Conference Paper

Comparison Between Key Success Factors in Safety Behavior in Small- and Medium-Sized Enterprises (SMEs) and Large Industries, and Development of a Hypothetic Model for Safety Behavior in Indonesian SMEs

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Abstract

The distinct characteristic between SMEs and large industries indicates a difference in the Key Success Factor (KSF) in safety behavior that must be considered. The purpose of this article is to identify possible differences in KSF between SMEs and large industries. The identification of KSFs is used to avoid the focal point of attention to critical elements that is taken into account in efforts to implement safety improvement programs and it is conducted through a literature study. The result of the research shows that there are differences between KSFs in SMEs and large industries, although some KSFs represent the characteristics of both industries. In addition, a hypothetic model of the influence of KSFs to safety behavior in SMEs is proposed.

Keywords: key success factors, safety behavior, SMEs

1. Introduction

Occupational accidents occur in industries generally caused by unsafe behavior [1]. For examples, Khandan [2] points out that 86 to 96 percent of accidents can be prevented and occurs due to unsafe behavior. In another study conducted by Al-Hemoud and Al-Asfoor [3], it was estimated that 88 percent of occupational accidents were caused by unsafe activity, 10 percent due to unsafe conditions, and only 2 percent due to unavoidable factors.

Occupational accidents that are caused by unsafe behavior occur on different industrial scales, both on small and large-scale of industries. Therefore, it is crucially important to investigate critical factors that trigger the occurrence of an unsafe behavior.
In particular, the importance of investigation of the critical factors is supported by the fact that safety behavior is an important aspect of occupational safety [4].

According to Shin et al. [5], Soe et al. [6], Amponsah-Tawiah & Adu, [7], Guo et al. [8], and Panuwatwanich et al. [9], safety behaviors can be defined as behaviors that support safety activities required by workers to meet the Occupational Health and Safety (OHS) that are needed to avoid accidents. The dimensions used to describe safety behaviors are safety participation and safety compliance [10]. Safety participation concerned with helping peers, supporting safety programs, initiatives and efforts to improve safety at work, while safety compliance refers to safety procedures and performing work activities in a safe manner [6, 10]. Safety behavior can consequently decrease accident rates, injuries, and lost working time [6].

Efforts to improve safety behavior start by investigating influential variables as key success factors (KSFs) that contribute to safety behavior [11]. Unfortunately, the differences in industrial characteristics, especially in SMEs with large-scale industry makes the generalization of KSF cannot be applied. There are many research models of safety behavior developed in large industries. In contrast, no model of safety behavior in SMEs can be found.

In Indonesia, the contribution of SMEs in reducing a number of unemployment and Indonesian gross domestic product is crucial, any effort in increasing productivity and enhancing safety in SMEs is worth noting [12]. Thus, safety behavior issues also arise in SMEs.

This article aimed to identify possible differences in KSF in safety behavior between SMEs and large industries. The identification of KSFs, both for SMEs and large-scale industries is used to avoid the focal point of attention to critical elements that taken into account in efforts to implement the safety improvement programs. A hypothetic model of the influence of KSFs to safety behavior in SMEs is proposed.

2. Methods

Identification and comparison of KSFs in safety behavior between SMEs and large industries were conducted through a literature study. Literature searches were performed on major publishers such as Elsevier (www.sciencedirect.com), Emerald (www.emeraldinsight.com), Springer (www.springerlink.com), Wiley (www.wiley.com), library services (e.g., Scopus; www.scopus.com) or google scholar. Based on the literature review, five papers were found in relation to the SME’ safety behavior factors and nine papers were found in relation to the model of safety behavior.
within the recent two years of publications. Other 10 papers related to SMEs’ OHS performance were reviewed to link and match all factors with the parameters of conformity of both driving factors and barriers from OHS’ papers. Finally, a hypothetic model of SMEs’ safety behavior was proposed based on a model of Soe et al. [6], combined with the unique characteristic of the SMEs.

![Flow chart of research.](image)

### 3. Results

Based on a literature study, since there is no model of safety behavior exist in SMEs, in general, KSFs in SMEs are divided into individual factors and organizational factors. As can be seen in Table 1 that several studies have obtained factors that contribute to the safety behaviors performed in some countries, such as Malaysia, China, and Indonesia.

Meanwhile, KSFs in large industries are identified based on existing safety behavior models. Table 2 shows several studies concerning the large-scale industrial safety behavior model as a reference in the study to describe what factors affect the safety behavior. The line business of industries is not only manufacturing but also in services industries.

In addition, from the identification process, Figure 2 shows the comparison between KSFs of SMEs’ safety behavior and large-scale industries. Base on Figure 2, a hypothetic
model for safety behavior in SMEs is proposed as can be seen in Figure 3. In Figure 3 show a mapping of factors that affect safety behavior as a special characteristic possessed by SMEs.

Figure 2: Classification of SMEs’ KSF and large industries’ KSF on safety behavior.

Figure 3: Model of safety behavior in SMEs based on KSFs.

4. Discussion

This article is purposed to identify KSFs in safety behavior in SMEs compared to ones in large industries. The identified KSFs are then used to develop a hypothetical model of safety behavior in SMEs. This article is particularly important as stated by Cagno et al. [18], the implementation of SMEs’ safety performance needs attention due to the fact that SMEs safety management practices are not yet well-established and still require...
practice and increased safety awareness [19]. SMEs constraints and limitations make OHS modern rules in large industries and their interventions cannot be automatically applied to SMEs [20]. Several OHS studies of SMEs [18, 21–30] are inventoried to obtain all the attributes of constraints and drivers of SMEs’ OHS performance.

