

OPTIMIZING EFFICIENCY FACTORS IN MAINTENANCE OPERATIONS OF EMPLOYEES OF ENERGY ABSOLUTE PUBLIC COMPANY LIMITED

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Abstract

The present study aims to: 1) examine the effect of demographic factors on optimizing efficiency of maintenance operations of Energy Absolute Public Company Limited, 2) to investigate the relationship between motivational factors in maintenance operations, organizational commitment, and optimizing efficiency of maintenance operations of Energy Absolute Public Company Limited, and 3) to study the relationship between participation in maintenance operations and the optimizing efficiency factors of employees of Energy Absolute Public Company Limited. The participants were 127 maintenance staffs. The data was analyzed by a statistical program.

The findings revealed that demographic factors had effects on the optimizing efficiency factors of employees of Energy Absolute Public Company Limited. However, the age and income were found the effects on the optimizing efficiency factors of employees of Energy Absolute Public Company Limited at different levels. In addition, incentive factor in corporate engagement and employee optimization efficiency in maintenance operations were positively correlated in moderate level with the correlation coefficient (r) at 0.30 at significant level of 0.01. Meanwhile, employee participation and employee optimization efficiency in maintenance operations were positively correlated in high level with the correlation coefficient (r) at 0.68 at significant level of 0.01. Accordingly, the organization should provide opportunities for staff to effectively use their potentials. Future study indicates the interest in using other research approach and investigating other variables optimizing the benefits of the organization.

Keywords: Efficiency, Maintenance, Incentive Participation

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Introduction

In the competitive industrial world of innovation, every company seeks the benefit of taking the market share as much as possible in the same industry. This makes increasing production efficiency be a part of the organization's development to continue to operate. Increasing production efficiency can be achieved in several ways: cost reduction, loss reduction, efficient use of resources, right technology usage in the industry, potential development of employees in the organization, and usage of techniques or innovations to increase efficiency in the work process (Chulawat, 2015)

The necessity that the business must recognize the importance and continual growth is to increase production efficiency. Especially in the manufacturing sector where there are important factors such as machinery and equipment. If there is a malfunction or a sudden stop of the machine, there will be a high rate of loss. Therefore, today's executives must adopt the principle of all-inclusive maintenance. The productivity enhancement does not depend only on the amount of productivity but must take into account of the availability of machines that can produce quality products or have real product value (Deemoramor, 2004). It also has to focus on the importance of everyone. The maintenance work does not increase the burden but creates a corporate culture for everyone to learn and practice. In order to give personnel a sense of belonging to the organization, have a development mind, and reduce the gap between executives and employees to be more involved in work.

The Energy Absolute Public Company Limited has adopted the maintenance system as part of the management policy as to develop a system of preventive maintenance currently in operation and reduce the risk of incorrect inspection or operation causing damage to the machine. Due to preventive maintenance, there is a specific agency responsible for the audit. But still not enough to protect with the 24-hour operation of the machine so there is a gap in the inspection time. Therefore, to reduce the losses arising from the machinery, there should be a joint action between production workers and engineering personnel. The advantages of implementing a maintenance system that everyone is actually involved would cause enormous benefits to the organization and actually help reduce production costs.

From the above importance, a maintenance system has been implemented in the Energy Absolute Public Company Limited by studying the factors of increasing the efficiency of employees in the performance of maintenance work. To be used as a basis for the implementation of the maintenance system to carry out further activities. Executives use the obtained information to improve work processes and manipulate a policy for incentivizing employees in organizational acceptance and performance. Moreover, Energy Absolute Public Company Limited can reduce production costs effectively and customers are satisfied with the product. This will benefit the overall business operations.

Research Objectives

1. To study different demographic factors that influence the factors of enhancing operational efficiency for the maintenance operation system of the Energy Absolute Public Company Limited.

2. To study the relationship between incentive factor in organizational commitment and employee optimization factors for the maintenance operation system of the Energy Absolute Public Company Limited.

3. To study the relationship between participation in maintenance operations and employee optimization factors for the maintenance operation system of the Energy Absolute Public Company Limited.

