

SAFETY MANAGEMENT: A FRAMEWORK OF SAFETY CULTURE DEVELOPMENT PROCESS

Ahmadon BAKRI

Lecturer, Dept. of Structure and Materials, Faculty of Civil Engineering, Universiti Teknologi Malaysia, Malaysia.

Mohd Saidin MISNAN

Lecturer, Dept. of Quantity Surveying, Faculty of Built Environment, Universiti Teknologi Malaysia, Malaysia.

Abdul Hakim MOHAMMED

Professor, Dept. of Property Management, Faculty of Geoinformation Science and Engineering, Universiti Teknologi Malaysia, Malaysia.

Wan Yusoff WAN MAHMOOD

Associate Professor, Dept. of Quantity Surveying, Faculty of Built Environment, Universiti Teknologi Malaysia, Malaysia.

Syamsul Hendra MAHMUD

Lecturer, Dept. of Quantity Surveying, Faculty of Built Environment, Universiti Teknologi Malaysia, Skudai, Malaysia.

ABSTRACT

The nature of most accidents at the construction sites shows that the construction industry is unique. Factor involved include human behaviour, different construction sites, the difficulties of works, unsafe safety culture, dangerous machinery and equipment being used, and noncompliance to the various set procedures. It argues that accidents recurring at construction sites show that the construction industry is unique in causing safety problems. As buildings become higher and larger, the frequency of accidents also increases. However, it is not possible to control all the hazardous activities at a construction site. Factors influencing accidents include human behaviour, different construction sites, complexity of work, lack of safety culture, unsafe use of machinery and equipment, and noncompliance with various sets of procedures. Safety culture is more related to workers' safety practices. An efficient safety management system ought to be based on the safety awareness that should then become a culture in the construction industry. Efficient safety culture should be demonstrated to the public as a good value business. Safety culture is an alternative for encouraging competition at any level. The construction industry must have a safety culture in order to reduce number of accidents, fatalities and injuries that involves workers and properties. This paper discuss a framework of the safety culture development process in construction firms. The entire safety culture development process contain eleven phases namely leadership values, safety culture stimulus, transference methods, safety interpretation, safety comprehension, safety reinforcement, safety training, continuous safety training, motivation, obedience and self-regulation, and recognition system and acknowledgement. Finally the paper explains that validations are required to determine the effectiveness of the framework and to identify desired improvement.

Keywords: construction industry, safety culture, safety management, safety culture development process

INTRODUCTION

The reputation of the construction industry relies on the expertise of implementation and managing safety, while meeting the consumer's requirements (Mills, 2001; Loosemore *et al.* 2003; Root, 2005; Goetsch, 2005). Although the construction industry has been attempting to find reasonable and efficient safety supervision systems, the systems largely being used in preventive is not comprehensive and lack preventive measures. The safety supervision system being adopted by new construction is inefficient. The construction sites are constantly exposed to safety risk and that such risks are hard to manage by the

supervisors alone. Therefore, it is necessary to prioritize these risk factors and manage them accordingly.

In order to improve health and safety in the construction industry it is important to have an understanding of the industry's culture. One of the key initiatives that can make a positive impact on health and safety statistics is education and training, both in the classroom and on the job training. It is clear that the industry is in need of not only increased training, but relevant and specific training that reaches to all those involved in the construction

process, from the front line operatives to the height level strategic decision makers (Fadier, 2006).

One of the measures that can be undertaken in order to develop a good or better image of the construction industry is to provide safe working environment (Jamal Khan *et al.* 2005). High rate of accidents occurring in the construction industry is causing losses both to the health and safety of workforce and millions of ringgit worth of properties every year in the country (Singh *et al.* 1999).

RESEARCH OBJECTIVES AND METHODOLOGY

The overall objectives of this study are to identify safety culture development process and other related attributes such as safety and health training. The initial part of the investigation involved review of relevant literature on the subject of safety culture and organisation culture. The literature review has revealed some ambiguity over the definitions of safety culture. Second part discusses the findings from the research and proposed framework of the safety culture development process in the construction firms. In order to proposed framework of safety culture development process, semi-structured in-depth interviews were carried out with 15 safety practitioner currently working and practicing on safety management and consultations. These interviews explored personal attitudes to everyday activities on site through a safety cultural lens, drawing out attitudes towards safety culture, and safety culture development programmes.

