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CIB W112 - Culture in Construction

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TG59 - PEOPLE IN CONSTRUCTION
&
W112 - CULTURE IN CONSTRUCTION

PAPERS AND POSTGRADUATE PAPERS FROM THE SPECIAL TRACK
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PAPERS AND POSTGRADUATE PAPERS FROM THE SPECIAL TRACK

TG59

The Task Group focuses on human resource issues in the construction industry. Construction is a labour intensive activity and the behaviour of people has an enormous influence upon the organisation and performance. The Task Group aims to involve representatives of employers, workers and governments, and researchers in both developed and developing countries, and to foster dialogue and collaboration. The Task Group brings together researchers with one of two aims: those who will be primarily seeking to improve the performance of the industry and with focus on people and researchers whose aim is primarily to improve the lives of the people who work in the industry. Against this background the Task Group objectives are: to create a network of members who are interested and involved in research into labour issues in the construction industry, to bring into the network researchers from outside the construction disciplines who are working on construction labour issues, to provide a forum for the exchange of ideas on social and labour issues in construction amongst those in the network, to identify key issues for future research and possible sources of funding and to disseminate research findings within the network and to a broader group of academics and practitioners working in the field.
W112

The scope for this Commission reflects the array of important business concerns deriving directly from underpinning culture - organisational climate, ethics, corporate social responsibility (CSR) and organisational citizenship behaviour (OCB). The construction industry itself as field of interest is considered on an international, national and local scale, focussing on the processes, (project-) experiences, and the parties involved. Given the dynamism, the scope is maintained under constant review. Against this background the objectives of W112 are: to continue to research National Cultures and Organisational Cultures relating to construction worldwide to maintain and extend the 'Inventory of Culture in Construction', to extend the methods of research employed to encompass more longitudinal approaches to enable evolitional aspects of culture to be included in investigations, to research into the related cultural topics of organisational climate, ethics, CSR, and OCB; and other related topics to provide a more comprehensive understanding of culture and its consequences and to enhance relationships with other CIB Commissions, and beyond, to disseminate findings and stimulate further collaborations and investigations.
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A comparison of the attitudes of construction workers towards empowerment and participation pre- and post- 
Egan

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Abstract

The modernisation initiatives proposed by the Egan Report, (Egan 1998) and other reports (RfP 2000; 
CIC 2002), required a change in culture in the construction industry, including a change in the 
attitudes of its workforce. Employee involvement formed an important part of the cultural changes 
proposed, particularly in relation to continuous improvement, quality improvement, increased 
productivity and integrated working. Fundamental to involvement is the attitude of the workforce. 
This paper examines and compares the attitudes of construction workers from a survey undertaken in 
1994, pre the Egan initiatives, with the attitudes produced from the same survey repeated in 2009, 
post the Egan initiatives. The paper identifies changes in the key attitudes of construction workers 
towards participation and empowerment that have occurred between 1994 and 2009. The original 
survey revealed a range of attitudes that were conducive to participation, it showed there to be a 
strong propensity for participation amongst construction workers and the existence of a significant 
potential for empowerment in the construction workforce. The 2009 study has found that some of the 
key attitudes have changed, however the results are mixed and do not support a clearly identifiable 
trend. Some important attitudes have changed very little, such as the desire to be involved and the 
importance of being involved, but overall there is no significant change in the attitudes toward 
involvement and participation expected by the Egan initiatives. The positive attitude towards 
participation remains strong, indicating that the attitudes required to fully exploit the potential of lean 
and other initiatives exists in the UK construction workforce.

Keywords: worker attitudes, empowerment, participation, involvement, Egan
1. Introduction

Michael Latham in his 1994 report instigated a large scale process of change within the UK construction industry (Latham 1994). These changes were enunciated and developed in the Egan Report, amongst others, which set a range of goals to which the industry should aspire, together with proposals regarding how these could be achieved (Egan 1998). The goals set by Egan in essence required a change of culture in the UK construction industry, with a corresponding change in the attitude of its workforce, particularly with respect to involvement, participation and empowerment. Ten years on and with a significant number of initiatives and projects undertaken in line with the principles set by Egan, it is reasonable to expect there would be a discernible shift in the attitude of workers, towards those attitudes expected in order to achieve the goals set for the industry.

2. Empowerment and the Egan initiatives

Central to Egan’s proposals was the concept of lean production, which was strongly promoted for adoption within construction, having been successfully used in other assembly-based processes across a wide variety of industries in the UK and elsewhere. The Egan Report fails to explicitly recognise the contribution and significance that the industry’s workforce contributes to the success of its proposals, however analysis of the methods and systems developed by other industries, that the Report puts forward to operationalise lean production, such as total quality management, supply chain management, integrated working, etc. shows that all are dependent on a significant level of employee involvement (Womack and Jones 1996). It is only later, with the publication of the report Accelerating Change that the significance of the construction workforce and their involvement begins to be recognised, the Report describing the required approach to be a 'people issues' strategy (CIC 2002).

The fundamental activity of lean construction is to analyse the production process to identify and then minimise or eliminate waste. This analysis, although undertaken and organised on a company basis, relies heavily upon every individual employee identifying the waste that occurs in the process and detail of their job, then suggest ways to eliminate or reduce the waste. Studies of innovation, together with large amounts of anecdotal evidence from lean producers indicate that somewhere in the order of 70% of improvements originate from the employees who physically perform the work (Mullins 2007). The ability to undertake these detailed analyses resides with the workers who physically carry out the work on a day to day basis, management can only support this analysis; they are unable to undertake it themselves because they do not possess the intimate knowledge of the work.

Continuous improvement is an important activity inherent within all the methods and systems used to implement lean production. It was recognised as a fundamental activity to improve performance and produce improved value for customers; the overall aim of lean production. Involvement through schemes of empowerment was recognised to be fundamental to retaining and developing a workforce that can generate continuous improvement (DTI 1998). Success in respect of producing continuous improvement becomes largely dependent upon the workforce, who will only contribute improvements when they are suitably motivated to do so; participation plays a major part in this. It has also been
shown that once the initial systemic improvements have been achieved, the incrementally more
difficult improvements can only be achieved by the involvement of the workforce, as only they have
the intimate detailed knowledge and understanding of the work being undertaken to be able to identify
and produce on-going improvements (Womack and Jones 1996).

Employee involvement only occurs voluntarily, involvement cannot be forced, employees must
willingly contribute their ideas and this only occurs where there is genuine commitment on the part of
employees and employers alike. Therefore it is clear that to implement the reforms proposed by Egan,
the active involvement of the workforce is necessary, consequently the attitude of individual workers
towards involvement becomes a fundamental issue in the success of the reforms.

The relationship between participation and the various methods used to implement lean construction
has been shown by a number of studies. Dainty et al. (2002) established that all the techniques used in
lean construction require the increased participation and autonomy of employees, and are a necessary
component for improving the efficiency and effectiveness of organisations, but that each demanded a
different approach to the inclusion, involvement and participation of people. The need for employee
participation in the construction industry, together with the advantages that accrue from it are widely
accepted. Barlow (1997) considered participation and self-management to be necessary parts of lean
production systems. Powell (1995) observed that involvement and participation are important
elements of total quality management, whilst Love et al. (2000) stated that the concept of total quality
management stresses a systematic, integrated consistent organisation-wide perspective involving all
employees. Integrated teams and supply chains are regarded as central to the success of Rethinking
Construction, which also rely on the active involvement of the workforce. Overall, analysis of various
methods used to achieve lean production show most to be dependent upon the active involvement and
participation of the workforce.

It is clear from the Egan report and a number of subsequent reports that people are the key to taking
the reforms envisaged by Egan forward. The report Accelerating Change (CIC 2002), describes the
approach to be a ‘people issues strategy’ and states that if staff at all levels are to play their full part in
realising value through the integration of supply chains and teams, they must be cognisant of the
potential value creation opportunities and be able to identify and extract them. Similarly, a key
statement from the report A Commitment to People Our Biggest Asset by the Movement for
Innovation working group on Respect for People (RfP 2000) set the agenda and importance of
involvement, participation and empowerment; identifying the role of people to be a ‘vital area’. It
concluded that change and improvement would only happen through people, and in particular the
efforts of all people working in the industry, as it is they who ultimately determine practice and
performance. The Report emphasised workforce involvement, that respect for people means that all
workers need to be consulted, involved, engaged, and ultimately empowered in a spirit of partnership
not just management. The workforce on site is a rich source for ideas to improve the way work is
carried out and involving the workforce will not only demonstrate that they are respected and valued,
but will also improve productivity and quality. In addition to the benefits of empowerment to
production, the benefit to improved health and safety is also recognised by the report, stating that the
involvement of the site workforce, through their personal empowerment, is essential to improve
standards and eradicate accidents. Investors in People was adopted as a key part of changing the
management of the workforce, it provides key performance indicators of the progress made in implementing the Respect for People agenda (RfP 2000).

3. Involvement and participation in context

Employee involvement and participation has been a focus of attention for the management of a variety of organisations across a wide spectrum of industries. This interest is driven by the underlying tenet that human resources are a major source of sustainable competitive advantage in what has become a highly competitive global market for most businesses (Goss 1994). Historically, employee involvement and participation has taken a number of forms, resulting in a multitude of definitions of participation, see Roca and Retour (1981), Cooper (1980), Marchington and Parker (1990), Hyman and Mason (1995) and Geroy et al. (1998). The defining characteristic of participation was first identified by Tannenbaum and Massarick (1961) to be decision-making. Definitions of participation tend to fall into one of two broad categories, genuine participation and pseudo-participation. Schemes of genuine participation are identified as those where the employees have the authority to make and implement their decisions. Pseudo-participation schemes do not allow employees the authority to implement the decisions they have made (Verba 1961). The acid test of genuine participation is whether the empowered employees have the authority to implement the decisions that they make without further reference to higher authority. The evidence shows genuine participation to be significantly more effective than pseudo-participation or other non-genuine schemes of participation, indeed White (1979) showed it to be essential to the success of participation. These were not new findings, earlier work by Allport (1949) had concluded that only authentic participation taps central values and calls for the person’s ego to be involved.

The form in which participation is undertaken is also significant; participation can be direct or indirect. Direct participation occurs where every employee affected by the decisions made is directly involved in the making of those decisions. Indirect participation involves a representative who participates in the decision-making on behalf of fellow employees, indirect decisions often have a wider span than those of direct participation and extend beyond the immediate work of the employees represented. Indirect schemes of participation are more formal and tend to be initiated and controlled to varying extents by management. Employees have a much greater interest in direct forms of participation less in indirect forms of participation; a difference that was very evident in the attitudes of construction workers in the 1994 survey (Coffey and Langford 1998).

As a topic of current interest in management thinking participation has tended to rise and fall in prominence, but it consistently remains a significant part of the management approach adopted by almost all organisations; the emphasis on teams and teambuilding over recent years is but one example of this. Participation also concurs with the more consensual approach to management adopted by postmodern organisations, which have recognised their greater dependency on the intellectual potential of their employees to remain competitive in an increasingly turbulent global business environment (Huczynski and Buchanan 2007). It also reflects the need of modern organisations to devolve decision-making down the organisation in order to function as lean flat organisations with minimum amounts of management.
4. Research method

The findings presented in the paper are based upon the first batch of interviews, undertaken as part of a larger study, to determine the propensity of construction workers towards participation. It repeats an earlier study undertaken in 1994 (Coffey 1996) that found that a significant propensity for participation existed amongst construction workers and concluded that its potential was neither recognised nor consciously exploited by construction firms at that time; although unconsciously firms were using informal ad hoc schemes of empowerment as a part of their normal working practices. The study also showed that a positive attitude towards participation and involvement by employees is an essential factor in the potential success of any scheme of participation.

Attitudes were elicited by a questionnaire, which was administered as a structured interview with individual workers to ensure confidentiality and to minimise any peer or group bias in the responses. Interviews were carried out at the individual’s place of work to attempt to maximise the relevance of the responses and to maintain the respondent’s territorial comfort. The survey used a cross-sectional sampling approach, interviewing every construction worker on the selected sites; supervisory and management staff were not included. The findings reported in the paper are from fifty seven interviews carried out on four construction sites in the south east of England during the third/fourth quarter of 2009. The limitations of the sample are recognised, the sample will be expanded to include respondents from across all regions of the UK so as to be fully comparable with the 1994 study. The questionnaire used the same questions as the 1994 study, which used a range of question forms to determine particular key attitudes based upon a combination of direct questions and indirect questions to triangulate the validity of responses. The questionnaire used a mix of closed, structured and open questions, where appropriate responses were quantified using a ten point Likert scale set against recognisable verbal indicators in the question.

5. Findings

5.1 Desire to participate

A number of attitudes were shown to contribute to an employee’s overall attitude towards involvement and participation (Coffey 1996), the findings presented below relate to these key attitudes. The operation of all the constituent attitudes is important, but one attitude in particular, ‘the desire to participate’, is fundamental to the occurrence of participation, because without a minimum desire to participate, participation cannot occur and all the other constituent variables are rendered impotent. To determine their desire to participate, workers were asked ‘How much would you like to be involved in deciding how your work is to be organised?’
### Table 1: Desire to be directly involved

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>79.79</td>
<td>60.66</td>
</tr>
<tr>
<td>Neutral</td>
<td>5.55</td>
<td>35.09</td>
</tr>
<tr>
<td>Negative</td>
<td>14.64</td>
<td>5.25</td>
</tr>
</tbody>
</table>

The 1994 results showed a strong positive response, with an average score of 7.44 on a ten point Likert scale compared to the 6.44 for the 2009 survey, indicating that the desire to participate is not as strong as it was in 1994. The result reflects a shift in attitude from both the positive and negative responses towards a more neutral, less committed position; the negative desire to be involved has decreased from 14% to 6%, whilst the positive desire has reduced from 79% to 60%. This indicates that there are now a significant number of respondents who are either neutral or uncommitted with respect to participating. This trend cannot necessarily be attributed to the recession currently being experienced by the construction industry, as the 1994 study was also undertaken at a time of similar recession. It may indicate an increased apathy or feeling of helplessness on the part of the workforce, but at the present time this is uncertain. The results do show that there still remains a strong positive desire to be involved with the decision-making affecting their work and only a very small negative desire not to be involved. There was no anecdotal evidence to suggest that this negative desire was any more than disinterest, none of the respondents expressed an antagonism towards the concept of being involved.

### 5.2 Importance of participating

An important attitude that was revealed in the original study was whether the workers regarded participating as important. The 1994 study showed quite clearly that workers regarded being involved and participating in deciding how their work was done was a very important to them. Determining a measure of how important workers regarded involvement in their work, provides an important perspective on their expressed desire to be involved. Where the workforce regard involvement to be both important and having a strong desire to do so, indicates that a strong basis for the development of empowerment exists; a low response to either of these attitudes would indicate the opposite. The results show that construction workers still regard involvement in deciding how their work is undertaken to be a very important aspect.
Table 2: Importance to workers of deciding how they do their work

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely/Very important</td>
<td>92.07</td>
<td>89.47</td>
</tr>
<tr>
<td>Moderately important</td>
<td>5.94</td>
<td>0.53</td>
</tr>
<tr>
<td>Not very/Not at all important</td>
<td>1.98</td>
<td>0.00</td>
</tr>
</tbody>
</table>

The results show there to be only a minor change in attitude between 1994 and 2009.

5.3 Form of involvement

The 1994 and 2009 studies both showed construction workers to have a strong interest to be directly involved in the decision-making affecting their work (Refer Table 1). In the 1994 study workers expressed a very weak interest in being involved in indirect participation, through such mechanisms as representative committees and the like.

Table 3: Willingness to become involved in indirect forms of participation

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very interested</td>
<td>26.24</td>
<td>36.84</td>
</tr>
<tr>
<td>Averagely interested</td>
<td>26.13</td>
<td>36.84</td>
</tr>
<tr>
<td>Not interested</td>
<td>47.24</td>
<td>26.32</td>
</tr>
</tbody>
</table>

The results for the 2009 study show a discernible change in the attitudes of workers, with a shift in results that indicate workers are now more willing to get involved indirectly in the decision-making regarding how the company and site are organised. More declared to be ‘very interested’ and ‘averagely interested’ compared to the 1994 study, the difference being accounted for in a corresponding shift away from those who previously stated that they were ‘not interested’. This may indicate that construction workers in 2009 are more comfortable operating in these sorts of situations and levels, possibly because of experience in representative situations in other aspects of their life. It may also suggest that this generation of workers are generally more assertive and self-confident.
5.4 Trust of employers

The original study identified that a minimum threshold of trust needed to exist in order for empowerment to take place. The 1994 study revealed a sufficient level of trust existed, the higher level in the 2009 study indicates that this criteria has been further strengthened, increasing the margin over the minimum threshold level. The survey asked workers to what extent they thought that companies were essentially honest in their dealings with the workforce.

Table 4: Honesty of employers in their dealings with the workforce

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Always/Often</td>
<td>27.37</td>
<td>38.60</td>
</tr>
<tr>
<td>Sometimes</td>
<td>33.83</td>
<td>38.60</td>
</tr>
<tr>
<td>Occasionally/Never</td>
<td>38.81</td>
<td>22.80</td>
</tr>
</tbody>
</table>

The results show a shift towards greater trust of employers between the two studies, whilst those who consider the companies to be only ‘sometimes’ honest in their dealings with the workforce has increased by a small amount (5%), there is a definite increase in those who believe that the companies are ‘always’ or ‘often’ honest in their dealings and a reduction in the number of workers who believe that companies are only ‘occasionally’ or ‘never’ honest in this respect. The increased level of trust of firms by employees is a positive aspect for the Egan initiatives, which require such trust in order to gain the genuine commitment and involvement required to successfully achieve its goals.

5.5 Attitude towards authority

The attitude of employees to authority was shown by the 1994 study to be a major factor in participation. Whilst autonomous workers required a certain level of independence and free-thinking, which was defined in the research as semi-anti-authoritarian, if this was too high it threatened the authority structure of the firm and would impair the potential success of the empowered work group. It was also a major concern to firms and their management, who feared a loss of control, consequently the workers attitude towards authority is an important one. The issue was explored by ring-fencing the issue with a number of questions to validate the response given to the direct question regarding authority, which asked ‘the boss is the boss and must be obeyed?’.
The results show a firming of the respect for authority in the work situation and a reduction in the free thinking independence demonstrated in the first study. It confirms that construction workers generally accept the authority structure that exists and do not pose a challenge to it. The fact that a very minimal proportion (3.50%) of workers express a resistance to authority supports this deduction. It remains to be determined in what circumstances these workers would exercise their refusal, if at all.

### 5.6 Satisfaction of working in the construction industry

Satisfaction has an important underlying contribution to involvement and participation; a dissatisfied worker would be highly unlikely to genuinely engage in participation, whereas a satisfied worker is more likely to do so. Whilst total satisfaction is probably not a reality, a reasonable level of satisfaction, expressed as the extent of non-dissatisfaction, is necessary for schemes of empowerment to be successful. Workers were asked how much they enjoyed working in the construction industry; the results show that the level of satisfaction has remained essentially the same for the two studies.

### Table 5: Authority towards authority (The boss must be obeyed)

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>32.34</td>
<td>54.39</td>
</tr>
<tr>
<td>No</td>
<td>2.99</td>
<td>3.50</td>
</tr>
<tr>
<td>Not necessarily</td>
<td>64.68</td>
<td>42.11</td>
</tr>
</tbody>
</table>

### Table 6: Enjoyment of working in the construction industry

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>55.23</td>
<td>56.14</td>
</tr>
<tr>
<td>Average</td>
<td>29.35</td>
<td>33.33</td>
</tr>
<tr>
<td>Negative</td>
<td>15.42</td>
<td>10.52</td>
</tr>
</tbody>
</table>
The 2009 results show a close similarity with those for the 1994 study. Both studies were carried out in recessionary times with a challenging employment situation facing most workers. The pressures to perform are no less in 2009, perhaps even greater, yet the expressed satisfaction remains strong. The workers in the 2009 sample are a different generation from those in the 1994 study, but the result suggests that construction continues to be an attractive choice and does not appear to have been affected by the changes that have occurred within the industry. The direct question was followed with an open question that sought to elicit the reasons for their satisfaction or dissatisfaction. The 1994 study had shown that the independence offered from working in construction was the most common reason for those who expressed satisfaction. The reasons given in the 2009 study are not as singularly certain, respondents cite three main reasons for their satisfaction with working in the industry, namely the variety offered by the work, the practical hands-on characteristic of the work and being outside (the comparison being working in a factory or office). These are similar to the reasons given in the 1994 study and express similar sentiments.

