STAKEHOLDER ROLE IN SAFETY CULTURE AND SAFETY PERFORMANCE OF CONSTRUCTION: A CONCEPTUAL MODEL

Dr. Torky Althaqafi and Dr. Salah Abunar

Department, College of Business Administration (CBA), University of Business & Technology (UBT), Jeddah, KSA.

ABSTRACT: *Project management in the Saudi Arabian construction industry is an activity complicated by the current widespread lack of a mature organisational safety culture, which results in a high incidence of serious and fatal accidents, making it difficult to deliver project objectives. This article addresses this major problem. This research is therefore an attempt to verify the causal relationships and interactions between stakeholder involvement, safety culture, and safety performance in the construction industry, thus providing a better understanding, in turn, may improve safety. To achieve this objective, a conceptual model was developed to enable empirical research via responses to a questionnaire will distribute to construction organisations. The model provided in this study is a systematic approach to assess the safety culture of construction organisations and to guide them in self-assessments. The research contributes to the literature pertaining to assessments of stakeholder involvement and safety culture. Furthermore, it offers a valuable tool to government bodies and regulatory agencies for assessing their efforts in improving safety culture.*

KEYWORDS: Management, Policy, Safety Culture, Performance

INTRODUCTION

This study explores the extent to which stakeholders endorse a positive safety culture on construction projects. In recent years, stakeholder theory has become a commonly accepted management theory for framing an organisation's strategies, yet little is known about how stakeholders may influence the safety culture of a construction project. Even so, the stakeholders are expected to contribute to (Newcombe 2003; Smith, J & Love 2004), and influence, the development of that project (Chinyio & Olomolaiye 2009). Despite this expectation, there is still a large gap in the general conceptualisation of a safety culture in a construction project, due to both a lack of agreement on what 'safety' means and a lack of integration into accepted models of business operation.

The interaction between stakeholder theory and safety culture in balancing responsibilities and preventing injury or loss of life are obvious and significant. However, the types of interaction between the stakeholders, theories of relationships and safety culture that could provide a positive safety outcome are not very well developed in construction projects. No conceptual model has been produced to explain the relationships between stakeholder involvement and safety culture. This study addresses this shortcoming.

Safety culture, and safety performance in the construction industry, thus providing a greater understanding of their interaction which, in turn, will facilitate safety improvement. To achieve this outcome, a conceptual model was hypothesised and empirically will be tested by using information gathered via a questionnaire survey covering the main attributes of construction safety culture.

LITERATURE REVIEW

In preparation for the literature review, Cooper's (1988) Taxonomy of Literature Reviews was adopted to organise the review according to the research focus, goals, perspective, coverage, organisation and audience (Randolph 2009). The literature reviewed dealt with the three topics most important to this study – construction industries, workplace safety and stakeholder theory. The benefits of stakeholders' engagement in improving safety culture and reducing accident rates is examined by reviewing stakeholder theories and thinking. The review will demonstrate the influence of stakeholder theory on safety culture.

The construction industry

The construction industry plays a vital role in all countries, because it contributes significantly to the economic and social development of any nation. The ancient Egyptians were one of the earliest cultures to develop innovative construction techniques in order to build pyramids, temples, and obelisks. Also, just as we do today, they too had to supervise, mobilise, and feed a labour force.

The economic growth of a nation is often associated with the construction going on in the country, such as housing, industrial complexes, roads, bridges, buildings and other projects. Consequently, the success of construction projects is of particular importance to stakeholders and governments (Wibowo 2009). A study carried out in the Australian context has indicated that a 10% gain in the efficiency and productivity of the construction industry could lead to 2.5% gain in GDP (Stoeckel & Quirke 1992). This demonstrates the way in which a thriving, productive construction industry can influence any country's economic growth.

The construction industry involves many types of activities, and in terms of health and safety is considered unique by many researchers in terms of risk to life and limb. Construction industry conditions and organisation present a great challenge in terms of leadership, communication, and team integration, which all impact on health and safety.

Safety in the construction industry

Numerous definitions of safety are available in the literature; according to the Oxford Dictionaries safety is defined as 'the condition of being protected from or unlikely to cause danger, risk, or injury'. Also, British Standards Institution (2007, p. 3) defines occupational health and safety as 'conditions and factors that affect, or could affect, the health and safety of employees or other workers ..., visitors, or any other person in the workplace'.