SAFETY AND HEALTH CULTURE

Glendon and McKenna (1995) stated that effective safety management is both functional (involving management control, monitoring, executive and communication subsystems) and human (involving leadership, political and has safety culture sub-systems paramount to safety culture). This is so, because the concept of safety culture has emerged from the earlier ideas of organisational climate, organisational culture and safety climate. They described safety culture as the embodiment of a set of principles, which loosely defines what organisation is like in terms of health and safety.

Safety is looked into from the cultural point of view as shared characteristics of a group dynamic relating to a system (e.g. group, community, race, nation, religion) which include beliefs, values, attitudes, opinions and motivations (Misnan *et al.*, 2007b). Glendon and McKenna (1995) pointed out that organisations with good safety cultures have employees with positive patterns of attitudes towards safety practice. These organisations have mechanisms in place to gather safety-related information, measure safety performance and bring people together to learn how to work more safely.

Creating a culture of safety means that the employees are constantly aware of hazards in the workplace, including the ones that they create themselves. It becomes second nature to the employees to take steps to improve safety. The responsibility is on everyone, not just the

management. However, this is a long process to get to that point (Dilley and Kleiner, 1996).

Safety and health culture within a company is closely linked to the workforce's attitudes in respect to safety. They share the company's risk, accidents and incidents. The role of management and the involvement of all employees as important key players in safety and health culture are important to cultivate the positive beliefs, practices, norms and attitudes among all in the company (Misnan *et al.*, 2007b).

The theoretical and empirical development of safety culture and climate has followed the pattern set by organizational culture and climate, although to a lesser extent. As stated previously, most efforts have focused on the empirical issues surrounding safety climate although it is possible to identify theoretical development of concepts within the safety culture literature. Also, the terms safety culture and safety climate have been used interchangeably in the literature (Cox and Flin, 1998). Cox and Cox (1996) also demonstrated this point by likening culture to personality, and climate to mood. Conducting a survey will assess the current mood state of an individual. Some responses may be indicative of the individual's stable underlying beliefs, constructs and personality but overall, the survey will reflect how the individual feels at that point in time. The comparison between culture and personality seems attractive because personality is relatively stable over time whereas climate and mood can be susceptible to short-term fluctuations (Pervin, 2003).

In relation to occupational safety, the workers must be able to automatically correct a hazardous act or eliminate a hazardous condition. In terms of occupational health, they ought to automatically undertake measures to ensure protection from health hazards at the workplace using personal protective equipment without having to be told repeatedly to do so (Misnan and Mohammed, 2007a).

Organizational Culture

Culture is defined as those practices common to a group of people. In this context, safety can be expressed in simple direct terms as behaviour affected by culture. Note that this topic encompasses both management behaviour (action or inaction) and employee behaviour (Eckhardt, 1996). Culture is further defined as missions interacting with work processes and corporate values to generate behaviour (McSween, 2003).

Organizational or corporate culture as defined by Handy (1993) is the 'pervasive way of life or set of norms and values that evolve in an organization

over a period of time'. Norms are unwritten but accepted rules which tell people in organizations how they are expected to behave. They may be concerned with such things as how managers deal with their staff (management style), how people work together, how hard people should work or the extent to which relationships should be formal or informal. Values are beliefs on how people should behave with regard to such matters as care and consideration for colleagues, customer service, the achievement of high performance and quality, and innovation.

It should be noted that the proposed definition of safety culture is stated in neutral terms. As such, the definition implies that organizational culture exists on a continuum and that organizations can have either a good or poor safety culture. However, not all definitions in the literature make this assumption. Some suggest that safety culture is either present or absent within an organization. Nevertheless, it is clear from the initial introduction of the term within various operational environments that safety culture is assumed to be a component of an organization that can be improved rather than simply instilled (IAEA, 1986; Cox and Flin, 1998). Obviously, such a distinction is important when it comes to both measuring and changing safety cultures within organizations. More specifically, safety culture is seen as a subfacet of organizational culture and exists at a higher level of abstraction than safety climate. It seems plausible that safety culture and safety climate are not reflective of a unitary concept, rather, they are complementary independent concepts (Cooper, 2000).