SMEs have unique characteristics in relation with KSFs that cannot be found in large industries such as the high heterogeneity in demographic factors (age, gender, educational background and work experience [11, 17, 21, 35]. In addition, Kheni et al. [21] state that the low socioeconomic conditions of SMEs workers as a uniqueness that can hamper the achievement of SMEs’ OHS performance. Furthermore, the non-fixed/scheduled work time in SMEs is claimed as a factor that affects the accidents [36]. In relation to SMEs work time, Cagno et al. [35] stated that working time conditions in irregular working hours on SMEs can affect the performance of SMEs’ OHS.

Research by Kheni et al. [21] states that family relationships can lead to poor OHS management, any tendency for tolerance in the application of OHS rules. The character of seasonal and part-time work in SMEs makes it difficult to implement OHS rules. Meanwhile, Sorensen et al [37] point out that psychosocial factor in SMEs is higher than the large one. It can accordingly affect the quality of OHS performance. Thus, psychosocial has an important role in preventing an occupational accident.

Modeling is a process to represent the real system more simply, where the goal is to perform prediction analysis of system changes [38]. In the proposed hypothetic safety behavior model of SMEs, it described causality between one factor with other factors. In which KSFs represent independent variables while safety behavior represents a dependent variable. Modeling of SMEs safety behavior based on SMEs’ KSF is required

<table>
<thead>
<tr>
<th>Research</th>
<th>Object</th>
<th>Method</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subramaniam et al. [13, 14]</td>
<td>SMEs Malaysia</td>
<td>Study of Literature</td>
<td>Management commitments, safety communications, safety training, employee engagement, safety regulations, managerial priorities</td>
</tr>
<tr>
<td>Hong et al. [15]</td>
<td>SMEs Malaysia</td>
<td>Correlation Analysis</td>
<td>Safety training, employee engagement, safety regulations</td>
</tr>
<tr>
<td>Liu et al. [16]</td>
<td>SMEs China</td>
<td>Study of Literature</td>
<td>Managerial priorities, safety culture, internal motivation, safety knowledge</td>
</tr>
<tr>
<td>Ansori et al. [17]</td>
<td>SMEs Indonesia</td>
<td>Factor Analysis</td>
<td>Managerial priorities, safety knowledge, resource allocation, supervision, safety attitudes</td>
</tr>
</tbody>
</table>
Table 2: Large industries’ safety behavior model.

<table>
<thead>
<tr>
<th>Research</th>
<th>Object</th>
<th>Method</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chughtai [31]</td>
<td>Hospital</td>
<td>SEM</td>
<td>Ethical leadership, self-efficacy, job autonomy</td>
</tr>
<tr>
<td>Shin et al. [5]</td>
<td>Construction Industry</td>
<td>EFA &amp; CFA</td>
<td>Communication safety, safety training</td>
</tr>
<tr>
<td>Soe et al. [6]</td>
<td>Construction Industry</td>
<td>SEM</td>
<td>Job demands, job insecurity, lack of respect, global fatigue, daily dysfunction, situational exhaustion, managerial priority, safety communications, safety regulations, safety training, personal characteristics, safety culture</td>
</tr>
<tr>
<td>Amposah-Tawiah et al. [7]</td>
<td>Hospital</td>
<td>Multiple Regression Analysis</td>
<td>Job demands, safety communications, safety training, personal appreciation of risk, internal motivation, safety knowledge, management commitment</td>
</tr>
<tr>
<td>Guo et al. [8]</td>
<td>Construction Industry</td>
<td>SEM</td>
<td>Production pressure, internal motivation, external motivation, safety knowledge, management commitment</td>
</tr>
<tr>
<td>Lu &amp; Kuo [32]</td>
<td>Container Terminal</td>
<td>Hierarchical Regression Analysis</td>
<td>Stress emotions, physical stress, emotional intelligence</td>
</tr>
<tr>
<td>Panuwatwanich et al. [9]</td>
<td>Construction Industry</td>
<td>EFA &amp; CFA</td>
<td>Safety communication, safety regulations, safety training, personal appreciation of risk, work pressure, internal motivation, external motivation</td>
</tr>
<tr>
<td>Baser et al. [33]</td>
<td>Hotel</td>
<td>SEM</td>
<td>Safety attitude, safety knowledge</td>
</tr>
<tr>
<td>Mohammadfam et al. [34]</td>
<td>Construction Industry</td>
<td>Bayesian Network Approach</td>
<td>External motivation, safety attitude, safety knowledge, worker participation</td>
</tr>
</tbody>
</table>

to test whether the KSF will significantly influence safety behavior. In addition, the model can be used to predict SMEs safety behavior.

5. Conclusions

SMEs has different KSFs from large industries. This implies that the focus of attention on efforts to improve safety behavior between SMEs and large industries are different. Several existing factors and indicators can be used as a benchmark for safety behavior in SMEs. The findings of the KSFs is used as a guide to establish a model of SME safety behavior which is required to predict safety behavior in SMEs, so that effort to provide
safety in SMEs can be in the right track. Further studies will be conducted to validate the KSFs in the proposed model, in particular, field studies in SMEs to confirm the KSFs and to analyze the result based on the proposed model. With further studies, the generalization of the model is expected in order to maximize utilization the model of SMEs safety behavior in Indonesia.

**Conflict of Interest**

The authors declare that they have no competing interest.

**Funding**

The research is funded by Indonesia Endowment Fund for Education (LPDP)—Ministry of Finance through doctoral program scholarship.

**References**


