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Assessing the Behavioural Factors' of Safety Culture for the Malaysian Construction Companies

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Abstract

Modifying behavior and to encourage safe behavior is the key element of a good safety program. Defining safety culture, based on behavioural factors frees us to include a host of behaviours as part of the puzzle that creates the cognitive construct of organisational culture. Hence, the objective of this paper is to identify the behavioural factors' of safety culture for the Malaysian construction companies. The sample for the study was selected from the total population of Grade 7 registered contractors but was limited to those building contractors in the area of Klang Valley. The questionnaire survey approach, identified leadership, organisational commitment, management commitment, safety training and resource allocation as the practices that embed safety culture into the organisational culture. A fairly emphasis on the behavioural factors' of safety culture with an equal number of elements received mean score exceeding and below the median score was found currently practice among the Malaysian construction companies.

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Keywords: Contractors; safety programmes; social learning; management commitment

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1. Introduction

Improving occupational health and safety in the Malaysian construction industry is not an easy task despite adequate safety legislation and regulative institutions. According to Mohamed (1999), a zero-accident culture can only prevail if contractors are committed to realizing fundamental change in the industry. A prerequisite for such improvement is to treat safety as an important and integral constituent of daily work routine, rather than as an appendage. The introduction of self-regulation through the enactment of OSHA, 1994 aimed at to promote safety culture.

A key part of the attractiveness of safety culture is the idea that assessment of these aspects may provide leading indicators of the safety level of the organisation and may be used to benchmark organisational safety performance (Mearns, 1999). Safety culture is defined as ‘The product of shared values, beliefs, attitudes, and patterns of behaviour based on a top-down approach practices that are concerned with minimizing the exposure to conditions considered dangerous or injurious to the entire group members on a self-regulatory basis’(Faridah,2009).

Internationally, the International Labour Conference, 93rd session (2005) concluded that the building and maintenance of a national preventive safety and health culture and the introduction of a systems approach to OSH management at the national level were the fundamental pillars of a global safety strategy (ILO, 2005). Translating culture formation according to Schneider (2000) into behavioural terms helps people understand how the process works as people learn more from behaviours than from printed statements and company policies.

2. The Behavioural Approach of Safety Culture

The strengths which a Total Quality management (TQM) approach has over a behavioural approach to safety is in the realisation that TQM focuses on “systematic” changes in attitude, which in turn, result in the changes in behaviour. (Parady,1997). Many safety professionals feel that the key element of a good safety program is its efforts to modify behaviour and to encourage safe behaviour

Translating culture formation into behavioural terms helps people understand how the process works. People learn more from behaviours than from printed statements and company policies according to Schneider (1990). Behaviour is the function of its consequences and these make behaviours strongly associated with learning. Citing research from social learning theory, it is noted that individuals in social settings may learn which behaviours and opinions are rewarded and punished by observing others. Hence, there seems to be an acknowledged connection between behaviours and the development of culture. Since behaviours are a function of their consequences, culture formation can be thought of as a series of behaviours and consequences.

2.1. The Behavioural Safety Initiatives

Safety culture has been studied and positively concluded in previous studies to be known to show positive results on safety outcome (Phang 2005). According to Cooper (1998), over the years, regardless of the industrial sector, scientific evaluations have typically found that implementing a behavioural safety initiative leads to:

- improved level of safety performance
- significant reductions in accident rates and associated cost
- improvements in co-operation, involvement and communication between management and workforce
- improvement in safety climate
- ongoing improvements to safety management systems

- ownership of safety by workforce
- enhanced acceptance of responsibility for safety
- better understanding of the relationship between safe behaviour and accidents

2.1.1. The Behavioural Factors and Dimensions

According to Ostrom (1993), organisations with a good safety culture are also reflective on safety practices. Vredenburg (2002) did compile factors found across several reports concerning safety culture based on a few practitioners and experts (Cohen & Cleveland, 1983; Pidgeon, 1991; Turner, 1991). He found that there are six management practices that have been discussed consistently concerning safety culture: (a) rewards, (b) training, (c) hiring, (d) communication / feedback, (e) participation, and (f) management support.

