

National Cultural Orientations and Site Managers' Preferences in Pakistan

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Abstract

Many construction safety management functions are determined by different conceptions of roles. Indeed, these conceptions are underpinned by related cultural values. This paper investigates national cultural values' orientations that are influencing individual preferences on safety management policies and practices. Further, it presents empirical results of a questionnaire survey administered in Pakistan targeting local construction and project managers with safety management responsibilities. From the survey results, an affirmative attitude towards the existence of safety monitoring systems is found. Data analysis reveals the presence of cultural trends which influence managers' safety management preferences. Managers' safety-related decisions, whether being developed at the head office or on-site were found to be strongly influenced by their high collectivist, feminist, power distance and uncertainty avoidance attitudes. The Pearson correlation analysis of inter-relationships between the managers' cultural trends and their safety management preferences revealed a strong correlation.

Keywords

Construction, national culture, site managers, power distance, uncertainty avoidance.

1. Introduction

Individuals' attitudes and behaviours discernible in safety climate could be regarded as the micro-elements of an organisation (Hofmann *et al.*, 1996), which themselves are determined by the macro-elements of the organisation (e.g. management systems and practices). Thus, it could be argued that safety management systems and practices permeate down through the organisation to the workforce. Kirwan (1998) relates safety management systems and practices to the actual practices, roles and functions associated with working safely. Based on a critical review of safety climate measures, Flin *et al.* (2000) concluded that the most frequently measured organisational factors are related to safety management systems and practices. As such, there has been an increasing interest in understanding how management practices and organisational factors impact upon workplace safety. Research has focused on managers as role models to instil safety awareness and to support safe behaviour (Flin *et al.*, 1996). In construction, the link between safe behaviour (outcome) and organisational factors (input) is well established and has been empirically supported in a variety of contexts (Mohamed 2002; Chinda and Mohamed, 2008). The importance of such a link is exacerbated in developing countries due to: 1) lack of statutory regulations and legislation to protect construction workers, 2) relatively low standards in corporate systems and governance, 3) high labour-intensive character, and 4) inadequate infrastructure (Enshassi *et al.*, 2007; Mohamed *et al.*, 2009). The absence or deficiency of safety regulations adversely affects the enforcement of safety on the job site (i.e.; workplace), thereby resulting in more vulnerable conditions to occupational health and safety for workers (Ali, 2006).

Pakistan is a typical developing country; despite the continual growth of construction activities at the

national level, anecdotal evidence suggests that there is room for improving safety performance (Mohamed *et al.*, 2009). Site inspection services, in Pakistan, are not adequate to recognize and objectively evaluate occupational hazards. The system for reporting and recording accidents is somewhat dysfunctional. To illustrate, only those fatal accidents that gain media coverage are adequately reported and recorded (Ali, 2006). Farooqi *et al.* (2008) noted that large contractors, in Pakistan, do have a safety policy, on paper, but employees in general are not aware of its existence. Not surprisingly, the lack of official records of accidents makes safety issues of lesser importance to both of contractors and owners. On-site personnel, workers and managers alike, are perhaps not too concerned with safety problems, since they are not informed by the statistics of serious and fatal accidents, and the number of disabilities that resulted from such accidents.

Cultural differences have a significant impact upon industrial safety culture and help in understanding different approaches to accidents and safety management (Peckitt *et al.*, 2002). Although there is no single, accepted definition of *Culture*, it distinguishes one group from another; and influences beliefs, attitudes, perceptions and behaviour in a somewhat uniform and predictable way (Bird, 2000). However, there is a commonly used set of characteristics that helps to identify culture: 1) culture includes systems of values; 2) culture is learned, not innate; 3) culture distinguishes one group from another; and 4) culture influences beliefs, attitudes, perceptions and behaviour in a somewhat uniform and predictable way (Bird, 2000). This paper explores the possible influence of national culture on perceptions and attitudes of construction managers with regard to safety management practices in Pakistan.

2. Research Methodology

The research methodology adopted was a cross-sectional one based on a representative sample of 11 construction companies from eight large construction sites in Pakistan. A three-part interview-based questionnaire survey was developed to target local construction managers including project managers, project engineers, site engineers, and site supervisors who have safety management responsibilities and are aware of local practices. The first part of the questionnaire, labelled as MS1, contained a detailed format of the questionnaire addressing key safety issues of management systems. It included open- and closed-ended questions. The open-ended questions were asked to collect information about site safety conditions and plans. This questionnaire also had several quantitative measures (Keys) built into it. These Keys were provided to translate qualitative impressions, gathered after each interview, into measurable rating scales.