A major difference between the 2009 and 1994 studies is the attitude towards health and safety, the implementation of which is consistently expressed as a negative aspect of working in the industry. A significant number of respondents regarded the rules and regulations surrounding the implementation of health and safety to be excessive, whilst none criticised the intentions or considered health and safety management to be unnecessary, they did feel that the regulations had gone too far, were petty, unnecessary and in some instances did not contribute to better health and safety.

The level of satisfaction shown by the 2009 results generally reflects those measured by Investors in People, who include employee satisfaction as an assessment criterion for its key performance indicators. It measures how satisfied direct employees are with respect to:

a) the amount of influence they have over their jobs

b) their pay and conditions

c) the sense of achievement they get from their work

d) the respect they get from line managers/supervisors

The construction workers who were ‘satisfied’ or ‘very satisfied’ in their work are in line with those in the study.
Table 7: Investors in People indicator of satisfaction level of construction employees

<table>
<thead>
<tr>
<th>Year</th>
<th>Satisfaction Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>41%</td>
</tr>
<tr>
<td>2004</td>
<td>41%</td>
</tr>
<tr>
<td>2005</td>
<td>51%</td>
</tr>
<tr>
<td>2006</td>
<td>55%</td>
</tr>
<tr>
<td>2007</td>
<td>47%</td>
</tr>
</tbody>
</table>

The results of the Investors in People and the 2009 study indicate a similar level of satisfaction expressed by employees; this suggests that a solid basis exists for the development of employee involvement. It does, however, show that only half of construction workers are satisfied, which indicates that there is considerable potential and need to improve the satisfaction of workers; if for no other reason a satisfied worker is better than a dissatisfied worker.

5.7 Employed v self-employed

The form of employment can potentially have a significant effect on attitude and the willingness of employees to be involved, especially as many of the self-employed are not self-employed by choice, but because of circumstance or employer demand. The form of employment has been an issue in the construction industry for some years with the growth of self-employment from the 1980’s onwards being considered to run counter to the goals set by Egan, in terms of team building, continuous improvement and integrated long-term relationships. In 1994 the balance between employed and self-employed was four to one, in 2009 this had become one to two; a significant shift.

Table 8: Employed v Self-employed

<table>
<thead>
<tr>
<th>Year</th>
<th>Employed</th>
<th>Self-Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>80.79</td>
<td>19.21</td>
</tr>
<tr>
<td>2009</td>
<td>35.08</td>
<td>64.92</td>
</tr>
</tbody>
</table>

The result indicates a significant reversal of the position with regard to the form of employment, however the size and composition of the two samples differs in terms of the proportion of different
trades included, which may influence the result. Similarly, the size of the 2009 study sample is smaller that the 1994 sample, which may also influence these figures. It is notable that despite the significant increase in self-employment there has not been a corresponding change in most of the other attitudes expressed by the respondents.

6. Conclusions

The findings reveal that some changes have occurred in the attitude of construction workers towards involvement and participation, but these are mixed and do not at this stage establish a clearly discernible trend towards an increase or decrease. Some important attitudes have changed very little, such as the desire to be involved and the importance of being involved, but there is no evidence of the enhanced attitude towards involvement and participation expected by the Egan initiatives. Overall, the positive attitude towards participation remains strong, with no indication of any significant weakening, which suggests that the propensity for participation and empowerment still exists. In overall terms, the necessary attitudes required to fully exploit the potential of lean production and to achieve the goals set by Egan are still evident, but there is no evidence that the Egan initiatives have effected any positive change on the attitude of construction workers in 2009.

References

Allport G (1949) *Personality: A Psychological Interpretation*, London, Constable


An Assessment of Key Performance Indicators Utilised in Measuring Multicultural Team Performance

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Abstract

As globalisation advances at an ever-increasing rate, there is a great need in the global construction industry for identifying a set of common indicators to be used by project leaders in measuring multicultural team performance at the project level. The focus of this research was to collect management perceptions of the key performance indicators currently utilised in the global construction industry in Kenya and UK. A literature search was employed to generate the initial set of perceived key performance indicators, which were administered to the construction industry via a survey using both quantitative and qualitative methodology. Correlations were performed for both the quantitative and qualitative indicators to determine which type of indicators is used most extensively. Further analysis displayed a substantial difference between project leaders in Kenya and the UK. In conclusion, it was found that the correlation between quantitative indicators and qualitative indicators proved to be inconclusive.

Keywords: Kenya, UK, global construction industry, key performance indicators, multicultural team.
1. Introduction

The construction industry has been widely castigated for its fragmented approach to project delivery and its failure to form effective integrated multicultural project teams. Ochieng (2008) established that in practice, there are three basic forms of multicultural construction project teams:

i. A construction project team with individuals from different cultural backgrounds working in the same country. These are project teams which consist of expatriate individuals or team members from different communities that are culturally distinct.

ii. Construction teams that are fundamentally or totally propagated in many countries but meet face-to-face.

iii. Construction teams that repose of individuals in many countries, work together only through medias, and never meet each other. This “virtual construction project team” has no face-to-face or project review meetings.

Nonetheless, there is also lack of knowledge regarding team integration of multicultural project teams, thus the determinants, attributes, and variables are largely unknown. Recent attempts at team integration in the construction sector have been widely centered on improving project procurement and product delivery processes (Bernard et al 2003). It is essential to note that, in construction, integration is used to explicate the introduction of construction working practices, methods and behaviours that constitute a culture of efficacious and effective collaboration by project teams and contractors (SFC 2003 and Lennard et al 2002). The term “integrated multicultural project teams” has been used in this paper to designate a highly effectual collaborative project team capable of delivering a construction project. This paper investigates the extent to which senior managers in Kenya and the UK were able to integrate multicultural construction project teams. It examines the practices within multicultural construction project teams that lead to full team integration.

2. The impact of culture on multicultural project teams

Whilst there is a plethora of empirical work focusing on culture, the nature of national culture, team culture, project culture, corporate and organization culture (Ankrah and Langford 2005; Dainty et al, 2007; Hall, 1999; Hofstede, 2001; Trompenaars, 2001), the concept of multicultural team working remains largely unexplored. With the growth in globalisation, construction project managers increasingly need to work in culturally diverse project teams. The challenge, however, is that they bring different understandings and expectations regarding team dynamics and multicultural team working. In a construction project, the project team is new. It is brought together for the project and its participants are not chosen as project team players but by the lowest price tag. They are not the projects employees but leased from their home firm, which probably has other success criteria than the project in question. Since the project is new and the site is unbroken, nothing at all is as it was in the previous project. A second problem facing senior managers is that they need to act fast. In a
project environment there is no such thing as a second try. The culture of teamwork must be introduced from the very beginning and kept all the time. In addition, service and support must be introduced in order to gain confidence and the project’s targets must be clearly communicated, particularly if the construction project is one where recurrent changes may be expected (Emitt and Gorse 2007). Essentially, construction projects and project participants are all different and the big challenge facing clients and senior managers, which a business manager is fortunate to be almost without, is the need for setting up a construction site team spirit almost immediately (Egan 2002).

Though there is plenty of knowledge on how to manage an international organisation, but this knowledge is not applicable to construction project teams. Global construction organisations have to deal with multicultural issues on a much wider and deeper level than any other sector. Because of the unique requirements of multicultural construction project teams, we need strategies suited to deal with the problems that practicing project leaders face in multicultural team integration, everyday situations. This study was designed to examine the practices within multicultural construction project teams that lead to full team integration, in UK and Kenya.

3. Aspiration of the construction industry

As established in this research, construction operations are so complex and multidimensional that major heavy construction engineering projects in many developing countries are often performed as joint ventures with firms from developed nations. A good understanding of multi-cultural team working is therefore particularly beneficial to developing and developed countries. According to Clark and Ip (1999), trans-global economic developments offer an opportunity to introduce products utilising up-to-date knowledge in a cost-effective manner. In any construction project, it is essential for the senior managers to be cross-culturally competent. Multi-cultural team working calls for cultural understanding and sensitivity in terms of personnel management by the concerned clients. The specific cultural and behavioural issues include language, communication, and the understanding of cultural differences.

In the last ten years, there has been a growing research interest in soft issues like social and cultural factors, which affect people management on projects (Dainty et al 2007; Egan 1998). The interviews held in both Kenya and the UK revealed that cultural dynamics causes challenges in heavy construction engineering projects among other internal and external issues. In addition, cultures are very dynamic, which creates another challenge to clients and project managers within the construction industry. Addressing the poor performance of multi-cultural project teams remains an aspiration within the construction industry.

For effective management of multi-cultural project teams, there is a need to examine if cultural complexity can be effectively managed. Due to the demand of international construction projects involving multi-cultural project teams, there is a growing trend towards discussing cultural complexity more openly within the construction industry. This has been influenced by clients in both the developing and developed countries demanding for improved people management strategies. There is a need for increased research efforts in understanding influential factors that affect managing
cultural complexity in multi-cultural project teams. There is mounting evidence and opinion indicating that integrated team working is a primary key in efforts towards improving product delivery within the construction industry (Egan 2002). Given the uniqueness of culture to particular project teams, and its persistent influence in societies and organisations this study presents a balance between the experiences of project managers from a developed and developing country.

The construction industry has been under pressure to evolve into a sector that is constantly changing to fit the needs of the broader context in which the operations are executed. Attitudes towards working have changed dramatically in recent years and there is currently much more emphasis on multi-cultural team working. As construction organisations define more of their activities as projects, the demand for multi-cultural team working grows, and there is increasing interest in reforming the project delivery process. Based on this demand and the previously cited challenge of improving people management, this research has focussed on examining the factors influencing multi-cultural team working and has explored how team integration can be made effective for a multi-cultural project environment.

4. Methodology

Eight well project-oriented organizations were selected in Kenya (4) and the UK (4) respectively. A semi-structured interview approach was employed to achieve the aims of the study. A total of twenty interviews were conducted in Kenya (10) and UK (10); each interview lasting approximately ninety minutes. The twenty participants were selected on the basis of their integration experience, with each having long-standing familiarity in managing multicultural construction project teams. All participants had a practical understanding of cross cultural issues in construction projects. All interviews were conducted by the first author and were tape rerecorded and transcribed verbatim accordingly. Data analysis was achieved through the use of qualitative analysis software package NUDIST NVivo™ and SPSS 13. During the analysis, broad themes and patterns were looked for, rather than narrow, precisely variables of qualitative research. Three hundred postal questionnaires were distributed to senior managers in Kenya and the UK and one hundred and thirty two were returned giving a response rate of forty-four percent. Careful consideration was given to how best to collect and analyse data covering possible differences in construction project management practice. A solution seemed to be to focus the research on ensuring diversity in the sample, in terms of construction engineering projects managed by subjects. Such diversity ensured that potential differences in practice could be identified and this facilitated the analysis of any influences on different projects that were researched.

5. Findings

There was a consensus from both set of participants that in order for multicultural team integration to be successful, there should be:
i. A clear identification of who does what and reporting lines with defined roles and responsibilities co-coordinating aspects of the design and the industrial construction process

ii. Performance measurement and benchmarking of both the supply team member’s performance in order to promote continuous improvement. The aim is to identify and resolve problems and to share best practice.

iii. Arrangements for sharing efficiency gains so that all parties in the team benefit and incentives for everyone in the integrated team to work together to bring about innovation, and cost effective design solutions.

iv. A shared risk register with risks allocated between managers and across the team, and

v. Clear measurable targets, improving value for money in industrial quality, delivery times, and whole life costs that are agreed the client and organisations that make up the integrated team.

Several participants emphasized the importance of initiatives to sustain team spirit. It is notable that individuals working in a high-performing team usually have a good mix and balance of different personality types, which enable individuals to play to their natural strengths. Some of the participants highlighted that there have always ended up with a project that is on budget, on-time and good quality. Participants highlighted that some of the benefits of integration include: improved communication, greater awareness of opportunities, fewer disputes, improved performance, improved quality and greater certainty of outturn cost. For example, one of the participants in the UK noted that she had worked on a variety of projects whereby the teams had integrated and where some had not. This was mainly because of poor communication systems and lack of trust among project team members.

“I had a situation whereby the main contractor didn’t want to integrate with the sub-contractors mainly because of poor communication systems which were in place”

In addition, individual attitudes towards each other and the project were found to play a key role on influencing the success of multicultural team integration. It was widely acknowledged that if you get a balance on risk, values, and teamwork then you have a good chance of implementing the strategy successfully. Other key factors that emerged include the need for the project leader must employ strategic management and co-ordination, devise and agree with the team shared goals and there has to be a strong incentive for members to help each other in achieving their goals. The need for client and senior managers to demonstrate a cultural balance of enthusiasm, experience, drive, organisation, and control must also be present. As stated by one of the participants in Kenya:
“The underlying message which underpins them multi-cultural project team should be to try and enjoy the day to day activity on a project. This can be achieved through team building activities so as to create an environment, which is both focused and efficient in producing the project deliverables”.

With regards to running efficient multicultural team integration, the participants identified a number of key factors which included: cross cultural communication, cross cultural trust, cross cultural collectivism and cross cultural empathy in project leadership. The results of the interviews indicated that the extent of integration is complex. Participant’s accounts of integration were related to their opinions about cultural complexity. Though opinions towards integration appeared to be similar between project leaders in Kenya and the UK, project leaders in UK appeared to cope much better with the ever-accelerating pace change in construction industry. Even though the dynamics and diversity of teams were found to be complex, participants in this study showed that there are many benefits to be derived from working with fully integrated teams. Participants in the UK showed that many clients now prefer to work alongside the contractor in the integrated teams. This enables them to share knowledge and resources easily and efficiently. Teams better integrated have the best balance of culture, skilled and semi skilled, experienced and inexperienced people. This means they share the same aim—a successful project! The discussion of results in this study shows that cultural differences on projects can do considerable damage to the organisation of heavy construction engineering projects. Irrespective of whether the project is international or not, participants demonstrated that cultural differences contribute to complexity on projects. To capitalise on efficiency in the multicultural project team, it is critical for the client and project manager to establish a clear, effective and robust process at an early stage of the project in order to identify and resolve obstacles clearly and swiftly before they develop into major problems.

5.1 Effective formation of multicultural team

Participants’ views on effective formation of a multi-cultural team are given in Figure 1. In this question, participants were asked to indicate how multi-cultural teams could successfully be formed. The findings are presented in the following sequence: communication, project manager leadership, client leadership, people selection, and risk. The factor regarded as most important is “communication” with a percentage score of thirty-five.
Figure 1: Proportion on effective formation of a multi-cultural team

From the survey results, it can be observed that the participants believe that interaction among multi-cultural team members can stimulate the effective formation of an integrated team. In this study, it has been shown that heavy construction project management is a collective endeavour. In this feature, project leaders have noted that if integrated project teams fail to communicate effectively, then they will be unable to achieve their collective objectives and talents; this does mean that as a team they will be less effective. It is essential that the project manager take ownership in making sure that both internal and inter-group communication is implemented. This can be achieved through effective leadership and maximising effective external communication procedures. Dainty et al. (2006) stated that the interdisciplinary nature of construction project teams is such that they will always involve project teams from different organisations, backgrounds, skills, and knowledge coming together for short periods to work collectively. The process of team formation and reaching a stage where individuals communicate can be an issue in construction projects. The survey results suggest that communication and leadership does influence effective team formation on projects. As highlighted in the literature (Dainty et al. 2006), the development of team synergy and a positive project chemistry is theoretically straightforward. The authors are aware of the dynamic nature and characteristics of heavy construction engineering projects and that it means that team formation may be more problematic than in environments that are more static. Here individuals will join teams for defined periods before moving to other projects. This temporal dimension makes it more complex as highlighted by participants in this study.

6. Conclusion

This research provides the construction industry with a sense of how widespread cultural issues affect multicultural project teams. From the findings, most participants agreed that multicultural team integration have an important effect on project success. For example, participants mentioned that good multicultural team integration enhances the quality of final product by harvesting expertise and creativity of all the team members. An interesting feature of project integration need that emerged
from this study was that it could vary significantly at different times in the project life cycle. This study, therefore, provides good groundwork for understanding the influential factors that affect multicultural project teams in developed and developing countries. There is a need for the construction industry to develop further its appreciation of the different cultural factors that influence multicultural teamwork in projects.

The growing trend in engineering design and construction is giving rise to a need for the development of effective multi-cultural teams. Now that construction companies are able to move resources to almost any location worldwide and have the capacity to work on a global scale; for many organisations future opportunities to work entails thinking more clearly about cross-cultural issues and more overtly and systematically an understanding of multi-cultural team working. As proposed in this study, this requires the integration of thinking and practice related to cross-cultural management. Although much can be achieved by working with multi-cultural teams, the truly successful construction firms are likely to be those, which embed the change through integrated changes to cross-cultural team selection, development process, communication, collectivism and trust.

References


Lennard et al. (2002). Integrating the team; dream or reality? Liverpool: Liverpool Best Practice Club/Rethinking Construction North West.


Employee Attitudes towards Ownership: ESOPS in the Construction Industry

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Abstract

With the introduction of Employee Stock Ownership Plans (ESOP’s), many of today’s construction employees find themselves being both an employee and employee owner. Employee attitudes toward becoming an employee owner were well-researched and documented up to the year 1986. However, over the last 20 years, new research in this area has been limited. Therefore, this study is designed to survey and analyze the attitudes of today’s construction employee owner. Data was collected separately to obtain two-dimensional survey results. Survey questions were asked to gain information regarding their experiences, perception, and feelings toward their company. Conceptually, an employee’s feeling toward employee ownership--positive or negative--depends on the established company culture. When an employee feels the pride of being a “real” vested owner, they are self-motivated to be less wasteful, to perform at a higher level, and to show greater initiative. However, some ESOP companies were formed strictly for financial reasons and do not take in consideration the spirit of employee ownership. It is recommended that further studies should be done to identify the differences between firms that encourage and promote broad-based participation with those that created an ESOP as a financial benefit, as well as a comparative study based on the extent of employee stake and participation.

Keywords: employee owner, employee stock ownership plans, employee attitudes towards ownership
1. Introduction

In 1956, a San Francisco banker and attorney named Louis Kelso created a broad-based employee ownership plan, known today as an Employee Stock Ownership Plan (ESOP) (Kelso & Adler, 1958). The Kelso Plan implemented the first ownership transfer to employees of a San Francisco newspaper. In the early 1970’s, the concept began to attract attention on Capitol Hill. The Chairman of the Senate Finance Committee was Senator Russell Long of Louisiana. Kelso and Long prompted that legislation for broader-based ownership which could increase corporate performance, ease workplace tensions, address the future shortfalls of Social Security, and help to build a better society. In 1974, Congress passed ERISA, and within the legislation was an attractive tax and financing advantage to promote the sale of company stock to employees. Current laws allow employee owners to foster a broader distribution of wealth among employees who, as owners, will help their companies perform better, while they accumulate significant retirement savings.

In 1987, the U.S. Government Accountability Office (GAO) performed a study on 110 firms, focusing on productivity and profitability. The study found that participatively managed employee-owned firms increased their productivity growth rate by 52% per year. Thus, if a company’s productivity growth rate had been 3.0% per year, it would be 4.5% after an ESOP was adopted. Due to the particular methodology used in this study, the results may be considered conservative. The study also found no real impact on profits.