These review shows consistencies among researchers i.e. Cooper (1998); Ostrom (1993); Mohamed (2002); Weigmann (2002); Vredenburg (2002) and Schein (2004). In relation to this, Flin et al., (2000) did point out that the dimensions of climate measures vary considerably in terms of criteria, statistical analysis, size and composition of workers and industry. Even though some researchers termed it as “indicator”, others consider it as management or safety practices. However, there seems to be an agreement in general that management commitment is the driving force towards the achievement of safety culture. This commitment is then translated into actions and reflected through the management practices that will embed and transmit safety culture into the organisational culture. Further, Faridah (2010) revealed that the factors identified from the Preliminary Survey were:

- Leadership;
- Organisational Commitment;
- Management Commitment;
- Safety Orientation/training ;
- Resource Allocation.

Previous studies on behavioural – leadership approach and safety culture also shows that while those authors tended to measure the behavioural – leadership independently, with different dimensions, these appear to measure the similar concepts. Faridah et al. (2009), revealed that the items measuring leadership is as illustrated in Fig. 1.

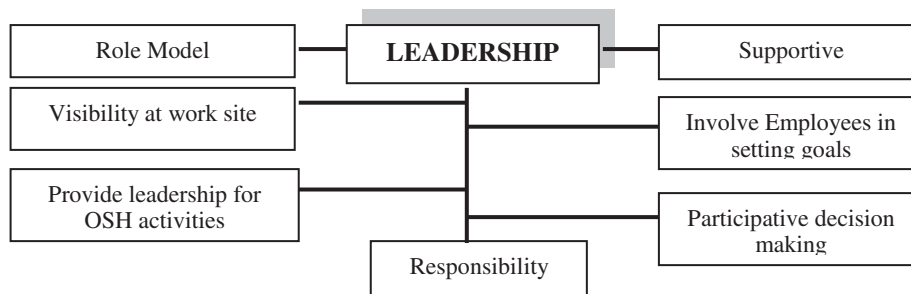


Fig. 1. Dimensions for Leadership –Behavioural Approach. Source: Faridah, 2009

The literature review highlighted that the management commitment is reflected in many ways as follows:

- The *existence* of, values, policy, goals, programme development and implementation, resource allocation, behaviour modeling and injury analysis. (Smallwood, 1996)
- Through their *participation* (Wong, 1996).
- *Support* which relates to the amount of time spent with the field safety representative (Jaselskis, 1996)
- *Visibility* as there is nothing more noticeable to employees than a plant manager who regularly makes himself or herself visible and accessible by walking through the operation and randomly stopping and talking to employees about safe work practices (Lack, 2002).
- *Demonstrate* the necessary leadership and resources to implement any improvement strategies (Cooper, 1996)
- The ability of its upper-level management to demonstrate an enduring, *positive attitude toward safety*, even in times of fiscal austerity, and to actively promote safety in a consistent manner across all levels within the organisation (Weigmann et.al.,2002).
- Provides the motivating force and resources for organising and *controlling* activities within an organisation (Esposito, 2001).
- The management commitment is inbuilt within the Five Fundamental General *Beliefs* on Excellence in Safety. The commitment to safety refers to the extent to which the upper-level management identifies safety as a core value or guiding principle of the organisation (Stewart, 2002).
- Measures the level to which management *acknowledges* the significance of the safety programme and involved in the safety process (Molenaar, 2002).

The ways in which the management commitment’s reflected is illustrated in Fig. 2. This is also supported by Vredenburg (2002) who believed that management safety practices are recognised as important predictors of employees’ compliance with safety measures.

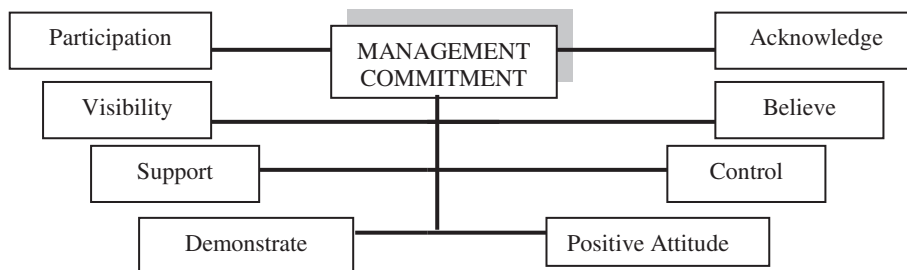


Fig. 2. Ways of Management Commitment Reflected

Sound safety practices and training is a credit for strong safety performance according to Minter (2003). Safety training is an essential element in developing excellence (Stewart, 2002). A well-designed and administered training programme should emphasize safe work practices and be derived from a true assessment of need according to Vredenburg (2002). Further training is one of the essences of management commitment. The aspects of training that need to be considered based on literature are as illustrated in Fig. 3.