The second part of the questionnaire, labelled as MS2, was a summary of the MS1, and was developed to assess whether the respondent had been biased or not. In other words, it acted as a counter-check tool for the information collected via MS1. The MS2 contained 14 statements. For each statement, site managers were required to express the level of their agreement on a five-point Likert-type scale where 1 indicated strong disagreement and 5 indicated strong agreement.

The final part of the survey explored the national cultural trends and was labelled MS3. For this study, the culture of Pakistan was seen only from the well-known framework of Hofstede (Hofstede, 1994), identifying four work-related cultural dimensions: 1) Power Distance, 2) Individualism and Collectivism, 3) Uncertainty Avoidance, and 4) Masculinity and Femininity. Each of the four dimensions is briefly described in Table 1. The MS3 contained 25 statements, and for each statement the managers were required to express the level of their agreement on a five-point Likert-type scale.

Table 1: Definitions of the four cultural dimensions

Dimension	Definition
Power distance	The extent to which the less powerful person in a society accepts power inequality among members of a society
Individualism vs. Collectivism	The relationship between the individual and the group that is reflected in the way people work together. Societies based on collectivism typically place the well-being of the 'group' before that of the 'individual'
Uncertainty avoidance	The extent to which members of a society feel try to avoid future uncertainty or ambiguous situations
Masculinity vs. Femininity	Masculine cultures place importance on achievement, high levels of assertion and are generally materialistic by nature. Feminine cultures place greater value on the social aspects of life

The head offices of the 11 companies were contacted to request the participation in the survey, and to ask permission for the interviews of the on-site managerial staff. Each survey respondent was briefed about the objectives and nature of the study. A total of 100 managers for the MS1 and the MS2 questionnaires, and 130 managers for the MS3 questionnaire responded to the survey.

3. Results and Discussions

3.1 Managers' Safety Practices

The MS1 questionnaire explored safety management practices on:

- a) the existence of site safety plans;
- b) the level of competency and training;
- c) the safety monitoring and accident reporting systems;
- d) the communication systems within the workplace;
- e) the assumptions on safety responsibility; and
- f) the cooperation between main contractors and sub-contractors.

The survey results revealed a low level of available safety plans that allow managers to monitor and audit safety performance. The majority of the respondents did not have printed or published safety documents at the organisational level. However, they indicated the existence of safety plans at the site level. Unfortunately these may not meet international safety and health standards, but, nevertheless, have been effectively implemented on site.

The site managers were not interested in using safety competence as a criterion to select and recruit construction workers. However, two managers on two separate sites claimed to have a recruiting policy for workers, managers and sub-contractors that refers to safety competence. Both sites had been operated by the same contracting company which also pays special attention to safety competence when recruiting operators for special tasks (e.g. crane operators), and organises mandatory safety induction and periodical one-day programmes for its workers. In contrast, managers representing the remaining ten companies reported a lack of such programmes.

The majority of the managers reported having some level of monitoring systems for on-site safety which usually include hazard reporting, and incident and accident reporting. At two different sites operated by the same contracting company, a flow chart clearly depicting the process of safety monitoring and accident reporting was sighted. During the interview discussions, it was clear that many managers believed the workers felt reluctant to report hazards or accidents. In relation to communicating safety requirements and performance, the managers relied on adopting informal approaches for communication. Only two sites had informal safety meetings on a regular basis, and also had incorporated safety awareness poster campaigns. Other sites relied heavily on individual briefings to communicate safety messages, as this one-to-one approach was considered to be very

reliable and effective.

Generally, the working relationship between the main contractors and sub-contractors was effective in handling safety issues. It was strongly believed that the main contractors were always responsible for on-site safety issues, whether they were legally bound, or not, through their contract.

3.2 Factor Analysis

As stated previously, the sample size of the MS2 questionnaire was 100; with the ratio of 7.1 cases to 1 variable being well above the minimum permissible limits to undertake a factor analysis. Hair *et al.* (2001) note that the minimum sample size for undertaking factor analysis should be at least five times the number of observations as there were variables to be analysed. The suitability of data gathered from the questionnaire was assessed by the measure of sampling adequacy (MAS) test and the Kaiser-Meyer-Olkin (KMO) test. Only two statements (variables) were found to be short of the adequacy limits of data suitability, and therefore were removed from further analyses.

The remaining 12 variables were factor-analysed using a principle component analysis with varimax rotation. The process revealed the existence of a two-factor solution accounting for about 82 per cent of the total variance. Table 2 depicts the 12 variables, and their respective factor loadings, explained variances, eigenvalues and Cronbach's values for the two-factor solution. Each factor was labelled in accordance with the common thread that connects together the set of individual items loaded onto it.

