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Research Article

Framework for Safety Performance in Paramedic Training Institute: Mediating Effect of Safety Competence

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Abstract

Safety performance in the public service and statutory authorities can still be considered to be at a low level. Based on the Department of Occupational Safety and Health, (DOSH) Malaysia's annual report from 2017 to 2020, there was an increasing trend of reported workplace accident cases from 47 cases in2017 to 77 cases last year. A paramedic training institute, for example, has recorded 17 in-house incidents in 2018 that cause absenteeism, reduce staff confidence to perform work productively, and negatively impact the workers' quality of life. Malaysia OSHMP 2020 highlighted the demand of exercising preventive culture in every sector to inculcate a safe and healthy work culture for the well-being of workers, employers, and the country. However, implementing this action at the non-factory sector, including public service and statutory authorities during 2016-2020, in the early stages. Hence, the solution needs to be broken down into feasible elements to form a model that can produce better safety performance. This paper aims to address the development of a conceptual framework to study the dimensions of safety culture and potential link to safety performance in paramedic training institutes. In the literature, there have been fewer frameworks formed in this low-risk industry. The study used a quantitative technique, with the sample size being limited to the safety person in charge at the paramedic training institute. This research examines probable linkages between all five elements of safety culture and proposes a conceptual framework that includes the mediating influence of safety competence on safety performance. Therefore, we believed that in other low-risk industries in similar categories, more research is needed to evaluate our proposed empirical framework. Finally, this document may help senior management to understand the value of fostering a safe culture for a healthy and safe workplace. Future studies in this field, particularly in the non-factory sector, might be guided by the suggested conceptual framework.

Keywords
Research Framework, Conceptual Framework, Safety Performance, Safety Culture, Safety Competency, Paramedic, Training Institute.

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Introduction

Safety culture and climate have been a prominent issue in modern decades due to their influence on safety performance in the organization. An organization's safety performance may be portrayed as a safety level in terms of action or management, incorporating structures, organization, and systems [1]. Likewise, safety performance assesses the degree of workplace safety in terms of injury and death [2]. The above definitions cover all components of both reactive (action taken after the incident) and proactive approaches (action before an incident happened) to safety performance. Furthermore, some aspects contribute to defining an organization's safety performance, such as accident indicators [3] and human component aspects [2]. However, there is no definitive agreement on the definition of safety performance in the literature. Most scholars define the meaning based on what they experienced [4]. For example, [5] defined safety performance as an organization's ability to prevent occupational-related incidents or injuries. Safety performance in the public service and statutory authorities can be considered to be at a low level in Malaysia. Malaysia's annual report revealed an increasing trend of reported workplace accident cases from 2017 to 2020, there is an increasing trend in reported workplace accident cases of 64% from 47 cases to 77 cases last year [6]. In addition to reactive measurement of safety performance in literature by looking at the incident number, safety performance is also studied with a proactive measure for the organization under public services and statutory authorities [7]–[12]. Low safety performance causes many unwanted impacts to organizations such as high frequency of occupational incidents, road traffic accident, trip and fall [13], reduced staff confidence to perform work productively, and negatively impacted workers' quality of life. In combating these issues, the corrective actions need to be broken down into feasible elements to form a model that can produce better safety performance. Previous literatures suggested that safety culture/ climate helps tremendously in improving safety performance. Hence, this justifies the need for this study. This study also explores elements or factors that might improve safety performance based on appropriate safety culture/climate indicators. This would include safety competence for Public Services and Statutory Authorities sector such as paramedic training institutes. This is because safety competence is an essential factor listed in the OSHMP 2020-2025 strategy, which maximizes tripartite (government, employer & employee) competence in occupational safety and health (OSH) governance at work. In addition, this factor also be given less emphasis as a mediator in the previous study of safety culture and safety performance in the literatures as compared to similar factors such as safety knowledge, safety intention, and consideration of future consequences [10], [11], [14].

Proposed Research Framework

A conceptual framework has been constructed for this study based on a review of previous relevant literature to investigate the link between safety culture and safety performance, using safety competence as a mediating component in paramedic training institutes.