The ESOP plans took off in the 80’s and 90’s from 1,600 plans to over 9,000 in 1993. As of May 2007, more than 9,600 ESOP’s exist totaling about 10.5 million employee owners with assets valued at $675 billion. Rosen et al. (2007) believes this is due to larger private companies and faster employment growth among ESOP companies. Many believe that if more business owners knew of the tax advantages for ESOP’s; the numbers could be much higher. The following table shows the growth:

Table 1: Growth of ESOP’s identified by NCEO

<table>
<thead>
<tr>
<th>Year</th>
<th># Of Plans</th>
<th>Plan Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>1,600</td>
<td>250,000</td>
</tr>
<tr>
<td>1990</td>
<td>8,080</td>
<td>5,000,000</td>
</tr>
<tr>
<td>2005</td>
<td>9,225</td>
<td>10,150,000</td>
</tr>
</tbody>
</table>

Source: www.NCEO.org

Note: In this table, the “Plans” row shows number of plans and the “participants” row shows the number of employee participating in those plans.
ESOPs have also been around in the construction industry itself since 1974. However, as noted by Rusk (2005), it wasn’t until the mid-'80s that these plans became truly popular, in part because “newly created tax incentives made these plans financially effective, particularly as a structure for leveraged buy-outs.” Government’s varied legislative changes allowed these plans to become more attractive to the construction industry and the employees working within. ESOPs have grown extensively in the engineering industry, where 50% of the largest firms in the United States are employee-owned, and at least 20 firms are specifically in the engineering and construction arena. So with the larger construction firms, employee ownership has become more and more well-established and accepted over the last 30 years.

1.1. Current Employee Attitudes towards Employee Owners

Employee attitudes toward becoming employee owners were well-researched and documented up to the year 1986. However, over 20 years have now passed with very little new research attempted or performed in this area. Employee attitudes may have changed with the younger age of today’s workforce. Therefore, this report is designed to survey and analyze the attitudes of today’s employee owners.

Very few surveys have been performed on employee ownership with stock option or 401(k) plans. The National Center for Employee Ownership, Rosen (2007) states, “Efforts to do employee surveys have not gotten very far” and “few companies have been willing to participate.” These plans have different ways for employees to become owners and most companies would not be willing to share this type of financial information. Kruse (1996) suggests that employee owners generally have superior retirement provisions. More research is needed on the risks the ESOP’s face by putting all of their eggs in one basket.

1.2. Benefits of employee ownership

Construction employees need to accept that a large number of companies in their industry have failed to use ESOPs when compared to other industries. Construction contractors, in general, have a number of different characteristics than those of companies in various other industries. “The construction business is very competitive and very cyclical, with many companies regularly leaving the market for reasons within and out of their control” (Wrixon, 2005). As a result, the use of ESOPs may not appear to be financially viable, especially for the smaller construction firms or firms with a mobile and unstable employee base. However, if the firm is of greater size and stability, the employees within usually derive the greatest benefits from employee ownership. The employees can accrue both substantial wealth toward retirement and growth in compensation. Employee owners derive other benefits as well, which can include job security and work satisfaction. The construction surety bond works as “a three-party instrument whereby a surety company joins with the contractor to guarantee to a project owner that the contractor will comply with the terms and conditions of the contract. Should
a contractor fail to fulfill its contractual obligations, the surety must step in to satisfy the obligations” (Wrixon, 2005). With the ESOP, the employees are enabled to purchase the bonds and guarantee business continuity after initial business ownership is succeeded, by establishing a general and available market for the purchase of bond shares. This study provides new research and answers to the questions of how the construction employees of today feel toward becoming the truly vested owners in their companies.

### 1.3. Employee Stock Ownership Plans (ESOP)

In a research study, Logue and Yates (2001) found that more than one in twelve private sector employees participate in an Employee Stock Ownership Plan (ESOP). This new plan gained increasing popularity after the passage of the Employee Retirement and Income Security Act (ERISA) in 1974. The Act provided a way for the average employee to become a partial owner in a company, build wealth for retirement, and have a voice in the manner that the company would operate. Kruse and Blasi (2000) found that employee-owned companies increase sales and employment, by more than 2% per year over what would be expected without an ESOP. They also found that ESOP companies are more likely to be in business several years later due to the fact that said companies offer other retirement plans in addition to the ESOP benefits. Like any company, one owned by employees needs direction and an aligned path for that company to have success. An environment must be created to allow employees the opportunity to be active and, similarly, must offer solutions to make the company a better place for said employees to work.

In a study by Quarrey and Rosen (1986), these researchers found a link between employee ownership and corporate performance. Employee-owned companies with participative management structures showed the largest gains in sales and employment growth. This is what an “ownership culture” promotes to keep the participation going. One way to become the employer of choice is through employee involvement. Ownership with participative management is a very powerful competitive tool. Ownership without participation accomplishes very little toward company growth. Employee involvement and participation is the culture upon which high-performing ESOP’s have built their companies around. Employee ownership does not guarantee a firm’s performance or lower employee turnover, but when the firm’s employees have been given a voice on an issue that will involve effectiveness inside the company, then a true employee-owned culture has been created and the individuals within the organization are often satisfied to a greater level.

Some ESOP’s have less than a 100% employee ownership, and this report did not survey or study these companies. This survey includes results only from 100% employee owners who have a voice in the decisions made on a day-to-day basis. In addition, the report did not study any non-ESOP publicly held companies. Employee-owners who have a personal stake in total shareholder returns were the focus of this survey. Additional information on publicly held companies was included for support only or for necessary reference to make a point.

Past research has demonstrated that very few privately held companies would be willing to provide financial accounting data--making studies that rely on productivity, profits, return on investments, or stock prices almost impossible. And the data available for public companies can be much more
ambiguous. The focus of this report is employee attitudes; therefore, financial information was used for support or reference only.

2. Research methodology

ESOP research has almost always been based on written surveys. The broad hypothesis is that employee-ownership share plans will increase the levels of company commitment, employee participation, and general satisfaction within the firm. Using single methods tends to produce one-dimensional results. Therefore, the original plan for this study did change when the collection of data began.

This study collected data separately to obtain two-dimensional survey results. Some of the survey questions were asked to collect information regarding the individual respondents’ experience, perception, and feelings toward their company. This added a dimension of individually oriented information to the informants’ perspectives and gave each individual an opportunity to express personal views about his/her own circumstances. Survey respondents tend to be more candid and objective about the groups of which they are members than about themselves personally. The main areas surveyed were feelings of ownership, effects of ownership on company practices, and perceived effects on attitudes and behavior.

2.1. Survey procedures

A 15-question survey was written, approved, and emailed to employee owners at all six companies. The confidential survey was voluntary, anonymous, and participants could stop at any time. The survey was made available to the respondents on a website that collected and organized the data. A link to the survey site was attached to the e-mail that was sent to all possible respondents. The process was made to be quick and easy to complete, requiring the respondents only 5 to 10 minutes to access the survey site, complete the questions, and send the results back to the data collection site.

3. Results

3.1. Respondents’ response rate

The sample was composed of 1,836 possible respondents in five companies. Completed surveys were received from 330 participants, which is equivalent to an 18% response rate. In addition, a managerial respondent was interviewed at each of the five companies to gain background information on the company and insight about the ESOP. The entire interview was conducted through telephone conversations. In conducting the surveys, the focus was always to look at the employees’ attitudes toward employee ownership. Additionally, it was considered useful to see where the individual company stands when compared to other similar employee-owned companies.
3.2. Correlation between employee ownership and participation: A hypothesis

What might explain the correlation between construction employee ownership and participation? Does ownership without participation improve work effort or promote productive behavior? ESOP’s need incentives and opportunities for employees to grow and work together so performance can be improved. Freeman and Dube (2000) found that productive behaviors were higher in companies that combined employee ownership or profit sharing with participation in decision-making. In an ESOP, the incentive is sharing in the profits to build a wealthy account for retirement, and, for the larger firms, to lock in the on-going work force. In the end, employee ownership and the ESOP plan may be “particularly advantageous for companies whose rapid growth has required the reinvestment of profits, resulting in a shortage of cash available for employee benefits. A collateral benefit is that the ESOP often serves to diminish employee interest in unionization” (Wrixon, 2005). The employees will feel more satisfied knowing that as the business goes through growth and change, with the ESOP and employee involvement it is still an established firm, with guaranteed future benefits. Industrial and economic stability are provided, without the need for organizations to otherwise protect the employees, because the firm itself is designed for employee wealth protection. In the construction work world, with its rapid changes, this offers guarantees that are not otherwise provided to the worker.

Table 2 reflects responses to questions that primarily surveyed feelings of ownership.

Table 2.

<table>
<thead>
<tr>
<th>Employee Reported Responses- “Industry”</th>
<th>Range</th>
<th>Dep. Var. Mean</th>
<th>Standard D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feelings of Ownership: FEEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I feel my work is more satisfying because of employee ownership.”</td>
<td>3</td>
<td>5.35</td>
<td>1.52</td>
</tr>
<tr>
<td>“My company makes me feel like I own part of the business.”</td>
<td>3</td>
<td>5.45</td>
<td>1.47</td>
</tr>
<tr>
<td>“I am proud to own shares of stock in this company.”</td>
<td>3</td>
<td>6.55</td>
<td>0.95</td>
</tr>
<tr>
<td>“I feel I need more information to understand how employee ownership works.”</td>
<td>4</td>
<td>4.95</td>
<td>1.51</td>
</tr>
<tr>
<td>“I have comfort that my retirement funds are safe from risk.”</td>
<td>5</td>
<td>5.45</td>
<td>1.49</td>
</tr>
</tbody>
</table>
Table 3 reflects responses to questions that primarily surveyed the effects of ownership on company practices.

Table 3.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Range</th>
<th>Dep. Var.</th>
<th>Mean</th>
<th>Standard D.</th>
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<td>Perceived effects on company practices: PERCEPTION</td>
<td></td>
<td></td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>“I have more say in company decisions because I own shares in my company.”</td>
<td>4</td>
<td>5.1</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>“Because of employee ownership workers here are treated as equals.”</td>
<td>3</td>
<td>4.9</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>“Because of employee ownership, workers cooperate more with each other.”</td>
<td>3</td>
<td>5.4</td>
<td>1.26</td>
<td></td>
</tr>
<tr>
<td>“Employees have more say than if they did not own shares in this company.”</td>
<td>4</td>
<td>5.9</td>
<td>1.18</td>
<td></td>
</tr>
<tr>
<td>“Employee ownership will help me to grow in this company.”</td>
<td>5</td>
<td>5.65</td>
<td>1.55</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 reflects responses to questions that primarily surveyed perceived effects on attitudes and behavior.

Table 4.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Range</th>
<th>Dep. Var.</th>
<th>Mean</th>
<th>Standard D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect on attitudes and behavior: EFFECT</td>
<td></td>
<td></td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>“I believe that owning shares in this company has influenced why I continue to work here.”</td>
<td>3</td>
<td>6.6</td>
<td>1.64</td>
<td></td>
</tr>
<tr>
<td>“I believe that owning shares in this company increases my interest in company finances.”</td>
<td>3</td>
<td>6.55</td>
<td>1.53</td>
<td></td>
</tr>
<tr>
<td>“I am more conscientious about waste in this company because I am an owner.”</td>
<td>3</td>
<td>6.02</td>
<td>1.29</td>
<td></td>
</tr>
<tr>
<td>“I work smarter and more efficiently because I own shares in the company.”</td>
<td>4</td>
<td>5.01</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>“Because of this experience, I would only work for employee owned companies.”</td>
<td>5</td>
<td>4.5</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>
Note: Ranges, as defined in Table 2, 3, and 4, are based on a 1 out of 5 scale, 1-strongly disagree and 5-strongly agree.

4. Conclusion and recommendations

Conceptually, an understanding of how employees feel about construction ownership—positive or negative—depends on the company culture that has been established. When an employee feels the pride of being a “real” vested owner, that employee then becomes self-motivated to be less wasteful, performs at a higher level, and puts in the extra effort to be the best worker one can be. Employee owners know that the more they help to develop the company and build profits, the more money they will have in their retirement accounts. Some ESOP companies were formed strictly for financial reasons and have nothing to do with the spirit of employee ownership. Participation and getting involved with the ESOP is the key to longevity/sustainability for the employee owners. Further studies should be done to identify the differences between firms that encourage and promote broad-based participation with those that provide ESOP’s only as a means of retirement benefits; between firms that provide voting rights and those that do not; and a comparative study based on the extent of employee stake and participation. Rusk (2005) comments that because the greater part of ESOP ownership, unlike that researched in this survey study, is typically “held to a manageable level—often between 30 and 50 percent—the ESOP stock redemption liability is less burdensome to manage. This is a formula that has proven successful for many engineering firms.” Since this study has been focused on 100 percent employee ownership, said conflict in conceptualizations leaves room to continue research on total employee ownership and its benefits for the employees and construction firms. Further surveying the larger construction firms and employees may indicate that the greater to total ownership is more desired by the work force. What is essential is to establish the broader survey method, looking to obtain a greater percentage of results, and focusing on details that are not only of employee reported responses but also of a comparison of the employee-owned construction businesses to the construction industry as a whole. Over time, the room for employee ownership may be found to be very much alive on both the individual and corporate levels, for benefits that far exceed the economic.

References


Assessment of Ergonomic Quality of Hand-Held Materials and Packaging in Constructions

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Abstract

The paper focuses on usability of hand-held materials and packaging in constructions activities. Even if many studies have been carried out about assessment of the ergonomic quality of hand-held tools, not much has been experimented about handling of materials and packaging in constructions. In fact, despite the relevance of ergonomic approach in bricklayers health and safety studies, most common best practices imposes new ways to perform masonry tasks. They seems to give constraints to spontaneous workflow which would be followed by operators, making all proposed solutions ineffective in practice. On the other hand, it is widely recognized that inadequate usability performances of hand-held tools are a cause of poor working conditions, but it can be considered that hand-held tools require strength exertion and repetitive movements as masonry material do, therefore it can be expected that improving usability performances of construction materials would bring an actual improvement of masons working conditions. Starting from a detailed task analysis of masonry activities, in order to evidence main operators constraints in actions execution, the study focuses on two typologies of construction materials, giving a particular attention to different kind of wall blocks and loose materials packaged in sacks. By identifying a set of ad-hoc requirements and technical specifications, an evaluation of usability ranking of a selection of 15 different construction products has been done. The study evidenced that selected held hand construction materials provide inappropriate grips in relation to several characteristics, such as shape, dimensions, easiness to
recognize handle points, handling stability, slipperiness resistance, pinch force, weights, easiness to be opened and poured. On these basis a set of objective usability characteristics, also on sight based, has been identified for an easy selection of ergonomic hand-held construction materials and packaging.

**Keywords:** usability requirements, handling, materials, constructions

### 1. Introduction

According to the report published by European Agency for Safety and Health at Work (2008) a survey carried out in 31 countries in 2005, up to 25% of the workers in the EU27 reported back pain and 23% muscular pain. About 235 million people were employed in these 31 countries at the time of the survey, meaning that at least 60 million workers reportedly suffer from MSDs in Europe. It presents MSDs have commonly been associated with physically demanding working conditions, especially regarding construction sector, where work is mainly characterized by working tasks manually executed, and exposure to manual material handling, repetitive movements and constrained postures is considered the highest.

About handling, European Union Directive 90/269/EEC, transposed into law in all Member States, gives the minimum health and safety requirements for the manual handling of loads. OSHA (2004) reports that the associated risk depends on a range of factors, including the characteristics of the load, the layout of working environment and the demands of the activity. Regarding to characteristics of the load, the risk increases during lifting, carrying, pushing and pulling of loads, in relation to their weight, bulk, grasp, content stability. EU regulation imposes to manage loads which weight is less than 25 or 30 kg, but we generally know there is no exact weight limit that is safe, since recommended weights could be heavy to lift for most people, especially if the load is handled several times in an hour. Moreover the muscles will get tired more rapidly while handling when reaching to hold a large bulky load, because it is difficult to keep the load close to the middle of trunk when lifting and carrying it. Loads that are difficult to grasp, also considering gloves, can result in the object slipping and can cause sudden movement, increasing the load on the worker. Also in the case of unbalanced, unstable or if the contents can move, the load is difficult to hold, leading to uneven loading of muscles and sudden movements that can increase the physical effort and make the worker loose their balance and fall.

Since Mital and Kilbom (1992) study it is well known the existence of a strong relationships between occurrence of musculoskeletal disorders and excessive use of poorly designed hand tools, as several successive studies confirm. Rwamamara and Holzmann (2007) reported that design of materials themselves and their packaging, delivery method, etc. could have reduced the risk in more than a third of the accidents on construction sites.

Many studies have been carried out about assessment of the ergonomic quality of hand-held tools, as OSHA and NIOSH (2004) and more recently Strasser (2007) focus, but less has been experimented about materials and packaging handling in constructions, where almost all tasks are driven by the
necessity to frequently utilize hand-held components in solid, liquid, fluid or powdered status, differently packaged and then offering diverse ways to be stocked, transported and used by workers.

About the ergonomic approach for prevention of trauma in construction industry by selection and use of hand-held modular building component, like bricks in their different typologies, we can find studies on technical aids for minimize efforts, i.e. improving lifting of granite and concrete tiles, kerbs and blocks, like in Kaminskas (2003) or studies on the experimentation of organization measures in order to introduce workers behavioural changes, as van der Molen et al. (2005) point out. Less can be found about how we can design construction components in order to reduce risks during their manipulation. In that direction goes the study of Bust et al. (2005) proposing to change existing kerbs reducing their length, depth and weight. Nothing was reported about the packaging of construction materials contained in sacks and pails.

On the contrary a postural analysis carried out by Li and Lee (1999) observed that the most strenuous task for cement workers was just brick-laying, especially when the hands are working near floor level, when the workers are picking up bricks or mortar from the side and putting them onto a low wall or when workers are carrying bricks and buckets of mortar.

Despite this kind of attention, several EU regulations request employers must provide workers with equipments and materials chosen to minimize every possible physical constraint during their use. They have to permit operators to execute job reducing effort demanding, avoiding long and useless actions and so reducing human errors, in order to assure comfort and wellbeing on work, decreasing work related pathologies rates, and increasing work systems global efficiency.

With this background and in order to contribute to cover the gap between regulations requests and applied studies, the research that formed the basis of this paper was founded by Laboratory of applied and experimental ergonomics (LEAS) of University of Naples Federico II and Salerno district bilateral organization of construction companies and workers trade union (CPT). Main research aim was identifying criteria for helping employers to select or purchase the best ergonomically well designed construction materials and powered and not powered hand-held tools. The study has been carried out by defining usability requirements and technical specification for hand-held materials and packaging in constructions; measuring usability performances of hand-held materials and packaging in relation to usability requirements, outlining design line guides to improve workers ergonomic condition using hand-held materials and packaging. This paper reports research methodology and first findings concerning construction materials.

2. Methods

2.1 The problem of materials constructions usability

Scientific literature shows studies about usability in construction field which are just referred to some of hand-held tools used in masonry tasks, for instance, usability tests of trowels have been conducted
by Strasser et al. (1996), while Das et al. (2005) have tested saws usability and Spielholz et al (2001) have done a compared usability evaluation of random orbit sanders, so that studies focused on construction materials usability appears to be still lacking.

As previously shown, literature agrees on construction materials manual handling as one of most serious ergonomic problems in masonry. Most common solutions suggested by guidelines about MMH are the use of handling aids (Ohio BWC) or brick raising devices (Vink et al, 2002) and the workers training aimed to promote behavioral changes in loads picking and lifting (Davis, 2001 and Albers and Estill, 2007). A more specific suggestion about materials characteristics is given in order to reduce materials weight (cement sacks, brick and blocks), as showed by Entzel at al. (2007), and Salem et al. (2008), but it is well known from main risk assessment methods (ISO 11228 parts 1, 2, 3) that ergonomic risks associated to manual handling of loads are affected not only by their weigh but also by factors such as load dimensions and grasp type. Furthermore, actual effectiveness of ergonomic solutions for bricklaying activities improvement which are based on new devices provided in worksites is quite difficult to be proven, due to the worksites variety as observed by Vink et al, (2002) and because of “a number of design issues, supply problems, jobsite conditions and management practices (i.e., site planning and coordination) that render some technologies and work practices impractical on many worksites” (Entzel et al., 2007).