Table 2: Factor loadings for the two-factor solution of safety systems and practices

Factor 1: Strategic (Variance = 63%; Eigenvalue = 7.528; Cronbach's α = 0.944)	
The company has a highly effective safety plan for site	0.738
The company has safety related criteria for worker's recruitment	0.826
The company has safety related criteria for managers and supervisors recruitment	0.755
The company has safety related criteria for sub-contractors selection	0.787
The company has highly effective training programme for workers	0.872
The company has highly effective training programme for managers and supervisors	0.860
There is high level of cooperation between main contractor and different subcontractor(s) to handle safety on site	0.860
Factor 2: Operational (Variance = 19%; Eigenvalue = 2.265; Cronbach's α = 0.756)	
The company has safety monitoring policy and keeps safety records	0.898
The company has an effective hazard reporting system	0.864
The company has an effective incident and accident reporting systems	0.840
Communication on safety is an important issue for company	0.794
Communication channels used by company prove to be highly effective in promoting the safety in the workplace	0.876

Seven items loaded on the first factor accounting for about 63 per cent of the total variance, labelled "*Strategic*". These items addressed safety management strategic issues, including:

- a) Existence of effective on-site safety plans;
- b) Existing recruitment policy for workers;
- c) Existing recruitment policy for managers;
- d) Existing recruitment policy for sub-contractors;
- e) Training programmes for workers;
- f) Training programmes for managers and supervisors; and
- g) Expected level of cooperation between main contractors and sub-contractors on safety issues.

The majority of the items possessed relatively high factor loadings, larger than 0.77. The mean and standard deviation scores showed that the majority of the managers were of the opinion that their organisations had neither proper nor highly effective site safety plans; there is neither policy for

having a safety experience criteria for the recruitment of staff (which includes, workforce, managers, site supervisors) nor for hiring sub-contractors. No proper or specific safety training was conducted for the workforce, the managers or the supervisors. The managers did, however, indicate that the relationship of cooperation between the main contractor and the sub-contractors in handling safety on site is usually satisfactory.

The second factor, labelled “*Operational*”, contained the following five items:

- a) Monitoring safety policy and keeping safety records;
- b) Having an efficient hazard reporting system;
- c) Having efficient incident and accident reporting systems;
- d) Providing effective communication on safety in an organisation; and
- e) Providing effective communication channels on promoting safety issues in the workplace, addressing operational aspects of site work.

Many of the managers confirmed the existence of proper safety monitoring policies and effective hazard reporting systems on sites. The presence of an effective communication system for safety issues was also strongly acknowledged.

3.3 National Culture

To explore national cultural trends, a factor analysis test was conducted on the information gathered via the MS3 questionnaire. A total of 25 variables were used for data suitability tests to enable the factor analysis process to proceed further. The tests showed that five variables of the questionnaire could not meet the minimum threshold value of 0.50. Therefore, they were removed from the analysis. The remaining 20 variables were factor-analysed. The results revealed the presence of three factors accounting for about 81 per cent of the total variance.

Eigenvalues for the three factors were found to be greater than one. Varimax rotation was performed as to interpret results of the items’ loadings on the three-factor solution. The factors were then examined to identify the number of items that loaded on each factor. Care was taken to pick only those items that had loadings equal to or more than 0.5 (Hair *et al.*, 2001). The first factor catered for nine items, followed by six and five in the second and third factors, respectively. Table 3 summarises the factor loadings for the three-factor model of the cultural survey.

Each factor solution was labelled in accordance with the set of individual loaded items. The items addressing the issues of perception of *power distance* and *femininity* were loaded on the same factor, thus overlapping two cultural dimensions into one. As a result, the first factor was labelled “*Power Distance and Femininity*”. It accounted for 37 per cent of the total variance and had five of the nine items posed measuring managers’ perceptions on power distance while the remaining items addressed *femininity/ masculinity*.

The mean values for items regarding “encouraging workers’ feedback on safety issues” and “encouraging workers to raise any safety concern”, showed that managers do not feel less power distance in giving such “liberty” to workers. However, the remaining power distance statements, surprisingly showed that managers have a strong perception for power distance. These mean values depict that managers do not accept the idea to include workers into that process, perhaps to save time and/or to avoid confusion. This also shows that managers do feel comfortable welcoming feedback from workers on any concerns on safety issues, on one hand. However, they feel reluctant to ask for the participation of workers while developing site safety plans. From the managers’ perspective, it would be difficult and impractical to ask workers or their immediate supervisors to contribute their ideas in order to come up with site safety plans. Also, managers appear to hesitate to allow or authorise the workers to stop work immediately, if they encounter any safety hazard conditions. The mean values for the four statements which were posed to ascertain the perception of femininity, revealed their feminist attitude rather than the masculinity.