Conceptual Framework

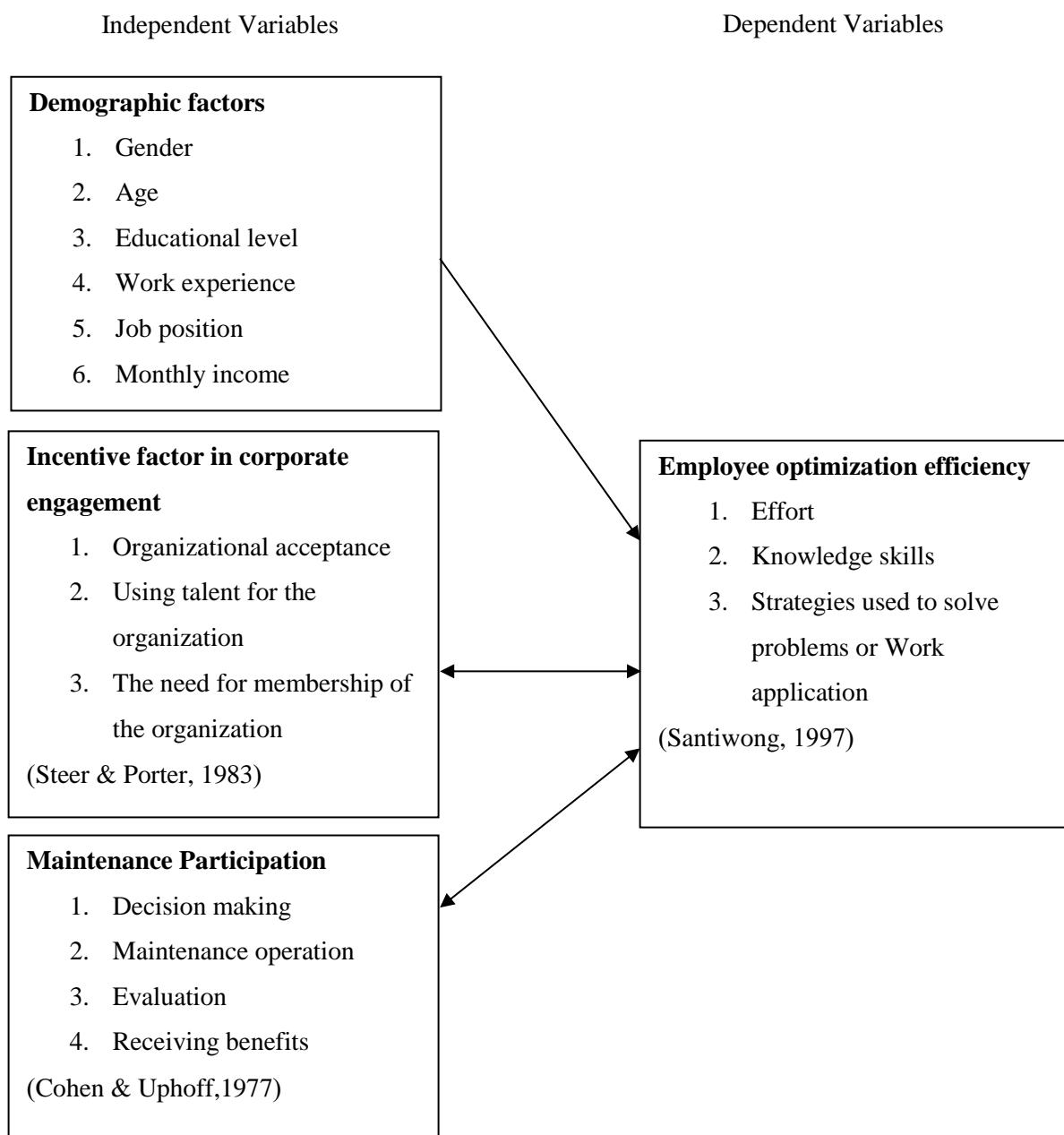


Figure 1 Research Framework

Hypotheses

Hypothesis 1: Demographic factor influences different degree of employee optimization efficiency.

Hypothesis 2: Incentive factor in corporate engagement has relationship with employee optimization efficiency.

Hypothesis 3: Maintenance participation has relationship with employee optimization efficiency.

Literature Reviews

Steer and Porter (1983) defined the incentive factor in corporate engagement as it is the strong relationship of the members in the organization and the members in the organization behave in the values. The organization is harmonious with other members, manifests itself as one with the organization and is willing to devote physically and mentally to participating in the activities of the organization. The incentive factor in corporate engagement has 3 factors included 1) organizational acceptance, 2) using talent for the organization, and 3) the need for membership of the organization.

Cohen and Upoff (1977) defined maintenance participation that includes decision making maintenance operation, evaluation, and receiving benefits. The decision-making in conjunction with implementation, for example in organizing, as development activities. The decision-making is also related to receiving benefits and evaluation in the development activities. The decision-making is almost directly related to the maintenance operation, but also to the interests and evaluation. Benefits are the result of operations and benefits determine the evaluation; they are all the result of the decision-making process. In addition, the feedbacks are from the evaluation and operation operations back to the decision.