Moreover, stakeholders perspective on any device, tool and material for construction is not focused only on their safety aspects, since, as told by Entzel et al (2007), stakeholders care quality of final building performances and cost-effectiveness of construction processes.

In this framework, the concept of materials usability can result more appropriate than ergonomic devices use, since it gets over the health and safety issues and includes suitability of the materials to the masonry tasks under the effectiveness, efficiency and user satisfaction perspective.

### 2.2 Task analysis of masonry activities

In order to detect which factors affect usability of construction materials used in construction of a wall, a work break-down structure of masonry tasks was drafted on the basis of the observation of three Italian work sites, one for each kind of construction technique (implying the use of: gypsum, lime and premixed plaster in sacks; bricks, air bricks, stone blocks) and the tasks listed by Entzel et al. (2007). Prepared list was revised with the participation of two representative of the CPT; the list includes all tasks needed for a wall raising, pertaining both jobs executed by masons and mason assistants.

Description of tasks includes details on all materials used, modalities in which they are handled and manipulated in the various possible worksites, habits of workers in materials arrangement in the workspace layout, kind of grasp offered by each material types, habits for load lifting. Task explanation contains also materials characteristics able to support the task execution, that is making it easier, faster and more comfortable or, on the contrary, materials features which could increase errors,
physical demand, time needed for task completing. These aspects have been highlighted with the participation of the CPT representatives.

One of the outcomes of the task analysis concerns differences observed in working posture, movements frequency and lifting distances during materials handling (horizontal and vertical), and also for the materials themselves for bricklayers and bricklayer assistants. For instance, mortar pails are lifted almost only by assistants; bricklayers do repetitive lifting operations with a higher frequency and for a longer duration than assistants; bricklayers move loads mainly along a vertical axis in a relatively fixed position in the worksite, while assistants lift materials for a bigger distance. Common factor in all tasks is the action to pick up brick, block, sacks and pails with fluid or powdered materials. A further consideration relates to habits and preferences of masons in job execution: obviously they prefers most natural actions and try to skip using aids or respecting handling instructions.

About powdered and fluid materials in sacks, task analysis evidenced that their usability performances have to be investigated for their four possible status: as sealed sacks, as open sacks (full or partially empty), as loose powdered of fluid (handled with shovel) and, finally gathered in pails. All these status imply different ergonomic risks connected to: type of grasp, packaging materials, movements, different skin and respiratory contacts.

Also for what concerns bricks and blocks several differences in way of use have been observed, with consequent prompts for usability requirements. Main considerations relate to differences among the specific laying techniques (e.g. mortar quantities and types, imbibing, installation quickness), movements and parts of the hands involved in grasping, physical constitution of the component (shape, weight, texture).

From these observations, it can be hypothesized that improvements in materials for what concerns their suitability to be grasped, held and manipulated could bring most impacting ergonomic benefits than the use of specific ergonomic devices, because the majority of masonry tasks and all masons engaged will benefit of the design changes.

3. Usability requirements for construction materials

From task analysis a set of factors which can affect the usability performances of tools and materials used in bricklaying has been evidenced, as listed in the table below.
Table 1: Factors affecting usability of construction materials

<table>
<thead>
<tr>
<th>Factors affecting usability of construction materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical demands</strong></td>
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<tr>
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<td></td>
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<tr>
<td><strong>Precision</strong></td>
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<td></td>
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<tr>
<td></td>
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<tr>
<td><strong>Times</strong></td>
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<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td><strong>Quality controls</strong></td>
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<td></td>
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<tr>
<td></td>
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<tr>
<td><strong>Residues or foulness production</strong></td>
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<td></td>
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<tr>
<td></td>
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<tr>
<td><strong>Safety risks</strong></td>
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</tbody>
</table>

The factors quoted above are the premises on which the qualities able to increase usability performances of construction materials have been defined. Then, five categories of usability requirement have been settled and, for each of them, a set of requirements has been specified. Finally
technical specifications with qualitative and, when possible, quantitative indications have been
detailed. Table below shows requirement categories and associated details.

Table 2: Usability requirements for construction materials

<table>
<thead>
<tr>
<th>Usability category</th>
<th>Usability requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort during use</td>
<td>Manipulability</td>
</tr>
<tr>
<td>Capability of the material to be used in an easy and</td>
<td>Efficiency in use</td>
</tr>
<tr>
<td>comfortable way in order to reduce probability that</td>
<td>Transportability</td>
</tr>
<tr>
<td>workers do unnecessary/long/high demanding actions</td>
<td></td>
</tr>
<tr>
<td>Maintanability</td>
<td>Folding packaging</td>
</tr>
<tr>
<td>Capability of the material to be simply stocked and</td>
<td>Humidity-resistant packaging and loose materials</td>
</tr>
<tr>
<td>reserved also in unsealed packaging</td>
<td>Chemical-resistant packaging and loose materials</td>
</tr>
<tr>
<td>Comprehensiblellity</td>
<td>Self-explaining</td>
</tr>
<tr>
<td>Capability of the material to let workers aware about</td>
<td>Contextual information</td>
</tr>
<tr>
<td>stocking, handling, preparation and laying ways in</td>
<td></td>
</tr>
<tr>
<td>order to reduce/avoid risk exposure and errors in</td>
<td></td>
</tr>
<tr>
<td>execution</td>
<td></td>
</tr>
<tr>
<td>Injury protection</td>
<td>Secure grip</td>
</tr>
<tr>
<td>Capability of the material to assure the safest</td>
<td>Resilience</td>
</tr>
<tr>
<td>operational conditions for workers</td>
<td>Absence of cutting edge</td>
</tr>
<tr>
<td>Health protection</td>
<td>Absence of cutting fragments</td>
</tr>
<tr>
<td>Capability of the material to assure that its prolonged</td>
<td>Low residues production</td>
</tr>
<tr>
<td>use does not provoke work related disorders</td>
<td>Power / palm grip allowed</td>
</tr>
<tr>
<td></td>
<td>Low physical effort demanded</td>
</tr>
</tbody>
</table>

4. Usability assessment of construction materials

4.1 Selection of products

The study considered two typologies of construction materials commonly used in Italian
constructions, concerning powdered and fluid material packaged in bags and wall blocks. They are
cement, lime and premixed plaster in sacks; bricks, air bricks, cement blocks and stone blocks. The
selection has been founded in order to collect an adequate variety of characteristics in relation to
substances compositions and consistency, as well as morphological and dimensional differences. In
the whole fifteen products have been analyzed. At least three different manufacturer’s brand among
market leaders for each material have been chosen. About loose materials packaged in bags, two
brands for cement in paper sacks, one brand for gypsum and one brand for stucco in plastic sacks
were selected. About wall blocks the selection concerns four brands of air blocks, four brands of red bricks and three brands of tuff stones.

4.2 Materials usability assessment

In general, and according to the standard ISO 9241/11, usability measurement of any products requires to assess the extent of effectiveness, efficiency and satisfaction by its users. Once defined that, within the aims of the presented study, users are bricklayers and bricklayers assistants, effectiveness and efficiency of construction materials can be measured with a certain objectivity, but specificities of construction industry would make quite unreliable satisfaction measurement, because of its subjectivity (Vink, 2002). Furthermore, one of expected output of the study is a guide for helping employers and buyer to choose materials and packaging offering better ergonomic performances, therefore also in this case, where masons aren’t directly involved in the purchasing, usability characteristics need to be expressed by mean of objective indicators rather than subjective ones.

Having said that, gathering of data corresponding to the quantitative and qualitative sets of previously defined technical specifications has been conducted, considering information provided by technical sheets, sales literature, information graspable on sight or measurable with simple instruments like a weighing scale or a measuring tape. Usability assessment of selected materials has been carried out checking the compliance of their features with the requested set of technical specification. Final ranking is based on the number of crosschecked technical specifications/number of all technical specifications ratio, then each usability requirement can result fully satisfied (more than 80% technical specifications checked), partially satisfied (79-50% technical specifications checked) or not satisfied (less than 50% technical specifications checked). The table below gives an example of the assessment grid regarding one of selected powdered materials in paper bag.

Table 3: Example grid of usability assessment for cement in paper bag

<table>
<thead>
<tr>
<th>Comfort during use</th>
<th>Manipulability</th>
<th>Efficiency in use</th>
<th>Transportability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2/2</td>
<td>2/2</td>
<td>2/4</td>
</tr>
<tr>
<td></td>
<td>☺</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintainability</th>
<th>Folding packaging</th>
<th>Humidity resistant packaging/loose materials</th>
<th>Chemical resistant packaging and loose materials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0/1</td>
<td>0/1</td>
<td>0/1</td>
</tr>
<tr>
<td></td>
<td>☺</td>
<td>☺</td>
<td>☺</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comprehensibility</th>
<th>Self-explaining</th>
<th>Contextual information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0/3</td>
<td>1/2</td>
</tr>
</tbody>
</table>
5. First findings

Already at earliest stages of the EDILUSABILE research development, an initial finding emerged about technical information provided by construction materials producers. In fact, independently on differences among products brands and market targets considered in the study, a general deficiency of useful data for usability requirements assessment has been observed either in technical sheet either on dealer literature. As consequence of this factor, usability test has provided more accurate results for qualitative technical specifications crosschecking than for quantitative ones.

Figure 1: Compared results of usability test for materials in bags

About the usability assessment of materials in bags, test shows a quite poor ranking, since all usability requirement categories give acceptable usability performances in average around the 50% of measured specifications, presenting just one usability category partially satisfied and one totally satisfied. The four market brands considered do not show substantial differences in usability
performances of their products, just one has an outstanding ranking for the comprehensibility category. For what concerns all kind of bricks and blocks, results of usability test show differences among the various usability categories, being some categories partially satisfied while maintainability is always totally satisfied. Nevertheless, differences have been observed among comfort in use, injury protection and health protection performances for air blocks and all other products, since usability ranking for air blocks is in the lowest values of the partially satisfaction range, while all others are just below the totally satisfaction percentages.

6. Conclusions

In conclusion, it can be said that, considering the gap between the expected usability performances and the actual ones provided by investigated products, wide margins for design improvement exist. Therefore, a more comprehensive approach to ergonomics of construction materials appears to be useful. Consideration of materials multiple features which actually affect ergonomic working conditions of bricklayers and their assistants, seems to open promising research scenarios in order to promote safety strategies in constructions whose reliability doesn’t depend on specific worksite conditions or workers behaviors but are also founded on mainly unchanging parameters.

References


Respect for People

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Abstract

‘Respect for people’ is one of three principles of ‘Rethinking construction’ in the United Kingdom, initiated as a result of the 1998 Egan report. ‘Respect for people’ is a principle due to the role of people in construction - they manage, supervise and undertake the physical process of construction. The work environment influences the morale, attitude, behavior, motivation, and performance of people. Performance relative to the environment, health and safety (H&S), productivity, quality and time, all impact on client, customer and worker satisfaction, and ultimately cost and profitability. The work environment should be appropriately laid out, organised, clean, healthy and safe. Optimum ergonomics should be realised through appropriate design, detail, specification, work processes, development of materials, minimisation of manual handling, and maximum mechanisation. Employment practices and employment contracts should reflect respect for people, and engender empowerment in the holistic sense such that people are developed and become sustainable entities. Facilities in the form of comprehensive ablutions, change rooms and eating areas should be available. The paper reports on a study conducted among a group of ‘better practice’ H&S general contractors (GCs) to determine, among other, their perceptions with respect to the degree of respect for people in construction, and the extent to which various stakeholders can contribute to an improvement therein. The salient findings are as follows. The South African construction industry is not highly rated relative to production workers in terms of respect for people - it is rated poor to average relative to most aspects. All stakeholders can contribute to an improvement in the level of respect for and empowerment of production workers in the industry. The findings clearly indicate a need for a national agenda relative to respect for people. A multi–stakeholder forum consisting of ‘better practice’ stakeholders would be likely to provide the requisite leadership.

Keywords: respect for people, construction, performance, multi-stakeholder
1. Introduction

‘Respect for people’ is one of three principles of ‘Rethinking construction’ in the United Kingdom, initiated by the report of the Construction Task Force chaired by Sir John Egan in the United Kingdom in 1998 (Rethinking Construction Limited, 2002). The Egan report reviewed among other, the performance and image of the industry, and ways to improve it. ‘Respect for people’ is a principle due to the role of people in construction.

The importance of the initiative is amplified by a poll conducted by pollster YouGov in the UK (Construction Manager, 2003). The British public were asked where they would like to work, and why - building sites identified by 24 % of respondents, achieved a ranking of second out of seven places in terms of where people would least like to work. ‘Work is physically exhausting’ and ‘sites are exposed to the elements’ predominated among eleven possible responses, followed jointly by ‘sites are dangerous’ and ‘the work culture is harsh / aggressive’, and then ‘building sites are dirty’. Contact Africa, the Chartered Institute of Building (CIOB) Southern Africa’s newsletter reported on the recently launched CIOB UK ‘Change in our Sites’ campaign, the primary aims of which are to raise the profile of the industry and to make a real difference in working conditions (Contact Africa, 2003). Improving site conditions is one of five areas identified as key objectives for 2003 by the Strategic Forum for Construction in the UK.

Alan Crane, Chair, Rethinking Construction Ltd. in his Preface to the report Respect for People A Framework for Action states that he wants to see the people in the United Kingdom (UK) construction industry better rewarded, better trained, and as safe and healthy at the end of the day as they were at the start.

In their report A Commitment to People “Our Biggest Asset” the UK Movement for Innovation (M4I)’s Working Group on Respect for People state that there is a strong business case for the construction industry to radically improve its performance on people issues. They add that the business case hinges on the ‘3 Rs’ – organisations that fail to improve their attitude and performance towards respecting people will fail to recruit and retain the best talent and business partners (M4I, 2000).

Based upon the findings of international literature and an initial study conducted in 2003 (Smallwood, 2004), a follow up study was conducted in 2009, the objectives being to:

- Review the performance of the industry relative to respect for people;
- Determine the potential contribution of various industry stakeholders to an improvement in the level of respect for and empowerment of production workers, and
- Determine whether there has been any improvement in performance relative to respect for people between 2003 and 2009.
2. Review of the literature

2.1 The case for the respect for people initiative

People undertake the physical work, operate plant and equipment, and supervise and manage the construction process and therefore, are the industry’s most important resource. Furthermore, change and improvement will only happen through the efforts of people working in the industry, as they ultimately determine practice and performance. However, a commitment to people, demonstrating respect and providing the right conditions to support their endeavours is essential (M4I, 2000).

The M4I (2000) makes reference to various issues. Reports from trade unions about breaches of employment law and the lack of basic employment rights amplify the need for action. The reliance on temporary labour, use of agency labour, and self-employment has exacerbated the situation. Furthermore, the perception of the industry is damaging its image and reputation, which is discouraging potential recruits from joining or remaining within it. The M4I maintains that the industry needs to change its recruitment policies if it is to maintain and grow its share of talented people. A further issue is that of increased demand for construction, which requires enough of the right people to do the right jobs in the right environment. To be able to recruit and retain the right people organizations need to demonstrate day-in-day-out that they value all their workforce, their health and safety (H&S), working environment, training and personal development, their diversity, and can demonstrate commitment to equal opportunities.

The M4I contends that the respect for people initiative is not a high-minded aspiration, but a business necessity. Improved health, safety, working conditions, investment in training and a more diverse workforce will be appreciated, resulting in:

- A better standard of work;
- More cost effective projects;
- Fewer delays and expensive mistakes;
- Fewer accidents and less ill health;
- Reduced staff turnover;
- Earlier completion dates;
- An advantage over the competition, and
- More repeat business, and
• Ultimately, improved financial performance.

2.2 Corporate social responsibility (CSR)

According to Murray and Dainty (2009) CSR is “the responsibility an organisation takes for the impact of its corporate activities on the various stakeholders with whom it interfaces and whom it affects, such as employees, customers, and communities, and the environment.” The emergence and growth of the concept is attributable to the deepening societal interest in the ethical behaviour of businesses, and because stakeholders are increasingly prone to criticise unethical practices that, inter alia, exploit workers or damage communities. This in turn has resulted in the recognition of CSR as a key driver and metric for business performance. Although the respect for people initiative preceded the advent of CSR, the initiative is effectively underscored by CSR.

2.3 Current status

The M4I (2000) cites statistics relative to the people working in the UK industry as follows. People are getting older – whereas ten years ago 33% were under the age of thirty years, now 25% are. Males tend to predominate – the proportion of women in all positions is 8.6%. 93% work for organisations employing less than eight people, and 36% are self-employed. Male manual workers work on average 46.4 hours / week, of which 5.9 hours on average is overtime – these figures are 2 hours / week higher than the average for all industries and services. People are more likely to be involved in an accident – the reported accident rate for construction was 1 254 per 100 000 employees in 1998 / 9, compared with 666 for all industries.

A survey conducted among members of the South African Property Owners Association (SAPOA) entailed the rating of GCs relative to twenty-six aspects on a scale of very poor to excellent (Smallwood and Venter, 2001). General contractors were rated between very poor to poor / poor relative to facilities, and between poor to average / average relative to worker attire, health, public relations, housekeeping, worker skills, communication, site offices, and safety.

2.4 Themes

The UK M4I’s Working Group on Respect for People identified four cross-cutting themes and six action themes (M4I, 2000).

The main ‘overarching’ cross-cutting theme emerging from most subgroups was investors – in people (iPiP) standard, followed by workforce involvement, behavioural issues, and an overarching management framework. A key recommendation is that all organizations should commit to the Investors in People standard as the most effective and most systematic means of developing and demonstrating respect for people. Workforce involvement entails the consultation, involvement,
engagement, and empowerment of all workers – not just management. Behavioural issues are primarily concerned with the adversarial behaviour in the construction industry and the impact thereof on performance. Findings emanating from two pilot projects indicate that integration of the supply chain leads to productivity and quality gains and also has a positive effect on behaviour. However, in order to instigate and achieve effective radical improvements, organizations – regardless of sector, size, structure or maturity, must first identify how their objectives fit within their corporate strategy and overarching management framework. The Business Excellence Model illustrates the fundamental importance of people as both ‘enablers’ and ‘results’. ‘Enablers’ in the sense that people provide the leadership, evolve the policy and strategy, and enter into partnerships and obtain, allocate and direct resources. ‘Results’ in the context of: people results such as development; customer results; society results, and key performance results such as staff turnover, absenteeism, fatalities, reportable accidents, percentage of workforce qualified, and mean annual pay.

The six action themes identified include: diversity in the workplace; site facilities and the working environment at site level; health; safety; lifelong learning and career development, and the working environment off-site. Diversity is about recruiting and retaining the best people. The inclusion of the widest possible scope of ability and experience will result in enhanced quality, service, and innovation. The provision of appropriate welfare facilities and site establishment is paramount in ensuring that the workforce feels respected and part of the project, the rationale being inter alia the resultant improvement in productivity. However, clients play a key role in enabling and requiring contractors to improve site welfare. Ill health as a result of poor occupational health risk management contributes substantially more to fatalities and ill health than safety related fatalities and accident related injuries. The construction industry has one of the poorest safety records of any business sector in the UK, which has a direct impact on its image and therefore its ability to recruit and retain the workforce it requires. More recently the Construction Industry Development Board (cidb) (2009) reports that “Globally, the construction industry has a poor health and safety (H&S) record and South Africa is no exception.” Furthermore, fatalities and non–fatal accidents result in considerable suffering and hardship to many families and individuals. Lifelong learning and career development, the process by which individuals in the workforce continue to learn and update and add to their skills, enables them to become more effective, more able to contribute to the competitiveness of their organization and the construction industry, and also to enhance their employability. In terms of the working environment of site, the key issues for those in the office environment tend to be ‘softer issues’, such as the culture, quality of communication, and behavioural issues.

