

# Occupational Safety and Health Committees: How Fares the Pulse of the Self-Regulatory System in Malaysian Manufacturing Firms?

Ummu Kolsome Farouk, Stanley Richardson, and Arul Jeganathan Solucis Santhapparaj

**Abstract**—Occupational Safety and Health Committees (OSHC) were owing to a legislative mandate via section 30 of the Occupational Safety and Health Act 1994 (OSHA 1994) required to be established in workplaces with 40 or more employees. They were a manifestation of employee involvement and joint commitment of employer and employee; the twin pillars of the workplace occupational safety and health self-regulatory system that was attributed to the Roben’s Report of 1972 issued in the United Kingdom. The self-regulatory approach was adopted in Malaysia to replace the former approach that was dependent upon prescriptive based regulations and a command and control form of enforcement on the part of the government enforcement agency now known as the Department of Occupational Safety and Health (DOSH). To understand the efficacy of the self-regulatory system in so far as it relates to manufacturing firms in Malaysia, survey data from 231 manufacturing firms were empirically studied. The findings indicate that in terms of the extent of executing legislatively prescribed functions in general, OSHCs fall on a medium scale indicative of the self-regulatory system functioning at an average level. However, functioning in these areas were discovered to be lagging: access to reports provided by external experts, access to safety audits, collect general information on safety and health issues, assist employer in safety and health competitions, carry out studies on safety and health at the place of work, form sub-committee to assist in function, access to internal and external experts in determining safety and health issues and seeking intervention of DOSH when non implementation of OSHC recommendation was unjustified.

**Index Terms**—Employee Involvement, Manufacturing Firms, Occupational Safety And Health Committees, Self-Regulation.

## I. INTRODUCTION

From a national macro perspective, economic costs resulting from occupational accidents and illnesses originating from manufacturing firms in aggregate may compromise the competitiveness of nation states in the current globalized economy [33]. Malaysia in its path toward becoming an industrialized nation is not isolated from such a threat and the importance of occupational safety and health must not be undermined. Occupational safety and health had been recognized in Malaysia since 1878 as noted in [48], [39]

Manuscript received July 24, 2011; revised September 13, 2011.

U. K. Farouk is with Multimedia University, 61000 Cyberjaya, Malaysia (e-mail: ummu@mmu.edu.my).

S. Richardson is with Multimedia University, 61000 Cyberjaya, Malaysia (e-mail: s.richardson@mmu.edu.my).

A. J. S. Santhapparaj was with Multimedia University, 61000 Cyberjaya, Malaysia. He passed away after this paper was submitted for review.

and covers five eras that parallels the transitional development of Malaysia from a commodity based economy to that of an industrial based economy. In its transition to an industrial based economy the statistical evidence showed an increase in occupational accidents and illnesses. Table 1 evidences an increase in the number of accidents and fatalities in the manufacturing sector from the years 1977 until 2000.

TABLE I: ACCIDENTS AND FATALITIES STATISTIC IN THE MANUFACTURING SECTOR IN MALAYSIA. SOURCE: RAM PAL [35]

Manufacturing	1977	1980	1985	1990	2000
Accidents	28 068	31 801	28 592	54 925	41 331
Fatalities	30	36	54	86	282

The figures in Table I are indicative of an increase in industrial accidents from the years 1977 until 1990 when it then dips gently. However, the number of fatalities show a steady increase until the year 1990 when it then makes a sudden upsurge. Such statistics triggered a reassessment of the regulatory approach in occupational safety and health at the Malaysian workplace. The traditional method of enforcement in which a huge burden is placed upon the government enforcement agency to ensure that employers comply with prescriptive based legislation was found inadequate. Inadequacy laid in the financial and human constraints faced by the enforcement agency in the face of a growing number of workplaces; and the inability of prescriptive legislation to keep abreast with the ever evolving nature of hazards at the workplace. These drawbacks of such a paternalistic regulatory system are noted in [36].