Globally, the construction industry is labelled as one of the most dangerous sectors in terms of work safety, and occupational health and safety have become a major concern of both society and government (Choudhry, RM et al. 2008; Iain & Billy 2008; Phil 2010; Zou 2011). The likelihood of accidents is high, in spite of improvements over decades (The UK's Health and Safety Executive 2012). Construction in the 2011/12 data for the UK accounts for 22% of fatal injuries and 10% of reported major injuries throughout all industry, even though the construction industry accounts for only about 5% of the employees in Britain (The UK's Health and Safety Executive 2012). In Australia also, the construction industry records the highest number of fatal injuries of any industry: 17% of all compensated fatalities (Safe Work Australia 2013). In Europe, the construction industry has one of the worst workplace incident records, and around 47% of workers have indicated that they believe that their work affects their safety (EU-OSHA).

Providing a safe workplace is a global issue, and both developed and developing countries are attempting to solve the problem. In developed countries, new regulations and legislation have meant substantial improvement in the accident records. The UK's Health and Safety Executive (2012) reported that in the early 1990s the number of workers killed in the construction industry was around 125. By 1996/97 it was around 90, by 2005/06 around 60. For 2011/12 the fatal accident figure was 50.

Accident Causation

The reasons why accidents occur in the workplace, or anyplace, have been much investigated. It has been largely accepted that accidents are unplanned events which result in physical harm to people and property (Ridley & Channing 2008), but how and why accidents happen has produced different models of causation. The most widely known theories and models of accident causation are:

- the domino theory
- Leather's potential accident subject model
- project management accident model
- distractions theory
- Rasmussen's work behaviour model
- the Swiss cheese model
- the ConCA model.

Accidents in construction workplaces occur because of a failure of one or more indirect and/or direct factors, as summarised in Table 1. Accident causation models focus on management characteristics, human variables, and hazard aspects. Unfortunately, accident causation models are not interfaced with hazards identification and risk assessment, and there is a gap in our understanding of how risks become accidents (Khanzode et al. 2012).

Table 1 Summary of seven accident causation models

Accident causation model	The reason why accidents happen
The Domino Theory	Management loss control and a chain of loss event
Leather's Potential Accident Subject Model	Failure of management system, loss motivation, and inappropriate training and instruction which given by top management
Project Management Accident Model	Company policy failure, project management failure, site management failure, and individual failure
Distractions Theory	Distractions by hazards
Rasmussen's work behaviour model	Not comply with safety rules, hazards, and loss of control
The Swiss Cheese Model	Failures caused by management decisions
The ConCA Model	A failure in the interaction between worker and team work, workplace issues, and materials and equipment. Also it affected by the shaping factors and the originating influences

The big picture: Organisational and safety culture

Improving workplace safety usually concentrates on individual human failures and technical issues (Gadd, 2002). Most of major accidents, such as the meltdown at Chernobyl, the fire and explosion on the Piper Alpha or the grounding of the Exxon Valdez, all highlight the

contribution to major accidents of the organisation's procedures and policies. For example, when BP's Deepwater Horizon oil well spilled oil into the Gulf of Mexico in 2010, the judge ruling on the later litigation commented that BP had acted with 'conscious disregard of known risks' and that 'employees took risks that led to the largest environmental disaster in US history', because the company had allowed a reckless culture to dominate its decision-making capacity (Fisk & Feeley 2014).

According to Hofstede, GH (2001), culture is: transmitted and created content and patterns of values, ideas, and other symbolic meaningful systems as factors in the shaping of human behaviour and the artefacts produced through behaviour (Kroeber, & Parsons ,1958, p. 583). It is a shared mindset that distinguishes one group from another. Miraglia et al. (1999) point out that culture works as a template which shapes human behaviours in the form of values and practices; culture is learned and shared, and it is determined by contextual factors.

Organisational culture

An organisation's values, its objectives, and its resources must be congruent with one another. Turner and Pidgeon (2004) demonstrated that: part of the effectiveness of organisations lies in the way in which they are able to bring together a large number of people and imbue them for a sufficient time with a sufficient similarity of approach, outlook and priorities to enable them to achieve collective, sustained responses which would be impossible if a group of unorganized individuals were to face the same problem (Turner & Pidgeon, 2004, p.47). Cooper (2000) defines corporate culture as: ...to reflect shared behaviours, beliefs, attitudes and values regarding organizational goals, functions and procedures (Cooper, 2000, p.112).

