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# The Mediating Effects of Both Competency and Scope of Safety Committee Son the Relationship between Management's Commitment and Effective Safety Committees

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## I. INTRODUCTION

### a) Background

Safety committees are a form of representative employee involvement, or employee co-operation with management, in the management of occupational safety and health (OSH), at the workplace. The changing work environments, precipitated by the transition of many countries into an industrial based economy, exhibited varied and evolving hazards; and

the financial and human constraints of the governmental agency, in promulgating timely and relevant OSH laws, let alone enforcing them, brought about the recognition, that employee involvement was of primary importance, in reducing or eliminating the varied causes of workplace safety and health hazards: employees' apathy towards OSH (Barrett and James, 1981), poor safety management practices (Ali and Wan Mohammad, 2009), weak implementation of safety management practices (Ismail and Omar, 2003).

In light of the above, collaborative structures, involving employees, were sanctioned in some countries (e.g. United Kingdom, Australia, New Zealand, Singapore, Malaysia) via Robin' type legislation to introduce OSH self-regulation at the workplace. For example, Robins' type legislation in those countries might incorporate provisions mandating the need for employee consultation/engagement in OSH, or the appointment of employees' safety and health representatives; or the establishment of occupational safety and health committees (OSHCs), comprising members who are representative of management and non-management employees, respectively. In Malaysia, Section 30 of the Occupational Safety and Health Act 1994 (OSHA 1994) mandates the establishment of OSHCs in workplaces with more than 40 employees.

With this change in approach towards managing OSH at the workplace, the query is whether workplaces in Malaysia have become safer after the OSHA 1994 came into effect? In Malaysia, according to the Social Security Organization's Annual Report (2017), the number of industrial accidents reduced by more than 50%, from 75, 386 cases (in the year 2000) to 34, 376 cases (in the year 2009), and then rose again slightly to 35, 294 cases (in the year 2014). The number of industrial accidents seems to be in a state of flux after the year 2009. However, based on data sourced by the author, in April 2012, from the Department of Occupational Safety and Health (DOSH), Malaysia, the fatal injury rate, per 100 000 employees in the manufacturing sector, shows a marked increase from the year 1998 (4.7%) until the year 2011 (30.3%). This author argues that one of the many possible factors,

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explaining the fluctuating number of industrial accidents and marked increase in fatality rates, might bathe inadequate level of effectiveness of OSHCs that is integral to the OSH self-regulation approach adopted in Malaysia.

#### b) *Purposes and Significance of the Study*

OSHCs, comprising management and non-management representatives, enable persons proximate to workplace hazards to eliminate or abate them. Established OSHCs may be symbolic, prompting researchers in countries (primarily from the West), that have utilized the OSHC as a public policy approach, to manages at the workplace, to determine its effectiveness and the determinants of its effectiveness (Shear, 2005; Walters, 2010). This study adds to past literature by providing empirical evidence as to the factors that are associated with the perceived effectiveness of OSHCs in manufacturing firms operating in Malaysia; and how these factors are related to each other in explaining the phenomenon of interest. Hence, this study attempts to answer the following three research questions: RQ1: Which among the four factors of active management commitment, passive management commitment, competency of OSHCs and functions of OSHCs, are most important, in terms of explaining the variance in the perceived effectiveness of OSHCs? RQ2: Do both competency of OSHCs and scope of OSHCs, respectively, mediate the relationship between active management commitment and perceived effectiveness of OSHCs? RQ3: Do both competency of OSHCs and scope of OSHCs, respectively, mediate the relationship between passive management commitment and perceived effectiveness of OSHCs?

The findings are important because Malaysia is moving into the third phase of the OSH Master Plan 2015 (Government of Malaysia, 2005), that spans the years 2016 to 2020, in which a 'systems based' approach that embraces "strategic decision-making and operational action" (Hamalainen, Saaremaa, and Takele, 2009, p.26) towards OSH is envisioned. This author argues that central to this 'systems based' approach is the prevalence of an effective collaborative structure that in Malaysia is in the form of effective OSHCs.

#### c) *Literature Review*

In Malaysia, Section 30 of the Occupational Safety and Health Act 1994 (OSHA 1994) mandates the establishment of OSHCs in workplaces with 40 or more employees; and specific provisions within it and the Occupational Safety and Health (Safety and Health Committee) Regulations 1996 (SHCR 1996), to be discussed below, shape the competency and functioning of OSHCs.

##### i. *Effectiveness of OSHCs*

Effectiveness of OSHCs can be measured using accident/injury statistics or perceptual measures.

The former measure is more suited for a longitudinal study (Honaker *et al.*, 2005), is prone to underreporting (Arises, 2003; Way, 2007), and captures only the reactive ability of an OSHC (e.g. to prevent the reoccurrence of an accident/injury). Perceptual measures when used might erroneously measure the 'means' of a committee as opposed to its 'ends'. For example, Eaton and Ocarina's (2000) perceptual measures of effective OSHCs - in contrast to Bode *net al.* (1984), wherein, perceptual measures focused on the internal dynamics of the committee (e.g. perceived group cohesiveness and commitment of committee members) - considered the abilities of an effective committee along five areas to improve workplace safety and health (e.g. proactive, reactive, educative, productivity and change). The perceptual measures used in Eaton and Ocarina (2000) captured the 'ends' of an OSHC as opposed to the perceptual measures in the latter study that captured the 'means' towards its ends.