In the year 1994, the Occupational Safety and Health Act 1994 (OSHA 1994) was introduced in Malaysia. It heralded a shift from the traditional command and control method of enforcement in which the government through the Department of Occupational Safety and Health (DOSH) (before the year 1994 it was known as the Factories and Machinery Department) assumed a huge responsibility in regulating the safety and health of workers at the workplace; to one of self-regulation, wherein all stakeholders at the workplace were responsible for promoting self-regulation with the ultimate responsibility vesting in the employer, as an alternative regulatory system. This meant enabling legislation in the nature of non-prescriptive regulation was emphasized as prescribed solutions were perceived to impede the development of creative ways of managing hazards [6]. In addition, employee involvement was made an integral part of the self-regulatory system whereby via section 30 of the

OSHA 1994, workplaces regardless of type with 40 or more employees were mandated to establish occupational safety and health committees (OSHCs). These OSHCs were required by Regulation 5(2) of the Occupational Safety and Health (Safety and Health Committee) Regulations 1996 (OSHCR 1996) to have at the very least an equal number of management and non-management representatives. Thus a collective perusal of the OSHA 1994 and the OSHCR 1996 indicates that the principles of employee involvement and joint commitment of employer and employee as in [27] are integral in the occupational safety and health self-regulatory system in Malaysia. Consequently, the OSHC can be regarded metaphorically as the pulse of the occupational safety and health self-regulatory system in the Malaysian workplace. Similar changes via legislative initiatives had taken place in a number of countries such as the United Kingdom, Canada, Australia and New Zealand to name a few.

In comparison to those countries it can be observed that Malaysia has institutionalized this concept of self-regulation as in [48], [39] approximately two decades after it came into fashion in the 1970s in those countries. It is argued that the institutionalization of the concept of self-regulation varies from one country to another [19], [30]. The differences are discerned in but not limited to the following ways: (i) whether occupational safety and health committees (OSHC) are a distinctive feature of the self-regulatory system; (ii) the extent of rights and powers vested in members of OSHCs. For example, in Canada the presence of an OSHC features distinctively in its self-regulatory system as in [44], [34] but the same cannot be said of the situation in the United Kingdom. In the latter, specific legislative initiative enables the formation of OSHCs in the unionized and offshore workplaces [46]. The same cannot be said for the onshore non-unionized workplaces that have grown in numbers. As a result, in the United Kingdom the general emphasis is on consultation with employees rather than the form of consultation. Consultation that is a form of employee involvement or inducement of employee participation can denote direct or indirect consultation as in [29] whereby OSHCs are a form of indirect consultation. With respect to the roles and functions of OSHCs they may vary in terms of 'bite' (advisory or executive role) and scope depending upon country origin as in [19] and even within different jurisdictions in the same country [34].

Accident statistics obtained by the researcher on 16 November 2010 from DOSH and displayed in Table II seem to indicate that the accident rate and the fatality rate in the Malaysia workplace (all types of workplaces) have reached a plateau of 3.6 and 6.3 respectively. The accident rate appears to be below the benchmark of 5 per 1000 workers; whereas the fatality rate is still above the benchmark of 3 per 1000 workers [41]. This begs the question of whether accident and fatality statistics reflect the actual improvement of occupational safety and health at the workplace. The answer is debatable. This is because a plethora of literature has cautioned of the prevalence of underreporting as in [1] that permeates the Malaysian reporting system as well [42]. In addition, reporting requirements in Malaysia were mandated in the year 2004 via the Occupational Safety and Health

(Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Disease) Regulation 2004 [11].

TABLE II: ACCIDENTS AND FATALITIES STATISTIC IN THE MALAYSIA WORKPLACE. SOURCE: DASH

Year	Accident rate per 1000 employee excluding commuting	Death rate per 1000 employee excluding commuting
2004	5.8	7.2
2005	5.2	6.9
2006	4.8	7.2
2007	4.5	7.0

The results in Table I and Table II may be interpreted to mean that a shift in the regulatory approach has improved the regulation of occupational safety and health at the workplace. However, as argued above, accident and fatality statistics in Malaysia may not be indicative of the actual state of affairs. Thus it would be apt to determine the scope and extent of functioning of OSHCs in Malaysian manufacturing firms after a span of fifteen years from the legislative mandate. This would enable policy makers, professionals in safety and health and organizational designers to gauge the current level of OSHCs' functioning in Malaysian manufacturing firms as it may be indicative of the pulse of the self-regulatory system in Malaysia in terms of improving safety and health at the workplace.