Safety Culture in The Construction Industry

For a long time, the construction industry has been labelled with poor occupational safety and health culture. Efforts to improve occupational safety and health performance will not be effective until the occupational safety and health culture is improved (Misnan and Mohammed, 2007b). As a result, there is a need for a major paradigm shift regarding attitudes on occupational safety and health in the construction sites. Widening the understanding of behaviour increases insights into possible targets for improvements, for example better planning, more effective job design, or more comfortable personal protection. The influence human behaviour on safety performance is enormous. Therefore, this root problem must be solved effectively.

SURVEY

A survey and interview was carried out, focussing on the 9 factors that had been identified as the influential factors of the development of safety culture. The factors are: leadership, involvement, recognition systems and acknowledgement, training, communication, teamwork, motivation, health and safety committee, and policy and safety planning. The respondents involved 287 Grade G7 construction firms in Klang Valley and 15 safety and health expert, with the aim to acquire information on the

best activities for the 9 influential factors of the development of safety culture in construction firms.

Based on the findings in Table 1, it can be concluded that construction firms and safety experts recognise leadership as the main influential factor in the development of safety culture, followed by training. This shows that both respondents are in agreement that leadership and training are of great influence to the development of safety culture in construction firms. With the findings of the survey and interview used as the point of reference, the following discussions shall focus on leadership and training as the main influential factors in the development of safety culture in the construction industry. The delineation of leadership framework and training in human resource development shall be based on the leadership factors.

Table 1: Findings on the factors involved in the development of safety culture.

Nos.	Factors	Grade G7 Construction Firms		Safety and Health Expert	
		Importance Index	Rank	Importance Index	Rank
1.	Leadership	0.8946	1	0.9808	1
2.	Involvement	0.6548	3	0.6346	5
3.	Recognition system and acknowledgement	0.3879	9	0.3077	9
4.	Training	0.6665	2	0.7885	2
5.	Communcation	0.5500	5	0.4423	6
6.	Motivation	0.3937	8	0.4038	8
7.	Teamwork	0.4603	7	0.4231	7
8.	Health and Safety Committee	0.5346	6	0.7692	3
9.	Policy and safety planning	0.5641	4	0.6923	4

FINDINGS AND DISCUSSION: SAFETY CULTURE DEVELOPMENT PROCESS

Figure 1 illustrates the framework of safety culture development process. The entire process contain eleven phases – leadership value, safety culture stimulus, transference methods, safety interpretation, safety comprehension, safety reinforcement, safety training, continuous safety training, motivation, obedience and self-regulation, and recognition system and acknowledgement.

Overall, safety culture phases can be divided into two types - (i) phases dominated by the transferor and (ii) phases dominated by the receiver. Transferor is defined as conveyor, somebody to transfer the stimulus and develop safety culture to another person. The phases dominated by the transferor refer to the phases that can be monitored by them. Examples of transferor are safety manager, construction manager, safety manager, safety director or who ever wants to raise safety culture among the receiver.

On the other hand, receiver is defined as somebody who takes or accepts the stimulus for developing safety culture. The phases dominated by the receiver refer to the phases that cannot be monitored by the transferor and is self-regulation achieved by them. Examples of receiver include employees and construction professional.