A proactive role, unlike a reactive role that necessitates a remedial response, is preemptive in nature. Hence, an OSHC must be able to foresee safety and health issues and act accordingly before an unwanted incident occurs. The OSHC, being representative of employees, has to be able to educate management and non-management members alike at the workplace about safety and health issues; and consider how the promotion of safety and health issues can enhance productivity and reduce costs. Lastly, the OSHC, as a representative institution, should have the ability to transform work processes/practices, equipment/materials and substances/chemicals prevalent at the workplace especially when safety and health hazards are inherent within them.

##### ii. *Management Commitment*

Management's commitment towards OSH in general and OSHCs in particular, is manifested in the safety practices (Walters and Nichols, 2006) adopted in an organization that is also a reflection of upper management's safety culture (Vinod kumar and Basic, 2010). Hence, this author argues that contrary to past research (Subramanian *et al.*, 2016; Jaffa *et al.*, 2017), management commitment, in itself, should not be conceptualized as a safety management practice. Past research has evidenced significant positive associations between safety management practices (e.g. health and safety programs, provision of training, time and financial resources to enable members of OSHCs to perform their legislative duties) on the one part, and effective OSHCs (Eaton and Ocarina, 2000; Walters and Nichols, 2006; Farouk, 2017) on the other.

In Malaysia, the OSHA 1994 has mandated specific safety management practices, in the hopes that every organization will then voluntarily adopt other relevant safety management practices, for the purpose of improving OSH at the workplace. The study by Farouk (2017) conceptualized passive management

commitment as measuring safety management practices mandated by law, and active management commitment was conceptualized as measuring the adoption of safety practices not mandated by law; and the results of the said study, evidenced that manufacturing firms in Malaysia had adopted both types of safety management practices. However, the level of adoption of non-mandated safety practices (active management commitment) was lower, than that of mandated safety practices (passive management commitment), based on the mean values of 3.11 and 3.66, respectively. The results of the study also showed significant positive associations, between both active and passive management commitment, respectively, with perceived effectiveness of OSHCs, with active management commitment, having a more significant positive association with the dependent variable of interest.

### iii. Competency of OSHCs

In Malaysia, members of an OSHC must be competent in executing their legislative functions (Part V, SHCR 1996). Competency in legal (e.g. OSH laws), technical (e.g. hazard recognition and prevention, industrial hygiene, OSH inspections) and committee process matters (e.g. problem-solving, management of committee) is important to enable co-management between employers' and employees' representatives, respectively, at the workplace in terms of risk identification and resolution. The study by Farouk (2016) evidences a significant positive association between competency of OSHCs and perceived effectiveness of OSHCs.

Employers in Malaysia have a legal duty imposed upon them in Part V, SHCR 1996 - enforceable under Regulation 32 of the SHCR 1996 - to take steps as are reasonably practicable, to provide members of OSHCs with adequate training on safety and health, to enable them to function effectively. Consequently, employers have the sole discretion to determine the frequency, adequacy, quality and mode of training. Enforceability of this provision is difficult owing to its lack of specificity and its dependence upon the auditing and relationship skills of the enforcement officers. Hence, this author argues that competency of OSHCs would mediate the relationship between management commitment - as conceptualized by Farouk (2017) and explained in subsection 1.3.2 above - and perceived effectiveness of OSHCs.

### iv. Scope of OSHCs

In Malaysia, members of an OSHC must be able to execute their legislatively prescribed functions stipulated in Section 31 of the OSHA 1994 and Part III of the SHCR 1996. These functions are the 'means' that need to be undertaken so that an OSHC can achieve its 'ends' (see subsection 1.3.1 above). They cover these areas: inspective, investigative, review (e.g. of

technology, systems and internal information), collection and assessment of information, liaising with safety inspector, and educative. The study by Farouk (2016) evidences a significant positive association between scope of OSHCs and perceived effectiveness of OSHCs.

Employers in Malaysia have a legal duty imposed upon them in Part V, SHCR 1996 - enforceable under Regulation 32 of the SHCR 1996 - to ensure that members of the OSHC have a basic knowledge and understanding of their legislatively prescribed functions. However, the OSHC, to be able to exercise those legislative functions, might need the support of management in terms of provision of time (Walters and Nichols, 2006), financial or human resources. Also, remuneration by management - for the added tasks executed in one's capacity as a member of an OSHC - is important, in terms of motivating the said member to exercise those tasks, and is also indicative of management's support and appreciation of the member's role in the OSHC. Enforceability of this legal duty imposed on the employer is difficult, owing to lack of its specificity, and its dependence upon the auditing and relationship skills of the enforcement officers. For example, can enforcement officers take the employers to task, with reference to the current legislative provision, if they are perceived to not have been facilitating the efforts of members of OSHCs, in the ways suggested? Hence, this author argues that the scope of OSHCs would mediate the relationship between management commitments - as conceptualized by Farouk (2017) and explained in subsection 1.3.2 above -and perceived effectiveness of OSHCs.

### d) Research Hypotheses

Based on the literature above, the following hypotheses are advanced in the context of Malaysian manufacturing firms:

$H_1$ : Active management commitment has a significant positive association with effectiveness of OSHCs.

$H_2$ : Passive management commitment has a significant positive association with effectiveness of OSHCs.

$H_3$ : Competency of OSHCs has a significant positive association with effectiveness of OSHCs.

$H_4$ : Scope of OSHCs has a significant positive association with effectiveness of OSHCs.

$H_5$ : Competency of OSHCs mediates the relationship between active management commitment and effectiveness of OSHCs.

$H_6$ : Scope of OSHCs mediates the relationship between active management commitment and effectiveness of OSHCs.

$H_7$ : Competency of OSHCs mediates the relationship between passive management commitment and effectiveness of OSHCs.