In addition, the findings would enable one to be reflective of whether the path towards a systems approach in Malaysia [39] in which the OSHC is a central feature [4] would be smooth or strewn with impediments along the way. This path towards a systems approach has been encapsulated via the Occupational Safety and Health Master Plan that spans a period of 15 years (OSH-MP15). In the first 5 years commencing from 2005, the emphasis would be on promoting occupational safety and health ownership at the workplace. The second period of 5 years was intent on achieving self-regulation; whereas the last period of 5 years ending in 2020 seeks to establish a preventive culture at the workplace. The systems approach has not been legislatively mandated at the workplace but based on the researcher's interviews with 2 officers from DOSH such a move is in the pipeline.

The systems approach is defined as a planned, documented and verifiable method of managing hazards and risks systematically at the workplace and is an integral part of the overall management system capable of ensuring compliance with OSHA 1996 and enabling the development of creative solutions to resolve the varied challenges besetting the workplace [2]. In reference [16] an assertion is made that a systems approach is the 21<sup>st</sup> century form of occupational safety and health regulation that stimulates self regulation provided the system is properly implemented. However, as in [37] one is cautioned that the systems based approach may engender a top down bias that excludes employee involvement a factor amongst many others that compromises the effectiveness of such an approach.

The focus was on manufacturing firms because the Social

Security Organization's Annual Report of 2009 and the DOSH's Annual Report of 2009 indicate that the manufacturing sector has the highest number of accidents compared to other sectors; whereby the former's Annual Report states that 31.18% of accidents originate from the manufacturing sector. In addition, the manufacturing sector is an important economic sector and is targeted to grow at 5.6% per annum during the Third Industrial Master Plan period from 2006 until 2020. However, the challenges besetting the sector are many and among the ways suggested as in [26] in meeting the challenges would be to improve the sector's productivity and competitiveness and stimulate investments in human capital. It is argued that the functioning of an OSHC is indicative of its ability to improve workplace safety and health issues that would have a bearing on the sector's productivity and quality of human capital. A succinct observation made in [31] is that the health of labor affects supply of labor; and inadvertently this impacts efficiency and cost of labor what with it being a factor of production.

## II. LITERATURE REVIEW

### *A. Legislative Impetus and Actual Implementation of Employee Involvement Initiative in Occupational Safety and Health at the Workplace*

Representative employee involvement in New Zealand took root in the 1960s as in [20] implicitly acknowledging the emergence of employee involvement in general as a management tool in the mid 20<sup>th</sup> century that in its wake has changed the employment relationship [29]. The rationale for employee involvement is its potential in engendering employee commitment and cooperation [24]; as a channel for selling management ideology, improving industrial relations and improving productivity [46]; and conferring autonomy, pride and satisfaction on the employee [18]. Simultaneously, the detractors also prevail with their arguments especially when employee involvement is ornamental as in [38] and takes place in an unfavorable context [3], [18]. Given the fact that it is a management tool it thus lies with management as to 'if' and 'how' the said tool is to be implemented. However, in the area of workplace occupational safety and health, the laws in many countries have sought to regulate employee involvement. This is perhaps attributed to the supposed importance of external legal regulations in supporting internal democracy via attendant behavioral and structural changes that could over a passage of time influence the development of legislative activity [21]. It is argued that such a supposition may not manifest itself across all workplaces in the same manner and to the same extent if not at all. The reason lies in the need for the required behavioral and structural changes to take place at the workplace. Regardless of whether employee involvement is voluntarily or mandatorily introduced for a specific purpose the aforesaid changes must be in place.

The legislative initiatives made in countries that absorbed the spirit of the Roben's Model and/or those countries that ratified the International Labor Organization Convention (Number 155) 1981 acknowledged the importance of

employee involvement in the area of workplace occupational safety and health. This was actualized either via legal provisions relating to the establishment of OSHCs, the role and function of OSHCs through safety representatives or provisions emphasizing the need for consulting with employees (regardless of form of consultation) in stipulated areas.