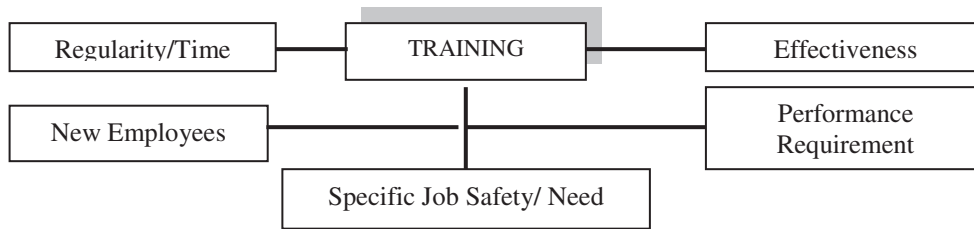


Fig. 3. Aspects of Safety Training

The creation of budgets is another process that reveals the management assumption and beliefs (Schein, 2004). The sufficient allocation of funds will support the reward system and training conducted for the staff of the organisation. The amount of allocation also dictates the commitment of the top management towards health and safety in the organisation. Noticing and showing appreciation when the subordinates put extra effort on safety. The amount allocated should be reviewed continuously according to Vredenburg (2002). Aspects covered under resource allocation are illustrated in Fig. 4.

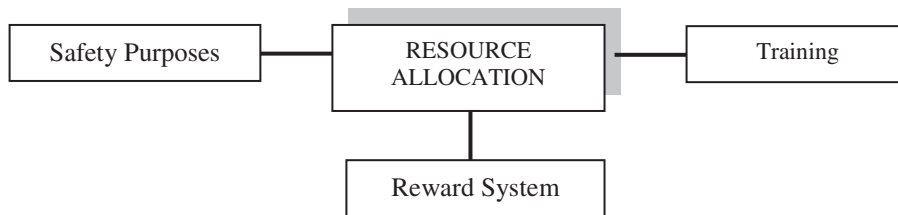


Fig. 4. Aspects of Resource Allocation

Ostrom et.al.(1993) agreed that rewarding individuals who call attention to safety problems and are innovative enough to locate safety hazards as a reflection of good safety culture. This is further supported by Weigmann (2002) and Vredenburg (2002). Stringer (2002) used the word “recognition” instead as one of the climatic dimensions where high recognition climates are characterised by an appropriate balance of reward and criticism. Krause (2004) used the similar term “recognition” as the best practices. Schein (2004) acknowledged the importance of rewards and judged in the long run by whether rewards are allocated consistently with the daily desired behaviour.

According to Minter (2003), a wide variety of recognition and incentive programs are used to encourage safety performance. However, incentive programmes can only work if they are carefully structured. A correctly designed safety-incentive programme reinforces the reporting of a hazard or an unsafe act that leads to an injury while giving bonuses for fewer loss-time accidents. A safety incentive programme must be part of the campaign that runs parallel to safety education and training. It must be directed at the prevention of accidents, not punishment after an accidents occurs according to Peavy (1995) as cited in Vredenburg (2002). A key characteristic of a successful incentive programme is that it receives a high level of visibility within the organisation. In this way participants will be able to comprehend what the incentive programme is designed to accomplish and how their performance will be measured Halloran (1996). Characteristics on the reward system according to this literature are illustrated in Fig. 5.

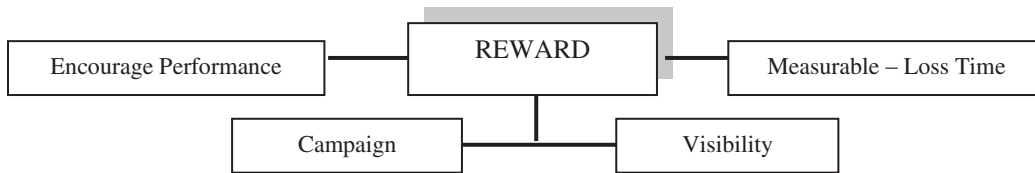


Fig. 5. Characteristics of the Reward System

3. Methodology

This research uses construction organisations as the unit of analysis. Duff (1998) specifically revealed that construction safety problems are, and always have been, one of the management control processes in which it is understood to be part of the contractors' management related to the construction process. Therefore, it is perceived that the construction accidents causation is always associated with contractors' management failure to control unsafe site conditions or unsafe actions (Abdelhamid, 2000).

The scope of the study was derived from the whole total population of 866 (overall total of 1,171) numbers of a Grade 7 contractors listed under the Construction Industry Development Board (CIDB) Directory who undertake Building Works within Klang Valley. The Main Survey was directed to 117 respondents who had responded to the Preliminary Survey undertaken prior to this survey.

