Global Business and Management Research: An International Journal
Vol. 6, No. 3 (2014)

The Role of Leadership and Leaders' Behavioral Characteristics on Employees' Safety Behavior in Plant Turnaround Maintenance of PETRONAS Petrochemical Companies in Malaysia

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Abstract
Purpose: The main purpose of this study is to determine the development of a proposed conceptual framework in exploring the relationship between leadership styles (transformational leadership and transactional leadership) and safety behavior (safety compliance and safety participation) with safety motivation as a moderator.
Design/methodology/approach: The paper describes the development of proposed conceptual framework in exploring the relationship between leadership styles, safety motivation and safety behavior.
Findings/highlights: There is a positive relationship between leadership styles and safety behavior meanwhile safety motivation moderates the relationship between leadership styles and safety behavior.
Research limitations/implications: There is a need for additional research to empirically validate the proposed conceptual framework in the plant turnaround maintenance of petrochemical companies.
Practical implications: This paper could assist the management especially the leaders and employees to have better understanding on leadership styles that can enhance employees' safety behavior.
Originality: The study contributes to the asset management literature in providing an overview of the relationship between safety leadership and safety behavior with safety motivation as the moderator in new context which is plant turnaround maintenance in petrochemical industry.

Keywords: Leadership role, leaders' behavioral characteristics, employees' safety behavior, plant turnaround maintenance, petrochemicals companies, Malaysia

Paper Type: Conceptual Paper

1. Introduction

Plant turnaround maintenance is a crucial event in asset management in continuous process-based industries where the event will be done in high pressure environment. The successful execution of turnaround maintenance is relying on proper project management by the organization. According to Zulkipli and Halib (2011) it is done with the aim to revitalize, develop, sustain and improve the plant facilities for efficient and optimal operations. Turnaround is organized to perform servicing, self-inspection, replacement, regulatory inspection by Department of Safety and Health (DOSH) and maintenance on equipment or facilities which cannot be carried out when the plant is in operation (Zulkipli and Halib, 2011). Besides that, it is also stated that the main objective of plant turnaround maintenance is to renew the Certificate of Fitness (CF) of the factory, expanding or modifying of asset and restoring assets to design operation condition (Zulkipli and Halib, 2011). For that reason, as a task oriented event, plant turnaround maintenance will require a lot of manpower and other physical resources to execute the event in a temporary basis and very limited timeframe. Hence safety in the plant turnaround is a critical aspect that needs full attention by all including management, leaders, supervisors,

engineers, and contractors. So everyone that involve with plant turnaround maintenance should have high sensitivity regarding to safety. Accordingly, safety in plant turnaround maintenance starts with management and superior because their actions will help to improve safety awareness throughout the organization especially their subordinates.

Therefore, one way to increase workplace safety is effective leadership styles. According to previous study, a good leader will always encourage and motivates their subordinate to work effectively, to work efficiently, to work harder and always responsible for their own safety, teammate's safety and environment (Lu and Yang, 2010). Besides that, an appropriate leadership styles will generate positive relation with safety especially employees' safety behavior (Clarke, 2013). Furthermore, organizational safety effectiveness can be obtained with leadership that focuses on safety. It is also very important to sustain safety leadership so that accidents can be reduced and safety awareness is well promoted among managers and general employees (Lu and Yang, 2010). Consequently, safety in plant turnaround maintenance can be referred to the following chain;

Manager > Engineer > Supervisor > Worker.

Due to its critical importance for workplace safety, this research aims to evaluate leader's behavioral characteristics (leadership styles) on employees' safety behavior in the perspective of plant turnaround maintenance in petrochemical industry. Therefore, next section will discuss about literature review of leadership styles, safety behavior and turnaround. Relationship between leadership styles and safety behavior will be discuss in the third section followed by proposed conceptual framework in forth section. Conclusions from the literature review analysis are presented in the last section.

2. Literature Review

2.1 Leadership Styles

Over the past 30 years, leadership style has always been a topic of interest among the academicians, practitioners and professionals from various backgrounds. It has been supported by previous study who stated that research on leadership has dramatic increase especially in leadership theories (Dinh *et al*, 2013). According to Lowe, Kroeck and Sivasubramaniam stated that Burns (1978) has determined two types of leadership style which are transactional leadership and transformational leadership. Burns suggestion about leadership construct is the earliest research about transformational and transactional leadership. Then it is followed by Bass (1985) who developed a tool to examine different styles of leadership using Multifactor Leadership Questionnaire (MLQ). After that, each year research about leadership has flourished. Therefore, it is showed that leadership is very important aspect. According to a meta-analysis review by Dinh *et al* (2013) for leadership theory and research in the new millennium, transformational leadership, charismatic leadership and transactional leadership are the top three leadership styles that receive highest attention among scholars. However, this study will focus on transformational leadership and transactional leadership. Below are definition about transformational leadership and transactional leadership.