2.5 Improving

In terms of a multi-stakeholder perspective, the Department of Public Works (DPW) advocates, inter alia, the following interventions to improve industry performance in South Africa (DPW, 1999):

- Improvements in the work processes of contractors in co-operation with clients and designers;

- Promotion of best-practice standards for, inter alia, H&S, productivity, and quality, which standards contractors can aspire to;
Introduction of H&S programmes, productivity improvement processes and Quality Management Systems, the initial costs of which are likely to be offset by the benefits of the resultant improvement in efficiency;

Integrated, as opposed to piecemeal implementation of work-process improvement techniques to enhance the likely success of such implementation due to the synergy between H&S, productivity and quality;

Incremental implementation of best-practice due to the debilitated condition of much of the industry, and

Reinforcement of measures intended to protect the environment, workforce and public such as H&S.

Improvement related endeavours are not constrained to the UK and South Africa. The New South Wales Government (1998) intends to engender focus on the following as part of their strategy to improve the performance of its industry: management and workforce development; workplace improvement; industrial relations; H&S, and environmental management.

3. Research

3.1 Methodology and sample stratum

The sample stratum consisted of 29 general contractors (GCs), which had achieved a first, second, or third place in the then Building Industries Federation South Africa (BIFSA) and currently the Master Builders South Africa (MBSA) National Health and Safety (H&S) Competition and, or a BIFSA / MBSA 4 or 5-Star H&S grading on one or more of their projects. A 3-question questionnaire consisting of 48 sub-questions was mailed to 29 GCs, of which 9 responded, 1 questionnaire was returned to the researcher undelivered, which represents a net response rate of 32.1% [9 / (29-1)]. The questionnaire used was identical to the questionnaire used in the initial study conducted in 2003 (Smallwood, 2004).

3.2 Findings

Table 1 indicates the rating of the South African construction industry relative to production workers in terms of thirty-four aspects by respondents in terms of percentages relative to a scale of very poor to excellent, and a mean score (MS) with a minimum value of 1.00, and a maximum value of 5.00. Given that those aspects ranked first to fourteenth have MSs > 3.00, they can be deemed to be rated between average and higher, and those aspects that have MSs ≤ 3.00 can be deemed to be rated between average and lower. However, a review of the ratings relative to ranges provides a more
detailed perspective – the number of aspects that occurred in the ranges in the initial study are recorded within parentheses (Smallwood, 2004):

- good to excellent / excellent ($> 4.20 \leq 5.00$) – 0 (0 in 2004) aspects;
- average to good / good ($> 3.40 \leq 4.20$) – 9 (2 in 2004) aspects;
- poor to average / average ($> 2.60 \leq 3.40$) – 17 (16 in 2004) aspects;
- very poor to poor / poor ($> 1.80 \leq 2.60$) – 7 (16 in 2004) aspects, and
- very poor to poor ($> 1.00 \leq 1.80$) – 1 (0 in 2004) aspect.

In terms of the aspects that can be deemed to be rated between average to good / good ($> 3.40 \leq 4.20$), it is notable that the provision of PPE, materials and plant and equipment, and to a lesser degree, mechanisation, feature prominently. However, it is also notable that personnel issues such as employment contracts, workplaces, appropriate remuneration, occupational safety, and induction feature within this range. Notable in the case of the latter in that the South African construction industry is generally not highly rated relative to workplaces, remuneration, and occupational safety. It is also notable that during a previous South African study conducted by Smallwood (2003), GCs achieved a rating of 3.38 / 5.00 relative to occupational safety, marginally below the current rating of 3.43.

The aspects that can be deemed to be rated between poor to average / average ($> 2.60 \leq 3.40$) include personnel issues such as housekeeping, skills training, recognition, general development, employment practices generally, occupational health, limited manual handling, promotion, supervision (inter-personal skills), primary health promotion, and welfare issues such as toilets, WHBs, and change rooms. These are notable findings in that many of these aspects impact on the image and the ability of the construction industry to attract people to and retain them within the industry. They are also notable in that during a previous South African study GCs achieved a rating of 3.39 / 5.00 relative to industrial relations, 2.67 / 5.00 relative to concern for the environment, 2.54 / 5.00 relative to facilities such as change rooms, and 2.97 / 5.00 relative to occupational health (Smallwood, 2003). Furthermore, the M²I (2000) says that an improvement in health, safety, and working conditions, and an investment in training in the UK construction industry would be appreciated.

Sustainable employment, which is a critical aspect in the South African construction industry is among the aspects that can be deemed to be rated between very poor to poor / poor ($> 1.80 \leq 2.60$). Other aspects include optimum time for activities, ergonomics, and welfare issues such as soap, mess rooms, and showers. Historically, the South African construction industry is not rated highly in terms of such aspects.

The lowest ranked aspect, towels is a further welfare issue, which can be deemed to be rated between very poor to poor ($> 1.00 \leq 1.80$).
Although there has been a decrease in the number of aspects rated between very poor to poor / poor, from 16 to 7, and an increase in the number of aspects rated average to good / good, from 2 to 9, there are still no aspects rated between good to excellent / excellent, and the ratings in general indicate that the South African construction industry is not rated highly in terms of aspects pertaining to respect for people.

**Table 1: Rating of the South African construction industry relative to production workers in terms of various aspects**

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Response (%)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Unsure</td>
<td>Very Poor</td>
<td>Poor</td>
<td>Average</td>
<td>Good</td>
<td>Excellent</td>
<td>MS</td>
<td>Rank</td>
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<td>Provision of personal protective equipment (PPE)</td>
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<td>0.0</td>
<td>14.3</td>
<td>0.0</td>
<td>57.1</td>
<td>28.6</td>
<td>4.00</td>
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<td>0.0</td>
<td>28.6</td>
<td>71.4</td>
<td>0.0</td>
<td>3.71</td>
<td>2</td>
<td></td>
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<tr>
<td>Provision of appropriate materials</td>
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<td>0.0</td>
<td>28.6</td>
<td>71.4</td>
<td>0.0</td>
<td>3.71</td>
<td>3</td>
<td></td>
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<tr>
<td>Workplaces</td>
<td>0.0</td>
<td>0.0</td>
<td>33.3</td>
<td>66.7</td>
<td>0.0</td>
<td>3.67</td>
<td>4</td>
<td></td>
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<tr>
<td>Provision of plant and equipment</td>
<td>0.0</td>
<td>0.0</td>
<td>42.9</td>
<td>57.1</td>
<td>0.0</td>
<td>3.57</td>
<td>5</td>
<td></td>
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<td>Appropriate remuneration</td>
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<td>0.0</td>
<td>14.3</td>
<td>42.9</td>
<td>14.3</td>
<td>28.6</td>
<td>3.57</td>
<td>6</td>
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<td>Occupational safety</td>
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<td>0.0</td>
<td>14.3</td>
<td>28.6</td>
<td>57.1</td>
<td>0.0</td>
<td>3.43</td>
<td>7</td>
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<tr>
<td>Induction (general)</td>
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<td>0.0</td>
<td>28.6</td>
<td>71.4</td>
<td>0.0</td>
<td>3.43</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Mechanisation</td>
<td>0.0</td>
<td>14.3</td>
<td>0.0</td>
<td>14.3</td>
<td>71.4</td>
<td>0.0</td>
<td>3.43</td>
<td>9</td>
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<td>Housekeeping</td>
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<td>0.0</td>
<td>14.3</td>
<td>42.9</td>
<td>42.9</td>
<td>0.0</td>
<td>3.29</td>
<td>10</td>
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<td>Environment</td>
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<td>0.0</td>
<td>14.3</td>
<td>42.9</td>
<td>42.9</td>
<td>0.0</td>
<td>3.29</td>
<td>11</td>
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<td>Skills training</td>
<td>0.0</td>
<td>0.0</td>
<td>28.6</td>
<td>28.6</td>
<td>28.6</td>
<td>14.3</td>
<td>3.29</td>
<td>12</td>
</tr>
<tr>
<td>Constructability of design / details</td>
<td>0.0</td>
<td>0.0</td>
<td>14.3</td>
<td>57.1</td>
<td>28.6</td>
<td>0.0</td>
<td>3.14</td>
<td>13</td>
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<tr>
<td>Recognition</td>
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<td>0.0</td>
<td>28.6</td>
<td>28.6</td>
<td>42.9</td>
<td>0.0</td>
<td>3.14</td>
<td>14</td>
</tr>
<tr>
<td>Provision of information</td>
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<td>0.0</td>
<td>14.3</td>
<td>71.4</td>
<td>14.3</td>
<td>0.0</td>
<td>3.00</td>
<td>15</td>
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<td>General development</td>
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<td>0.0</td>
<td>28.6</td>
<td>42.9</td>
<td>28.6</td>
<td>0.0</td>
<td>3.00</td>
<td>16</td>
</tr>
<tr>
<td>Employment practices generally</td>
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<td>0.0</td>
<td>28.6</td>
<td>42.9</td>
<td>28.6</td>
<td>0.0</td>
<td>3.00</td>
<td>17</td>
</tr>
<tr>
<td>Occupational health</td>
<td>0.0</td>
<td>0.0</td>
<td>28.6</td>
<td>42.9</td>
<td>28.6</td>
<td>0.0</td>
<td>3.00</td>
<td>18</td>
</tr>
<tr>
<td>Limited manual handling</td>
<td>0.0</td>
<td>14.3</td>
<td>0.0</td>
<td>57.1</td>
<td>28.6</td>
<td>0.0</td>
<td>3.00</td>
<td>19</td>
</tr>
<tr>
<td>Traffic safety</td>
<td>0.0</td>
<td>0.0</td>
<td>14.3</td>
<td>85.7</td>
<td>0.0</td>
<td>0.0</td>
<td>2.86</td>
<td>20</td>
</tr>
</tbody>
</table>
Table 2 indicates the rating of the South African construction industry relative to production workers in terms of respect for people and empowerment - empowerment was defined as “The development of people such that they become sustainable entities able to contribute holistically to workplace activities and society.” It is notable that both respect for people and empowerment achieved a MS marginally above the midpoint value of 3.00, which indicates that in general, the South African construction industry’s performance relative thereto can be deemed to be marginally above average. In 2004 the MSs were: respect for people (3.09) and empowerment (2.90). Therefore, the South African construction industry can be deemed to have improved, albeit marginally so.

<table>
<thead>
<tr>
<th>Promotion</th>
<th>0.0</th>
<th>0.0</th>
<th>28.6</th>
<th>57.1</th>
<th>14.3</th>
<th>0.0</th>
<th>2.86</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervision (inter-personal skills)</td>
<td>0.0</td>
<td>0.0</td>
<td>42.9</td>
<td>28.6</td>
<td>28.6</td>
<td>0.0</td>
<td>2.86</td>
<td>22</td>
</tr>
<tr>
<td>Primary health promotion</td>
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<td>0.0</td>
<td>42.9</td>
<td>28.6</td>
<td>28.6</td>
<td>0.0</td>
<td>2.86</td>
<td>23</td>
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<tr>
<td>Ablutions: Toilets</td>
<td>0.0</td>
<td>0.0</td>
<td>28.6</td>
<td>71.4</td>
<td>0.0</td>
<td>0.0</td>
<td>2.71</td>
<td>24</td>
</tr>
<tr>
<td>Ablutions: WHBs</td>
<td>14.3</td>
<td>0.0</td>
<td>28.6</td>
<td>57.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.67</td>
<td>25</td>
</tr>
<tr>
<td>Change rooms</td>
<td>0.0</td>
<td>0.0</td>
<td>33.3</td>
<td>66.7</td>
<td>0.0</td>
<td>0.0</td>
<td>2.67</td>
<td>26</td>
</tr>
<tr>
<td>Sustainable employment</td>
<td>0.0</td>
<td>0.0</td>
<td>42.9</td>
<td>57.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.57</td>
<td>27</td>
</tr>
<tr>
<td>Optimum time for activities</td>
<td>0.0</td>
<td>14.3</td>
<td>14.3</td>
<td>71.4</td>
<td>0.0</td>
<td>0.0</td>
<td>2.57</td>
<td>28</td>
</tr>
<tr>
<td>‘Off-the-job’ H&amp;S</td>
<td>14.3</td>
<td>0.0</td>
<td>42.9</td>
<td>42.9</td>
<td>0.0</td>
<td>0.0</td>
<td>2.50</td>
<td>29</td>
</tr>
<tr>
<td>Ergonomics</td>
<td>14.3</td>
<td>14.3</td>
<td>28.6</td>
<td>28.6</td>
<td>14.3</td>
<td>0.0</td>
<td>2.50</td>
<td>30</td>
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<tr>
<td>Ablutions: Soap</td>
<td>0.0</td>
<td>28.6</td>
<td>28.6</td>
<td>14.3</td>
<td>28.6</td>
<td>0.0</td>
<td>2.43</td>
<td>31</td>
</tr>
<tr>
<td>Canteens / Mess rooms</td>
<td>0.0</td>
<td>0.0</td>
<td>85.7</td>
<td>14.3</td>
<td>0.0</td>
<td>0.0</td>
<td>2.14</td>
<td>32</td>
</tr>
<tr>
<td>Ablutions: Showers</td>
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<td>57.1</td>
<td>28.6</td>
<td>0.0</td>
<td>0.0</td>
<td>2.14</td>
<td>33</td>
</tr>
<tr>
<td>Ablutions: Towels</td>
<td>0.0</td>
<td>57.1</td>
<td>14.3</td>
<td>28.6</td>
<td>0.0</td>
<td>0.0</td>
<td>1.71</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 2: Rating of the South African construction industry relative to production workers in terms of respect for people and empowerment.
Table 3 indicates the extent to which twelve stakeholders could contribute to an improvement in the level of respect for and empowerment of production workers in the South African construction industry in terms of percentages relative to a scale of minor to major, and a mean score (MS) with a minimum value of 1.00, and a maximum value of 5.00. Given that those aspects ranked first to eighth have MSs > 3.00, the contribution can be deemed to be between moderate and major, and those ranked ninth to twelfth have MSs ≤ 3.00, the contribution can be deemed to be between moderate and minor. However, a review of the MSs relative to ranges provides a more detailed perspective:

MSs in the (following ranges) indicate the extent of the contribution:

- near major contribution to major contribution / major contribution (> 4.20 ≤ 5.00) – 1 stakeholder;
- moderate contribution to near major contribution / near major contribution (> 3.40 ≤ 4.20) – 5 stakeholders;
- near minor contribution to a moderate contribution / moderate contribution (> 2.60 ≤ 3.40) – 6 stakeholders;
- minor contribution to a near minor contribution / near minor contribution (> 1.80 ≤ 2.60) – 0 stakeholders, and
- minor contribution to a near minor contribution (> 1.80 ≤ 2.60) – 0 stakeholders.

Notable rankings include the:

- Sixth ranking achieved by the Construction Industry Development Board (cidb), which was ranked first in 2004;
- Construction supervisors, construction managers, and clients ranked second, third, and fourth, which were ranked joint first, third and joint fourth respectively in 2004, and
Fourth ranking achieved by project managers, which was ranked ninth in 2004.

Table 3: Extent to which stakeholders could contribute to an improvement in the level of respect for and empowerment of production workers in the South African construction industry

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Response (%)</th>
<th>MS</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsure</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Construction supervisors</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Construction managers</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
<td>Clients</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Project managers</td>
<td>0.0</td>
<td>0.0</td>
<td>14.3</td>
</tr>
<tr>
<td>Unions</td>
<td>0.0</td>
<td>14.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Construction Industry Development Board</td>
<td>0.0</td>
<td>14.3</td>
<td>14.3</td>
</tr>
<tr>
<td>(cidb)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer associations e.g. MBSA, MBAs,</td>
<td>0.0</td>
<td>0.0</td>
<td>28.6</td>
</tr>
<tr>
<td>NHBRC and SAFCEC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department of Labour</td>
<td>0.0</td>
<td>14.3</td>
<td>28.6</td>
</tr>
<tr>
<td>Department of Health</td>
<td>0.0</td>
<td>14.3</td>
<td>28.6</td>
</tr>
<tr>
<td>Compensation Commissioner</td>
<td>0.0</td>
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<td>42.9</td>
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<tr>
<td>Department of Public Works</td>
<td>0.0</td>
<td>14.3</td>
<td>57.1</td>
</tr>
<tr>
<td>Designers</td>
<td>0.0</td>
<td>14.3</td>
<td>28.6</td>
</tr>
</tbody>
</table>

4. Conclusions

Although the sample stratum was small and the response sample smaller, the conclusions must be read with the qualification that the respondents constitute the more ‘committed’ among a group of ‘better practice H&S’ GCs. Many respondents represent the regional entities of national and international GCs, and also respected medium sized GCs. Consequently, the respondents are better positioned to undertake ratings and to comment with respect to the potential contribution of stakeholders.

The South African construction industry is not highly rated relative to production workers in terms of respect for people. In fact, it is rated poor to average / average relative to 50% of aspects and very poor to poor / poor relative to 47.1% of aspects. Furthermore, the contents of Table 1 read more like a ‘To do’ list. The ratings relative to the following aspects are particularly notable: provision of information; general development; employment practices generally; occupational health; limited manual handling; traffic safety; promotion; supervision (interpersonal skills); primary health promotion; sustainable employment; optimum time for activities; ‘off-the-job’ H&S; ergonomics, and welfare facilities – the industry received particularly poor ratings relative to welfare facilities.
All stakeholders can contribute to an improvement in the level of respect for and empowerment of production workers in the South African construction industry. Notable potential contributions include those from construction supervisors and managers, clients, and project managers. Given the scope of the aspects related to respect for people, contractor employer associations can play a leading role in contributing to improvement. Although the potential role of designers as perceived by respondents is less than that for other stakeholders, there is a potential for them to contribute. Clients, project managers and designers should note the ratings relative to constructability of design / details, limited manual handling, occupational health, optimum time for activities, and ergonomics. The potential contributions by the Departments of Labour, Public Works, and Health, and the Compensation Commissioner are notable in that the government is not perceived to be the champions, but rather the industry itself, and the reason the industry exists, clients.

5. Recommendations

Earnest endeavours must be made to engender and realise the realisation among all industry stakeholders that people actually undertake the physical construction process. Such people have the right to a decent work environment, quality of life, and sustainable future in general. Furthermore, the industry actually needs to attract the optimum people to ‘remain in business’ and to become more competitive.

The findings clearly indicate a need for a national agenda relative to respect for people. This would not be a ‘world first’, as the United Kingdom respect for people endeavour is well advanced. Furthermore, the findings of previous studies conducted by the author relative to performance improvement and the image of the industry, amplify the need for such an agenda. The cidb is well positioned to provide the catalyst for actions necessary to realise such an agenda, and such an agenda would constitute construction industry development.

A multi-stakeholder forum consisting of ‘better practice’ stakeholders would be likely to provide the requisite leadership. The forum would then identify a strategy, which could include among other, the development of appropriate indicators, followed by benchmarking, and demonstration projects.

References


Women in Construction Development, Empowerment and Sustainability (CODES)

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Abstract:

Despite several government-driven initiatives that include legislated requirements in terms of the Employment Equity Act of 55 of 1998 and Broad Based Black Economic Empowerment Act of 53 of 2003, the South African construction sector remains untransformed. Of the 40,505 women-owned contractors in the Construction Industry Development Board (CIDB) Register of Contractors, 36,513 (90.1%) are registered at Grade 1 which is the lowest grade. On the other hand, only 11 are registered at Grade 8 which is the second highest grade. None are registered at Grade 9. (CIDB 2009) There has been marginal upward movement of women-owned contractors through the grades. It is evident that there is a need to examine why these contractors have difficulty in growing and sustaining their contracting businesses. As part of the needs assessment phase of a major project namely Women in Construction Development, Empowerment and Sustainability (CODES), a national survey was conducted of 11,265 registered women-owned contractors with email addresses in Grades 1 through 8. Additionally, needs assessment workshops were held with groups of women-owned contractors in 6 of the 9 provinces in South Africa. Further, a national survey of stakeholders that includes consultants, financiers, and clients was done. This paper only reports on the initial findings of the workshops. This is a qualitative survey and the results are those as espoused by the women who attended the workshops. No reliability testing has been done as the researchers were present in the workshops and the opinions of the women were captured in the workshops.