Studies have been conducted in the United Kingdom as in [22], [23] and [45] that show a tension between legislative impetus and implementation attributable to varied factors noted in [22], [43] such as the following: power relationships between managers and workers; approach adopted by enforcement agencies, workplace size and origin, degree of trade unionization, industrial sector and the political, social and economic climate within which it operates. Some of the studies reviewed in [34] also lend credence to the fact that a tenuous relationship between legislative impetus and implementation may also prevail in other countries that have imbibed the spirit of the Roben's Model. Fairly recent studies as in [15] and [19] either explicitly or implicitly express the gap between legislative demands and actual practice.

This presence of a possible gap between legislative drive and actual implementation may have inspired the study as in [32] which discovered that OSHCs that had been legislatively sanctioned for more than thirty years in Ontario, Canada were functioning well in acute care hospitals in terms of legislative compliance and availability of resources and experts. However, gaps in functioning were noted in the following areas: lack of OSHC member education beyond certification training and suboptimal status and visibility of OSHCs within the organization.

### *B. OSHC and Knowledge Creation*

The establishment of an OSHC as asserted in the beginning of this paper is a manifestation of employee involvement and the joint commitment of employer and employee. The justifications for the existence of the OSHC are many: to tap into the indigenous knowledge of the employees; to secure the commitment and support of employees [8]. The legislatively prescribed functions of an OSHC enable it to act as a knowledge creation channel in the area of occupational safety and health at the workplace. In reference [9] the researchers were able to prove that specific activities of an OSHC can be linked to knowledgeable quality information. The said information which is contextually dependent when converted can lead to the creation of several types of knowledge assets. In addition, it was argued that securing conceptual type assets enabled OSHCs to perform more effectively in a proactive manner. The creation of conceptual type assets was dependent upon information sought from internal and external workplace stakeholders or those persons privy to information relevant to workplace occupational safety and health.

Premised upon the proposition that the OSHC is indeed a channel for knowledge creation in the area of workplace safety and health, the literature on the drivers for knowledge creation and knowledge sharing the twin pillars of knowledge management as in [5] would be of importance. Knowledge sharing falls into the equation because it is the precursor to knowledge creation. These enablers are as

follows: strategy and leadership, corporate culture, people and information technology [47]; knowledge sharing culture and absence of language barriers, discrimination and individual based education systems (notable in a multicultural setting) [25].

### III. STUDY OBJECTIVES AND QUESTIONS

The purposes of the study were as follows: (i) to assess the extent of OSHCs' legislative compliance in terms of their functioning and (ii) to determine the areas of functioning of OSHCs that are lagging. In relation to these two objectives the two research questions formulated were as follows:

(1) What is the extent of functioning of OSHCs in Malaysian manufacturing firms?

(2) What are the areas of functioning in which OSHCs in Malaysian can be improved?

### IV. RESEARCH METHODS

A questionnaire survey was conducted using the sampling frame of all manufacturing companies with OSHCs (4, 337) provided by DOSH in September 2008. One thousand survey packages were posted. Each comprised two sets of identical questionnaires: one to be answered by a management representative (MR) and another to be answered by a non-management representative (NMR). The survey method used is consistent with past research as in [32] and [8]. The said two studies and the study that formed the basis of this paper targeted different populations. The rationale for having two sub-samples of respondents was consistent with the method used in the aforesaid two studies and because past research had indicated that non-management representatives may perceive issues or position themselves differently from management representatives [15].

Data was collected in the period of April 2009 until January 2010. Altogether 278 respondents participated in the survey: 196 MRs and 82 NMRs. The responses were evaluated statistically using SPSS software version 17.0. The final data set comprised 231 cases only as cases that were outliers were removed and if a MR and NMR originated from the same manufacturing company the NMR was eliminated from the data set. The latter elimination was done because the unit of analysis was the manufacturing company and the response of either the MR or NMR would be representative of the company. Either response of MR or NMR would be representative of the firm because type of representative did not have a statistically significant impact upon perception of legislative compliance with OSHCR 1996 (denoted as OSHCR) because premised upon assumption of variance being violated, the  $p$  value was 0.308 ( $>0.05$ ), when Independent sample  $t$  test was run. This finding could perhaps be attributed to the OSHC operating in a different population. Perhaps in the Malaysian landscape members of OSHCs regardless of type see themselves unified for a common purpose that benefits all employee types. Stratified random sampling was the method employed and the ratio of each category to the sample approximately matched the ratio of each category to the population whereby category refers to

type of manufacturing company.