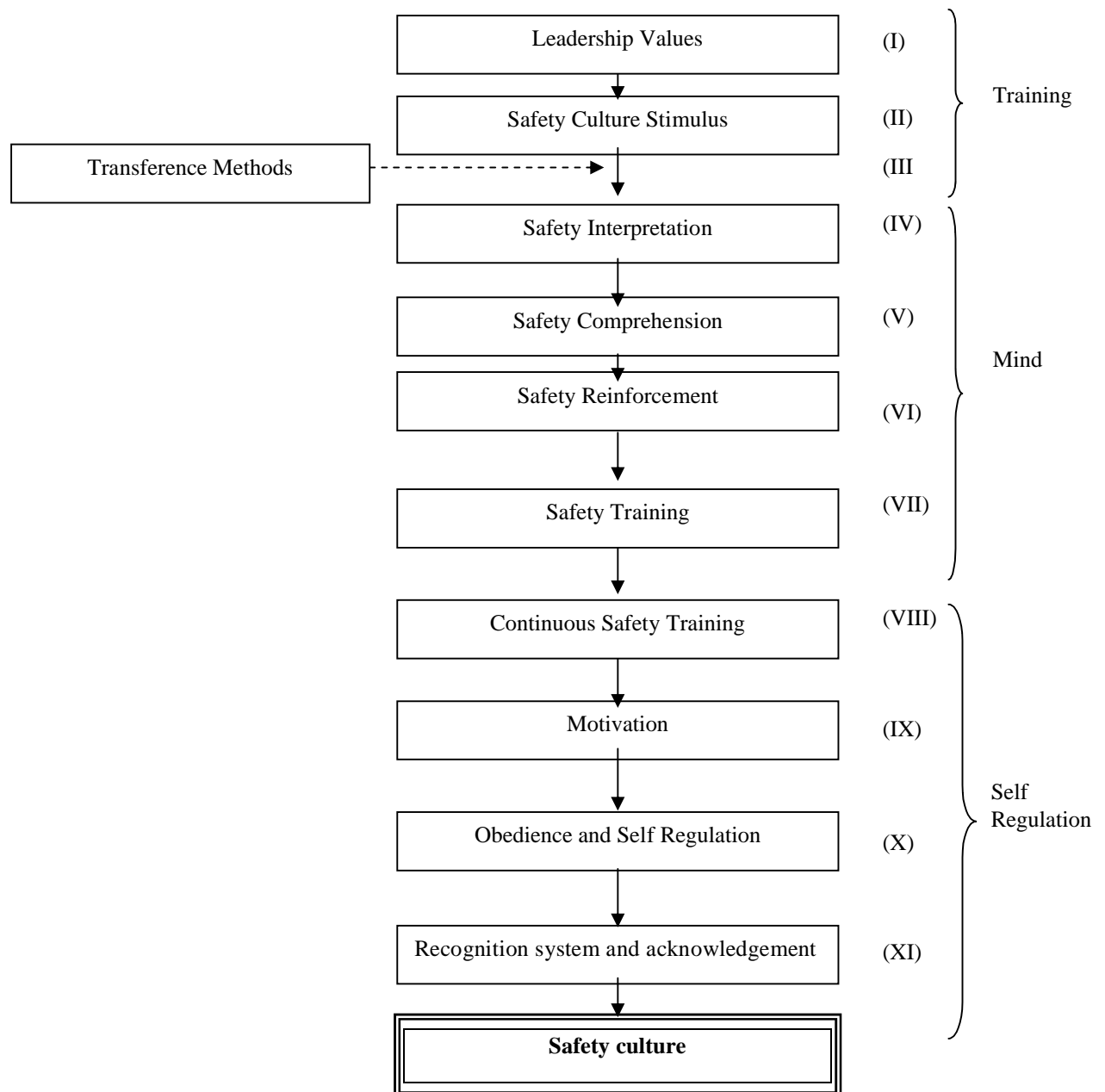


Figure 1: A framework of safety culture development process in construction firms

Phase (I): Leadership Values

The first phase of the safety culture development process is the leadership values development. The subject of leadership has been written about very widely and it is very crucial towards achieving success (at industry, organization and project levels). A good leader tends to have the ability to integrate people, motivate them and get

them to do things willingly. There are more specific definitions of leadership which have been cited but most depend on the theoretical orientation of the writer. Leadership is an essential part of the process of management and it is also an integral part of the social structure and culture of the organization. If the manager is to be successful in dealing with people and influencing their behaviour and actions,

it requires a leadership style and values which helps to foster a supportive organizational culture - a type of leadership that goes beyond profitability.

The leadership style employed by those in safety critical roles was an additional factor seen as determining the quality of the site safety culture. Commonly discussed topics included the ability of the manager to: delegate responsibility, provide clear expectations, display work competence, and be highly organised in planning the construction activity. It is sufficient here to say that people have beliefs about their leaders, and their leaders' strengths and weaknesses can influence their work culture. Furthermore, they will have values and beliefs about what constitutes good leadership.