$H_8$ : Scope of OSHCs mediates the relationship between passive management commitment and effectiveness of OSHCs.

## II. RESEARCH METHODS

### a) Research Model

The model of the present study comprised four independent variables: active management commitment, passive management commitment, competency of OSHCs and scope of OSHCs, because of their relative associations, with perceived effectiveness of OSHCs, the dependent variable of interest. In the model, both competency of OSHCs and scope of OSHCs were postulated, respectively, to have mediating effects on these two relationships: (i) between active management commitment and the dependent variable, and (ii) between passive management commitment and the dependent variable.

### b) Population and Sample

A target sample of 1,000 manufacturing firms, were drawn via the proportionate systematic stratified random sampling method, from a sampling frame comprising 4,337 manufacturing firms with established OSHCs, reclassified into 15 manufacturing sub-sectors, and registered with DOSH as of 3rd September 2008, because a significant proportion of accidents and work-related diseases originate from the manufacturing workplace (Social Security Organization, 2010).

An OSHC established at a manufacturing workplace must comprise at the very least an equal number of members, who are representatives of both management and non-management employees, respectively (Regulation 5, SHCR 1996). A survey package comprising a cover letter and two identical questionnaires was mailed to the Safety Manager/Safety Officer/Safety Executive of the targeted sample of 1,000 firms. Responses were solicited from both types of OSHC members because past research (Grantor and Thunberg, 2009; Osprey and Yasser, 2004; Jaffa *et al.*, 2017) is inconclusive as to whether type of member could affect the responses to the questionnaire.

As of February 2010, 196 and 82 questionnaires, completed by both management and non-management representatives, respectively, were usable for data analysis. The sample of  $n=278$  comprised two subsamples that were subsequently merged, as the results of the independent-samples *t*-test, after removal of five extreme outliers from the data set ( $n=273$ ), suggested no significant statistical difference in the mean scores for both management and non-management respondents, respectively, across the five variables in the study's model, as *p* values were more than 0.05. Thereafter, 42 cases (comprising responses from non-management representatives) were removed because 42 pairs of management and non-management representatives' responses originated from

the same firm. Hence, the final sample size was reduced to  $n=231$ .

### c) Instrument and Measurement

The research instrument used in the study was the questionnaire. Multi-item scales were used to measure the five variables in the study's model. In analyzing the results of the said variables, the mean responses between 3 and 4 were considered medium; those between 1 and 3 were considered low; and those between 4 and 5 were considered high.

#### i. Dependent Variable- Effectiveness of OSHCs

The 12 items used in Eaton and Ocarina (2000) to measure perceived effectiveness of OSHCs were adapted for use in this study. The variable was operationalised along the OSHC's perceived ability to effect changes in four ways: (i) prevent the reoccurrence of safety, health and environmental hazards; (ii) prevent the occurrence of potential safety, health and environmental hazards; (iii) improve OSH knowledge among employees, overall productivity and reduce cost and; (iv) change work practices, equipment and substances. The respondents were asked to rate the perceived abilities of their OSHCs in the past 12 months on a Liker scale of 1 to 5 (from 1=poor to 5= excellent).

#### ii. Independent Variable-Active Management Commitment

Active management commitment was measured using a multi-item scale consisting of eight items. These items required the respondents to evaluate the extent to which they perceived that management at their workplaces was executing the following safety-related practices, the substance and content of which originates from the literature, on a 5-point Liker Scale (from 1 = strongly disagree to 5 = strongly agree): (i) the participation of top management in OSHC inspections/audits; (ii) incorporating safety and health competencies into performance evaluations; (iii) certification of a company's OSH management system to safety standards; (iv) the engagement of a safety and health auditor; (v) the allocation of a budget for the OSHC's functions; (vi) the allocation of a budget for implementing the OSHC's recommendations; (vii) the provision of monetary incentives to members of OSHCs; and (viii) the provision of non-monetary incentives to members of OSHCs.

#### iii. Independent Variable-Passive Management Commitment

Passive management commitment was measured using a multi-item scale consisting of four items. These items required the respondents to evaluate the extent to which they perceived that management at their workplaces was executing the following safety-related practices, mandated by law, on a 5-point Liker Scale (from 1 = strongly disagree to 5 = strongly agree): (i) the presence of senior management at

OSHC's meetings (Regulation 5 of SHCR, 1996); (ii) the issuance of a safety policy (Section 16 of the OSHA, 1994); (iii) the provision of safety and health training to all employees (Section 15(2)(c) of the OSHA 1994); and (iv) the employment of a safety officer (Section 29 of the OSHA, 1994).

iv. *Independent Variable-Competency of OSHCs*

The variable competency of OSHCs was measured using a multi-item scale comprising 6 items adapted from Eaton and Ocarina (2000) that measured competency of OSHCs in terms of their legal, technical and committee process knowledge. The respondents were asked to rate their provision of training in those areas, in the past 12 months, on a Liker scale of 1 to 5 (from 1=none to 5= always).

v. *Independent Variable-Scope of OSHCs*

The variable scope of OSHCs was measured using a multi-item scale comprising 12 items adapted from Eaton and Ocarina (2000). The scale measured scope of OSHCs in terms of their operational, information gathering, review and educative functions. The respondents were asked to rate whether their OSHCs executed the said functions in the past 12 months on a Liker scale of 1 to 5 (from 1=none to 5= always).

vi. *Control Variables -Financial Health, Size of Firm and Type of Firm*

Financial health, type and size of firm were treated as control variables in this study. Past research evidences a significant positive relationship between the first two variables - good financial health and multinational type firm - and safety performance (Chen and Chan, 2004; Filer and Globe, 2003); whereas the association between size of firm and effectiveness of OSHCs is inconclusive from past research reviewed (Hall *et al.*, 2006). A significant majority of the firms in this study were perceived to be in good to excellent financial health (71.4%); and 58% were local in origin. In

terms of size of firm categorised based on number of employees (less than 500 or more than 500 employees), 26.4% of the firms had more than 500 employees.