Erez and Gati (2004) point out that the fit between organisational culture and management practices is critical and management behaviour tends to be constrained by an existing culture, which affects overall performance by influencing problem solving and decision making (Christensen & Gordon 1999). According to Deal and Kennedy (1982) certain cultural directions lead to strong and effective performances, while other directions result in failure. Clearly, there is evidence in the literature for the hypothesis that organisational culture and management practices influence the performance of construction projects.

Concepts of a safety culture

In the 1980s, researchers into the science of safety considered human error to be one of the sources of accidents, having already noted the dangers of the physical workplace in the technical phase and moved into the socio-technical phase (Reason, J 1993). At that time, it was agreed that the interaction between technical systems and various social situations caused accidents in the workplace. When analysing the accidents, it was in this context that researchers and practitioners considered social and organisational factors.

The term safety culture was introduced in an International Atomic Energy Agency (IAEA) report after their analysis of the nuclear accident at Chernobyl, Ukraine, in 1986 (Cooper, MD 2000; International Safety Advisory Group 1991). According to the agency (1992), a poor safety culture contributed to the disaster. The IAEA defines safety culture as: that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance (International Safety Advisory Group 1991, p. 1).

According to Flin (2007), the most widely accepted definition of safety culture was introduced

by Advisory Committee for the Safety of Nuclear Installations (ACSNI): The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management. Organisations with a positive safety culture are characterised by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures (ACSNI & HSC 1993, p. 23).

The concept of safety culture has increasingly become a part of academic literature, and the idea of working in a safe work environment is largely embedded in organisations in developed nations. The idea of safety culture and safety management are largely accepted by businesses (Cooper, MD 2000; Guldenmund, FW 2000). Cooper (1998) argues that the organisation's safety culture affects not only accident rates, but also quality, productivity, absenteeism, commitment, loyalty, work methods, and work satisfaction, while being a source of influence in determining outcomes (Cipolla et al. 2005), for better or worse.

Stakeholders and stakeholder theory

The main factors affecting safety in construction projects include the leaders of the company having a low awareness of the importance of safety in the workplace and the poor engagement among designers, architects, planners and coordinators of the projects (Tam et al. 2004).

Freeman's (1984) book is generally acknowledged to have brought stakeholder theory into the forefront of management literature, and his discussion of the history of the concept of stakeholders provides an overview of the various theories to which its early development is attributed. Then in 1988 and 1993, Evan and Freeman elaborated the stakeholder concept in editions of Beauchamp and Bowie's text Ethical theory and business by introducing two principles ⬚ the principle of corporate legitimacy, and the stakeholder fiduciary principle (Evan, William M & Freeman 1988/1993).

Stakeholder definitions. Stakeholders therefore are a group of individuals or a single person whose activities can affect, or are affected by, the organisation (Freeman 1984, 2010; Loebbaka & Lewis 2009). Stakeholders have the power to benefit or threaten an organisation (Gibson 2000), and influence an organisation's goals, activities, improvement and functions (Chinyio & Olomolaiye 2009).

Understanding and managing the complexities of business today is a challenge. Stakeholder theory has appeared as a new narrative to understand three interconnected problems related to organisations; the problem of how value is created, the problem of connecting ethics and capitalism, and the problem of managerial mindset (Parmar et al. 2010). According to Parmar et al. (2010) organisation executives pursue profit and care little for ethics. Since managerial activities have a broad impact on a range of people (Clement 2005), Parmar et al. (2010) suggest that academics and managers need to rethink the traditional ways of conceptualising the responsibilities of the firm.

Stakeholders in the construction industry include owners or clients, shareholders, project managers, employees, designers, contractors, subcontractors, suppliers, governments and legal authorities, insurance companies, competitors, customers and visitors (Newcombe 2003; Smith, J & Love 2004). At some point, each of these stakeholders has influence on the development of the project (Chinyio & Olomolaiye 2009). Much of the literature identifies primary and secondary stakeholders. Primary stakeholders are those who have a direct impact

upon an organisation and have formal or contractual relationships. Secondary stakeholders are various, and include those who are indirectly engaged in the organisation's activities, but are able to influence the organisation's decisions (Savage et al. 1991).

Safety Performance

Safety performance relates to how well the organisation manages its hazards (Reason, JT 1997). An organisation can increase its resistance and lower the risk of accidents by a positive safety performance, or decrease its resistance and increase the risk of accidents by a negative safety performance (Nevhage & Lindahl 2008). Edwards, JRD et al. (2013) view safety outcomes as representative of safety culture's interpretation within the organisation and a subset of organisational performance.

