic rewards, which are then designed according to the needs of project workers.
2. In determining the reward as the work motivation of the workers, two factors can increase the work motivation of workers, namely salary and health insurance. These factors are obtained from the closed questionnaire calculations given to workers using the analytical hierarchy process (AHP) method.

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