Occupational Safety and Health Performance Measurement Model

A Thesis Submitted in Partial Fulfillment of the Requirements for the Master’s Degree in Engineering Management

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ABSTRACT (ENGLISH)

The International requirements and local demands of occupational safety and health standards generate a high pressure on the governments to develop their own enforcement systems in order to monitor the compliance of business owners with the legal requirements of such standards. A huge debate exists on the best way to evaluate workplaces in this field using risk assessment.

Decisions made by government inspectors are subjective in most cases. The experience and knowledge of an inspector have the biggest influence on these decisions for each case. This situation causes a lot of conflict between the decisions taken by a single safety inspector for different cases that have the same circumstances. Also these conflicts occur between different inspectors that face the same case in different places. Fairness, consistency and transparency of the decisions are required by the society as this will shape the level of community trust of the inspectorate.

The thesis reviewed the existing models to evaluate OSH performance, studied the current situation of Bahrain OSH inspection system and developed a policy and a model to help OSH inspectors to evaluate OSH performance of workplaces.

The developed model consists of two parts; one is a descriptive part that explained the steps that should be followed by OSH inspectors for each situation. The other is a numerical part which utilizes a designed scale system to evaluate workplaces by a single measure based on the current OSH regulations in the Kingdom of Bahrain. All regulations were sub-classified into a number of attributes that describe each one of them. Three different types of approaches were used. One is the Average Weights Model by creating relative weights for each attribute depending on the results of the preference expressed by a questionnaire. It targeted a sample of manufacturing and construction companies. The other approach is creating a relative weight for the same attributes by using the Analytic Hierarchy Process (AHP) method. The AHP utilized a questionnaire targeted 15 OSH experts. One extra approach was added by finding an average between the weights calculated by Average
Weights and AHP. The weights resulted used to evaluate the overall performance by a simple rating system.

The developed model attempts to assist the OSH enforcement body inspectors in determining the suitable legal action as stated by law. Moreover, it pursues to minimize the failure that may be caused by human interference due to lack of experience or knowledge as it will depend on a numerical scoring scale set to measure the level of risk exists in the workplace rather than depending on judgment of the inspector himself.

Twenty inspection cases were selected, from the latest inspections done by the Occupational Safety Section (OSS) in Ministry of labour, in order to carry out the validation of the model. All approaches were applied to the cases to find the overall OSH score. The final decisions found were compared to the decisions recorded previously by the OSH inspectors. The results show that the AHP model has more acceptable, consistent scores and decisions. The resulted model may be considered as a sort of a leading indicator.