Figure 1 The conceptual model

The Research Problem

Since 1959, several theories of accident causation have evolved in an attempt to explain why accidents occur. The most widely known theories and models of accident causation are:

- the domino theory (Heinrich 1959)
- Leather's potential accident subject model (Leather 1987)
- project management accident model (Whittington et al. 1992)
- distractions theory (Hinze, JW 1996)
- Rasmussen's work behaviour model (Rasmussen et al. 1994)
- the Swiss Cheese model (Reason, JT 1997)
- the ConCA model (Haslam, R et al. 2005).

These researchers have variously determined that accidents occur in construction workplaces because of a failure of one or more indirect and/or direct factors; management characteristics, human variables, and hazard aspects.

In 1986, the concept of a poor safety culture was introduced as a contributing factor to the Chernobyl disaster. Since then, the idea of a safety culture has increasingly become a part of academic literature. Cooper (1998) argues that an organisation's safety culture influences not only accident rates, but also reflects quality, productivity, absenteeism, commitment, loyalty, work methods, and work satisfaction. Safety culture is often a factor in better outcomes (Cipolla et al. 2005). Thus, improving an organisation's safety culture is considered to be one way to improve safety performance and achieve better overall organisational performance (Fang et al. 2006).

Although the safety culture concept has been widely used for many decades by academics and practitioners, the actual nature of a safety culture is not precisely clear. According to Choudhry, R et al. (2007a), there is a major limitation to the concept of a safety culture since no accepted model of safety culture exists. This is due to both a lack of agreement, and the lack of its integration into general models of organisational culture (Edwards, JRD et al. 2013). Edwards, JRD et al. (2013) has pointed out, however, that there does exist a synthesised conceptualization of safety culture, which includes practices and activities, behaviours and attitudes, policies and procedures, and safety performance. This conceptualisation provides a useful starting point for discussion regarding the nature of safety culture, yet still needs a clear justification of its indicators and a conformity analysis to validate the model. Furthermore, safety outcome as safety performance needs more in-depth studies to distinguish between leading indicators and lagging indicators, in order to understand the effect of safety culture on those indicators. The current research presents a comprehensive conceptual model of safety culture to fill this gap.

According to Greenwood and Freeman (2011), stakeholder theory is important for a number of reasons. Firstly, it does not separate the logic of business from human or ethical logic, because all workers are stakeholders and as stakeholders are human beings. Secondly, in any business model, workers often form the core meaning of that model. Therefore, business models have been defined by stakeholder theory as "how an organization makes customers, suppliers, employees, communities and financiers better off, and how making one better off makes the others better off (Greenwood and Freeman 2011, p. 276)", and defines the purpose, principles and the relationship of the organisation to society. Stakeholder theory suggests that this needs to be a shared process where workers are at the centre, and involved.

In the current research, stakeholder theory and thinking has been adopted and conceptualised with the safety culture model in order to understand the relationship between the stakeholder and safety culture in the construction industry, and discusses the usefulness of their interaction in finding a balance between responsibilities and the prevention of loss. The main aims of the research were to determine empirically the extent to which stakeholder involvement impacts on safety culture and safety performance, and the nature of this involvement, along with developing a model that could help to assess the extent of this involvement within the construction industry.

METHODOLOGY

The study will be conducted in stages. The lack of common empirical indicators and the absence of an appropriate model meant that it was necessary to begin the research with a review of the literature, and to obtain expert opinions prior to developing a research instrument and verifying the extracted indicators, as suggested by García-Valderrama and Mulero-Mendigorri (2005), as well as Jonker and Pennink (2010). Having completed these steps, a pilot test was then conducted to modify the questionnaire.

To achieve the above research objective, a conceptual model was hypothesised and empirically will be tested by using information gathered via a questionnaire covering the main attributes of construction safety culture. The questionnaire will administer within the construction industry to the three groups of organisations (small, medium, and large). The initial study determined a cross-sectional design to be the most appropriate method for the

collection of data. Cross-sectional research is used to collect data on relevant variables simultaneously, which provides a snapshot of the variables (Busk 2005).

According to Busk (2005), the advantages of this method are that it fulfils multiple research requirements, such as collecting data on multiple variables, collecting data on behaviours and attitudes, and generating hypotheses for future study.

After data collecting, descriptive statistics, calculation of reliabilities, and checking of outliers and non-normality will be undertaken by employing the SPSS program. A confirmatory factor analysis and convergent and construct validities will be also undertaken by using AMOS. Lastly, the final results and model will be validated by using independent experts.