The examination of safety culture is from the individual perspectives of the senior executives as the data source. The approach is consistent with the proposition that the top management is in a position to influence cultural identity, a top-bottom approach as established by IAEA (1991), Cox *et.al* (1997) and Mohamed (2003).

Seven items were used to measure on leadership, management commitment, safety training and resource allocation. However for organisational commitment which was further sub-divided into *Strategy* and *Structure* were measured with seven and five items respectively. Generally a seven likert- scale were used to measure all the dimensions (1= not very true in this organization and 7= very true in this organization). The assessment of the behavioural factors was deduced based on the mean score.

4. Results and Discussions

The '*Leadership*' role is cited as critical for the smooth running of an organisation and without strong leadership the organisation may lose its direction, in particular when trying to achieve its target. For this dimension, with the exception of the factor '*Senior Manager own the overall responsibility for the sub-contractors' safety & health*' which received the lowest mean score of 4.73, the rest of the factors recorded means of more than 5.00. This augurs well for the companies since the staff member's perceived importance high towards the higher authorities' endeavour to achieve the highest safety level in the company. For example the factor '*Senior Manager is supportive and helpful to subordinates in their day-to-day activities*' recorded a mean of 5.58 which is equivalent of 80 percentage points.

For the '*Strategy*' the level of perception ranged widely by about 20 percentage points between the factor that recorded the highest level, i.e. '*The safety policy statement describes the organisation's core beliefs, commitments & responsibilities regarding safety & connects these successes to the success of the organisation's overall mission*' which registered a mean of 5.62 or 80 percentage point to 4.19 or 60 percentage points recorded by the factor '*Sub-contractors past safety performance is an important criteria for selection in the organisation*'.

As far as '*Structure*' is concerned there is not much difference in the perception of the respondents towards the various factors being investigated as evidence by the narrow margin of differences in the

percentage point (8 percentage points) of their means. The highest ‘The organisation established clear, *specific performance goals for subordinate’s job*’ at 5.33 or 76 percentage point against the lowest ‘*Structures and process are reviewed timely for OSH excellent*’ with a mean of 4.79 or 68 percentage point. This means that the staff members do not really think highly of the authority and responsibility accorded to the respective individuals for the maintaining of the safety measures.

The dimension ‘*Management Commitment*’ did not receive high rating among the respondents in which the highest mean recorded was the factor ‘*The top management acts as chairman or member of safety committees*’ at 5.33 or 76 percentage points. In fact only three factors received a mean above, 5 or 71 percentage points and above. This could be interpreted as the staff members were not really convinced how serious are the management attitudes in maintaining the highest safety standard in the organisations. That contradicts the expectation that management commitment as the most important out of the five behavioural practices that influence the embedding of safety culture in the organisation as discussed earlier.

However, when looking from the ‘*Safety training*’ point of view, there seems to be some conflicting results when assessed against ‘*Management commitment*’. In this case the factor ‘*Safety trainings are provided to all subordinates free of charge*’ received a high mean of 5.83 or 83 percentage points. This is in contrast to the lowest factor recorded by ‘*Safety training background is a criteria for sub-contractors’ to receive invitation for new works in this organisation*’ with a mean of 4.43 or 63 percentage points.

Rewards whether in cash or in kind are important ingredients to encourage good job performance by increasing motivation. This can be evaluated by considering the resources being allocated. Incidentally, despite being critical issues that need to be recognised by the management, the staff members appeared not to have a high regard to all the factors considered within the ‘*Resource allocation*’ dimension. The highest mean recorded was the factor ‘*Recognition, praise and similar methods are rewarded for good performance*’ which received a mean of 4.81 or 69 percentage points. The lowest was achieved by the factor ‘*An incentive is offered to sub-contractors to become excellent safety performers*’ at 3.72 or 53 percentage points. In fact all factors considered recorded means or less than 5.00. The mean score for all these items is shown in Table 1.