### V. RESULTS AND ANALYSIS

Table III below displays the results of the descriptive analysis. All the items are the functions that are legislatively prescribed via the OSHCR 1996 (column 2 of the said table states the corresponding regulation ) and were measured using a five point Likert scale whereby respondents were asked to circle the extent to which each of the functions was carried out ranging from none (score of 1 indicated none) to always (score of 5 indicated always). These items when summed up and averaged out measure the overall level of legislative compliance with the OSHCR 1996 (denoted as OSHCR). From the Descriptives Table tabulated using SPSS 17.0, the mean value for OSHCR was 3.6290, the standard deviation was 0.70429 and the 95% confidence interval for the population mean was [3.5377 and 3.7203]. The results indicated that the perceived level of OSHCR on average fell slightly above the mid-point of the medium scale. This was because a score of 3 measured using the Likert scale denoted average, a score of 4 as good and a score of 5 as very good.

### VI. DISCUSSION

The empirical findings show that in Malaysian manufacturing companies, OSHCs level of functioning falls on a medium scale after a span of fifteen years from the legislative mandate. Table III also shows that committee functioning is lax in several areas: collecting of general information on safety and health issues, access to reports provided by external experts, access to safety audits, assisting of employer in health and safety competitions, forming of sub-committees to assist in functioning, carrying out studies on safety and health at the workplace, access to internal and external experts in determining safety and health issues and seeking intervention of the Department of Occupational Safety and Health (DOSH). The cut-off point of the mean being at 3.5 and below was used to determine which activities were lagging relative to the others as this was the mid-point of the average part of the Likert Scale. The relative lack of functioning in the aforesaid areas may be indicative of the lack of ability of the OSHC to act as a channel for effective information gathering that would enable it to act in a proactive manner; the lack of validation or recognition given to the JOSHC internally and externally and fear of reprisal on the part of management in event of intervention from DOSH being sought.

The first finding alludes to the possible ability of an OSHC to create knowledge. In reference [9] the researchers were able to prove conceptually how the Knowledge Creation Model as in [28] when transposed to the workings of an OSHC enable it to create assets in the form of knowledge assets (of which there are 4 types) that can promote occupational safety and health at the workplace. The lagging activities as discerned in this research are activities that enable OSHCs to create conceptual type knowledge assets that are argued to enable OSHCs to act better in a proactive mode. To overcome this predicament provisions in the OSHCR 1996 must be more specific in terms of type and

scope of training. Perhaps members of OSHCs are not cognizant of their knowledge creation function or are bereft of the skills needed to collect general information and carry out studies in the matters relating to workplace safety and health. Specificity of training related provisions will not only ensure type of training that must be provided but enable enforceability of those provisions by DOSH enforcement officers in event of breach. The training of OSHC members must be redesigned in collaboration with the National Institute of Occupational Safety and Health, the training arm of DOSH, to enable members of OSHCs to pursue a career path in the area of safety and health beginning as a member. Legal provisions relating to incentives, monetary or in kind, are absent currently and should be incorporated into the said legislation. Purposive training, a future path in terms of career mobility and appropriate reward structure may motivate members of OSHCs to improve their ability to function in the lagging activities as such legislatively initiated motivating factors are absent presently

TABLE III: RESULTS OF DESCRIPTIVE ANALYSIS FOR TWENTY ITEMS ON OSHC FUNCTIONING

OSHCR Compliance	OSHCR 1996 Reg.	Mean	Standard Deviation
Keep record of OSHC Meetings	Reg.27	4.5498	0.7137
Keep record of accidents/injury statistics	Reg.30	4.3117	0.98148
Investigate workplace injuries, accidents and complaints by employees	Reg.13/16	4.0303	0.91078
Access to and review employer's safety and health records	Reg.30	3.8701	1.11532
Keep record of employer's response to recommendations made by OSHC	Reg. 14(2)	3.8615	1.07858
Distribute educational/training material to non-management employees	Reg. 18	3.8355	1.04621
Inspection to identify safety hazard	Reg. 12(a)	3.8268	0.90667
Access to reports provided by internal expert on safety and health	Reg. 15(2)(b)	3.8009	1.08114
Consulted by employer when rules on safety and health formulated	Reg. 19	3.7489	1.04556
Inspection to identify health hazard	Reg. 12(a)	3.7056	0.91837
Distribute educational/training material to	Reg. 18	3.7013	1.03502