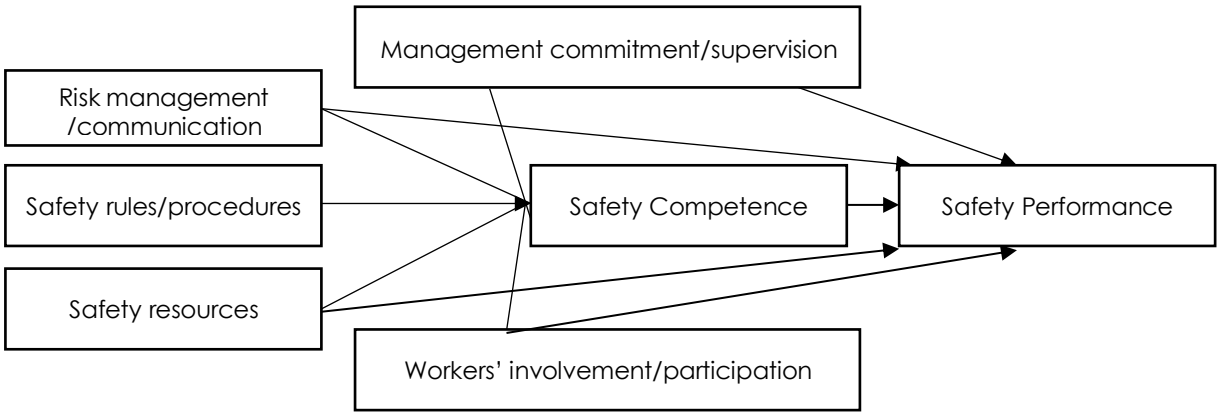

Figure 1: A proposed conceptual framework

Figure 1 depicts the study's suggested conceptual framework. It is hypothesized that safety culture elements (Management commitment/supervision, Risk management /communication, Safety rules/procedures, Safety resources, and Worker's involvement/participation) have significant relationships with safety competence and safety performance. Furthermore, there is also a significant mediator effect of safety competence between safety culture elements (Management commitment/supervision, Risk management /communication, Safety rules/procedures, Safety resources, and Worker's involvement/participation) and safety performance in the context of the present study. Sixteen hypotheses are presented to be tested in the research based on the above-mentioned structure.

(Ha1): There is a significant relationship between management commitment and supervision in safety performance in paramedic training institutes.
(Ha2): There is a significant relationship between the risk management /communication with safety performance in paramedic training institutes.
(Ha3): There is a significant relationship between safety rules/procedures with safety performance in paramedic training institutes.
(Ha4): There is a significant relationship between safety resources with safety performance in paramedic training institutes.
(Ha5): There is a significant relationship between workers' involvement/participation with safety performance in paramedic training institutes.
(Ha6): There is a significant relationship between safety competence with safety performance in paramedic training institutes.
(Ha7): There is a significant relationship between management commitment and supervision in safety with safety competence in paramedic training institutes.
(Ha8): There is a significant relationship between the risk management /communication with safety competence in paramedic training institutes.
(Ha9): There is a significant relationship between safety rules/procedures with safety competence in paramedic training institutes.
(Ha10): There is a significant relationship between safety resources with safety competence in paramedic training institutes.
(Ha11): There is a significant relationship between workers' involvement/participation with safety competence in paramedic training institutes.
(Ha12): There is a significant mediation effect of safety competence between management commitment and supervision in safety and safety performance in paramedic training institutes.
(Ha13): There is a significant mediation effect of safety competence between risk management /communication and safety performance in paramedic training institutes.
(Ha14): There is a significant mediation effect of safety competence between safety rules/procedures and safety performance in paramedic training institutes.
(Ha15): There is a significant mediation effect of safety competence between safety resources and safety performance in paramedic training institutes.
(Ha16): There is a significant mediation effect of safety competence between workers' involvement/participation and safety performance in paramedic training institutes.

Method

Formulation of the construct

The dependent variable will be represented by the safety in-charge person's perception of the reactive and proactive safety performance assessments. The safety performance questions is employed from a number of studies on subjective indicators [15], [16]. Thus, in this study, reduction in accidents and injuries, increased knowledge of safety, safe work practices, reduced accident-related costs, worker absenteeism, and worker morale are identified as six subjective lagging indicators. Safety culture and safety competence, two independent conceptions affecting safety performance, will also be investigated. For the independent construct, the safety culture element representing five constructs, namely management commitment/supervision, risk management/communication, safety rules/procedures, safety resources, and worker's involvement, will be selected in this study. This selection is made based on the common elements

of safety culture in a similar sector that can describe the target organization and feasibility of the study in a broader context [9], [10], [24], [12], [17]–[23]. As for the construct of safety competence, this study focuses on producing indicators under the safety competence construct that can help improve safety performance. This selection conforms to the function of safety competence as an agent to achieving safety performance in paramedic training institutions.

Respondent

Respondents included in this study will be those who fulfill criteria as (1) safety person in charge for each institute, (2) a member of their institute's safety and health committee or having had formal health and safety training/education. It is also expected that the respondents are familiar with safety processes and would provide accurate comments. The study's goal is to build an applicable safety performance model rather than assess the institute's safety performance. The strategy is consistent with the idea that they significantly impact safety culture identity and performance in the organization.