### III. RESEARCH RESULTS AND ANALYSES

a) *Data Analyses and Results*

Reliability analyses were conducted to measure the construct validity and reliability of the five multi-item scales. The internal consistency of these scales was significant as their Cranach's alpha values (see Table 5) were above 0.6 (Hair *et al.*, 1998). Hence, with reference to the items used to measure these five variables, and shown in Tables 1, 2, 3 and 4, the said scales satisfied the tests of construct validity and reliability analysis. Descriptive, multiple, simple and hierarchical regression analyses were executed to answer the research questions (refer to subsection 1.2) and test the hypotheses (refer to subsection 1.4) generated for this study. All analyses were conducted using the SPSS 17.0 software.

b) *Descriptive Analyses of all Measures*

The mean values for all five variables fell on the medium scale (effectiveness of OSHCs=3.54; passive management commitment=3.66; active management commitment=3.11), with scope of OSHCs registering the highest mean value (3.70), and active management commitment registering the lowest mean value (3.11).

c) *Descriptive Analyses for Effectiveness of OSHCs*

The mean scores suggest that OSHCs were perceived to be at par in terms of their reactive (mean=3.56) and proactive (mean=3.56) abilities (Table 1). Their educative and productive ability (mean=3.56) followed next, with OSHCs being perceived the least effective in terms of their ability to transform work processes/ practices, equipment/ materials and substances/chemicals used at the workplace (mean=3.47).

Table 1: Descriptive Statistics of Effectiveness of OSHCs in Manufacturing Firms

Items	Effectiveness of OSHCs	Mean	Std. Dev.
	<b>Reactive Ability</b>		
1.	Ability of OSHC to Reduce Reoccurrence of Potential Safety Hazard	3.59	0.77
2.	Ability of OSHC to Reduce Reoccurrence of Potential Health Hazards	3.56	0.78
3.	Ability of OSHC to Reduce Reoccurrence of Potential Environmental Hazards	3.54	0.83
	Mean	3.56	0.75
	<b>Educative &amp; Productive Ability</b>		
4.	Ability to Improve Health and Safety Knowledge Among Management Employees	3.61	0.78
5.	Ability to Improve Health and Safety Knowledge Among Non Management Employees	3.54	0.79
6.	Ability to Improve in General Productivity and Reducing Costs	3.52	0.78
	Mean	3.56	0.70
	<b>Proactive Ability</b>		
7.	Ability of OSHC to Reduce Potential Safety Hazards	3.58	0.75
8.	Ability of OSHC to Reduce Potential Health Hazards	3.58	0.74
9.	Ability of OSHC to Reduce Potential Health Environmental Hazards	3.54	0.80
	Mean	3.56	0.71

Change Ability			
10	Ability to Change Work Processes or Practices	3.53	0.82
11	Ability to Change Equipment and Materials	3.47	0.82
12	Ability to Change Substances or Chemicals	3.42	0.87
	Mean	3.47	0.75

d) *Descriptive Analyses for Active and Passive Management Commitment*

The mean values (Table 2) suggest that passive management commitment (mean = 3.66) was perceived to be higher than active management commitment (mean = 3.11) given the former's higher mean value. With respect to passive management commitment, the items that recorded the highest values, in descending order, were the following: provision of safety and health training to all employees (mean=3.75), management attending OSHC's meetings (mean=3.73) and issuing a safety and health policy (mean=3.67). The item that recorded the lowest mean value was employment of an internal expert on OSH matters (mean = 3.49).

With reference to active management commitment, the items that related to the provisions of remuneration either in cash (mean = 2.48) or kind (mean = 2.79) to members of OSHCs, and the item discerning whether the company's OSH management system was certified to existing safety standards (mean = 2.77), recorded low mean values. The mean values for the other items, in descending order, ranged from 3.06 to 3.52: performance evaluations incorporating one's ability to manage OSH issues (mean = 3.52), allocation of budget for executing recommendations of OSHCs (mean = 3.49) or exercising their functions (mean = 3.40), management partipating in OSHC inspections (mean = 3.39) and the employment of an OSH auditor (mean = 3.06).

*Table 2:* Descriptive Statistics for Passive and Active Management Commitment in Manufacturing Firms

Items	Passive management commitment	Mean	Std. Dev.
1.	All employees provided with safety and health education and training	3.75	0.92
2.	Top management attended OSHC meetings	3.73	1.18
3.	Top management issued good safety policy	3.67	1.02
4.	Company employed internal expert in safety and health	3.49	1.22
	Cranach's alpha=0.74; Mean=3.66; Std. Dev.=0.81		
Items	Active management commitment		
1.	Performance evaluation incorporated ability to handle safety and health issues	3.52	0.91
2.	Company allocated budget for implementing safety and health recommendation of OSHC	3.49	1.02
3.	Company allocated budget for OSHC functions	3.40	1.07
4.	Top management participated in OSHC inspections/audits	3.39	1.14
5.	Company employed safety and health auditor	3.06	1.25
6.	OSHC members given non-monetary incentives	2.79	1.21
7.	Company's OSH management system certified to safety standards	2.77	1.39
8.	OSHC members given monetary incentives	2.48	1.23
	Cranach's alpha=0.84; Mean=3.11; Std. Dev.=0.79		

e) *Descriptive Analyses for Competency of OSHCs*

The mean score was on the medium scale in all areas of training (Table 3). In terms of technical training, both hazard recognition and prevention (mean=3.33), and inspections training (mean=3.28) had higher mean

values than industrial hygiene training (mean=3.08). With respect to non-technical training, training in the areas of committee process (mean=3.10) and problem solving (mean=2.95) was lagging behind training in OSH related laws (mean=3.32).