management employees			
Review effectiveness of health and safety programs, policies, procedures and safety and health management system	Reg. 11(a)(d)	3.5844	1.09961
Access to reports provided by external experts (DOSH, other government agencies or non-governmental organizations)	Reg. 15(d)	3.5238	1.12215
Access to safety audits	Reg. 15(b)	3.5108	1.33143
Collect general information on safety and health issues (use surveys, talk to employees)	Reg. 11(c)	3.4935	1.10678
Assist employer in safety and health competition	Reg. 18	3.3463	1.21278
Carry out studies on safety and health at the workplace	Reg. 11(c)	3.3203	1.28587
Form sub-committee to assist in function	Reg. 20	3.2944	1.39873
Access to internal and external experts in determining safety and health issues (occupational safety and health consultants or doctors specializing in occupational disease)	Reg. 25	3.1732	1.15547
Seek DOSH intervention when non implementation of OSHC recommendation unjustified	Reg. 17	2.0909	1.24253

The second finding hints at lack of visibility and validity of OSHCs. It is suggested that a legislative provision be included in the OSHCR 1996 to sanction that DOSH officers should when making company inspections ensure that members of the OSHC accompany them on their rounds to improve visibility and validity of the OSHC. External agencies or nongovernmental organization (NGOs) should also come to the forefront and enhance the knowledge of

members of OSHCs in the area of safety and health as this would enable the development of a knowledge activist type of member as in [17]. Some of these external bodies secure funding from the Social Security Organization [40], a statutory body in Malaysia that oversees the administration and enforcement of social security legislation, for the promotion of workplace occupational safety and health programs. However, it is suggested that these NGOs should organize themselves strategically so that the line of communication between them and OSHCs is always open to enable relevant and constant feedback.

The last finding evidences that DOSH also needs to continue playing an educative role and assuring members of OSHCs that intervention sought from DOSH would be free of possible reprisals as confidentiality would be maintained. The first two findings may also be indicative of lack of support from top management. Access to safety audit as a lagging activity could be indicative of the possibility that in the establishment of a formal or informal occupational safety and health management systems (OSH MS) in the company the OSHC is sidelined. Top management also needs to ensure that appropriate training coupled with sufficient time and resources (financial/human) are provided to enable better functioning in the lagging areas noted.

## VII. CONCLUSION

This paper indicates that OSHCs in Malaysian manufacturing firms fall on an average scale in terms of functioning. The second phase of the OSH-MP 15 that covers the period 2010 until 2015 is devoted to improving self-regulation. The study was carried out in the year 2009 and is thus indicative that in this phase between 2010 until 2015 much needs to be done to promote self-regulation if the functioning of OSHCs is taken as the pulse of the occupational safety and health self-regulatory system in Malaysia. If this challenge is not addressed then the transition into the last phase of the master plan that envisages a systems approach would be imperiled as the effectiveness of employee involvement still remains an important factor.