The procedure and applied methods used in the current research were considered appropriate in order to control biases, reduce error, and remove unwanted influence through statistical techniques and measurements, and to validate the research outcomes.
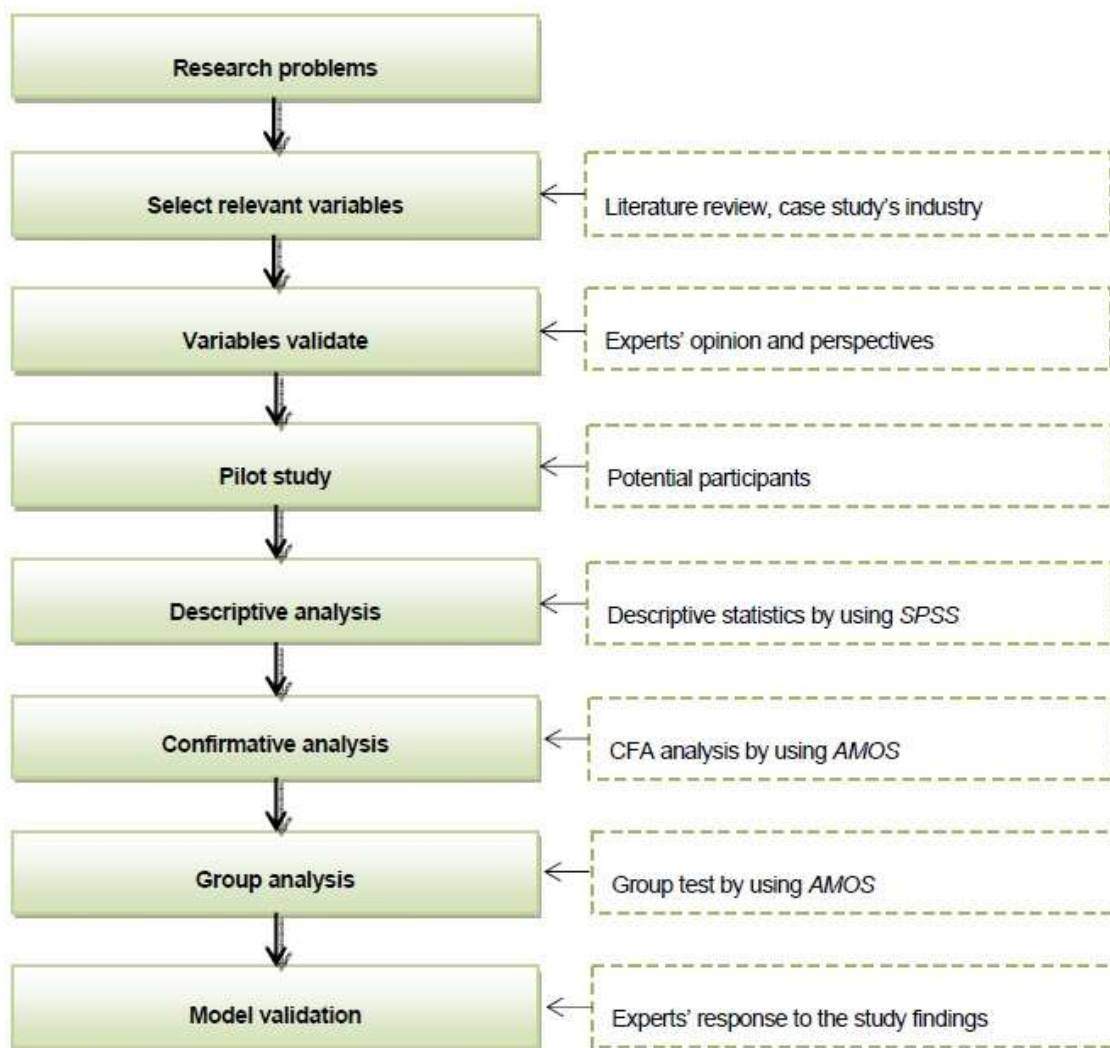

Figure 2 Research design for the current study

Figure 2 illustrates the procedure and methods used and will be used in the current research. In sum, these are:

- A comprehensive and critical review of relevant literature was conducted in order to develop the necessary research instruments.

- Formal interviews with safety experts will conduct to verify extracted variables.

- A pilot test will conduct to modify the questionnaire.

- Data will be collected.