*Table 3:* Descriptive Statistics of Competency of OSHCs in Manufacturing Firms

Items	Competency of OSHCs	Mean	Std. Dev.
	Technical Training		
1	Hazard Recognition and Prevention training	3.33	1.03
2	Inspections Training	3.28	1.07
3	Industrial Hygiene Training	3.08	1.14
	Non-Technical Training		
4	Training in OSHA 1994	3.32	1.13
5	Committee Process Training	3.10	1.11
6	Problem-solving Training	2.95	1.08

f) *Descriptive Analyses for Scope of OSHCs*

Based on the mean values (Table 4), arranged in descending order, these OSHCs' functions were

executed relatively better than the others: investigation and review of employees' complaints (mean=4.06), accompanying inspectors during inspections

(mean=3.96), having access to employer's safety and health records (mean=3.88), educating non-management employees (mean=3.85), inspection to identify safety hazard (mean=3.85), educating management employees (mean=3.76), inspection to identify health hazard (mean=3.72), and inspection to identify environmental hazard (mean=3.64). The data

also evidences that OSHCs were relatively weak in these functions: having access to citations and corrective orders provided by DOSH (mean=3.59), review of occupational health and safety programs, policies and procedures (mean=3.57), information gathering function (mean=3.54) and review of new technology, process or substance (mean=3.34).

*Table 4:* Descriptive Statistics of Scope of OSHCs in Manufacturing Firms

	Scope of OSHCs	Mean	Std. Dev.
1.	Investigate and Review Complaints by Employees	4.06	0.87
2.	Accompany Safety and Health Inspectors	3.96	1.15
3.	Access to and Review Employer's Safety and Health Records	3.88	1.10
4.	Distribute Educational/Training Material to Non-Management Employees	3.85	1.01
5.	Inspection to Identify Safety Hazard	3.85	0.90
6.	Distribute Educational/Training Material to Management Employees	3.76	0.98
7.	Inspection to Identify Health Hazard	3.72	0.90
8.	Inspection to Identify Environmental Hazard	3.64	1.01
9.	Access to and Review Citations and Corrective Orders Provided by DOSH*	3.59	1.19
10.	Review the Effectiveness of Management Health and Safety Programs, Policies and procedures	3.57	1.08
11.	Collect General Information on Safety and Health Issues	3.54	1.06
12.	Review of New Technology, Process, Substance	3.34	1.13
	Cranach alpha=0.90; Mean=3.70; Std. Dev.=0.71		

\* DOSH: Department of Occupational Safety and Health; Items in *italic* are legislated for via the SHCR 1996

#### g) Correlation Analyses

Table 5 shows the means, Cranach's alphas, standard deviations and correlations of all the measures. The correlations for passive management commitment ( $r = 0.48, p < 0.01$ ) and active management commitment ( $r = 0.50, p < 0.01$ ) suggest a significant, medium-to-large, positive relationship, respectively, with the effectiveness of OSHCs; with high perceptual levels of both types of management commitment associated with high levels of perceived effectiveness of OSHCs, suggesting support for  $H_1$  and  $H_2$ . In comparison, the correlations for competency of OSHCs ( $r = 0.65, p < 0.01$ ) and scope of OSHCs ( $r = 0.60, p < 0.01$ ) suggest a significant, large, positive relationship, respectively, with the effectiveness of OSHCs; with high perceptual levels of both competency of OSHCs and

scope of OSHCs associated with high levels of perceived effectiveness of OSHCs, suggesting support for  $H_3$  and  $H_4$ . Notably, the correlations for competency of OSHCs ( $r = 0.46, p < 0.01$ ) and scope of OSHCs ( $r = 0.43, p < 0.01$ ) suggest a significant, medium, positive relationship, respectively, with active management commitment; and the correlations for competency of OSHCs ( $r = 0.43, p < 0.01$ ) and scope of OSHCs ( $r = 0.45, p < 0.01$ ) suggest a significant, medium, positive relationship, respectively, with passive management commitment; suggesting support for  $H_5$ ,  $H_6$ ,  $H_7$  and  $H_8$ , in terms of the mediating effects of both variables, respectively, on the relationships between both types of management commitment and the dependent variable.

*Table 5:* Means, Cranach's alphas, Standard Deviations and Correlations of the Study's Variables

	Variable	Cranach's alpha	Mean	Standard deviation	Variable				
					1	2	3	4	5
1.	Passive management commitment	0.74	3.66	0.81	-	0.72**	0.48**	0.65**	0.60**
2.	Active management commitment	0.84	3.11	0.79	0.72**	-	0.50**	0.46**	0.43**
3.	Effectiveness of OSHCs	0.96	3.54	0.66	0.48**	0.50**	-	0.65**	0.60**
4.	Competency of OSHC	0.88	3.18	0.87	0.43**	0.46**	0.65**	-	0.65**
5.	Scope of OSHC	0.90	3.70	0.71	0.45**	0.43**	0.60**	0.65**	-

\*\* Correlation is significant at the 0.01 level (2-tailed)

#### h) Multiple, Hierarchical and Simple Regression Analyses

The results of the multiple regression analyses evidence an absence of multicollinearity, based on the

Tolerance and Variance Inflation values of more than 0.10, and less than 10, respectively, and the Durbin Watson value of 1.94 that approximates 2.0. All four independent variables explained 50% of the variation in



perceived effectiveness of OSHCs (Model 1, Table 6). Furthermore, competency of OSHCs ( $p < 0.01$ , Beta value=0.385), scope of OSHCs ( $p < 0.01$ , Beta value=0.236) and active management commitment ( $p < 0.05$ , Beta value=0.155) had strong significant positive associations with the dependent variable, supported by the results of the adjusted R-square (0.504), the F statistics (59.332), and the highly significant corresponding  $p$  value ( $p < 0.001$ ). The highest Beta value for competency of OSHCs also suggests that it has the strongest influence on the perceived effectiveness of OSHCs.