Phase (II): Safety Culture Stimulus

The second phase of the safety culture development process is the availability of safety culture stimulus. Based on the classic stimulus-response (S-R), awareness happens because of specific stimuli. Practically, stimulus is incentive - something that encourages an activity or a process to begin, increase or develop. Stimulus can exist in various kinds of forms, such as visual, audio, taste, smell and feel. However, for the purpose of safety culture development, only two senses are given concentration - audio and visual, as other senses are not appropriate. In safety culture development process, stimulus refers to information and should cover criteria such as clear, understanding, interesting and strongly impress. Different communities will need different kind of stimulus, appropriate stimulus must be carefully considered before further steps are taken. In practice, during the second phase of safety culture development, the transferor can utilize two types of stimulus - safety tips and safety problems. Safety tips are very important in showing the worker show easy they can conserve safety. Simultaneously, this raises their knowledge about the importance of safety. Examples of safety tips are using the personnel protection equipment (ppe). Such simple safety tips will encourage and provide the respondents a better way to conserve safety in their daily activities. Reverting to the second types of stimulus - safety problems, it is believed that bringing people's attention closer to the safety problems will help them to better understand about the safety issue. People may take safety conservation as a responsibility if they realized the safety that they make every day. Summarizing from Clarke (1999), employees can be stimulated to support an safety management program if they are informed of (1) the personnel protection equipment of safety they are using, (2) the cost involved, (3) critical part that safety plays in the continued viability of their job, (4) the relationship between accidents rate and safety implementation, (5) the seriousness of the safety problem and its potential effects upon our nation's economy in the future.

Phase (III): Transference Methods

Between safety culture stimulus and interpretation phase, transference methods appear as a technique or tool to effectively transfer the stimulus to the receiver or in other words, to distribute the information. To develop safety culture, both transferor and receiver have to be available. Responsibility of the transferor is to effective transfer the stimulus (knowledge or information) while the responsibility of the receiver is to successful receive the stimulus. The function of the transference methods is to help transferor convey the stimulus to the receiver. There are several transference methods that have been identified. Such methods are: (1) booklet, pamphlets, brochures or leaflets - this is the easiest way to distribute the information to workers, however, the disadvantage of doing so is that the transferor cannot monitor the selection process of the receiver. In fact, the receiver may not go through the contents. (2) Seminar, talk or presentation are referred as the one (transferor) to many (receivers) method. In this case, the speaker (transferor) plays an important role in conducting the speech and the designation of the speech must be suitable for the audience. Appointing a good speaker will be the main concern. (3) Sign, it is said to be very effective to remind people to be aware and to conserve safety. (4) Regulation, compared to the others, this is the most unfriendly method. However, regulation may be very effective in forcing employees to conserve safety. Besides that, it also reflects the organisation appears to be more serious in promoting safety implementation.

Phase (IV and V): Interpretation and Safety Comprehension

Under the mind stage, fourth and fifth phase of the safety culture development process is receiver dominant, meaning that these phases is out of the control of the safety manager or project manager. The fourth phase of the safety culture process is interpretation.

Interpretation refers to the process of how receiver explains and clarifies the information that he received. Often, the receiver will operate and integrate the new knowledge by using past experience, available knowledge and believe. The fifth phase is comprehension or understanding, it refer to the level of understanding of the receiver to the information. The fifth phase include awareness, if the previous phases are applied successfully, then the awareness probably is developed in this stage. In this case, the receiver will have the knowledge of those particular subjects and aware about it.

Phase (VI): Safety Reinforcement

It is easier to change a participant's knowledge about safety and conservation than it is to change their attitudes (DeJoy, 2005). For instance, although many smokers aware (having knowledge and realize) that smoking is harmful to their health, but they still continue to smoke. In the similar circumstance, those who aware the importance of safety conservation and understand the safety conservation technique may not practice them. Hence, reinforcement is designed to overcome this problem. Reinforcer actually strengthens the association between a response and preceding stimuli. Barker (1997) defined reinforcer as any stimulus whose application following a response has the effect of increasing the probability of that response. This S-R interpretation of learning says that reinforcement is necessary for response selection, for one response to eventually become more dominant than other equally likely responses in a particular situation (Beck, 1983). For the reason of so, reinforcement should be carrying out to emphasize benefits that can be gained or hazards that can be avoid if the receiver carry out the safety conservation. During this phase, transferor should repeat the stimulus. According to Adler and Rodman (1991), repeating influence the process of selection, something can be noticeable if frequently exposed. If the respondent frequently expose to the relevant stimulus, the level of understanding of them towards the issue will be higher. Besides that, transferor may also distribute the information of benefit or detriment if or if they do not carry out safety conservation efforts, example of benefits: expand the life span of non-renewable safety sources, reduce the unnecessary safety cost and use it in more profit return sector, delay the country's movement to safety importer status and provide a better environment for working culture. On the other hand, examples of detriment includes health and safety hazards, physical hazards, accidents, near miss incidents, fatalities, pollution, decrease of public health, drastically increases of safety cost and likewise.