## REFERENCES

- [1] S.S. Ariss, (2003). "Employee involvement to improve safety in the workplace: An ethical imperative," *Mid-American Journal of Business*, vol. 18(2), pp. 9-16, 2003.
- [2] A. Bakri, R.M. Zin, M.S. Misnan, and A.H. Mohd, "Occupational safety and health management systems: Towards development of safety and health culture," in *Proceedings of the 6th Asia-Pacific Structural Engineering and Construction Conference, Malaysia*, C19-C28, 2006.
- [3] M. Beck, and C. Woolfson, "The regulation of health and safety in Britain: from old labour to new labour," *Industrial Relations Journal*, vol. 31(1), pp. 35-49, 2000.
- [4] A.H.S. Chan, W.Y. Kwok, and V.G. Duffy, "Using AHP for determining priority in a safety management system," *Industrial Management and Data Systems*, vol. 104(5), pp. 430-445, 2004.
- [5] C. Chen, J. Huang, and Y. Hsiao, "Knowledge management and innovativeness: The organizational climate and culture," *International Journal of Manpower*, vol. 31(8), pp. 848-870, 2010.
- [6] J. Culvenor, "Comparison of team and individual judgments of solutions to safety problems," *Safety Science*, vol. 41, pp. 543-556, 2003.
- [7] Department of Occupational Safety and Health. *Annual Report*. Kuala Lumpur. 2009
- [8] A.E. Eaton, and T. Nocerino, "The effectiveness of health and safety committees: Results of a survey of public-sector workplaces," *Industrial Relations*, vol. 39(2), pp. 265-290, 2000.
- [9] U.K. Farouk, S. Richardson, and A.J.S. Santhapparaj, "Occupational safety and health committees: A Channel for knowledge creation in Malaysia?" presented at the 16<sup>th</sup> International Business Information Management Association (IBIMA) conference, Kuala Lumpur, 29-30 June, 2011.
- [10] Government of Malaysia. Occupational Safety and Health Act (Act 514) 1994.
- [11] Government of Malaysia. Occupational Safety and Health (Notification of Accidents, Dangerous Occurrences, Occupational Poisoning and Disease) Regulations 2004.
- [12] Government of Malaysia. Occupational Safety and Health (Safety and Health Committee) Regulations 1996.
- [13] Government Malaysia. (2005). Occupational Safety and Health Master Plan for Malaysia 2015 (OSH-MP 15). Kuala Lumpur
- [14] Government Malaysia. (2006). *Third Industrial Master Plan 2006-2020 (IMP3)*. Kuala Lumpur.
- [15] K. Granzow, and N. Theberge, "On the line: Worker democracy and the struggle over occupational health and safety," *Qualitative Health Research*, vol. 19(1), pp. 82-93, 2009
- [16] N. Gunningham, "Integrating management systems and occupational health and safety regulation," *Journal of Law and Society*, vol. 26(2), pp.192-214, 1999.
- [17] A. Hall, A. Forrest, A. Sears, and N. Carlan, "Making a difference: Knowledge activism and worker representation in joint OHS committees," *Industrial relations/Relations Industrielles*, vol. 61(3), pp. 408-436, 2006.
- [18] R. Hodson, "Worker participation and teams: New evidence from analyzing organizational ethnographies," *Economic and Industrial Relations*, vol. 23(4), pp.491-528, 2002.
- [19] J. Hovden, T. Lie, J.E. Karlsen, and B. Alteren, "The safety representative under pressure. A study of occupational health safety management in the Norwegian oil and gas industry." *Safety Science*, vol. 46, pp. 493-509, 2008.
- [20] P. Haynes, P. Boxall, and K. Macky, "Non union voice and the effectiveness of joint consultation in New Zealand," *Economic and Industrial Democracy*, vol. 26(2), pp. 229-256, 2005.
- [21] Industrial Democracy in Europe, "Participation: Formal rules, influence and involvement," *Industrial Relations*, vol. 18(3), pp. 273-294, 1979.
- [22] P. James, and A. Kyprianou, "Safety representatives and committees in the NHS: A healthy situation?" *Industrial Relations Journal*, vol. 31(1), pp. 50-61, 2000.
- [23] P. James, and D. Walters, "Worker representation in health and safety: options for regulatory reform," *Industrial Relations Journal*, vol. 33(2), pp. 141-156, 2002.
- [24] P. Joyce, and A. Woods, "Joint consultation in Britain," *Employee Relations*, vol. 6(3), pp. 2-7, 1984.
- [25] N. King, N. Kruger, and J. Pretorius, "Knowledge management in a multicultural environment: A South African perspective," *Aslib Proceedings: New Information Perspectives*, vol. 59(3), pp. 285-299, 2007.
- [26] H.H. Lean, "The impact of foreign direct investment on the growth of the manufacturing sector in Malaysia," *International Applied Economics and Management Letters*, vol. 1(1), pp. 41-45, 2008.
- [27] A. Levinson, "Self-regulation and health and safety," *Employee Relations*, vol. 9(4), pp. 3-8, 1987.
- [28] C. Lin, and C. Wu, "A knowledge creation model for ISO 9001:2000," *Total Quality Management*, vol. 16(5), pp. 657-670, 2005.
- [29] R. Markey, A. Hodgkinson, and J. Kowalzyk, "Gender, part-time employment and employee participation in Australian workplaces," *Employee Relations*, vol. 24(2), pp. 129-150, 2002.
- [30] N. Milgate, E. Innes, and K. O'Loughlin, "Examining the effectiveness of health and safety committees and representatives: A review," *Work*, vol. 19, pp. 281-290, 2002.
- [31] P. Miller, and C. Haslam, "Why employers spend money on employee health: Interviews with occupational health and safety professionals from British industry," *Safety Science*, vol. 47, pp. 163-169, 2009.
- [32] K. Nichol, I. Kudla, M. Manno, L. McCaskell, J. Sikorski, and L. Holness, "Form and function of joint health and safety committees in Ontario acute care hospitals," *Healthcare Quarterly*, vol. 12(2), pp. 86-93, 2009.
- [33] S. Niu, "Ergonomics and occupational safety and health : An ILO perspective," *Applied Ergonomic*, 2010, vol. 41, pp. 744-753, 2010.