When the variables relating to size of firm, type of firm and perceived financial health of the firm were controlled for (Model 1\* and Model 2\*, Table 6) using hierarchical multiple regression analyses, the findings were as follows: (i) Model 2\* (Table 6) explained 52% in the variance of the dependent variable, supported by

the results of the adjusted R-square (0.518), the F statistics (36.305), and the highly significant corresponding  $p$  value ( $p < 0.001$ ); (ii) Beta values for the three variables, with significant positive associations with the dependent variable, were as follows: competency of OSHCs ( $p < 0.001$ , Beta value=0.382), scope of OSHCs ( $p < 0.01$ , Beta value=0.212), active management commitment ( $p < 0.10$ , Beta value=0.127). Hence, the results in both Model 1 and Model 2\* (Table 6) are in support of  $H_1$ ,  $H_3$  and  $H_4$  that a higher perceived level of three variables - active management commitment, competency of OSHCs and scope of OSHCs - contributes to a higher perceived level of effectiveness of OSHCs, even when three workplace related variables (financial health, size and type of firm) were controlled for, in the hierarchical multiple regression analyses.

**Table 6:** Results of the Multiple Regression Analysis (MRA) and Hierarchical Multiple Regression Analysis (HMRA)

Variable	Effectiveness of OSHCs, Model 1	Effectiveness of OSHCs, Model 1*	Effectiveness of OSHCs, Model 2*
	MRA	HMRA	
(Constant)	1.138	3.112	1.190
Financial health (0 = poor to average; 1 = good to excellent)	-	0.365***	0.143***
Type of company (0 = local; 1 = multinational)	-	0.095	0.048
Size of company (0 = less than 500 employees; 1 = more than 500 employees)	-	-0.009	-0.014
Active management commitment	0.155**	-	0.127*
Passive management commitment	0.092	-	0.072
Competency of OSHC	0.385****	-	0.382****
Scope of OSHC	0.236****	-	0.212***
$R^2$	0.512	0.152	0.533
Adjusted $R^2$	0.504	0.140	0.518
$R^2$ change	0.512	0.152	0.381
F change	59.332	13.514	45.458
Sig F change	0.000	0.000	0.000
F statistic	59.332****	13.514****	36.305****
Durbin-Watson	1.990	1.94	1.94

Cell entries are standardised coefficient estimates ( $n = 231$ ). \* $p < 0.10$  \*\* $p < 0.05$ , \*\*\* $p < 0.01$ , \*\*\*\* $p < 0.001$

The results of the multiple and simple regression analyses (Model 1 and Model 2, Table 7), evidence the partially mediating effect of competency of OSHCs, on the relationship between active management commitment and the dependant variable, for two reasons. Firstly, the Beta value for active management commitment in the simple regression analysis reduces (from 0.500 to 0.256), when the competency of OSHC ( $p < 0.001$ , Beta value=0.533), is included in the multiple regression analysis. Secondly, despite the inclusion of the latter, the former still has a significant positive relationship with the dependent variable ( $p < 0.001$ ). The results of the multiple and simple regression analyses (Model 3 and Model 4, Table 7), also evidence the partially mediating effect of

scope of OSHCs, on the relationship between active management commitment and the dependant variable, for the same two reasons. Firstly, the Beta value for active management commitment in the simple regression analysis reduces (from 0.500 to 0.298), when the scope of OSHCs ( $p < 0.001$ , Beta value=0.467), is included in the multiple regression analysis. Secondly, despite the inclusion of the latter, the former still has a significant positive relationship with the dependent variable ( $p < 0.001$ ). Hence, the findings in Table 7 are partially in support of  $H_5$  and  $H_6$ , that both competency of OSHCs and scope of OSHCs, respectively, mediate the relationship between active management commitment and perceived effectiveness of OSHCs.

**Table 7:** Results of Multiple (MRA) and Simple Regression Analysis (SRA) to Determine Mediators of Active Management Commitment

Variable	Effectiveness of OSHCs (MRA) Model 1	Effectiveness of OSHCs (SRA) Model 2	Variable	Effectiveness of OSHCs (MRA) Model 3	Effectiveness of OSHCs (SRA) Model 4
(Constant)			(Constant)		
Active management commitment	0.256***	0.500***	Active management commitment	0.298***	0.500***
Competency of OSHCs	0.533***	-	Scope of OSHCs	0.467***	-
R-squared	0.474	0.250	R-squared	0.427	0.250
Adjusted R-squared	0.470	0.246	Adjusted R-squared	0.422	0.246
F statistic	102.804***	76.152***	F statistic	85.046***	76.152***
Durbin Watson	2.020	1.922	Durbin Watson	1.949	1.922

Cell entries are standardized coefficient estimates ( $n=231$ ); \* $p<0.05$ , \*\* $p<0.01$ , \*\*\* $p<0.001$