Keywords: women-owned contractors, development, sustainability, employment equity
1. Introduction

Many authors (Okpara, Squillace and Erondu, 2005; Todd and Bird, 2000; Marthur-Helm, 2004) found that women in various workplaces were discriminated against in one form or another. Furthermore, Lingard and Lin (2003), Dainty et al., (2004), Byrne et al., (2005), and Oldham (2004) found discrimination against women in the construction workplace. According to Verwey (2009) the glass ceiling still existed in the South African construction sector. Madikezela and Haupt (2009) questioned why in spite of all their negative experiences women still entered the South African Construction Industry. Monks and Barker (1999) and Anderson (2004) found that women-only programmes benefited women and they were able move above the perceived glass ceiling.

2. Discrimination against women in the workplace

Okpara, Squillace and Erondu (2005) found that women in higher education in the U.S.A. encountered discrimination which included lower salaries. Todd and Bird (2000) found that promotion for women in the Australian academy had been inequitable as a male-dominated committee created situations resulting in women applicants for promotion not faring well. They found under-representation of women among senior academics. Therefore, gender-based discrimination it is not only a construction sector problem. In South Africa women were always discriminated against by policies which particularly favoured white men (Marthur-Helm 2004). The aim of the Gender Policy Framework (GDF) was specifically to Eliminate All Forms of Discrimination against Women (CEDAW). This framework legally bound both Parliament and the Executive of the Republic of South Africa to actively seek the abolition of gender discrimination from the governance of the RSA (Marthur-Helm 2004).

3. Discrimination against women in the construction industry

The under representation of women in the Australian construction Industry is also well recorded (Lingard & Lin 2003). They argued that family-friendly practices had not been widely adopted in the Australian construction industry. They also argued that when a partner or spouse supported the role that the woman played in the organisation, women were more likely to show higher levels of organisational commitment. In order for women to sustain careers in construction they had to know that they had support from their family as well as the organisation recognising that they had parental duties to perform at some time or another. Dainty et al. (2004) agreed that the UK construction Industry was in the same position with women and minorities having the lowest representation. Further, the discriminatory behaviour of the dominant white male workforce was common place. Women also remained seriously underrepresented in the construction sector in the European Union as well even though their representation in other sectors of the economy had increased (Byrne et al .,2005).
4. Discrimination against women-owned construction business owners in South Africa

Verwey (2009) reported that resolutions adopted at a Women Leadership Convention in Polokwane in South Africa in February 2008, acknowledged that inroads had been made in women empowerment over the previous years, but the glass ceiling still prevented women from playing a meaningful role in the South African construction sector. The overwhelming number of women contractors registered was in the lowest levels of the CIDB which meant that they only had access to projects less than R200,000 in value (just about €20,000). The competition at this point was also frenetic with a total of 62,000 male and female owned contractors battling it out in this market.

In their 2009 research, Madikezela and Haupt examined why South African women chose construction careers in spite of the many negatives that they experienced. In keeping with previous studies they confirmed that 69.1% of and 42.5% respectively found themselves in secretarial and administrative roles. This was despite the overwhelming majority of women feeling that they had the same benefits as men with regard to rights, benefits, opportunities, toilet and ablution facilities, equal advancement and promotion they reported that far less funding was available to improve their qualification and status. Further, they reported that there was a lack of written gender equality policies and education material. Most did not know what the organisational status was with regard to gender related issues and practices.

Once on the site girls find themselves isolated because of the lack of other women on site. With the lack of male acceptance they tend to leave the industry (Madikezela and Haupt, 2009). Women in South African society are historically faced with the housework burden in addition to being expected to add to the family income. (Madikezela and Haupt, 2009)

Women do however still enter the construction sector as business owners. As stated previously the CIDB has as many as 40505 registered contractors that are majority women owned from 51% to 100% women owned. The problem, however, is that the 36 513 are registered at the lowest level Grade 1 and only 11 contractors are registered at Grade 8 the second highest level (CIDB, 2009.)

5. Research

Workshops were held with women contractors in six of the nine provinces in South Africa to ascertain their views on a number of issues, namely

- Where they saw their businesses in an ideal world without any constraints;
- The constraints that prevented what they saw from becoming a reality; and
- What could or should be done to make what they saw become a reality.
From Table 1 it is evident that the responses of the workshop participants relative to where they saw their businesses in the ideal world if anything and everything were possible could be categorized into four categories, namely education and training, growth and expansion, social responsibility, and influence.

**Table 1: The ideal world**

<table>
<thead>
<tr>
<th><strong>Education and training</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization with highly developed technical and management skills</td>
</tr>
<tr>
<td>Have own skills training centre to overcome shortage of construction skills</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Growth and expansion</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Company listed on the Johannesburg Stock Exchange</td>
</tr>
<tr>
<td>Able to compete with the Big 5 contractors in South Africa and other established and internationally known South African contractors</td>
</tr>
<tr>
<td>Being able to fund their own projects without being dictated to by demands of financial institutions</td>
</tr>
<tr>
<td>Ability to network with other women contractors to form consortiums / joint ventures and tender for large projects</td>
</tr>
<tr>
<td>Be registered in the CIDB Register of Contractors between grades 6 and 9</td>
</tr>
<tr>
<td>Own their fixed assets, namely plant, land, equipment, etc.</td>
</tr>
</tbody>
</table>

| Be the preferred multi-disciplinary project management consultant/ contractor/ sub contractor/ supplier / manufacturer |
| Be an international procurement brokerage                        |

<table>
<thead>
<tr>
<th><strong>Social responsibility</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Company involved with the upliftment of youth, women, and rural communities</td>
</tr>
<tr>
<td>Become a role model for other women-owned contractors and new entrants into the industry</td>
</tr>
<tr>
<td>Be an organization that creates jobs in the construction industry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Influence</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Be in a position to influence government policy</td>
</tr>
</tbody>
</table>

While the expectation was that the workshop participants would have much more unrealistic visions for themselves and their organization, the opposite was true. They realistically acknowledged the need for both technical and organizational skills given the existing construction skills shortage. All participants wanted their businesses to grow to compete with the larger construction companies who were registered in the higher grades of the CIDB Register of Contractors. To achieve this goal they were willing to form joint ventures with other women-owned contractors which had sufficient funds to compete in the mainstream construction sector. They also had a sense of social responsibility possibly because as women and mothers they saw beyond the selfish profit maximization motive for being in business. To this end they saw themselves as organizations that would generate jobs for their communities. Given the
significant role of government both in the construction sector and social reconstruction, they wanted to be organizations that would influence government policy directions.

The respondents enthusiastically and often heatedly outlined the constraints that prevented them from achieving their potential despite several government-driven initiatives being in place. Some of their unedited responses are listed in Table 2.

Table 2: Perceived barriers and constraints to development

<table>
<thead>
<tr>
<th>Bureaucracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottlenecks in systems and procedures – red tape</td>
</tr>
<tr>
<td>Poor monitoring of policy implementation</td>
</tr>
<tr>
<td>Department of Public Works (DPW) workshops invitation list - what criteria used (lack of information)</td>
</tr>
<tr>
<td>Payment cycles becomes liability to contractors because of the length of time taken to pay contractors</td>
</tr>
<tr>
<td>Systems and procedures within government and other developing agencies restrict growth of small companies - red tape</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education, training, development and empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of government efficiency / competency</td>
</tr>
<tr>
<td>Lack of contractor development</td>
</tr>
<tr>
<td>Lack of continuous development (shortism)/Continuity of work – stop/go effect – cannot retain staff</td>
</tr>
<tr>
<td>BEE not truly empowering and developing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business training and technical skills lacking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractual matters – interpretation of documents and understanding contractual risk and liabilities</td>
</tr>
<tr>
<td>Lack of skills training for business owners</td>
</tr>
<tr>
<td>Construction Education and Training Authority (CETA) skills development programmes not accessible to Women In Construction (WIC)</td>
</tr>
<tr>
<td>Expanded Public Works Programme (EPWP) opportunities are not shared amongst all contractors</td>
</tr>
<tr>
<td>Getting feedback from unsuccessful tenders will improve the contractors pricing abilities</td>
</tr>
<tr>
<td>Lack of skills to price</td>
</tr>
<tr>
<td>Low levels of skilled staff both site and management</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Collaboration and Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender discrimination within the ranks of women contractors which influences lack of willingness to form consortiums. It requires mindset change that strength in numbers they would be able to harness each others strengths and negate their weaknesses.</td>
</tr>
<tr>
<td>Lack of recognition as expert in field (specialization)</td>
</tr>
<tr>
<td>Clients select expensive international expertise</td>
</tr>
<tr>
<td>Lack of opportunities for new entrants with little experience</td>
</tr>
<tr>
<td>Grade 1 - same as not operating - no opportunities</td>
</tr>
<tr>
<td>Not knowing who to go to for help</td>
</tr>
<tr>
<td><strong>Marketing</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Lack of exposure</td>
</tr>
<tr>
<td>Cannot increase client base</td>
</tr>
<tr>
<td>Dependency on public sector projects - growth into private sector too slow</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CIDB and its grading system</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>System of grading not reflecting the current status of contractors</td>
<td></td>
</tr>
<tr>
<td>Poor communication from CIDB</td>
<td></td>
</tr>
<tr>
<td>Registration requirements are unrealistic and Joint Ventures are not recognised by the CIDB</td>
<td></td>
</tr>
<tr>
<td>Joint venture (JV) requirements are not progressive and the unrealistic requirements for JV's prevent women contractors from doing contracts as JV partners</td>
<td></td>
</tr>
<tr>
<td>CIDB needs to hold development workshops for each grades not across grades</td>
<td></td>
</tr>
<tr>
<td>There is no correlation between National Home Builders Registration Council (NHBRC) and the CIDB</td>
<td></td>
</tr>
<tr>
<td>CIDB grading system prevents upward movement and growth is difficult and there is a lack of support for growth</td>
<td></td>
</tr>
<tr>
<td>CIDB offers no development programmes (lack of programmes)</td>
<td></td>
</tr>
<tr>
<td>Downgrading of grading during recession when work is scarce is unfair</td>
<td></td>
</tr>
<tr>
<td>CIDB Turnaround time for documentation administration is very poor</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Exploitation</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploitation of women owned contractors</td>
<td></td>
</tr>
<tr>
<td>Exploitation from main contractor – if operating as subcontractor</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Financial</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>South African Revenue Service (SARS) workshops needed to help in sorting out tax problems</td>
<td></td>
</tr>
<tr>
<td>Difficult to access bridging finance from Financial institutions</td>
<td></td>
</tr>
<tr>
<td>High interest due to poor payment of loans due poor payment from government</td>
<td></td>
</tr>
<tr>
<td>Limited working capital</td>
<td></td>
</tr>
<tr>
<td>Guarantees and sureties are difficult to obtain and these restrict growth</td>
<td></td>
</tr>
<tr>
<td>Retentions withheld affects cash flow</td>
<td></td>
</tr>
<tr>
<td>When projects are delayed (Government Delays), no escalation in price is allowed</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Corruption:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Influences the availability of work</td>
<td></td>
</tr>
<tr>
<td>Poor ethical standards in the industry</td>
<td></td>
</tr>
<tr>
<td>Nepotism within the departments who issue work</td>
<td></td>
</tr>
</tbody>
</table>

Glass ceiling still exists – monopolies by male owned companies

Contractors from other provinces getting work across provincial lines even when they are not registered in those provinces

Member of Provincial Executive Council (MEC) need to be involved in empowerment projects for women

It is a highly competitive industry which is male dominated historically and this influences the mindset of clients that women do not have the capacity to do the work

**Exploitation**

Exploitation of women owned contractors

Exploitation from main contractor – if operating as subcontractor

**Financial**

South African Revenue Service (SARS) workshops needed to help in sorting out tax problems

Difficult to access bridging finance from Financial institutions

High interest due to poor payment of loans due poor payment from government

Limited working capital

Guarantees and sureties are difficult to obtain and these restrict growth

Retentions withheld affects cash flow

When projects are delayed (Government Delays), no escalation in price is allowed

**Corruption:**

Influences the availability of work

Poor ethical standards in the industry

Nepotism within the departments who issue work
Sexual harassment by departmental officials who issue work
It is a matter of who you know not how good you are
These problems exist even within women contractor environment, organizations representing women have better access to jobs due to high positions in organizations. Unfair access to job opportunities due to inside connections (fraudulent)
Rigged tender process – there is a fear that disclosure to authorities will lead to victimization (some women were not aware of the hotlines and others claimed that the hotlines don’t work)

Procurement problems
Client team who show preference for certain contractors irrespective of price and experience
Being required to register on multiple tender Boards is a problem there should be one registration for all and the CIDB should be responsible
Unfair adjudication of tenders/lack of transparency
Constant problems with professional teams leading to poor payment

The workshop participants raised numerous restrictions that they felt impeded their ability to realize their ideal situation. They felt that the bureaucracy in the DPW was a definite hindrance to achieving their goals. Education, training, development and empowerment as WIC formed a large sector of dissatisfaction amongst the participants. Many issues were raised that the participants felt held them back as contractors. They felt that by collaborating with other women contractors they would be able to be more effective than individually. There were concerns that even when women contractors had achieved standing in the construction sector they still struggled to receive recognition for their accomplishments. Access to opportunities still remained with the glass ceiling being firmly intact. Exploitation by main contractors and exploitation of women contractors generally was raised as a concern. A number of issues were raised under finance with tax issues and the raising of finance being issues of main concern. Marketing was an issue of concern as well as they felt that they were unable to access the private sector work and that they were stuck in tendering in the public sector only. The CIDB came in for much criticism as it is responsible for construction industry development in the Republic of South Africa but workshop participants felt that it is still failing in its primary task of industry development. Corruption which included sexual harassment was a serious concern of the workshop participants who felt that without knowing someone (contacts) in the works departments’ they were unlikely to obtain work. Sexual favors were also listed as a requirement that some participants had come across in trying to obtain work. Problems were also raised in the procurement process with professional teams playing a negative role in contractor selection and payment approvals.

The much vaunted corruption complaint hotlines were either unknown or did not work when participants did try to use them
Table 3: Interventions

<table>
<thead>
<tr>
<th>Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>The need to see construction as a career and not only commercial opportunity</td>
</tr>
<tr>
<td>The need for more support in the application of funding for capital for projects the need for a construction bank.</td>
</tr>
<tr>
<td>The correct use of the funds and the control of these funds.</td>
</tr>
<tr>
<td>Some work in EPWP should be reserved for smaller contractors.</td>
</tr>
<tr>
<td>CIDB grading to be revised.</td>
</tr>
<tr>
<td>Incubator programmes - more contractors must be allowed to attend.</td>
</tr>
<tr>
<td>Mentorship by women is better than by men.</td>
</tr>
<tr>
<td>Increasing the of visibility of current women in construction organizations</td>
</tr>
<tr>
<td>Education, training and development</td>
</tr>
<tr>
<td>Needs assessment of skills requirements the use of collective skills can be utilized in consortiums</td>
</tr>
<tr>
<td>Appropriate training opportunities needs to be developed at reasonable costs as training is expensive</td>
</tr>
<tr>
<td>Contractors register (CIDB) mentoring systems should be implemented</td>
</tr>
<tr>
<td>Pricing, estimating and tendering courses are needed to improve skills in completing tenders to become more competitive</td>
</tr>
<tr>
<td>Training for WIC is required on a big scale that includes project financial and time management</td>
</tr>
<tr>
<td>Technical skills will improve supervision skills</td>
</tr>
<tr>
<td>Bureaucracy</td>
</tr>
<tr>
<td>Realistic time frames for the work to be done expectations exceed possibilities</td>
</tr>
<tr>
<td>Construction industry Ombudsman is required to negate Bureaucracy and corruption</td>
</tr>
<tr>
<td>Transparency in adjudication process will negate corruption</td>
</tr>
<tr>
<td>Financial</td>
</tr>
<tr>
<td>Access to start-up capital for new contractors should be made available</td>
</tr>
<tr>
<td>Raising guarantees from Khula the government construction finance body are restrictive and more favorable terms required</td>
</tr>
<tr>
<td>Cessions for materials from government to suppliers to prevent material delivery problems</td>
</tr>
</tbody>
</table>

Workshop participants raised a number of issues that they believed were possible and would lift the restrictions under which they currently found themselves. They believed empowerment of women contractors through seeing the construction industry as a career and not just a temporary commercial opportunity was important. They also raised issues such as mentorship by women instead of men as being preferable. They noted that in many cases that they were under skilled in the industry and education and training would play a vital role in alleviating this situation. The EPWP, CIDB grading system and
incubator programmes were all listed as issues that needed attention in order for WIC to be more successful than they currently are. They felt that the Bureaucrat needed to be reigned in with an Ombudsman being appointed for the construction industry. Access to start up finance needed to be cheaper and more easily accessible Khula the government construction finance body was not working to the benefit of the WIC. The concept of cessions from government directly to suppliers was also raised as a possible solution to the, material delivery problem that many WIC suffered from

6. Conclusion

It is evident from the findings from the workshops that South African women-owned contractors had realistic visions for their businesses but perceived many barriers to them realizing these visions. They also had realistic recommendations and suggestions to address their concerns. These findings will be used to develop a model for the development, empowerment and sustainability of women-owned contractors.

Acknowledgement

This project was initiated by the Development Bank of Southern Africa (DBSA) and the authors wish to thank the DBSA for financial and other support during this project.

References


Byrne, J, Clarke, L and Van Der Meer, M (2005). Gender and ethnic minority exclusion from skilled occupations in construction: A Western European comparison. Construction Management and Economics. December, 23, 1025-1034. ISSN 0144a-6193


Verwey, I (2009). Research and innovation research and innovation quality assurance meeting No. 01/2009/01/26, report to Development Bank of South Africa. A needs assessment towards capacity building of women entrepreneurs
The Health and Wellbeing of Indian Construction Workers: A Comparison between Older and Younger Workers

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Abstract

Given the global persistent shortage of construction skills, older construction workers have come increasingly under the spotlight. Demographic changes and loss of interest in construction as a career choice have been contributing to the increase in the proportion of older workers in the sector. This proportion is rising given the reduction in the number of younger new entrants to the industry. This paper highlights the health and wellbeing status of construction workers in India using a standardized survey instrument which was originally developed and used in South Africa. This particular paper does not address the findings of the South African study. However, it does draw comparisons between the health and wellbeing status of older and younger workers in the Indian context.

Keywords: health, wellbeing, older workers, younger workers, construction
1. Introduction

Hard physical labour, static work, climatic influences, noise, and dust that typically characterize construction activities are considerable burdens for construction workers (Haupt, Deacon and Smallwood, 2004). Unfortunately, the construction industry has the reputation of being a particularly unhealthy sector as a result of its rate of work-related illness being the highest across all occupational groups. Health problems among construction workers are relevant because of the number of high-risk activities involved and the peripatetic nature of the workforce (HSE, 2002). By its nature, construction involves, for example, building, repairs, renovating, modifying, and demolishing of structures. These activities involve work that varies from fully mechanized activities to hard physical labour. Work sites vary from, for example, being in isolated locations to being in heavy traffic (Ringen et al., 1995).

Many of the experienced construction workers are chronologically older persons. Demographic changes and loss of interest in construction as a career choice have been contributing to the increase in the proportion of older workers in the sector. This proportion is rising given the reduction in the number of younger new entrants to the industry. Construction workers complain about the awkward and static postures, vibration and climate, and older workers are more likely to complain in general. The prevalence of both occupational and non-occupational diseases among older workers exacerbates the industry. The resultant absenteeism, medical incapacity, sick leave and disability pensions, medical care, and loss of productivity potentially affect the direct costs of construction firms. This paper highlights the health and wellbeing status of construction workers in India using a standardized survey instrument which was originally developed and used in South Africa.

1.1 Older workers

For the purposes of this paper, older workers are those construction workers aged 40 years and older who worked on construction sites and in the main executed manual construction activities.

1.2 Health

Health is defined as ‘the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations and not merely the absence of disease or injury (Kickbusch, 1984; Chappel, 1998; Lalonde, 1974).