Santiwong (1997) defined employee optimization factors that are managing the team effectively. Effective team management depends on 3 factors; 1) effort, 2) knowledge skills, and 3) strategies that are used to solve problems or work application. An effort is ability that the group members have dedicated to accomplishing the work that are challenging. In addition, it also means the provision of the freedom and support for the right decisions. In the meantime, the knowledge refers to skills related to tasks to be completely done effectively. Furthermore, the knowledge can then lead to getting along with people for work because knowledge can lead people in the group share their knowledge and experience that can be beneficial for the work. Lastly, the strategies used to solve problems are accounted to be another important factor making effective team. When working in the organization as a team, the problems from both the related work and team appear. To obtain the better performance, the team members should collaboratively help set the plan and strategies and use them to achieve the organization goals and solve the problems.

Research Methodology

The research on optimizing efficiency factors in maintenance operations of employees of energy absolute public company limited used research model as a survey research with collecting primary data using questionnaires. Applying statistical methods to investigate the assumptions established from the collected data. The researcher uses the following methodologies:

Population and Sample

The population was employees of energy absolute public company limited.

The sample population was employees of energy absolute public company limited that has been specifically random.

Calculation of the sample size from the population, in case the population is known. The sample size calculation will use a confidence level of 95% according to Yamane's formula as follows:

$$n = \frac{N}{1+Ne^2} \quad (\text{Equation 1})$$

n = Number of sample sizes

e = Acceptable Errors or Sampling Discrepancies (Set to be equal to 0.05)

N = The population of the engineering department and the production department amounted to 184 people (10 persons from engineering department, and 174 persons from production department)

Hence,

$$\begin{aligned} n &= \frac{184}{1+(184)(0.05)^2} \\ &= 126.03 \end{aligned}$$

From the calculation, the samples were of 127 persons from the entire population. In order to prevent incomplete questionnaire responses and non-return questionnaires, a total of 150 people from engineering department and production department were collected.

Research Tools

The data collection tool for this study was a questionnaire, which was closed-ended questionnaire with validity and reliability testing. For reliability testing, Cronbach's Alpha Coefficient was 0.80.

Statistical Analysis

In this research, the demographic characteristics are analyzed using descriptive statistics including percentage, arithmetic mean, and standard deviation. The statistics used to test the hypothesis include independent sample t-test, One-way ANOVA with (least significant difference: LSD), and Pearson correlation at a significant level of 0.05 or a confidential level of 95%.

Research Findings

Descriptive Analysis

The researcher can summarize the results as follows:

1. Most of the samples were male (94.5%), aged between 25-32 years old (81.1%), graduated from vocational certificate / diploma level (92.1%), had 4-year working experience (78.2%), worked as operating staff (85.8%), worked in the production department (92.1%), and had an average monthly income between 10,001 - 20,000 Baht.

2. The overall opinion level for incentive factor in corporate engagement was at high level with the majority of opinions in willingness to put effort to their best for the benefit of the organization as shown in Table 1.

Table 1 The opinion level of incentive factor in corporate engagement

Incentive factor in corporate engagement	X	S.D.	Results	Rank
Organizational acceptance	4.12	0.51	High	2
Using talent for the organization	4.22	0.53	High	1
The need for membership of the organization	3.93	0.59	High	3
Average	4.09	0.38	High	

3. The overall opinion level for the participation in maintenance operations is at high level with most of opinions in participation in the evaluation, as shown in Table 2.

Table 2 The opinion level for the participation in maintenance operations.

Incentive factor in corporate engagement	X	S.D.	Results	Rank
Decision making	3.78	0.47	High	4
Maintenance operation	3.88	0.55	High	2
Receiving benefits	3.89	0.56	High	1
Evaluation	3.78	0.63	High	3
Average	3.84	0.43	High	

Hypothesis Analysis

1. Demographic factors influencing employee optimization efficiency were not different in the aspects of gender, educational level, work experience, and different working positions. In the meantime, the demographic factors, age, and monthly income, influenced employee optimization efficiency differently. For the study of age, the result revealed that employees with age under 25 years old had different opinion towards employee optimization efficiency from employees with age between 33-39 years old and employees with age between 25-32 years old had different opinion towards employee optimization efficiency from employees with age between 33-39 years old. For the study of monthly

income, the result revealed that employees with monthly income between 20,001-30,000 baht had different opinion towards employee optimization efficiency from employees with monthly income between 30,001-40,000 baht at a significant level of 0.05.

2. There was a positive correlation between incentive factor in corporate engagement and employee optimization factor in maintenance operations, as shown in Table 3.