The Questionnaire

A five-point Likert scale with 50 items will be used to measure the main variables in the study. The questionnaires will be divided into three sections. Section A, the background and sociodemographic information such as job title and years of work experience, age, gender, incidence data in the institutes they are working in, and incidence types. Section B is related to the institute's existing safety and health culture practice based on their perception. Section C is questions related to perceptions of how safety and health culture practice might improve safety performance in the institute.

Validation of the Questionnaire

Two steps of validation will take place during the assessment process. In the first stage, the survey questionnaire instrument will be validated by professionals. Fifteen occupational safety and health specialist or occupational health trainers/ researchers will be invited by e-mail to be an expert professional assessor. These validation panels will be chosen based on their proactive participation and commitment in improving safety and health performace at their respective organisations. They should also have some experience in quantitative research. We will assess the questionnaire by examining factors such as face validity and content validity. This fact means that a sufficient and representative selection of elements is included in the measure [25]. The validation criteria were confined to the adequacy, simplicity of use, content coverage, components, items, and the opportunity for input on future improvements [26]. Pilot research is being carried out during the second stage of validation. The questionnaire will be answered by about 68 (safety person responsible for the healthcare facilities) with a comparable characteristic to future respondents. The analyses using SPSS 24 are utilized to obtain an inter-item reliability test of the value of Cronbach Alpha. Articles are reliable if Cronbach Alpha's score exceeds 0.70 [27].

Descriptive analysis

The SPSS 24 is used to analyze demographic variables to assess respondents' perceptions of this study's aspects. This result will be the preliminary output of the safety model of performance at the paramedic training institute.

Multivariate Correlation Analyses

Exploratory Factor Study (EFA), Structural Equation Modelling (SEM), which includes Confirmatory Factor Analysis (CFA), and Structural model testing were the primary processes in the multivariate correlation analysis. Selected demographic characteristics and aspects of the safety performance model were analyzed using this EFA analysis. EFA is a forerunner to the SEM, according to [28]. The EFA will be used in this study to obtain information on the factors' unidimensionality to determining whether the construct is factor-analyzable. Thus, it will confirm the validity and dependability of the suggested structure of the safety performance improvement model. Principal Component Analysis

will be performed to extract the factors, and the components' unidimensionality will be determined using the Varimax Rotation Method with Kaiser Normalization. To assess the adequacy of data sampling, the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity will be utilized. According to [29], a KMO value of 0 to 1, with a minimum of 0.60, is appropriate for factor analysis. [30], on the other hand, recommend a KMO base value of more than or equal to 0.70. Consequently, data with KMOs of 0.70 (p:0.05) will be deemed factor-analyzable in this investigation. SEM will be used to meet the goal of determining the link between safety culture and safety performance, as well as the influence of safety competence as a mediating factor between all of the examined relationships. SEM is able to investigate the connection between the independent variable and dependent variable, either as a single or multiple constructs. Subsequently, identifying whether the IVs and DVs can be either directly observed variables or latent variables [30]. SEM differs from other multivariate approaches in that it can account for latent variables while also providing explicit estimates of error variance parameters [31]. PLS-SEM will be chosen for this work because of its usefulness in analyzing driving factors, theory testing, and theory building, as well as its capacity to cope with non-normality data sets and its low sample size need [31]. The study of the causal link will aid in the investigation of the impact of safety culture factors on safety performance in paramedic training institutes, the non-factory, and public service organizations in Malaysia.

Conclusion

This paper presents a research framework to investigate the relationship between safety culture elements with safety performance towards safety culture in paramedic training institutes with safety competence as a mediator. The present study extends from previous studies in healthcare industries [7], [8], [24], [9], [10], [12], [18]–[21], [23] by assigning common dimensions of safety culture used in the industry. This includes safety competence as a possible mediator. Furthermore, it fills the gaps left by the limited safety model in non-factories and public service sectors. The strength of this proposed study is that it will enhance the empirical literature by integrating safety competence as a mediator in the proposed model. Validated and reliable samples will be utilized for SEM- measurement model analysis to confirm the components that contribute to safety performance. As well, to investigate the causal link and construct a safety performance model for the paramedic training institute, partial least squares structural equation modeling will be applied. Aside from cross-validating the safety culture dimensions that influence safety performance in many critical sectors, different cultures, regions, and organizational structures, the proposed method may assist the stakeholders with appropriate training in Occupational Safety and Health in industries and in the Ministry of Health. This study has a limitation whereby it will only be involving occupational safety and health personnel from paramedic training institutes all over Malaysia to be selected for the data collection in a cross-sectional study design. Future study is suggested to conduct using longitudinal study design to enhance precision and limit bias.

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