2. Methodology

A sample of 235 construction workers, namely 44 older workers as defined and 191 younger workers was surveyed using a standardized survey instrument. The instrument was designed to establish through the responses of those interviewed their health and wellbeing status and provide the basis to compare the relative health and wellbeing of older and younger workers in order to determine any trends that might be consequent to age. The data captured were analyzed using the SPSS software package.
3. Findings

3.1 Profile of sample

The youngest worker was 18 and the oldest 60 years old respectively. They had worked for between a minimum of 1 year to a maximum of 35 years. The profile of the sample is presented in Table 1. Those who were not involved in construction on a full-time basis (10.9%) were either engaged in agriculture or business. A larger proportion of the older workers than younger workers worked as general workers (70.6%) and a smaller proportion of them worked as skilled artisans (17.6%). Similarly, a larger proportion of older workers (43.3%) had no schooling than their younger counterparts (26.2%).

Table 1. Profile of sample

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Sample</th>
<th>Older workers</th>
<th>Younger workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age</td>
<td>30</td>
<td>29</td>
<td>43.5</td>
</tr>
<tr>
<td>Construction working experience</td>
<td>10</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Male workers</td>
<td>98.1%</td>
<td>98.4%</td>
<td>96.7%</td>
</tr>
<tr>
<td>Categories of employment:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General workers</td>
<td>67.1%</td>
<td>70.6%</td>
<td>66.1%</td>
</tr>
<tr>
<td>Skilled artisans</td>
<td>11.9%</td>
<td>17.6%</td>
<td>25.8%</td>
</tr>
<tr>
<td>Semi-skilled/operators</td>
<td>7.6%</td>
<td>11.8%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Supervision</td>
<td>1.3%</td>
<td>0.0%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Origin (Refer to Figure 1):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Bengal</td>
<td>27.5%</td>
<td>33.3%</td>
<td>25.6%</td>
</tr>
<tr>
<td>Bihar</td>
<td>16.3%</td>
<td>13.3%</td>
<td>17.1%</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>9.4%</td>
<td>13.3%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Orissa</td>
<td>8.1%</td>
<td>16.7%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Jharkand</td>
<td>9.4%</td>
<td>3.3%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Andhar Pradesh</td>
<td>8.8%</td>
<td>0.0%</td>
<td>10.9%</td>
</tr>
</tbody>
</table>

**Mother tongue:**

<table>
<thead>
<tr>
<th></th>
<th>Hindi</th>
<th>34.6%</th>
<th>30.0%</th>
<th>35.9%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bengali</td>
<td>27.0%</td>
<td>33.3%</td>
<td>25.0%</td>
<td></td>
</tr>
<tr>
<td>Tamil</td>
<td>9.4%</td>
<td>13.3%</td>
<td>8.6%</td>
<td></td>
</tr>
<tr>
<td>Telugu</td>
<td>8.2%</td>
<td>0.0%</td>
<td>10.2%</td>
<td></td>
</tr>
<tr>
<td>Oriya</td>
<td>8.2%</td>
<td>16.7%</td>
<td>6.3%</td>
<td></td>
</tr>
</tbody>
</table>

**Schooling:**

| No schooling | 29.5% | 43.3% | 26.2% |
| School (grade) | 67.9% | 56.7% | 70.6% |
| College (degree) | 2.6% | 0.0% | 3.2% |

**Location of dwelling**

| Living on site | 82.6% | 85.7% | 81.8% |
| Living off site | 17.4% | 14.3% | 19.0% |

**Literacy level:**

| Literacy level: Read | 86.4% | 79.2% | 87.9% |
| Literacy level: Write | 79.2% | 75.0% | 81.0% |

| Full-time construction worker | 89.1% | 89.7% | 88.9% |

Most workers lived on site confirming the transient nature of construction. Fewer workers could write than read. The categories of construction work that workers worked in are shown in Table 2. It is notable that none of the older worker cohort had worked as supervisors or foremen.

**Table 2. Type of construction**

<table>
<thead>
<tr>
<th>Type of construction activity</th>
<th>Sample</th>
<th>Older workers</th>
<th>Younger workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>General work</td>
<td>32.9%</td>
<td>34.5%</td>
<td>31.9%</td>
</tr>
<tr>
<td>Welding and metalwork</td>
<td>12.3%</td>
<td>10.3%</td>
<td>12.9%</td>
</tr>
<tr>
<td>Steelwork</td>
<td>11.6%</td>
<td>13.8%</td>
<td>11.2%</td>
</tr>
<tr>
<td>Concrete work</td>
<td>8.9%</td>
<td>6.9%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Brickwork and masonry</td>
<td>8.9%</td>
<td>17.2%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Carpentry</td>
<td>6.2%</td>
<td>3.4%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Electrical</td>
<td>5.5%</td>
<td>0.0%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Plant operator</td>
<td>4.8%</td>
<td>10.3%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Plastering, screeds and tiling</td>
<td>3.4%</td>
<td>3.4%</td>
<td>3.4%</td>
</tr>
</tbody>
</table>
From Table 3 it is evident that the most prevalent diseases that had been experienced by larger proportions of older workers than younger workers were fevers due to malaria or plague (53.3%), diarrhea (36.7%), skin infections (36.7%) and respiratory infections (16.7%). In the case of chronic conditions, 3.3% of older workers reported that they had experienced fever chronically. While younger workers reported suffering from similar diseases, the proportions were smaller except for chronically experiencing skin infections (4.7%) and respiratory infections (1.6%). They also experienced fever (1.6%) chronically. It is possible that where the proportions of unsure responses were high that the workers did not understand what the disease referred to was such as, for example, diabetes and central nervous system conditions.

Figure 2 shows the number of cases in the sample for the significant diseases (p > 0.05).

When compared with the various trades or types of construction activities that workers were engaged in the distribution of diseases present as shown in Table 4. Workers were more likely to complain about problems with their skin if they were carpenters, bricklayers, worked with concrete, electrical work and steelwork. Similarly, they experienced fever while doing brickwork and masonry, concreting, electrical work, steelwork, welding and shuttering and welding and ductwork. Those involved with concreting experienced respiratory infections. Steelworkers experienced diarrhea and respiratory infections. Workers involved with general work and shuttering reported tuberculosis and diarrhea as problems.
<table>
<thead>
<tr>
<th>Disease</th>
<th>Sample (%)</th>
<th>Older workers (%)</th>
<th>Younger workers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>E</td>
<td>C</td>
</tr>
<tr>
<td>Hearing loss</td>
<td>99.4</td>
<td>-</td>
<td>0.6</td>
</tr>
<tr>
<td>Hypertension</td>
<td>94.4</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Diabetes</td>
<td>94.4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>91.3</td>
<td>6.3</td>
<td>0.6</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>76.9</td>
<td>16.3</td>
<td>0.6</td>
</tr>
<tr>
<td>Heart disease</td>
<td>96.3</td>
<td>0.6</td>
<td>-</td>
</tr>
<tr>
<td>Respiratory infections</td>
<td>86.3</td>
<td>4.4</td>
<td>8.1</td>
</tr>
<tr>
<td>Skin infections</td>
<td>66.9</td>
<td>15.0</td>
<td>12.5</td>
</tr>
<tr>
<td>Central nervous system</td>
<td>87.5</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Fever (malaria, etc.)</td>
<td>54.4</td>
<td>40.6</td>
<td>1.9</td>
</tr>
</tbody>
</table>

N=No, E=Suffered earlier, C=Suffered currently, CH=Chronic, U=Unsure
Table 4. Distribution of diseases by trade

<table>
<thead>
<tr>
<th>Trade</th>
<th>Hearing Loss</th>
<th>High Blood Pressure</th>
<th>Diabetes</th>
<th>Tuberculosis</th>
<th>Diarrhea</th>
<th>Heart Disease</th>
<th>Respiratory Infections</th>
<th>Skin</th>
<th>CNS</th>
<th>Fever</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpentry</td>
<td>-</td>
<td>-</td>
<td>3.7</td>
<td>7.4</td>
<td>14.8</td>
<td>3.7</td>
<td>14.8</td>
<td>25.9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Brickwork and masonry</td>
<td>-</td>
<td>4.3</td>
<td>-</td>
<td>-</td>
<td>12.8</td>
<td>-</td>
<td>12.8</td>
<td>36.2</td>
<td>2.2</td>
<td>48.9</td>
</tr>
<tr>
<td>Concreting</td>
<td>3.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>18.5</td>
<td>-</td>
<td>25.9</td>
<td>29.6</td>
<td>-</td>
<td>40.7</td>
</tr>
<tr>
<td>Electrical</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20.0</td>
<td>-</td>
<td></td>
<td>30.0</td>
<td></td>
</tr>
<tr>
<td>Steelwork</td>
<td>-</td>
<td>-</td>
<td>3.5</td>
<td>6.9</td>
<td>31.4</td>
<td>3.5</td>
<td>24.1</td>
<td>31.1</td>
<td>6.9</td>
<td>34.5</td>
</tr>
<tr>
<td>General work and</td>
<td>4.6</td>
<td>9.1</td>
<td>9.1</td>
<td>22.7</td>
<td>31.8</td>
<td>4.6</td>
<td>13.7</td>
<td>4.6</td>
<td>-</td>
<td>40.9</td>
</tr>
<tr>
<td>shuttering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Welding and metalwork</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>11.1</td>
<td>5.6</td>
<td></td>
<td></td>
<td>50.0</td>
</tr>
</tbody>
</table>

From Table 5 it is evident that while all workers reported physical health problems, with the exception of eyesight or vision problems, the proportions of older workers reporting physical health problems were considerably larger than the proportions of younger workers.

Table 5. Physical health problems

<table>
<thead>
<tr>
<th>Health problem</th>
<th>Sample (%)</th>
<th></th>
<th>Older workers (%)</th>
<th></th>
<th>Younger workers (%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Unsure</td>
<td>Yes</td>
<td>No</td>
<td>Unsure</td>
</tr>
<tr>
<td>Breathing problems</td>
<td>13.4</td>
<td>85.4</td>
<td>1.3</td>
<td>20.0</td>
<td>76.7</td>
<td>3.3</td>
</tr>
<tr>
<td>Headaches</td>
<td>29.6</td>
<td>64.2</td>
<td>6.3</td>
<td>33.3</td>
<td>60.0</td>
<td>6.7</td>
</tr>
<tr>
<td>Skin problems</td>
<td>32.3</td>
<td>65.2</td>
<td>2.5</td>
<td>46.7</td>
<td>50.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Sore muscles and joints</td>
<td>19.9</td>
<td>75.0</td>
<td>5.1</td>
<td>40.0</td>
<td>56.7</td>
<td>3.3</td>
</tr>
<tr>
<td>Tension/mental pressure</td>
<td>20.0</td>
<td>72.9</td>
<td>7.1</td>
<td>33.3</td>
<td>63.3</td>
<td>3.3</td>
</tr>
<tr>
<td>Lower backache</td>
<td>35.3</td>
<td>64.1</td>
<td>0.6</td>
<td>62.1</td>
<td>37.9</td>
<td>-</td>
</tr>
<tr>
<td>Upper backache/neck pain</td>
<td>21.2</td>
<td>77.6</td>
<td>1.3</td>
<td>35.7</td>
<td>64.3</td>
<td>-</td>
</tr>
<tr>
<td>Hand and palm pains</td>
<td>20.8</td>
<td>79.2</td>
<td>-</td>
<td>40.7</td>
<td>59.3</td>
<td>-</td>
</tr>
</tbody>
</table>
This finding suggests that there is a relationship between age, length of working in the industry and the manifestations of physical health problems. The dominant physical health problems were lower back pain, skin problems, headaches and shoulder pains.

Figure 3 graphically presents the frequency distribution of the physical health problems.

![Figure 3. Frequency distribution of physical health problems](image)

From Table 6 it is evident that while physical health problems presented in all trades headaches, skin problems and lower back pain were the most prevalent across all the trades.
Table 6. Distribution of physical health problems by trade

<table>
<thead>
<tr>
<th></th>
<th>Carpentry</th>
<th>Concreting</th>
<th>Electrical</th>
<th>Brickwork and Masonry</th>
<th>Steelwork</th>
<th>General work and Shuttering</th>
<th>Welding and metalwork</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breathing Problems</strong></td>
<td>14.8</td>
<td>22.2</td>
<td>10.0</td>
<td>14.9</td>
<td>17.3</td>
<td>13.7</td>
<td>11.1</td>
</tr>
<tr>
<td><strong>Headaches</strong></td>
<td>29.6</td>
<td>33.3</td>
<td>20.0</td>
<td>31.9</td>
<td>27.6</td>
<td>36.4</td>
<td>27.8</td>
</tr>
<tr>
<td><strong>Skin Problems</strong></td>
<td>29.6</td>
<td>37.0</td>
<td>40.0</td>
<td>38.3</td>
<td>27.6</td>
<td>40.9</td>
<td>22.2</td>
</tr>
<tr>
<td><strong>Sore Muscles and Joints</strong></td>
<td>25.9</td>
<td>37.0</td>
<td>10.0</td>
<td>27.7</td>
<td>34.5</td>
<td>31.8</td>
<td>5.5</td>
</tr>
<tr>
<td><strong>Tension/Mental Pressure</strong></td>
<td>11.1</td>
<td>33.3</td>
<td>20.0</td>
<td>17.0</td>
<td>24.1</td>
<td>27.3</td>
<td>33.3</td>
</tr>
<tr>
<td><strong>Backache (Lower)</strong></td>
<td>40.7</td>
<td>29.6</td>
<td>20.0</td>
<td>25.5</td>
<td>58.6</td>
<td>36.4</td>
<td>27.8</td>
</tr>
<tr>
<td><strong>Backache (Upper)/Neck Pain</strong></td>
<td>22.2</td>
<td>29.6</td>
<td>10.0</td>
<td>25.5</td>
<td>34.5</td>
<td>9.0</td>
<td>11.1</td>
</tr>
<tr>
<td><strong>Hand and Palm Pains</strong></td>
<td>22.2</td>
<td>22.2</td>
<td>-</td>
<td>17.0</td>
<td>41.4</td>
<td>18.2</td>
<td>22.2</td>
</tr>
<tr>
<td><strong>Shoulder Pains</strong></td>
<td>25.9</td>
<td>25.9</td>
<td>-</td>
<td>27.7</td>
<td>34.5</td>
<td>18.2</td>
<td>27.8</td>
</tr>
<tr>
<td><strong>Lung Infection (Coughing)</strong></td>
<td>7.4</td>
<td>29.6</td>
<td>10.0</td>
<td>10.6</td>
<td>10.3</td>
<td>9.0</td>
<td>5.5</td>
</tr>
<tr>
<td><strong>Pressure Ulcers</strong></td>
<td>-</td>
<td>3.7</td>
<td>-</td>
<td>4.2</td>
<td>-</td>
<td>9.1</td>
<td>11.1</td>
</tr>
<tr>
<td><strong>Eyesight (vision) Problems</strong></td>
<td>7.4</td>
<td>14.8</td>
<td>-</td>
<td>17.0</td>
<td>10.3</td>
<td>13.6</td>
<td>16.7</td>
</tr>
<tr>
<td><strong>Hearing (earache) Problems</strong></td>
<td>-</td>
<td>7.4</td>
<td>10.0</td>
<td>4.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

As is evident from Table 7 lifestyle habits increased after workers started to work in construction.
Table 7: Lifestyle habits

<table>
<thead>
<tr>
<th>Habit</th>
<th>Before joining construction industry</th>
<th>After joining construction industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>23.8</td>
<td>28.5</td>
</tr>
<tr>
<td>Alcohol</td>
<td>15.3</td>
<td>32.8</td>
</tr>
<tr>
<td>Others (Tobacco and ‘Pan’)</td>
<td>11.5</td>
<td>14.1</td>
</tr>
</tbody>
</table>

In almost all cases, the abilities of older workers were more severely impacted by working in the construction sector. Most older workers reported that they had less stamina, were not as strong as they were before, tired more easily and could not lift and carry heavy weights or loads.

Table 8: Impact of construction on abilities

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Sample (%)</th>
<th>Older workers (%)</th>
<th>Younger workers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsure Yes No</td>
<td>Unsure Yes No</td>
<td>Unsure Yes No</td>
</tr>
<tr>
<td>Lower outputs</td>
<td>7.5 18.8 73.8</td>
<td>6.7 36.7 56.7</td>
<td>7.8 14.7 77.5</td>
</tr>
<tr>
<td>Not as agile</td>
<td>13.8 9.4 76.7</td>
<td>20.0 20.0 60.0</td>
<td>12.5 7.0 80.5</td>
</tr>
<tr>
<td>Tire more easily</td>
<td>6.9 23.8 69.4</td>
<td>13.3 50.0 36.7</td>
<td>5.4 17.8 76.7</td>
</tr>
<tr>
<td>Not as strong</td>
<td>4.4 22.8 72.8</td>
<td>3.6 53.6 42.9</td>
<td>4.7 16.3 79.1</td>
</tr>
<tr>
<td>Less stamina</td>
<td>4.4 22.8 72.8</td>
<td>6.8 58.6 34.5</td>
<td>4.7 15.6 96.9</td>
</tr>
<tr>
<td>Cannot remember as well as before</td>
<td>10.6 1.9 87.5</td>
<td>10.0 6.7 83.3</td>
<td>10.9 0.8 88.4</td>
</tr>
<tr>
<td>Not as steady on feet as before</td>
<td>11.3 5.6 83.1</td>
<td>10.0 13.3 76.7</td>
<td>11.6 3.9 84.5</td>
</tr>
<tr>
<td>Cannot stand as long as before</td>
<td>10.0 11.9 78.1</td>
<td>16.7 16.7 66.7</td>
<td>8.5 10.9 80.6</td>
</tr>
<tr>
<td>Out of breath more easily</td>
<td>12.5 10.0 77.5</td>
<td>13.3 30.0 56.7</td>
<td>12.4 5.4 82.2</td>
</tr>
<tr>
<td>Take longer to recover from injury or illness</td>
<td>12.6 6.9 80.5</td>
<td>26.7 10.0 63.3</td>
<td>9.4 6.3 84.4</td>
</tr>
<tr>
<td>Have to stay out of work more</td>
<td>7.5 3.1 89.4</td>
<td>6.7 3.3 90.0</td>
<td>7.8 3.1 89.1</td>
</tr>
<tr>
<td>Cannot concentrate on tasks for long periods</td>
<td>14.4 7.5 78.1</td>
<td>10.0 13.3 76.7</td>
<td>15.5 6.2 78.3</td>
</tr>
<tr>
<td>Difficulty in climbing stairs</td>
<td>9.4 18.8 71.9</td>
<td>10.0 40.0 50.0</td>
<td>9.3 14.0 76.7</td>
</tr>
<tr>
<td>Cannot lift and carry heavy weights/loads</td>
<td>9.4 22.5 68.1</td>
<td>6.7 46.7 46.7</td>
<td>10.1 17.1 72.9</td>
</tr>
<tr>
<td>Negative impact of socio-economic conditions</td>
<td>35.2 20.1 44.7</td>
<td>40.0 26.7 33.3</td>
<td>34.4 18.0 47.7</td>
</tr>
</tbody>
</table>
Workers were asked to respond to whether certain changes had been introduced to make easier for older workers specifically but for all workers generally. Their responses are shown in Table 9. Generally, workers reported that changes included less manual handling (36.7%), more help (32.1%) and less climbing (30.2%). Large proportions of older workers reported changes than younger workers.

Table 9. Prevalence of changes to make activities easier

<table>
<thead>
<tr>
<th>Change</th>
<th>Sample (%)</th>
<th>Older workers (%)</th>
<th>Younger workers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Less manual handling (lifting and carrying)</td>
<td>43.0</td>
<td>36.7</td>
<td>20.3</td>
</tr>
<tr>
<td>Lighter materials (bending and lifting)</td>
<td>50.9</td>
<td>27.7</td>
<td>21.4</td>
</tr>
<tr>
<td>Mechanization (use of machines)</td>
<td>50.3</td>
<td>22.0</td>
<td>27.7</td>
</tr>
<tr>
<td>Task rotation (shorter shifts)</td>
<td>47.5</td>
<td>26.6</td>
<td>25.9</td>
</tr>
<tr>
<td>More help (extra hands)</td>
<td>46.5</td>
<td>32.1</td>
<td>21.4</td>
</tr>
<tr>
<td>Less climbing</td>
<td>46.5</td>
<td>30.2</td>
<td>23.3</td>
</tr>
<tr>
<td>Less walking</td>
<td>46.3</td>
<td>26.3</td>
<td>27.5</td>
</tr>
</tbody>
</table>

Most workers reported that their employers did not deploy or dedicate older workers to specific tasks as alternative means to retain their services. These findings are presented in Table 10. Very few reported possible tasks that were reserved for older workers.