Table 1. Mean score of the behavioural factors

Dimension	Items	Mean score
Leadership	Senior Manager is supportive and helpful to subordinates in their day-to-day activities.	5.58
	Senior Manager involves people in setting their goals.	5.38
	Senior Managers are visible at worksites.	5.37
	The Senior Managers are role model.	5.31
	The Senior Manager encourages the subordinates to participate in making decisions.	5.15
	The Senior Manager provides leadership for OSH activities in the organisation.	5.12
	Senior Manager own the overall responsibility for the sub-contractors’ safety & health.	4.73
Strategy	The safety policy statement describes the organisation’s core beliefs, commitments & responsibilities regarding safety & connects these successes to the success of the organisation’s overall mission.	5.62
	The organisation clearly stated safety in long-term objectives and plans for the organisation.	5.33
	The organisational objectives state that safety is paramount within the organisation.	5.31
	The safety policy statement defines and reinforces the safety objective expressed in the mission statement.	5.25

	Safety policies and objectives are consistently reviewed and remain timely.	4.98
	This organisation provides clear and specific safety budgets.	4.48
	Sub-contractors' past safety performance is an important criterion for selection in the organisation.	4.19
Structure	The organisation established clear, specific performance goals for subordinate's job.	5.33
	Structures of the organisation are established to define and communicate to members of the organisation the responsibility, accountability and authority of persons who identify, evaluate or control hazards and risk.	5.33
	Structures and process are established to ensure that OSH is a line-management responsibility which is known and accepted at all levels.	5.15
	Structures and process are established to provide effective supervision of the sub-contractors' work.	5.15
	Structures and process are reviewed timely for OSH excellent.	4.79
Management Commitment	The top management acts as chairman or member of safety committees.	5.33
	The top management participates in decision making on all activities that give an impact on safety matters.	5.15
	The top management administer safety policies.	5.04
	The top management thoroughly examine safety reports, investigating all accidents, near misses and takes necessary action.	4.67
	The top management regularly audit safety systems to provide information feedback with a view to developing ideas for continuous improvement.	4.60
	The top management have mechanisms in place to gather safety related information, measure safety performance, and bring people together to learn.	4.58
	The top management monitor the safety management system of all sub-contractors.	4.48
Safety training	Safety trainings were provided to all subordinates free of charge.	5.83
	The necessary OSH competence requirements; arrangement established and maintained to ensure that all persons are competent to carry out safety and health aspects of their duties and responsibilities.	5.36
	The safety training programmes are provided effectively, timely initial and refresher training at appropriate intervals.	5.19
	Everyone is trained regularly and thoroughly in specific job techniques and in more general practises.	4.68
	There is a mentoring program for all new employees to develop safe working habits.	4.68
	The training programmes are reviewed regularly to ensure their relevance and effectiveness	4.59
	Safety training background is a criterion for sub-contractors' to receive invitation for new works in this organisation.	4.43
Resource allocation	Recognition, praise and similar methods are rewarded for good performance.	4.81
	The safety department is considered an organisational expense centre.	4.72
	Good performance is recognised more often then criticizing for poor performance.	4.66
	Appreciation given when people put extra time and effort on safety.	4.66
	Sufficient resources are reviewed timely for safety purposes.	4.51
	There is a reward system (compensation, recognition, promotion) that is directly related to performance rather than to personal relationships and so on.	4.40
	An incentive is offered to sub-contractors to become excellent safety performers.	3.72

5. Conclusion

The behavioural factors were measured by the leadership, the organisational commitment, the management commitment, training and the resource allocation. A fairly emphasis on the behavioural factors' characteristics were revealed with an equal number of elements received mean score exceeding and below 5.00 median score. In the aspects of leadership, despite of a high emphasis were given for SM as a role model, visible at worksite, supportive, involve people in goal setting, encourage subordinate in making decision and provide leadership for OSH activities, a low emphasis was given on the overall responsibility for the sub-contractors' safety and health.

The management commitment was rank as the most important as compared to other behavioural factors. Even though the senior management believe and put a high expectation on the management commitment as most important but it **was** not reflected in the practices within their organisation as discovered.

According to Ostrom (1993), organisations with a good safety culture are also reflective on safety practices in which they have mechanisms in place to gather safety related information, measure safety performance, and bring people together to learn how to work more safely. They use the mechanism not only to support solving immediate problems but learn how to better identify and address those problems on a daily basis. However the current practice shows that the commitment was limited to being the chairman of the safety committee, participate in the decision making and administer safety policies. Further, the literature review also highlighted that the management commitment is reflected in many ways on "good safety culture" features.

A fairly low emphasis found on reviewing the training to ensure their relevance and effectiveness. Training was rank as the fourth most important as compared to the other behavioural factors in the Main Survey.

None of the items recorded a high emphasis in the current practices on resource allocation, despite being critical and need to be recognised by the senior management. This is also consistent to the results of the Main Survey, where resource allocation was rank as the least important.

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