Phase (VII and VIII): Safety Training and Continuous Safety Training

A comprehensive safety and health education and training program includes all employees, beginning the first day on the job and continuing throughout their employment.

In today's rapidly changing environment, it is more important than ever that employee education and training, including safety and health education and training, be a continuously improving, ongoing process. Today's skills and knowledge will not be adequate to protect us from tomorrow's hazards. A comprehensive safety and health training program will include timely orientations and training for all levels of the organization and methods of ensuring that safety and health-related skills and knowledge continue to be developed and upgraded throughout the employee's career with the organization

Phase (IX): Motivation

Motivation is whatever activities that make people to act voluntarily in a certain way and then to persist in the face of difficulty. In this research, reinforcement is slightly different from motivation. Reinforcement is a technique to enhance the effect of stimulus while the motivation is to continue encourages the targets to be aware and carry out safety conservation (Wilson, 2004). Reinforcement offer indirect ways to influence the targets, the transferor only explains the benefit and hazard that can be obtained if doing something while the motivation is a direct ways which the transferor will provides prize or chastisement to the receivers directly. A critical determinant of motivation is the cost of compliance. Cost can be any expenditure of effort, time, and money. If a person perceives the costs of complying is greater than the benefits of complying, he or she is less likely to comply than if the benefits appear to outweigh the cost. The social influence is another motivational factor affecting compliance, if people see another person comply with a warning, thus they are more likely to comply. Although there are a lot of factors that influence human behaviour, the basic of motivation which control the great majority of human behaviour are rewards and punishments (Fazio, 1986). There are various types of reward and punishment, transferor may offer rewards such as: prizes, money and recognition. Conversely, transferor may also offer punishment such as: shame and fine.

Phase (X): Obedience and Self-Regulation

After the motivation phase, the employee is expected to be in the phase of obedience and self-regulation. There is one thing to be given consideration, when a person (p) receive information from some sources (s) to develop some kind of culture, for instance, safety culture (s). We cannot say 'p' have culture of 's' unless such exposure to 's' make a revealing difference in p's behaviour, then we can sure 'p' is culture of 's'. Safety culture should be followed by behavioural changes to conserve safety or in other words, complying behaviour. Definition of obedience is to act in accordance with another's command, request, rule, or wish. Obedience shows that the early success of the safety culture development process. By observing the receiver's attitude and compare the current and previous working and safety behaviour, the transferor can know that it was not the receiver that makes changes on safety consumption attitude. In this phase, transferor may carry out evaluation or assessment such as self-administrated observation, near miss incidents, accidents and injuries, medical leave and likewise, the purpose is to check out the level of safety awareness of respondent.

Self-regulation appears to be the stable element attempting to guide behaviour along a specific path to a directed safety aim or goal. However, apart from procedural, epistemic and conceptual divergences in various models of self-regulation, basic volitional factors, such as goal setting, self-monitoring, activation and use of goals, discrepancy detection and implementation, self-evaluation, self-consequation, self-efficacy, meta-skills, boundary conditions, and self-regulation failure, characterize the process of self-regulation (Karoly, 1993). Definition of self-regulation as those processes, internal and/or transactional, that enable an individual to guide his/her goal-directed activities over time and across changing circumstances (contexts). Regulation implies modulation of thought, affect, behaviour, or attention via deliberate or automated use of specific mechanisms and supportive meta-skills. The processes of self-regulation are initiated when routinized activity is impeded or when goal-directedness is otherwise made salient. The basic components of self-regulation, from the operant perspective, are goal setting, self-instructions, self-monitoring, and self-reinforcement.

Phase (XI): Recognition system and acknowledgement

The current review has highlighted different factors that can motivate contingent workers, e.g. the desire to gain permanent employment or to provide a professional service (Peckitt *et al.*, 2004). These findings suggest that alternative motivation and reward strategies, such as promoting safety as a professional value, could be successfully used to promote safe work behaviour, rather than assuming that contingent workers will internalise company safety goals. This means finding out more about the motivations of contingent workers and rewarding them accordingly (Goetsch, 2005).