The results of the multiple and simple regression analyses (Model 1 and Model 2, Table 8), evidence the partially mediating effect of competency of OSHCs, on the relationship between passive management commitment and the dependant variable, for two reasons. Firstly, the Beta value for passive management commitment in the simple regression analysis reduces (from 0.476 to 0.240), when the competency of OSHCs ( $p<0.001$ , Beta value=0.547), is included in the multiple regression analysis. Secondly, despite the inclusion of the latter, the former still has a significant positive impact on the dependent variable ( $p<0.001$ ). The results of the multiple and simple regression analyses (Model 3 and Model 4, Table 8), also evidence the partially mediating effect of scope of

OSHCs, on the relationship between passive management commitment and the dependent variable, for the same two reasons. Firstly, the Beta value for passive management commitment in the simple regression analysis reduces (from 0.476 to 0.261), when the scope of OSHCs ( $p<0.001$ , Beta value=0.479), is included in the multiple regression analysis. Secondly, despite the inclusion of the latter, the former still has a significant positive impact on the dependent variable ( $p<0.001$ ). Hence, the findings in Table 8 are partially in support of  $H_7$  and  $H_8$ , that both competency of OSHCs and scope of OSHCs, respectively, mediate the relationship between passive management commitment and perceived effectiveness of OSHCs.

**Table 8:** Results of Multiple (MRA) and Simple Regression Analysis (SRA) to Determine Mediators of Passive Management Commitment

Variable	Effectiveness of OSHCs (MRA) Model 1	Effectiveness of OSHCs (SRA) Model 2	Variable	Effectiveness of OSHCs (MRA) Model 3	Effectiveness of OSHCs (SRA) Model 4
(Constant)			(Constant)		
Passive management commitment	0.240***	0.476***	Passive management commitment	0.261***	0.476***
Competency of OSHCs	0.547***	-	Scope of OSHCs	0.479***	-
R-squared	0.469	0.226	R-squared	0.410	0.226
Adjusted R-squared	0.465	0.223	Adjusted R-squared	0.404	0.223
F statistic	100.869***	66.953***	F statistic	79.094***	66.953***
Durbin Watson	1.986	1.935	Durbin Watson	1.938	1.935

Cell entries are standardized coefficient estimates ( $n=231$ ); \* $p<0.05$ , \*\* $p<0.01$ , \*\*\* $p<0.001$

## IV. DISCUSSION

### a) Discussion

This section discusses the plausible reasons for the findings relating to the effects of all four independent variables, collectively, on the effectiveness of OSHCs; and the mediating effects of both competency of

OSHCs and scope of OSHCs, respectively, on the relationships between both types of management commitment - active and passive management commitment - and the effectiveness of OSHCs. Discussions relating to the descriptive findings of all the five variables in this study, and the significant positive

associations of each one of the four independent variables in this study, with the dependent variable of interest, can be found in Farouk (2016) or Farouk (2017).

The study by Farouk (2016) empirically suggests that both competency of OSHCs and scope of OSHCs have significant positive associations with perceived effectiveness of OSHCs; and that scope of OSHCs mediates the relationship between competency of OSHCs and the dependent variable of interest. Furthermore, Farouk (2017) also evidences that both types of management commitment - active and passive management commitment - have significant positive associations with the perceived effectiveness of OSHCs, with active management commitment, evidencing a stronger positive association with the dependent variable of interest.

*b) Determinants of Effective OSHCs and the Mediating Effects of Competency and Scope of OSHCs*

The findings of this study show that a conceptual model including all four variables - active management commitment, passive management commitment, competency of OSHCs, scope of OSHCs - is able to explain 52% of the variation in the dependent variable, even when factors such as financial health, size and type of firm were controlled for. Although all four independent variables have positive associations with the dependent variable, only three variables - active management commitment, competency of OSHCs and scope of OSHCs - have significant positive associations with it. If the said variables are arranged in descending order, in terms of the degree of their influence on the dependent variable, competency of OSHCs, is ranked first, followed by scope of OSHCs, and then active management commitment. The results of the regression analyses then evidence the mediating effects of both competency of OSHCs and scope of OSHCs, respectively, on the relationship between both active management commitment and passive management commitment, with perceived effectiveness of OSHCs.

The findings relating to the strongest associations of both competency and scope of OSHCs with perceived effectiveness of OSHCs, is consistent with the study by Eaton and Ocarina(2000), who in their study of 180 public sector workplaces with OSHCs, evidenced the same. The findings evidencing the significant positive association of active management commitment - conceptualized as safety management practices not mandated by the law - with perceived effectiveness of OSHCs is also consistent with past studies that showed a significant positive association between such practices (e.g. management's involvement in OSHCs' safety inspections or audits, health and safety performance appraisals etc.) on the one part, and effective OSHCs (Chew, 1988; Eaton & Ocarina, 2000; Walters and Nichols, 2006) on the other.

Passive management commitment although having a positive association with effectiveness of OSHCs, did not exhibit a significant relationship with it, perhaps attributed to it being more reflective of management's degree of compliance with specific safety management practices mandated by legislation, and not fairly reflective of management's genuine commitment to OSH in general and OSHCs in particular. Nevertheless, the importance of passive management commitment must not be dismissed, as there is a strong correlation ( $r = 0.72, p < 0.01$ : Table 5) between passive management commitment and active management commitment. Hence, this author argues that mandated safety management practices might encourage some employers, over time, to incorporate voluntarily, safety management practices not mandated by law, which is argued by this author to be more reflective of management's genuine commitment to OSH in general and OSHCs in particular.