- Descriptive statistics will be undertaken in this research by SPSS program.

- Confirmatory factor analysis will be also undertaken by using AMOS.

- Group analyses will be conduct by using AMOS.

- The final results and model will be validated by experts in construction projects after the data will be analysed.

Contribution to Knowledge

This study contributes to the theory and practice of stakeholder involvement, to aspects of safety culture, and to safety performance in the workplace as a first, empirically-determined step in raising standards in these areas. Despite the large number of studies having addressed the concept of safety culture and safety performance, only a limited amount of research has focused on stakeholder involvement and safety culture in the construction industry with particular reference to developing countries.

In the majority of existing studies, researchers have either replicated an already tested model in order to improve its adequacy, or developed a new model. To the best of the author's knowledge, none of the existing studies has explored the extent to which stakeholders promote a positive culture within the construction industry. This study examined the inter-cultural aspects of construction stakeholders' and senior management attitudes towards workplace health and safety within their industry, and then attempted to assess the influence and enforcement of the stakeholders on safety culture and safety performance. Therefore, this study adds to a growing body of empirical research related to construction safety culture in developing countries, and its relationship to the stakeholders in the industry. The most notable contribution of this study is in examining the relationships between stakeholders and safety culture dimensions with the objective of improving safety within the workplace. In addition, it opens up a future area of research into the clarification of these relationships, in particular by considering stakeholder theory in the context of construction safety culture and vice versa.

KEY Assumptions and Limitations

Despite the growing body of literature covering safety culture in the construction industry, it is still widely recognised that the empirical validation of stakeholder involvement in safety culture at senior management level is limited, and their contribution to safety performance is rarely studied. The interactions between the aims and objectives of senior management and what is actually being done in relation to safety performance appear to be ignored. This research is an attempt to verify the casual relationship and interaction between stakeholder involvement, safety culture, and safety performance in the construction industry, thus providing a greater understanding of their interaction which, in turn, will facilitate safety

performance improvement.

In the academic literature, these ways of elaborating stakeholder theory have been subject to significant debate. However, this research used stakeholder theory and thinking not to debate, but only to investigate the ways in which enforcement, influence, and participation can improve safety culture in construction projects.

A limitation of the study is that it focused on organisations within developing countries. Although the sample will be randomly selected, some restrictions will be applied. These restrictions will inevitably have influenced the results, which consequently may not be generalisable to other geographical areas.

SUMMARY

The main aims of this research were to determine empirically the extent to which stakeholder involvement impacts on safety culture and safety performance (leading indicators), the nature of this involvement, and to develop a model that could help to assess the specific nature of this involvement within the Saudi Arabian construction industry. Despite the large number of studies that have addressed the concept of safety culture and safety performance, only limited studies have focused on stakeholder involvement and safety culture in the construction industry with particular reference to developing countries. Therefore, the current study adds to a growing body of empirical research concerning construction safety culture in developing countries, and its relationship with its stakeholders.

A number of possible future research directions are offered in this section in relation to the findings presented above. Firstly, while this study focused on safety culture in the Saudi Arabian construction industry and to what extent stakeholders can influence that safety culture, there is an opportunity to replicate this study from the context of other developed or developing countries. Such an analysis would provide data to determine whether influence preferences may vary between different legal, religious, political, and cultural settings. Secondly, while the targeted participants were in senior positions to facilitate the capture of a macro-level perspective of stakeholders' involvement and safety culture, there remains an opportunity to carry out a comparison study between senior management and workers' perceptions, and capture the macro-level, as well as micro-level perspectives.

REFERENCES

Advisory Committee on Safety of Nuclear Installations & Health and Safety Executive (HSE) 1993, *ACSNI Human Factors Study Group: organising for safety.* Third report, HSE Books, UK.

British Standards Institution 2007, Occupational health and safety management systems OHSAS 18001:2007, British Standards Institution, London, United Kingdom.

Busk, PL 2005, 'Cross-sectional design', Encyclopedia of statistics in behavioral science, John Wiley & Sons, Ltd.

Chinyio, E & Olomolaiye, P 2009, in E. Chinyio & P. Olomolaiye (eds.), Construction stakeholder management, John Wiley & Sons. Oxford, United Kingdom & Iowa, USA.

Choudhry, R & Fang, D 2008, 'Why operatives engage in unsafe work behavior: investigating factors on construction sites', Safety Science, vol. 46, no. 4, pp. 566-584.