Breach of psychological contracts and loss of trust in management have also been highlighted as possible effects of a more contingent workforce. Such negative effects can be ameliorated through the negotiation of "new deals" (Herriot and Pemberton, 1995) between employees and the employer. These negotiations should be explicit and be focused on matching the individual's and the organisation's wants and needs. Negotiation of contracts should include safety responsibilities, so that the high priority given to safety is explicitly stated and agreed with the employee (LaBar, 1997), whether the contract is fixed-term or permanent.

For the benefit of long term, motivation must be carried out. Although the receiver already practices safety conservation but being continuous to practice safety conservation is thus another challenge. People have, however, very short memories for these things and easily drop back into old ways (Carnall, 2003). Transferor should offer long term motivation to the receivers so they can continuously practice safety conservation. Once again, the reward and punishment should be the main concern. However, transferor should realize that economic

incentives only suitable for the motivation and not so effective in the long term. Social influences and personal interest are more important, such as public recognition, personal pride and safety award.

Validation

The safety culture development framework proposed was developed based on the literature review and semi-structured in-depth interviews. Fellows and Liu (2003) mentions that issues of reliability and validity are important, because in them the objectivity of research is at stake. Validations are needed to determine the effectiveness of the framework and to identify desired improvements. The framework will be evaluated by the key players in the related fields such as safety manager and project manager through questionnaire survey and interviews. The evaluation would consist of three elements - general observation, specific observation and additional comments as referred to Jawahar (1997). The assessment criteria include efficiency, adequacy, usefulness, manageability and effectiveness of the framework. Finally, feedback from the evaluation will be analyzed by using quantitative and qualitative analysis. Lessons gained from the evaluation will be used to revise the framework and to identify future research directions.

CONCLUSION

In summary, there appears to be a considerable evidence suggesting that organizational and contextual factors are important in achieving workplace safety. However, current definitions of safety culture remain rather vague and variable, and current knowledge does not permit precise statements as to which factors are most important in a given organization or situation. Also, systematic studies evaluating field-based interventions specifically targeted to safety culture change are conspicuous in their absence. But this is perhaps not that surprising given current conceptual and measurement limitations. It is also worth noting that intervening into the culture of an organization is difficult under the best of circumstances, because it requires that the organization be willing to look at itself and make fundamental changes in the way it pursues its core activities. These limitations, withstanding not, the importance and usefulness of organizational culture as they pertain to workplace safety appears to be broadly accepted by researchers and practitioners alike. This paper has presented a framework of safety culture development process. The process framework can be divided into eleven phases. The entire safety culture development process contain eleven phases namely leadership value, safety culture stimulus, transference methods, safety interpretation, safety

comprehension, safety reinforcement, safety training, continuous safety training, motivation, obedience and self-regulation, and recognition system and acknowledgement. Validations are required to evaluate the effectiveness of the framework and to identify desired improvements.