Transformational leadership is known as the behavior of the leader who can influence the subordinates. Transformational leaders are dynamic, proactive and encouraging teammates to have high awareness in order to reach desired goal (Antonakis *et al*, 2003). Transformational leader are charismatic and inspired others (Shahrollah, 2011). The leader will act as a role model, encourage their subordinates to do the work beyond expectation and motivates them towards successful of the work done (Bass, 1997). Besides that, 'transformational leaders move the followers to transcend their own self-interests for the good of group, organization or country' (Bass, 1997:133). Moreover, transformational leader always smarten up the way of working more effective in ensuring efficient work done by the subordinates, and always seeks opportunities in facing work risk (Lowe *et al*, 1996). There are four characteristics of transformational leadership which are: idealized influence, inspirational motivation, intellectual stimulation and individualized consideration (Bass, 1997; Shahrollah, 2011).

However, transactional leader is referring to leader characteristics who like to give rewards (such as promotion), praise and withholds punishment in transaction of exchange for work performance and complies with role expectations (Laine, 2010; Burke *et al*, 2006). This transactional leadership depends on the leader's power to reinforce subordinates for their successful completion of the bargain' (Bass, 1997:133). Additionally, transactional leaders is based on exchange of resources which means that the leaders will provide rewards if their subordinates accomplish the objectives and punishing subordinates if not enough effort or low performance (Zhu et al, 2011). There are three characteristics of transactional leader which are contingent reward, active management by exception and passive management by exception (Bass, 1997; Zhu *et al*, 2011).

As mentioned earlier, the two types of leadership behaviors are transformational leadership or have also been called relationship-oriented leadership which focus on future development (Mullen and Kelloway, 2009) and

transactional leadership also known as task-focused leadership which focused on performance and rewards (Burke *et al*, 2006). A study done by Mullen and Kelloway (2009) has found that a leader who has been trained with safety specific transformational leadership training will influence more on workplace safety rather than leaders with general transformational leadership training. A meta analytic review of transformational and transactional leadership styles as an antecedents of safety behavior has stated that combination of both transformational leadership and active transactional leadership styles showed to be most successful for safety (Clarke, 2013).

2.2 Safety Behavior

According to Tomas *et al* (1999), the earliest effort to reduce the workplace accidents was focused on the technical aspect and control of engineering. However, workplace accidents still occurred. In tandem with the blossoming of academic literature in workplace safety, it is found that scholarly began to focus more on human factor related to the behavior of employees that eventually lead to workplace accident (Hafizah, 2013). Earlier studies have found that main cause of majority workplace accidents is unsafe behavior of the employees (Gilmore et al, 2002; Mathis, 2001; Williams, 2005). It is supported by Montante with his quotation about Domino Theory, which states that the workplace accidents statistic is caused by unsafe acts or behaviors (88%), unsafe conditions (10%) and unpreventable factors (2%) (Montante, 2008).

Safety behavior means that how the employees comply with the safety rules and procedures. Employees can either act safe or unsafe when they performing their job (Hsu *et al*, 2008). Therefore, behavior of the employees in workplace is crucial in order to minimizing the safety issue. Besides, safety behavior is found to prevent accidents from happening (Martinez-Corcoles *et al*, 2011). It has been supported by a study in petroleum refinery industry (Myers *et al*, 2010). The result of the research showed that safety behavior is the right approach in reducing accidents in the workplace. To determine the safety behavior, there are two dimension for safety behavior namely safety compliance and safety participation.

Safety compliance behavior is the main actions that employees required to perform to maintain workplace safety such as following the procedure and wearing personal protective equipment (Griffin and Neal, 2000; Neal and Griffin, 2006; Martinez-Corcoles *et al*, 2011). Safety compliance is very important to all the employees as it will enhance individual awareness to ensure safety. On the other hand, safety participations related with actions or activities such as helping co employees, attending safety meeting/talks and volunteering in joining safety programs will help to built positive workplace environment that is free from safety problems (Griffin and Neal, 2000;Neal and Griffin, 2006). It is also means that safety participation will make the employee not directly involve with employees/ their own safety but the activities will help them to built safe working environment that support safety. Safety participation is also important among employees so that every employee will have the responsible to remind other co employees to work safely.

2.3 Safety Motivation

Safety motivation can be defined as 'individual's willingness to exert effort to enact safety behaviors and the valence associated with those behaviors' (Neal and Griffin, 2006:947). It is mean that every employee should be encouraged to obey the rules and practices related to workplace safety. It is also means that they are inspired enough to involve with all activities linked with safety. It is also stated that employees will comply with safety procedures and involved with safety activities when they are motivated and believes that all things they are doing will lead to valued outcomes (Neal and Griffin, 2006). Furthermore, previous researchers analyzed that proper motivation to the employees will increase their attention, awareness and enthusiasm towards safety (Vinodkumar and Bhasi, 2010). Therefore, from above argument, it is proved that safety motivation can enhance safety behavior among employees.