In Eaton and Ocarina (2000), the proposed research model theorized that both competency of OSHCs and scope of OSHCs, would partially mediate the relationship between workplace characteristics (e.g. senior management presence on OSHCs, health and safety programs etc.) and effectiveness of OSHCs. However, in the said paper, the empirical findings suggesting the mediating effects of both variables were absent. Hence, in this study, the term workplace characteristics was replaced with management commitment, which in turn was conceptualized into two types of management commitment - active management commitment and passive management commitment - given Malaysia's current legislative context, and OSH self-regulation framework. Most important, this study empirically evidences the mediating effects of both competency of OSHCs and scope of OSHCs, respectively, on the relationships between both types of management commitment and effectiveness of OSHCs. This can be explained with reference to the current OSH laws that impose legislative duties on employers - that are difficult to enforce due to lack of specificity in the legislative provisions; and the possible inadequacy of relationship and auditing skills, needed for such enforcing such provisions, on the part of enforcement officers - tensure the competency of OSHCs, and to ensure that the OSHCs understand their roles and functions.

In short, consistent with past studies (Chew, 1988; Walters and Nichols, 2006),if management's commitment to OSH in general and to OSHCs in particular, is assumed to be genuine, based on the extent of management's adoption of mandated and non-mandated safety management practices, and the quality of their implementation, then the OSHC will be provided by management - with the needed training to develop its competency, and the required support (e.g. time, financial and human resources) to execute its legislative

functions, and ultimately influence the perceived effectiveness of OSHCs. Otherwise, on the part of management, training provided will be perfunctory for the mere purpose of meeting legal compliance, and attempts will be made to inhibit or restrict the substantive functioning of OSHCs. Hence, both types of management commitment - active management commitment, passive management commitment - that are reflective of management's commitment to OSH in general or OSHCs in particular, would have a catalytic effect in driving the competency and scope of OSHCs, although the evidence suggests that active management commitment might have a more catalytic effect.

## V. CONCLUSIONS AND RECOMMENDATIONS

### a) *Conclusions*

The study's results provide empirical support for the hypothesized model and answers to the research questions. They suggest the following: (i) the variables active management commitment, competency of OSHCs and scope of OSHCs have significant positive associations with perceived effectiveness of OSHCs; (ii) the variable that has the strongest association with perceived effectiveness of OSHCs is competency of OSHCs; (iii) both competency of OSHCs and scope of OSHCs, respectively, partially mediate the relationship, between active management commitment and effectiveness of OSHCs; (iv) both competency and scope of OSHCs, respectively, partially mediate the relationship, between passive management commitment and effectiveness of OSHCs.

### b) *Recommendations and Theoretical Implications*

From a policy perspective, given the state of OSHC as a collaborative structure, integral to Malaysia's effective OSH self-regulation; this author suggests that the responsibility for ensuring the competency and functioning of OSHCs, rather than being placed in the hands of the employer, be assumed by the Department of Occupational Safety and Health (DOSH), the governmental agency that is responsible for enforcing OSH related laws in Malaysia. DOSH has to ensure that OSHCs are competent, and aware of their normative, economic and physical powers that are potent in influencing employers to improve OSH at the workplace (Frick, 2011). It is also suggested that a legal provision be included in the SHCR 1996, to compel the employer to facilitate the functioning of OSHCs. Hence, DOSH would have legal recourse against the employer, if OSHCs were prevented from exercising their functions, without reasonable cause or justification, on the part of the employer.

The National Institute of Occupational Safety and Health (NIOSH), the training arm of DOSH, should monitor the training quality of OSHCs, by accrediting training providers; and establishing a database of

members of OSHCs, enabling an evaluation of their training needs and competency. Certificates validating competency should enable members to seek career opportunities in the area of Ashland motivating them to perform OSHC related duties, even when the employers' provision of monetary or non-monetary incentives for their efforts are absent. NIOSH should manage the training of members of OSHCs in cost effective and practical ways: members of OSHCs employed in the same industry and geographical location can be trained together enabling the sharing of experiences/resources and the joint development of creative and practical solutions. Most important, through NIOSH, experts and researchers in the varied areas of OSH can be reached by members of OSHCs for consultation.

If responsibility for the competency and functioning of OSHCs remains solely with the employers, as an incentive, employers should be allowed to claim some form of tax related benefits in relation to the training expenses of OSHCs; simultaneously being educated on the importance of employee involvement in OSH improvement at the workplace. Consequently, employers might be enlightened on the benefits of substantive employee involvement in the co-management of OSH at the workplace, in terms of improving workplace OSH (Chew, 1988; Walters and Nichols, 2006) and inadvertently increasing the profitability and competitiveness of the firm. Perchance employers may also come to regard the establishment of a collaborative structure, and the allocation of resources in support of it, as an investment rather than an expense; perhaps driving them to execute their current legal duties (e.g. provision of training to OSHCs, ensuring the OSHCs understand their role and functions), with reference to OSHCs, with more depth and substance. From a theoretical perspective, the findings contribute to past literature by providing empirical evidence, based upon manufacturing firms operating in Malaysia, of the mediating effects of both competency of OSHCs and scope of OSHCs, respectively, on the relationships between both types of management commitment - active management commitment and passive management commitment - and perceived effectiveness of OSHCs.

### c) *Limitations of the Study*

The limitation of this study is it being cross sectional in nature with a low response rate of usable questionnaires (11.6%). It also relied only upon the responses of members of an OSHC who were provided the questionnaires by the persons in charge of OSH in their firms; hence, having a tendency to be biased, if the recipient has a more favorable view of the OSHC. In explaining the findings in this paper unverified plausible suggestions were made that may need further investigation given the Malaysian context.



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