



# The relationship between critical success factors, internal control and safety performance in the Malaysian manufacturing sector



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## ABSTRACT

There is a lack of conceptual models that explain the relationship among critical success factors, internal control and safety performance, especially in the manufacturing sector of Malaysia. The enforcement of internal control is linked to safety performance, and more research is needed to validate this relationship. Unless management identifies the critical success factors that have significant impact on safety and health, safety management systems such as OHSAS 18001 compliance auditing will have little impact on organizations' safety performance. This study measured organizations' perceptions on six critical success factors and enforcement of internal control by conducting a survey using a questionnaire given to 300 organizations in Malaysia's manufacturing sector. Hundred and five organizations participated in this survey with a response rate of 35 percent. The reliability and validity of all the scales were found acceptable. The internal control was found to be the key mediator in the relationship between critical success factors and safety performance. Path analysis using Partial Least Squares (PLS) version 2.0M3 showed that Management Commitment, Employee Involvement, Safety Training and Government Regulation are related with Safety Performance through enforcement of internal control. This study emphasizes the need for enforcement of internal control to achieve outstanding safety performance.

## 1. Introduction

Manufacturing industry in Malaysia is among the most hazardous industries due to its unique nature. Factory workers are required to have some basic safety awareness to be sensitive to potential hazards in their workplace. Gherardi and Nicolini (2000) observed that knowledge is handed down from one generation of workforce to another. Therefore, unsafe acts and unsafe conditions any working culture comprises are also passed down, and slowly become part of the organizational culture. In a manufacturing line, the conveyor belting, lifting of materials, performing repetitive work—either standing or sitting throughout the shift, usage of forklifts, and working with machineries are some of the significant sources of potential accidents to workers, if these aspects are not properly supervised and controlled. Furthermore, the attitudes and practices involved in rushing to meet aggressive customer deadlines and attempts to maximize productivity have made manufacturing companies very hazardous workplaces.

Workplace accidents result in losses to the economy of Malaysia. Based on Malaysia Social Society Organization (SOCSO) annual report 2012, the statistics showed that the direct cost of accidents amounts to

RM 2.02 billion, which is about 0.5 percent of Malaysia Gross Domestic Product (GDP); indirect costs could be much higher (Social Security Organization, 2012). It was an increase of 16.91 percent from the 2011 benefit payment (RM 1.7 billion) (Social Security Organization, 2011) while the figure in 2013 further experienced another 11 percent increase from the figure reported in 2012, amounting to RM 2.2 billion in losses (Social Security Organization, 2013). The recent statistics indicate that the figure in 2014 has seen an 11.2 percent increase from the figure reported in 2013, amounting to RM 2.4 billion in losses (Social Security Organization, 2014). Such an increase in compensation indicates that working conditions in Malaysia have not improved to such a degree as to significantly reduce workplace accidents. According to Biggs et al. (2005), manufacturers tend to have a low awareness of implementing long-term safety practices, and safety issues usually receive the least priority due to cost control. It is similar in Malaysia where employers were constantly reminded not to implement cost cutting measures at the expense of their employees ("Don't cut costs at expense of safety, companies told", 2015). An effective safety management system is understood as a set of critical success factors associated with safety, health programs, and activities (Kirwan, 1997).

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In the next section of this paper, the research context and conceptual model in relation to existing literature on effective safety management system—comprising critical success factors—will be discussed. This is followed by an explanation of the research method used, and an assessment of goodness of measures, namely, reliability and validity of the constructs. Subsequent sections deal with the analysis of structural models, namely, path analysis, hypotheses testing, and predictive relevance. The last section is on discussion and conclusion with suggestions for future research.

## 2. Research context and research model

This paper is part of a larger research which examined critical success factors that have the greatest effect on a safety management system based on the enforcement of internal controls. We used the term safety management system in a broader sense following the Input-Process-Output system theory, whereby we visualize the critical success factors (enablers as the input), the Internal control (as the process), and safety performance (as the output).

### 2.1. Safety management system

The safety management system plays an important role in the growth of firms in the manufacturing sector, because many firms have reached a conclusion that effective safety management system implementation can improve safety performance. Makin and Winder (2008) supported the idea that critical success factors of an effective safety management system can be described as best practices or ways in which firms and their employees undertake safety activities in all key processes.