Choudhry, R, Fang, D & Mohamed, S 2007a, 'The nature of safety culture: a survey of the state-of-the art', Safety Science, vol. 45, no. 10, pp. 993-1012.

Christensen, EW & Gordon, GG 1999, 'An exploration of industry, culture and revenue growth', Organization Studies vol. 20, no. 3, pp. 397-422.

Cipolla, D, Biggs, HC, Dingsdag, DP, Sheahan, VL & Artuso, W 2005, 'Safety leadership and the project manager: competencies required to positively affect site safety culture', in Australian Institute of Project Management Annual Conference, October, 2005, Melbourne.

Clement, RW 2005, 'The lessons from stakeholder theory for US business leaders', Business Horizons, vol. 48, no. 3, pp. 255-264.

Cooper, D 1998, Improving safety culture: a practical guide, Wiley, Chichester.

Cooper, MD 2000, 'Towards a model of safety culture', Safety Science, vol. 36, no. 2, pp. 111-136.

Deal, TE & Kennedy, AA 1982, Corporate cultures: the rites and rituals of corporate life, Addison Wesley, New York.

Edwards, JRD, Davey, J & Armstrong, K 2013, 'Returning to the roots of culture: a review and reconceptualization of safety culture', Safety Science, vol. 55, no. 0, 6, pp. 70-80.

Erez, M & Gati, E 2004, 'A dynamic, multi-level model of culture: from the micro level of the individual to the macro level of a global culture', Applied Psychology, vol. 53, no. 4, pp. 583-598.

EU-OSHA: Safety and Health at Work (OSHA-Europa), Safety in construction, OSHA-Europa, viewed 28/4/ 2013 <https://osha.europa.eu/en/sector/construction>.

Evan, WM & Freeman, RE 1988/1993, 'A stakeholder theory of the modern corporation: Kantian capitalism' in TL Beauchamp and NE Bowie', Ethical theory and business, Englewood, NJ: Prentice Hall, pp. pp. 75–84.

Fang, D, Chen, Y & Louisa, W 2006, 'Safety climate in construction industry: a case study in Hong Kong', Journal of Construction Engineering & Management, vol. 132, no. 6, pp. 573-584.

Fisk, MC & Feeley, J 2014, 'BP found grossly negligent in 2010 Gulf of Mexico Spill' Bloomberg Business, online, viewed 01/05/2015, http://www.bloomberg.com/news/articles/2014-09-04/bp-found-grossly-negligent-in-2010-gulf-of-mexico-spill.

Flin, R 2007, 'Measuring safety culture in healthcare: a case for accurate diagnosis', Safety Science, vol. 45, no. 6, pp. 653-667.

Freeman, RE 1984, Strategic management: a stakeholder approach, Pitman, Boston.

Freeman, RE 2010, Strategic management: a stakeholder approach, Cambridge University Press, New York.

Gadd, S 2002, Safety culture: a review of the literature HSL, Health and Safety Executive (HSE), Sheffield, UK

García-Valderrama, T & Mulero-Mendigorri, E 2005, 'Content validation of a measure of R&D effectiveness', R&D Management, vol. 35, no. 3, pp. 311-331.

Gibson, K 2000, 'The moral basis of stakeholder theory', Journal of Business Ethics, vol. 26, no. 3, pp. 245-257.

Greenwood, M & Freeman, R 2011, 'Ethics and HRM: The contribution of stakeholder theory', Business and Professional Ethics Journal, vol. 30, no. 3, p. 269.

Guldenmund, FW 2000, 'The nature of safety culture: a review of theory and research', Safety Science, vol. 34, no. 1–3, pp. 215-257.

Haslam, RA, Hide, SA, Gibb, AGF, Gyi, DE, Pavitt, T, Atkinson, S & Duff, AR 2005, 'Contributing factors in construction accidents', Applied Ergonomics, vol. 36, no. 4, pp. 401-415.

Heinrich, HW 1959, Industrial accident prevention, 4th edn, McGraw-Hill, New York.

Hinze, JW 1996, 'The distractions theory of accident causation', in LM Alvez Dias & RJ Coble (eds.), Implementation of safety and health on construction sites, CIB W99 1996 Lisbon, Balkema, Rotterdam.

Hofstede, GH 2001, Culture's consequences: comparing values, behaviors, institutions and organizations across nations, Sage Publications, London.

Iain, C & Billy, H 2008, 'Planning tools for integrating health and safety in construction', Construction Management and Economics, vol. 26, no. 9, p. 899.