Table 3 The Correlation between incentive factor in corporate engagement and employee optimization efficiency in maintenance operations.

Correlation	r
Incentive factor in corporate engagement and employee optimization factor in maintenance operations	0.31

*Significantly at a level of 0.01

Table 3 shows that incentive factor in corporate engagement and employee optimization efficiency in maintenance operations were positively correlated in moderate level with the correlation coefficient (r) at 0.30 at significant level of 0.01.

3. Employee participation was positively correlated with the employee optimization factor in maintenance operations, as shown in Table 4.

Table 4 The Correlation between employee participation and employee optimization efficiency in maintenance operations.

Correlation	r
Employee participation with the employee optimization factor in maintenance operations.	0.68

*Significantly at a level of 0.01

Table 4 shows that employee participation and employee optimization efficiency in maintenance operations were positively correlated in high level with the correlation coefficient (r) at 0.68 at significant level of 0.01.

Discussion

The research results can be discussed as follows.

Demographic factors influencing different employee optimization efficiency were age and monthly income. When considering in the points, it was found that this is because a group of people working as operating staff are different from the persons working in senior management levels such as Chief Engineer. These people will have to use different details and scope of work. Similarly,

Phoonthong (1997) studied factors affecting the operation efficiency which consisted of the characteristics of the person, the nature of the work performed, the nature of work conditions, and the characteristics of the chief. These components can be a clear measure of employee performance. Moreover, it is consistent with the research of Suksanong (2009) studying factors affecting the performance of employees of Kehin Autoparts (Thailand) Co., Ltd. and indicating that different gender, age, working period, and marital status can affect employee performance.

The incentive factor in organizational commitment was positively related to employee optimization efficiency for the maintenance operation system. The incentive factors consist of organizational acceptance, using talent for the organization, and the need for membership of the organization. In all areas, there was a high level of opinion, probably because the organization had a high response to the needs of employees. As a result, employees have a positive attitude towards their jobs, both in terms of their career advancement and honest performance evaluation. In line with the ideas of Kast and Rosenzweig (1985), their study indicated that employees' motivation and effort are the variables influencing the productivity of the organization. The results of this research are also consistent with Khumraksa (2007) studying the participation of the employee in the implementation of the maintenance activities in Kangwan Polyester Co., Ltd. and the results showed that the participation of employees can support organizational engagement. Similarly, the study done by Boonpheng (2009) advocating that a high level of employee engagement of municipal employees in Samut Sakhon Province can correlate with employees' willingness to dedicate to perform the duties for the organization with the high level.

The aspects of participation in maintenance operations were positively correlated with employee performance of Energy Absolute Public Company Limited. Indeed, maintenance factor is considered as the duty of everyone in the organization. All employees should participate into the performance appraisals because their ideas and feedbacks related to the assessment process can help improve the overall performance in either individual or organizational level. The organization gives importance to employees and empowers them to solve problems. The study result is consistent with the concept of Cohen and Upoff (1977) mentioning that employee participation in decision-making can help organization determine developmental activities to better the organizational performance. In addition, the decision was also related to benefits and evaluation. Consistently, Thareesarn (2008) studied about the participation of employees to promote safety activities in the workplace of Kasalong Ceramics Co., Ltd. and found that employees participated in the promotion of occupational safety activities at a high level, especially, in terms of employee empowerment.

Lastly, the study indicated that the employee optimization efficiency is highly significant for the organization, referring to employee effort to manage and accomplish any complex task and problem solution. This is in line with the concept of Laksana (1999).

Suggestion

Suggestions from the study

1. Employees should be encouraged to love the organization and want to be a member of the organization as long as possible. Inevitably, there are opportunities for employees to experience more work and have absorbed the development path to bring the greatest benefit to the organization. Items for motivating employees may not be in the form of money, but rather acceptable by the organization and clear career opportunities.

2. Organization should provide training and development opportunities for employees to develop their own knowledge and skills. This will make employees feel that they are part of the organization, having confidence to achieve the goals and finally can benefit the organization.

3. Participation support and opportunities should be provided to employees in solving problems or work developments. When employees think, create and work together as a team, they will set rules to guide practice and the work become more effectively and efficiently.

Suggestions for the future study

1. The future research should apply qualitative research approach using interviewing techniques with the executive level related to the guidelines for maintenance work. The informative guideline can positively lead the employees to work effectively and efficiently.

2. There should further be a study related to improvement activities such as Kaizen technique, PDCA, etc. and its implementation applied to the organization.

3. There should be a study related to other factors such as organizational culture and coexistence in the organization that may affect or be relate to the performance of maintenance work.

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