Table 3: Factor loadings for the three-factor solution of cultural survey

Factor 1: Power Distance and Femininity (Variance = 37%; Eigenvalue = 7.449; Cronbach's α = 0.743)	
Major decisions regarding site safety issues, always take place after consulting with site workers / subcontractors	0.751
Managers do encourage feedback regarding safety issues from site workers	0.703
I am always encouraged to raise any safety concern with my site supervisors	0.807
Workers are always being consulted regarding preparation of site safety plans	0.772
I am allowed to act decisively if I find any situation contrary to safe conditions on site	0.931
Personally I enjoy the risk aspects associated with my job	0.975
Safety decisions made by me alone are usually more effective than decisions made by my co-workers together	0.706
It is not always important to have a good working relationship with my supervisor	-0.826
When workers ignore safety procedures at my workplace. I feel that it is none of my business	-0.761
Factor 2: Uncertainty Avoidance (Variance = 24%; Eigenvalue = 4.835; Cronbach's α = 0.850)	
Generally workers follow safety rules without being told to do so.	0.985
Safety rules should not be broken, even when the worker believes it affects the production	0.703
Safety decision made by management usually seems to be more effective than decisions made by workers	0.985
Many accidents just happen, there is not much can do to avoid the	0.842
I prefer to work with large company as they have effective on-site safety practice.	0.837
I often feel nervous or tense at work	0.853
Factor 3: Collectivism (Variance = 20%; Eigenvalue = 4.022; Cronbach's α = 0.701)	
A company should have major responsibilities for health and welfare of its injured worker.	0.756
Co-workers often give tips to each other on how to safely work.	0.762
A safe place to work has a lot of personal meaning to me and my co-workers.	0.986
It would help improving site safety, if my co-workers support safe behaviour.	0.747
Safety training can help improving my attitude to safely work.	0.978

The second factor for the cultural survey catered for six items, all of which were posed to measure the perception of uncertainty among the managers. This factor, which was labelled “*Uncertainty Avoidance*”, accounted for 24 per cent of the total variance. Items or statements within this factor were of two different styles. Out of the six items, two were presented in such a way that agreement with them would represent high uncertainty avoidance and the remaining four items were presented in a way that disagreement with those items would represent high uncertainty avoidance. The managers’ responses to all these statements (whether agree or not) revealed a high degree of uncertainty avoidance attitude. The third factor had five items and accounted for 20 per cent of the total variance. This factor was labelled “*Collectivism*” because all the items it catered for were posed to measure the perception of collectivism among the managers. The mean values for the responses showed that managers also possess a strong perception towards working collectively rather than individually.

3.4 Relationship between Managers’ Safety Practices and National Cultural Values

To identify whether national cultural values influenced managers’ preferences for safety management

practices, a Pearson correlation test was carried out to explore the linear relationship among the two safety management systems' factors (strategic and operational), identified in Section 3.2, and the three national cultural factors, identified in Section 3.3. The Pearson correlation results revealed some strong linear correlations between the two sets of factors. Table 4 summarises the obtained values for the Pearson correlation values along with the relevant significance values.

Table 4: Correlations between safety management factors and cultural factors ($p < 0.05$)

		Power Distance & Femininity	Uncertainty Avoidance	Collectivism
Strategic	Pearson correlation Significant (2-tailed)	0.639 0.018	-0.720 0.037	0.598 0.061
Operational	Pearson correlation Significant (2-tailed)	0.632 0.001	0.720 0.023	0.818 0.017

The national cultural dimension of *Power Distance & Femininity* showed strong positive correlations with the two factors “*Strategic*” and “*Operational*”. Presence of such pattern of relationship depicts that there is strong effect of power distance and femininity on the strategic and operational issues of safety. Therefore, one can conclude that Managers’ decisions regarding safety plans, safety monitoring, hazard reporting, cooperation between main contractor and sub-contractors are being strongly affected by the femininity and power distance cultural dimension. Managers tend to tolerate the power distance issue to some extent (till where they feel the workers will not take this “facility” or “luxury” for granted and become too demanding). After that, managers feel they have to be strict and maintain discipline and so their level of power distance increases.