- [34] J. O'Grady, "Joint health and safety committees: Finding a balance," in Terrence Sullivan (ed.). *Injury and the new world of work*. Vancouver: UBC Press. 2000, pp. 162-197.
- [35] K.G. Rampal, "Reproductive health hazards and its management in the manufacturing sector," IRPA 06-02-05-7011, Kuala Lumpur: Ministry of Science, Technology and Environment, 2002.
- [36] J. Rees, "Self regulation: An effective alternative to direct regulation by OSHA?" *Policy Studies Journal*, vol. 16(3), pp. 602-614, 1988.
- [37] P.O. Saksvik, and M. Quinlan, "Regulating systematic occupational safety and health management: Comparing the Norwegian and Australian experience," *Industrial Relations*, vol. 58(1), pp. 33-59, 2003.
- [38] J.C. Sesil, "Sharing decision-making and group incentives: The impact on performance," *Economic and Industrial Democracy*, vol. 27(4), pp. 587-607, 2006.
- [39] K. Soehod, *Law on Safety and Health in Malaysia*. Unpublished manuscript. Universiti Teknologi Malaysia, 2007
- [40] Social Security Organization. *Annual Report*. Kuala Lumpur. 2009.
- [41] L. Surienty, K.T. Hong, and D.K.M. Hung, "Occupational safety and health (OSH) in small medium enterprises in Malaysia: A preliminary investigation," *Journal of Global Entrepreneurship*, vol. 1(1), pp.70, 2010.
- [42] A.L.S. Wai, "*Critical causes of accident underreporting in Malaysian construction industry*," unpublished Master's thesis. Universiti Teknologi Malaysia, Malaysia, 2007.
- [43] D. Walters, "Employee representation and occupational health and safety: The significance of Europe," *J. Loss Prev. Process Ind.*, vol. 8(6), pp. 313-318, 1995.
- [44] V. Walters, and T. Haines, "Workers' use and knowledge of the 'Internal Responsibility System': Limits to participation in occupational health and safety," *Canadian Public Policy*, vol. 15(4), pp. 411-423, 1988.
- [45] D. Walters, and T. Nichols, "Representation and consultation on health and safety in chemicals: An exploration of limits to the preferred model," *Employee Relations*, vol. 28(3), pp. 230-254, 2006.
- [46] C. Wright, and M. Spaven, "Who represents whom? The consequences of the exclusion of unions from the safety representation system in the UK offshore oil and gas industry," *Employee Relations*, vol. 21(1), pp. 45-62, 1998.
- [47] Y. Yeh, S. Lai, and C. Ho, "Knowledge management enablers: A case study," *Industrial Management & Data*, vol. 106(6), pp.793-810, 2006.
- [48] H. Yon, "Factors Associated with Chemical Safety Status in Small and Medium Printing Enterprises in Penang," Unpublished Master's thesis, Universiti Sains Malaysia, 2007