2.4 Petrochemical Industry in Malaysia

Petrochemical industry is known as hazardous industry is also known to have many dangers associated with workplace safety (Laine, 2010). Workplace safety in petrochemical industry is one of major concern for the management as petrochemical is grouped under major hazard industry due to the high exposure to workplace hazard (Shahrul Nizam, 2012). Besides that, petrochemicals can be referred to the chemical products made from crude oil (petroleum) or natural gas (Laine, 2010). Natural gas liquids, crude oil (petroleum), fossil fuels-coal and natural gas are the primary sources of petrochemicals. Besides that, it is proved that petrochemicals industry is one of the key industries which are affected by globalization and world economic scenario. In Malaysia, petrochemical industry still remains as one of the fast growing industry due to the fact that Malaysia has accessibility to the substantial resources of hydrocarbon feedstock from oil and gas reserves. In addition, Malaysia has found to be in 23rd of the worlds' largest crude oil reserves and investment of RM58 billion as of 2010 (MIDA, 2014). In Malaysia, National Petroleum Company (PETRONAS) has the largest contribution for

petrochemical industry. Shahrul Nizam has acknowledged that PETRONAS is the major domestic investor in Malaysia (Shahrul Nizam, 2012). There are four main petrochemical zones which are in Gebeng, Kuantan, Kerteh, Terengganu, Pasir Gudang, Johor and Bintulu, Sarawak. Therefore, the current study is focusing on this industry due to the reason even though petrochemical industry in Malaysia is highly profitable but it is considered as heavy industry that has various major hazards.

3. The Present Study

'Leadership has been fully implicated in safety with the majority of previous studies examining the full-range model of transformational leadership and transactional leadership behaviors in managers and supervisors' (Lu and Yang, 2010:124). A study in hospitality sector (Canadian restaurant employees) has found that supervisors' transformational leadership has a positive association with employees' safety behavior (Barling *et al*, 2002). Besides that, transformational leadership can bring out employees' safety behavior [13]. This is because efficient transformational leaders will encourage and motivates subordinates to follow and reach team and organizational goals together with personal gain.

Leaders are already known to be the best person to motivate their subordinates about safety. Therefore, proper safety motivation by the leader will help to improve employees' safety behavior in the workplace and reduce accidents. Besides, it is proved that 'individuals who are motivated to engage in safety behaviors should, in turn, be more likely to carry out those behaviors (Neal and Griffin, 2006:18). It is also found that safety motivation is the determinant of safety performance and safety behavior is the antecedent of safety performance (Neal and Griffin, 2006).

As a result from above arguments, this study is done with the aim to investigate the relationship between leadership styles and employees' safety behavior in plant turnaround maintenance with safety motivation as a moderator. The first purpose of this study is to determine the relationship between leadership styles (transformational leadership and transactional leadership) and safety behavior (safety compliance and safety participation). The next purpose of this study is to examine the moderating effects of safety motivation on the relationship between leadership styles and safety behavior. Therefore, those two objectives are intended to answer the research questions of this study which are is there a relationship between leadership styles and safety behavior? and is safety motivation moderates the relationship between leadership styles and safety behavior? Hence, from above objectives, below are the hypotheses for this study.

H_1: Leadership styles with respect to transformational leadership positively related to safety compliance
H_2: Leadership styles with respect to transactional leadership positively related to safety compliance
H_3: Leadership styles with respect to transformational leadership positively related to safety participation
H_4: Leadership styles with respect to transactional leadership positively related to safety participation
H_5: Safety motivation moderates the relationship between leadership styles and employees' safety behavior.

Therefore, proposed conceptual framework is shown in Figure 1.0.

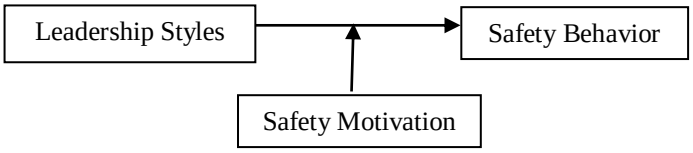

Figure 1.0

4**. Conclusion**

This study is attempted to examine the relationship of leadership styles on employees' safety behavior with safety motivation as a moderator in plant turnaround maintenance in PETRONAS petrochemical companies. This study hopes to fill the gap in asset management research focusing in plant turnaround. It is hope that this research can also help and give views to other researchers, professionals and academia about plant turnaround maintenance.

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