The second cultural dimension of “*Uncertainty avoidance*” showed a negative relationship with the first factor of safety management systems “*Strategic*” and a surprisingly positive relationship with the second factor “*Operational*”. As the descriptive analysis showed that managers have a stronger uncertainty avoidance nature, this negative relationship could be explained as: the higher uncertainty avoidance, the lower will be their risk taking attitude/ behaviour in their strategic planning for safety. The positive relationship between *Operational* and *Uncertainty avoidance* factors shows the higher the uncertainty avoidance the more intensive will be site safety activities, such as hazard reporting, accident reporting and the use of effective communication channels for safety.

The third cultural dimension of *Collectivism* showed a strong positive relationship with the *Operational* factor. From the descriptive analysis of the cultural dimension “*Collectivism*”, it was obvious that managers tend to be more comfortable and confident while working in a collectivistic environment. Therefore, this positive relationship depicts that the operational aspects of safety will be more effective and efficient, if managers work closely together. These operational aspects include: monitoring safety performance; having a combined effort for hazard reporting; and using effective communication channels.

The same third cultural dimension of *Collectivism* failed to show a statistically significant relationship with the *Strategic* safety management factor. At the strategic level, where recruitment policy regarding workers, managers and sub-contractors is discussed or the training programmes (if any) worked out, the collectivistic part of the culture does not play an important part as compared to the operational level. At the operational level, managers’ responsibilities usually include monitoring safety hazards, reporting incidents/near misses, and safety communication between managers and workers, as well the sub-contractors. Therefore this non-statistically significant relationship with the *Strategic* factor can be interpreted as managers feel confident and comfortable in a collectivistic environment and prefer to carry on the “*Operational*” duties collectively as compared to “*Strategic*” ones.

4. Recommendations by Managers

The following suggestions are recommended by the interviewed managers to achieve an overall improvement in safety and health conditions on local construction sites:

- a) The establishment of an independent health and safety monitoring agency or national safety and health council, as an effective organization having a broad mandate for introducing current standards for safety and health conditions in the local construction industry, benchmarking these conditions with international standards; and proposing relevant technical, legal and voluntary standards and codes of practice;
- b) The development of construction safety laws and regulations;
- c) The establishment of commitments from the Federal Government to:
 - enforce safety regulations;
 - run national publicity campaigns and public awareness;
 - provide obligatory safety training through provincial labour departments; and
 - allocate funds for promotion of awareness, training, information dissemination and research in occupational safety and health issues;
- d) The introduction of new safety clauses for company registration forms for the Pakistan Engineering Council;
- e) The encouragement of all enterprises to engage/employ a safety, health and environmental officer. The minimum qualifications for the officer should be prescribed by law or regulation;
- f) The encouragement of the government to establish occupational safety and health consultancy businesses and to develop operational criteria for these businesses;
- g) The encouragement of local universities to introduce diplomas, Masters and Doctor of Philosophy degree programs in occupational safety and health disciplines to prepare a professionally trained cadre. The government and industry will need to sponsor such educational and training programs, at least for the next five years. The national occupational safety and health council should also work to promote education and training in the industry;
- h) The introduction of severe penalties for specific safety breaches, such as continuously poor safety records, to reduce their occurrence at organisational levels;
- i) The improvement of safety management commitment at organisational levels; and
- j) The increasing participation of clients and designers to influence safety issues.

5. Conclusion

This paper examined the influence of national cultural values, in Pakistan, on individual preferences for safety management policies and practices. A questionnaire survey of, and structured interviews with, local construction site managers were conducted. While the results indicated that the majority of the construction sites did not have formal safety plans, the respondents demonstrated an affirmative attitude towards the existence of safety monitoring systems. The managers were found to be comfortable using informal approaches, such as individual briefings, to communicate safety issues. The results further revealed the presence of three cultural dimensions (i.e. power distance and femininity, uncertainty avoidance, and collectivism). “*Power Distance*” was seen as a useful tool for effective administration. The managers tended to be more collective and supportive, less masculine and more uncertainty avoiders, while making their safety decisions at head office or on site. The typical local organisational structure was seen as bureaucratic, centralized and generally unresponsive to employee needs. Several local managers had resisted the development of participatory culture to retain power and a non-questioning culture. The Pearson correlation analysis of interrelationships between the managers’ cultural trends and their safety management preferences revealed a strong correlation. This analysis also showed that managers’ safety management preferences were being influenced by their cultural trends. Indeed, their safety-related decisions were strongly influenced by their high collectivist, feminist, power distance and uncertainty avoidance attitudes.

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