#### 2.1.1. Management Commitment

The management commitment is the foundation of an effective safety management system. Zohar (1980) revealed that management's commitment to safety is a major factor that affects the effectiveness of internal control and contributes to the success of an organization's safety management system. It is an important ingredient in employees' perception of the importance of safety in their company (Fernandez-muniz et al., 2007). The safety commitment of the management is an observable element where employees can witness and feel what the management is demonstrating as well as preaching in terms of ensuring the workplace safety (Hofmann et al., 1995). Managers should demonstrate their commitment through their behavior and practices by involving safety-related operations, so that their workers can perceive it unambiguously (Neal and Griffin, 2002).

The positive perception will be created when they believe that safety is being valued in the organization (Griffin and Neal, 2000). In most of the high risk industries like the manufacturing sector, management commitment has been repeatedly highlighted (Cox and Cheyne, 2000; Cox and Flin, 1998; Vinodkumar and Bhasi, 2010). Consequently, the greater the managers' commitments to safety, the more workers are encouraged to carry out safe practices through enforcement of internal control. Based on the above discussion, one of the hypotheses of this study will be:

**H1:** Management Commitment has a direct positive effect on Internal Control.

#### 2.1.2. Employee Involvement

It has been acknowledged that a successful safety management system has a high level of employee involvement, particularly to create line ownership for embedding safety and health values and developing safety and health awareness. Employee involvement has been recognized as a behavioral modification technique that involves upward communication flow and decision-making process in an organization (Vinodkumar and Bhasi, 2010). This strategy is appropriate as the

employees are the ones who are closest to the risks. Vredenburg (2002) further posited that employees who are close to the work are the best qualified personnel to promote workplace improvements through internal control of risk assessment and risk control. Punnnett et al. (2009) stressed that organizations should adopt employees safety and health activities such as self-inspection, accident investigation, worksite analysis, hazards prevention & control and training.

The essence of getting the employees involved is to empower them with authority, responsibility, and accountability in decisions (Vinodkumar and Bhasi, 2010). Such an initiative would enable employees' involvement in setting organizational safety goals and developing mechanisms to achieve them. In a similar vein, Vecchio-Sadus and Griffiths (2004) observed that workers will be more committed to the safety management system if they are actively involved in decision making and problem resolution. Workers who are required to take initiative and achieve safety improvement through internal control, consider themselves to be responsible for their own actions, and are concerned about their organization's safety performance. Similar to management commitment, the aspects of involving employees in improving safety levels in an organization is seen as a decisive factor (Cox and Cheyne, 2000; Dedobbeleer and Beland, 1991; Lee, 1998; Rundmo, 1994; Shannon et al., 1996). In the Malaysian Occupational Safety and Health Act 1994 (Occupational Safety and Health Act 1994: Incorporating all amendments up to 1 January 2006, 2006), the involvement of employees are recognized and therefore the law allocates a provision for employee's involvement in safety committee (Section 30 of the Act 514). This committee comprising representatives from management and employees will identify and be consulted regarding safety problems and matters. Therefore, it is hypothesized that:

**H2:** Employee Involvement has a direct positive effect on Internal Control.

#### 2.1.3. Safety communication

It is essential to provide a platform to communicate on safety issues at the worksite. The communication intends to ensure that everyone understands their roles and responsibilities concerning workplace safety and health. Neal and Griffin (2002) supported the idea that the greater the level of open communication with a focus on problem solving and learning, the more workers become involved in safety management, and they offer more suggestions on potential improvements to their jobs. Such worker involvement implies a greater level of safety performance. Vinodkumar and Bhasi (2010) further stressed that the coverage and impact of communication will be enhanced when a two-way communication approach is adapted, which in turn could lead to behavioral modification in personnel.

Vredenburg (2002) revealed that consistent and forthright communications through internal control is an essential characteristic of any strong organization. These regular communications pertaining to safety issues among the management, supervisors and employees would be an effective safety management system that could enhance workplace safety. Mearns et al. (2003) supported the idea that communication of safety and health issues in the workforce can be viewed as a key stage of organizational learning that proceeds from accident investigations, safety audits, or changes in procedures in which enforcement of internal control is required. Previous attempts by Cohen (1977), Vredenburg (2002), Cox and Cheyne (2000) and Mearns et al. (2003) among various category of workers have demonstrated that safety at workplace is influenced by the level of communication in an organization. Therefore, based on the above discussion, the third hypothesis of this study will be:

**H3:** Safety Communication has a direct and positive effect on the Internal Control.

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