International Nuclear Safety Advisory Group, International Atomic Energy Agency, Vienna.

International Safety Advisory Group 1991, 'Safety culture' (Safety Series No 75- INSAG-4),

Jonker, J & Pennink, BW 2010, The essence of research methodology, Springer, London.

Khanzode, VV, Maiti, J & Ray, PK 2012, 'Occupational injury and accident research: a comprehensive review', Safety Science, vol. 50, no. 5, 6, pp. 1355-1367.

Leather, PJ 1987, 'Safety and accidents in the construction industry: a work design perspective', Work & Stress, vol. 1, no. 2, pp. 167-174.

Loebbaka, JK & Lewis, A 2009, 'Live or let die: managing safety management system strategies and stakeholders', Business Strategy Series, vol. 10, no. 4, pp. 193-198.

Miraglia, E, Law, R & Collins, P 1999, What is culture?, viewed 22 July 2013, https://oldwww.wsu.edu/gened/learn-modules/top_culture/culture-index.html and https://oldwww.wsu.edu/gened/learn-modules/top_culture/culture-index.html

Nevhage, B & Lindahl, H 2008, 'A conceptual model, methodology and tool to evaluate safety performance in an organization', Faculty of Engineering Masters Thesis, Lunds University

Newcombe, R 2003, 'From client to project stakeholders: a stakeholder mapping approach', Construction Management & Economics, vol. 21, no. 8, pp. 841-848.

Newcombe, R 2003, 'From client to project stakeholders: a stakeholder mapping approach', Construction Management & Economics, vol. 21, no. 8, pp. 841-848.

Parmar, BL, Freeman, RE, Harrison, JS, Wicks, AC, Purnell, L & De Colle, S 2010, 'Stakeholder theory: the state of the art', The Academy of Management Annals, vol. 4, no. 1, pp. 403-445.

Phil, W 2010, 'Safety culture among subcontractors in the domestic housing construction industry', Structural Survey, vol. 28, no. 2, pp. 108-120.

Randolph, JJ 2009, 'A guide to writing the dissertation literature review', Practical Assessment, Research & Evaluation, vol. 14, no. 13, pp. 1-13.

Rasmussen, J, Pejtersen, AM & Goodstein, LP 1994, Cognitive systems engineering, Wiley-Interscience Publication, New York.

Reason, J 1993, 'Managing the management risk: new approaches to organisational safety', Reliability and safety in hazardous work systems, Lawrence Erlbaum Associates, Hove, UK, pp. 7-22.

Reason, JT 1997, Managing the risks of organizational accidents, Ashgate Aldershot, England.

Ridley, J & Channing, J 2008, Safety at work, 7th edn, Butterworth-Heinemann, UK.

Safe Work Australia 2013, Compendium of workers' compensation statistics Australia 2010–11, Safe Work Australia, Australia, Canberra.

Savage, GT, Nix, TW, Carlton, JW & Blair, JD 1991, 'Strategies for assessing and managing organizational stakeholders', The Executive, vol. 5, no. 2, pp. 61-75.

Smith, J & Love, PED 2004, 'Stakeholder management during project inception: strategic needs analysis', Journal of Architectural Engineering, vol. 10, no. 1, pp. 22-33.

Stoeckel, AB & Quirke, D 1992, Services: setting the agenda for reform: a report, Australian Coalition of Service Industries, Canberra.

Tam, CM, Zeng, SX & Deng, ZM 2004, 'Identifying elements of poor construction safety management in China', Safety Science, vol. 42, no. 7, Aug, pp. 569-586.

The UK's Health and Safety Executive 2012, Construction, work related injuries and ill health, The Health and Safety Executive, UK, viewed 22/4 2013, <http://www.hse.gov.uk/statistics/industry/construction/construction.pdf>.

Turner, BA & Pidgeon, NF 2004, Man-made disasters, Butterworth-Heinemann, Boston, United States.

Whittington, C, Livingston, A, Lucas, DA & Britain, G 1992, Research into management, organizational and human factors in the construction industry, HM Stationery Office.

Wibowo, A 2009, 'The contribution of the construction industry to the economy of Indonesia: a systemic approach', discussion paper, Construction Management, Civil Engineering, Department, Diponegoro University, Indonesia, <http://eprints.undip.ac.id/387/1/Agung_Wibowo.pdf>.

Zou, PXW 2011, 'Fostering a strong construction safety culture', Leadership and Management in Engineering, vol. 11, no. 1, pp. 11-22.