REFERENCES

- Adler, A.B. and Rodman, G. (1991). *Understanding Human communication*. 4th. ed. Fort Worth, Tex; Holt, Rinehart & Watson.
- Barker, L.M. (1997). *Learning and Behaviour (Biological, Psychological, and Sociocultural perspective)*. New Jersey: Prentice Hall.
- Beck, R.C. (1983). *Motivation*. 2nd. ed. New Jersey: Prentice Hall.
- Biggs, H.C., Dingsdag, D.P., Sheahan, V.L., dan Stenson, N.J. (2005). The Role of Collaboration in Defining and Maintaining a Safety Culture: Australian Perspectives in the Construction Sector. *Proceedings of the 21st Annual Conference 2005*. 7-9 September. London: ARCOM. 137-146.
- Carnall, C.A. (2003). *Managing Change in Organizations*. London: Prentice Hall.
- Clarke, S. (1999). Perceptions of Organizational Safety: Implications for the Development of Safety Culture. *Journal of Organizational Behavior*. 20(2): 185-198.
- Cooper, M.D. (2000). Towards a Model of Safety Culture. *Safety Science*. 36(2): 111-136.
- Cox, S. and Cox, T. (1996). *Safety System and People*. Oxford: Butterworth-Heinemann
- Cox, S.J. and Flin, R. (1998). Safety Culture: Philosopher's Stone or Man of Straw? *Work and Stress*. 12(3): 189-201.
- DeJoy, D.M. (2005). Behaviour Change Versus Culture Changes: Divergent Approaches to Managing Workplace Safety. *Safety Science*. 43(2): 105-129.
- Dilley, H. and Kleiner, B.H. (1996). Creating a Culture of Safety. *Work Study*. 45(3): 5-8.
- Eckhardt, R. (1996). Practitioner's Influence on Safety Culture. *Professional Safety*. 41(7): 23-26.
- Fadier, E. and De La Garza, C. (2006) Safety design: Towards a new philosophy. *Safety Science*, **44**, 55-73.
- Fazio, R.H. (1986). How do Attitudes Guide Behavior? In: Sorrentino, R.M. eds. *The Handbook of Motivation and Cognition: Foundations of Social Behavior*. New York: Guilford Press.
- Fellows, R. dan Liu, A. (2003). *Research Methods for Construction*. 2nd. ed. London: Blackwell Science.
- Glendon, A.I. and McKenna, E.F. (1995). *Human Safety and Risk Management*. London: Chapman & Hall.
- Goetsch, D.L. (2005). *Occupational Safety and Health for Technologists, Engineers, and Managers*. 5th. ed. New Jersey: Pearson Prentice Hall.
- Handy, C.B. (1993). *Understanding Organizations*. 4th. ed. London: Penguin.
- Herriot, P. dan Pemberton, C. (1995). *New Deal: The Revolution in Managerial Careers*. New York: John Wiley & Sons.
- International Atomic Energy Agency (IAEA) (1986). *Summary Report on the Post Accident Review Meeting on the Chernobyl Accident*. (IAEA Safety Series Report INSAG-1). Vienna: International Atomic Energy Agency.
- Karoly, P. (1993). Mechanisms of Self-Regulation: A Systems View. *Annual Review of Psychology*. 44(1): 23-52.
- LaBar, G. (1991). Worker Training: An Investment in Safety. *Occupational Hazards*. 53(8): 23-26.
- Loosemore, M., Dainty, A. and Lingard, H. (2003). *Human Resource Management in Construction Project: Strategic and Operational Approaches*. New York: Spoon Press.
- Mills, A. (2001). A Syatematic Approach to Risk Management for Construction. *Structural Survey*. 19(5): 245-252.
- Jamal Khan, M.K, Chew Abdullah, N.A., and Yusof, A.A (2005). *Keselamatan dan Kesehatan Pekerjaan Dalam Organisasi*. Petaling Jaya: Prentice Hall.
- Jawahar Nesan, L. (1997). *A Generic Model for Effective Implementation of Empowerment in Construction Contractor Organisations*. Tesis Ph.D. University of Wolverhampton.
- Misnan, M.S., and Mohammed, A.H., (2007a). Development of Safety Culture in The Construction Industry: A Conceptual Framework. In: Boyd, D. ed. *Proceedings of the 23rd Annual Conference 2007*. September 3-5. Belfast, United Kingdom. pp. 13-22.
- Misnan, M.S., Mohammed, A.H., Mohammed, I.S., and L. Jawahar Nesan (2007b). Problem and Issues in Developing Safety Culture in Construction Industry. *Malaysian Journal of Real Estate*. 1(3): 61-70.
- Peckitt, S.J, Glendon, A.I. and Booth, R.T. (2004). Social Influences on Safety Culture in the Construction Industry. In: Rowlinson, S. ed. *Construction Safety Management Systems*. London: Spon Press.
- Pervin, L.A. (2003). *The Science of Personality*. 2nd ed. New York: Oxford University Press.
- Root, D.F. (2005). Creating a Culture of Safety on Construction Sites. *Risk Management*. 52(11): 56-62.
- Singh, A., Hinze, J. and Coble, R.J. eds. (1999). *Implementation of Safety and Health on Construction Sites*. Brookfield: A.A. Balkema.
- Wilson, F.M. (2004). *Organizational Behaviour and Work: A Critical Introduction*. 2nd. ed. Oxford: Oxford University Press.