A large proportion of workers were unsure about whether their firms had any tasks specifically for older workers to perform.

Table 10. Deployment of older workers to specific tasks

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Sample (%)</th>
<th>Older workers (%)</th>
<th>Younger workers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Older workers are deployed to specific tasks</td>
<td>38.0</td>
<td>20.9</td>
<td>41.1</td>
</tr>
<tr>
<td>Possible tasks that older workers could specifically perform</td>
<td>68.8</td>
<td>5.6</td>
<td>25.6</td>
</tr>
</tbody>
</table>

In response to the request to rate various aspects relative to work on a 5-point scale where 1= very poor, 2= poor, 3= fair, 4= good and 5= very good, workers responded as shown in Table 11. The Cronbach alpha coefficient for the scaled responses is 0.832 which is greater than 0.7 suggesting that the responses are reliable. Both age cohorts reported that their relationships with their workmates and supervisors tended to be good. While both cohorts regarded other aspects as being fair to good younger workers were more positive than older workers.
Table 11. Aspects related to work

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Sample Mean (SD)</th>
<th>Older workers Mean (SD)</th>
<th>Younger workers Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal development</td>
<td>3.47 (0.95)</td>
<td>3.23 (0.87)</td>
<td>3.51 (0.96)</td>
</tr>
<tr>
<td>Personal health</td>
<td>3.58 (0.89)</td>
<td>3.30 (0.87)</td>
<td>3.63 (0.88)</td>
</tr>
<tr>
<td>Relationship with workmates</td>
<td>4.18 (0.67)</td>
<td>4.14 (0.58)</td>
<td>4.18 (0.69)</td>
</tr>
<tr>
<td>Relationship with supervisor</td>
<td>4.03 (0.72)</td>
<td>4.07 (0.65)</td>
<td>4.01 (0.73)</td>
</tr>
<tr>
<td>Satisfaction with occupation</td>
<td>3.65 (0.90)</td>
<td>3.48 (0.87)</td>
<td>3.68 (0.90)</td>
</tr>
<tr>
<td>Quality of life</td>
<td>3.30 (0.95)</td>
<td>3.11 (0.79)</td>
<td>3.34 (0.99)</td>
</tr>
</tbody>
</table>

Just more than half (56.9%) of workers had been able to develop their qualifications, skills and responsibilities while working in construction. About one-third (39%) of workers who had been overlooked for promotion reported that it was as a result of their age. With respect to experiencing various types of injuries, older workers had experienced all types of injuries and the proportions of them who had were greater than for younger workers. First aid injuries dominated.

Table 13. Injuries

<table>
<thead>
<tr>
<th>Type</th>
<th>Sample (%)</th>
<th>Older workers (%)</th>
<th>Younger workers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (SD)</td>
<td>No</td>
<td>Yes (SD)</td>
</tr>
<tr>
<td>First aid injury</td>
<td>56.9 (43.1)</td>
<td>74.1 (25.9)</td>
<td>52.6 (47.4)</td>
</tr>
<tr>
<td>Medical aid injury</td>
<td>20.3 (79.7)</td>
<td>29.2 (70.8)</td>
<td>17.6 (82.5)</td>
</tr>
<tr>
<td>Temporary disabling injury</td>
<td>5.7 (94.3)</td>
<td>5.3 (94.7)</td>
<td>4.9 (95.1)</td>
</tr>
<tr>
<td>Permanent disabling injury</td>
<td>2.5 (97.5)</td>
<td>5.3 (94.7)</td>
<td>- (100.0)</td>
</tr>
</tbody>
</table>

4. Conclusion

This study found that the most prevalent diseases experienced by older workers were fevers, diarrhea, skin infections and respiratory infections. Fever was experienced chronically. Headaches, skin problems and lower back pain were the most prevalent across all the trades. Lifestyle habits such as smoking and consumption of alcohol and other substances had increased after workers started to work in construction. Older workers had less stamina, were not as strong as they were before, tired more easily and could not lift and carry heavy weights or loads. Changes to work activities to make them easier included less manual handling, more help and less climbing. Employers did not deploy or dedicate older workers to specific tasks as alternative means to retain their services, neither were there possible tasks that were reserved for older workers. Both age cohorts reported that their relationships with their workmates and supervisors tended to be good. While both cohorts regarded other aspects as being fair to good younger workers were more positive than older workers. Most workers had been able to develop their qualifications, skills and responsibilities while working in construction. Many workers reported being
overlooked for promotion as a result of their age. With respect to experiencing various types of injuries, older workers had experienced all types of injuries and the proportions of them who had were greater than for younger workers. First aid injuries dominated.

If older workers in India are to be retained in the construction industry, industry stakeholders need to develop programs targeted at achieving this goal.

References


Construction Site Culture; Seeking the Optimum Methods for an Ethnography

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Abstract

Research into culture is a growing area in the field of construction research. Industry culture, organisational culture, professional culture and project culture, amongst others, have all been examined. However it may be argued that little research has focused on the culture, or subculture, of the construction site itself. Research at grass roots level has the potential to illuminate and inform issues higher up the management chain, not least those underlying health and safety on construction sites. As part of an ongoing PhD study, a multiple case study ethnography is proposed of North West UK construction sites and this paper seeks to examine the optimum methods for undertaking this research. A literature review established suitable methods and an underlying methodology for the research. A pilot study was undertaken utilising the toolkit of methods, specifically recording the findings of each particular method and the ease of use within the construction site environment. This pilot study experience was then built into a narrative, incorporating analysis of the effectiveness of each of the methods and their performance in this particular field of study. It was found that the methods suggested by the literature review were appropriate for use on construction sites, and a further method that was not predicted to be compatible was actually found to be so through practical implementation. The methods chosen for inclusion in the toolkit for the future study include observation, fieldnotes, images and informal interviews.

Keywords: construction site, culture, ethnography, research methodology, qualitative research
1. Introduction

Research into the culture of the construction industry is a relatively new and growing area. The CIB Task Force TG-23 ‘Culture in Construction’ was established in 1997 with the initial aim of researching two key aspects; (i) to identify and define concepts of culture in the international construction industry and carry out research into their manifestations and effects, (ii) to develop appropriate methodologies, potentially adopted from other fields, for the study of culture in construction (Seymour and Fellows 2002). Research has subsequently developed from a variety of cultural perspectives, investigating such aspects as industry culture, professional culture, organisational culture and project culture (Kumaraswamy et al 2002).

This paper, and the PhD study from which it is drawn, is concerned with one particular area of culture within the industry; the construction site culture itself (Rawlinson and Farrell 2008). Culture concerns the ideas, values, attitudes, beliefs and ways of thinking of a distinct group of people (Seymour and Fellows 2002; Inglis 2005) and these underlying factors are profoundly implicated in motivating how people act and behave (Inglis 2005). On construction sites, arguably the most important manifestation of this behaviour is found in the health and safety.

Within the literature, focus on this area has often been gathered under the construct of ‘safety culture’. Various safety cultural change programmes have been borne of this ‘safety culture’ focused research (Spanswick 2007), and have been implemented with varying degrees of success. However, whilst safety culture can indeed be seen as a distinct entity, it must be appreciated that it also forms just one facet of construction site culture as a whole. The construction site culture will inevitably inform and shape safety culture, and it has been suggested in Australian research that the culture of the construction industry can actually inhibit the adoption of a proactive safety culture (Cipolla et al 2006).

The PhD study is an investigation into how the construction site culture itself is a causal factor in health and safety incidents, and how this culture can potentially be modified to remove its influence. It has been suggested from previous research that an examination of site culture would indeed have the potential to inform management initiatives for the suppression or nurturing of specific aspects to allow for the creation of a new proactive and positive culture (Kumaraswamy et al 2002; Inglis 2005; Fellows 2008).

It is hoped that through an ethnography of the construction site environment, the construction site culture can be revealed, and this will inform the production of a framework of initiatives for change. If fundamental change can be made to construction site culture to positively influence health and safety on site, or make the existing culture more receptive to the safety cultural change programmes already in existence, then hopefully improvements can be made in this critical aspect of industry. This paper seeks to determine the optimum methods for undertaking this ethnography within the construction site environment.
2. Literature review

2.1 Blue collar aristocrats: where are you now?

Despite the growth of cultural investigations within construction research, there has been relatively little research carried out investigating the construction site culture from a holistic point of view (Rooke and Seymour 2002; Loosemore 2003; Biggs et al 2005; Dainty 2008). When this research is examined from the point of view of method, it can be seen that there has been a strong reliance on the use of interviews and subsequently informed questionnaires, a method derived from Hofstede et al (1990) (see for example Choudry & Fang 2008; Smallwood and Deacon 2008; Ankrah et al 2008). However, as a cultural research tool, questionnaires are often criticised by other disciplines due to their inherent limitations (Toomela 2003). The use of observation as a method is relatively rare (Rooke and Seymour 2002; Chan and Kaka 2007) and is often limited by restricted access to the field and a reliance on presented data rather than found (Webb et al 1966). Multi-method approaches are occasionally employed, however despite utilising alternative qualitative methods at the commencement of the study, this is often again leading towards a final questionnaire to provide statistical support to the argument (Serpell and Rodriguez 2002).

Modern ethnographies are few and far between (Davey and London 2005), and none could be located that examined the UK construction site culture. The archives do hold a handful of treasures: Applebaum’s (1981) time as a site manager and engineer as told in Royal Blue, Cherry’s (1974) story of a teacher turned ironworker in 60s and 70s America in On High Steel and the academic LeMasters’s (1975) accounts of the years he spent drinking with construction men, his Blue Collar Aristocrats; however these are all of a certain time and another country.

Overall, it can be see that whilst specific aspects of construction site culture have been investigated, the research techniques used appear somewhat limited by the constraints of the construction management discipline in terms of the underlying ontology and epistemology (Dainty 2008). A holistic view, such as an ethnography, may at present be elusive due to incompatibility with the accepted research methodologies. However, beyond the sphere of construction research, culture has been studied extensively within other fields and for a considerable length of time (Inglis et al 2007). It is therefore from these more experienced disciplines within the social sciences that this paper looks to establish a research position and further investigate the optimum methods for an ethnography of construction site culture.

2.2 On firm foundations: methodology

It is necessary to define the methodology that informs the use of any method (Payne and Payne 2004), not least to ensure that they are able to work in harmony with each other (Hughes and Sharrock 1990).

It is the habit of construction management researchers to seek out statistics and science through questionnaires, scales, constructs and models, in order to answer their questions (Biggs et al 2005).
This is driven by the objective ontology and positivist epistemology that underlie much of the construction research field (Dainty 2008).

However this common acceptance of a positivist foundation has restricted the use of alternative methods to explore the construction environment. Indeed calls have been made for alternative approaches, from an interpretivist epistemology (Sutrisna 2009), in order to provide insights and enrich the understanding of those who work in construction (Dainty 2008). To gain an understanding of human behaviour and the culture of construction sites, an inductive and qualitative approach is required in order to establish the complex intricacies of the existing environment (Cresswell 1998; Sutrisna 2009), rather than simply tick the ‘mucky’ and ‘macho’ boxes on a deductive, quantitative questionnaire (Jordan et al 2005).

For the purposes of this paper, a broad foundation of constructive interpretivism is accepted, in order to inform and gather the methods together. This foundation will also inform the overarching method of ethnography; rather than seeking a scientific explanation as to ‘who are site operatives?’, the ethnography seeks to interpret and form theoretical understandings of phenomena on their own terms, through the eyes of everyday participants (Seale 2004; Payne and Payne 2004).

2.3 Becoming one of the tribe: the ethnography

The concept of culture is central to ethnographical work (Davey and London 2005). In an ethnographic study, researchers are immersed in the everyday life of the environment to be studied (Walsh 2004; Inglis 2005; Henn et al 2006), seeing the world from that point of view. This allows the collection of information about relationships, beliefs and values of the community (Angrosino 2007); the culture to be found there.

This information can be collected in a variety of ways (Rooke and Seymour 2002; Angrosino 2007) but the most common approach is that of participant observation over a prolonged period of time (Cresswell 1998; Walsh 2004; Inglis 2005; Henn et al 2006). With this approach, researchers participate in daily life and are able to record and probe activities to examine the underlying motivations and common understandings (Payne and Payne 2004). Additional methods commonly used to supplement participant observation include interviews, analysis of documents (Gillham 2000) and other methods of artefact analysis (Lee 2000). A combination of methods helps to give a more valid and holistic picture of the society than only one method would provide, adding rigour to the investigation (Henn et al 2006; Fellows 2008).

However ethnography as a method is not without criticism. Whilst it provides depth and insight that would be hard to obtain by other routes, it is often criticised for lacking structure and system (Henn et al 2006) and also for the potential for researcher bias (Fellows 2008) as a result of ‘going native’. Indeed, the debate surrounding ‘going native’ (Cresswell 1998; Geertz 2000; Silverman 2001; Tijhuis 2001) is of great significance to this particular PhD study. The lead researcher is employed as a full-time construction manager on construction sites, and so has arguably already ‘gone native’. However, this is tempered by the fact that although the lead researcher is a construction manager, she is also a
woman; an outsider within the construction site environment. The position is one of a ‘marginal native’ (Walsh 2004; Henn et al 2006).

Geertz (2000) feels in order to undertake an ethnography, things must be seen from the native’s point of view, therefore some form of psychological closeness with the subjects is a necessity. However this is countered with the argument that in becoming too enmeshed in the community, the objectivity of researchers and the research and analysis is lost (Cresswell 1998; Tijhuis 2001). Indeed Geertz adds that whilst closeness is required to grasp concepts, distance is required to analyse and examine them (2000); a balance between the objective collection of data with subjective insights from within the community (Angrosino 2007).

However, it is arguable that the researcher’s unique position can enable this fine line to be walked; it can facilitate rather than hinder. Whilst understanding the language and perspectives of the construction site, as is necessary to establish rapport (Taylor and Bogdan 1998; Payne and Payne 2004), a distance still remains between the researcher and the environment and community to be studied. The issue of gatekeeper obstruction (Silverman 2001) is also easily overcome and there is no need for reliance on presented rather than naturally occurring found data (Webb et al 1966). There is also some academic support for research undertaken by people who are members of the culture they study (Angrosino 2007). They are able to distinguish the truth more quickly and confirm or test the realism behind actions and behaviours within the environment.

2.4 What’s in the toolkit?: The potential methods

Ethnography can use a variety of methods to gather information and a mixed method approach will be adopted for this study. However the familiar construction management qualitative research methods may not be suitable. The use of interviews arguably creates an artificial situation (Henn et al 2006; Tzortzopoulous 2008) in which people are asked to put into words things that they rarely reflect upon (Inglis 2005). Sensitive topics, such as health and safety, can raise issues with self-implication (Lee 2000) and alongside interviewer bias, this can result in the informants creating a false impression of themselves and their beliefs (Payne and Payne 2004). Questionnaires and surveys, whilst useful for providing a superficial picture (Fellows 2008), are also criticised for their use in cultural research. By definition the questionnaire limits what can be known to the questions contained within it (Toomela 2003), and by its form, is likely to provide answers in the form of rationalisations, aspirations or cognitions, rather than reveal the true underlying culture (Guldenmund 2007).

For an ethnography seeking to establish construction site culture, these methods can be considered too intrusive, the act of eliciting data in this way is very likely to affect the responses gained (Lee 2000). Therefore the data must be gathered without intruding into the lives of the people being studied, and ensuring that the naturally occurring processes are not disturbed (Payne and Payne 2004); unobtrusive methods are required (Webb et al 1966). There is also the potential for the Hawthorn Effect (Kumar 2005) to manifest if people are aware they are being researched and natural behaviours may change, therefore this study will involve covert observation. The British Psychological Society Ethical Principles for conducting Research with Human Participants (BPS 2008) will be adhered to, in that no
false information is to be imparted to those under observation or any intentional deception made; the participants involved are not being treated in any different way or being exposed to any situation outside of their normal scope of work. The agreement of management of every site within the sample will be sought and anonymity of all participants will be maintained throughout the study.

The traditionally employed method for ethnographic research is that of participant observation (Payne and Payne 2004); put simply, the researcher interacts with the people being studied and makes observations in the course of these exchanges (Kellehear 1993). An observation protocol (Cresswell 1998; Tzortzopoulous 2008) should be established prior to fieldwork to ensure observations are attentive, receptive and facilitative (Kellehear 1993) and do not simply focus on conspicuous and highly visible behaviours (Lee 2000). The current employment of the researcher will facilitate the use of participation observation as a method in several ways; the researcher is already established as a participant within the site environment and will therefore be easily able to interact neutrally within it; the immediate recording of fieldnotes is also possible (Kellehear 1993; Payne and Payne 2004; Silverman 2005) as a clipboard, paper and a pen are usual accessories of the construction manager; and a long duration in the field is easily achieved, thereby allowing rigorous cross-comparison of data (Alasuutari 1996).

Observation can also be used to examine a variety of artefacts found within the site environments and the interaction of site operatives with them. For example, inductions, signs, information sheets, health and safety plans and meeting minutes (Alasuutari 1996; Gillham 2000) can all be examined through narratology (Kellehear 1993), content analysis (Payne and Payne 2004) or discourse analysis (Henn et al 2006). Still images (photography) can be used to supplement this data gathering to help illustrate the site environment, signage provision and content (Hermer and Hunt 1996), evidence of physical traces (Webb et al 1966), graffiti (Lee 2000) etc. Although images of people cannot be taken or used without their consent (Payne and Payne 2004), there is still the potential for rich data to be obtained, and recording the data through images enhances the credibility of the study by allowing cross-checking by others to support or challenge the findings (Kellehear 1993).

3. The pilot study

In order to examine the applicability and ease of use of the above methods within the construction site environments, a cross-sectional pilot study was proposed (Yin 2003). The site chosen was not one on which the researcher was currently working, in order to ascertain the applicability of the methods within an unfamiliar environment. It was a £150m development consisting of five large mixed use blocks, with structural and envelope works ongoing, but nearing completion. The visit had been agreed with site management and permission had been given for free movement about the site.

A full list of all the potential methods was established from the literature review (Henn et al 2006) and the intention was to locate these occurring naturally within the site environment. It was accepted that due to the nature of the pilot study, true participant observation was unachievable, but interaction with the site operatives would be sought where possible. A rucksack was prepared containing a clipboard, paper, pens and a digital camera for use on the site. Full fieldnotes (Kellehear 1993; Payne
and Payne 2004; Silverman 2005) were taken, recording both the use of the method as well as the data discovered from it. These fieldnotes will be transcribed and analysed away from this paper and the data used within the main PhD study. The findings of the pilot study are displayed as a narrative of the day, with the focus on the methods used.

4. Findings: a day on site as a construction researcher

I arrived at the offices opposite site just before the induction began at 8:00am. I was wearing my usual site clothes; boots, jeans, my old high-visibility body-warmer, glasses and gloves and my hard hat covered in site stickers, and with a faded ‘egghead’ written on one side, courtesy of my last apprentice joiner.

I attended the site induction with one other operative in a dedicated induction room, containing tables and chairs facing the rear wall onto which was projected the induction material. A company DVD was followed by a site specific DVD, and we were also given a site information leaflet and safety booklet to keep. Note taking was attempted during the DVDs, however the speed and volume of content made this difficult to undertake comprehensively. In addition taking notes in a room with others made me feel conspicuous and I would probably not even have attempted it if more people had been present. However I was able to obtain copies of these artefacts (Gillham 2000; Lee 2000) by asking site management, which were reviewed later at leisure. Attendance and participation in the induction was still important, as observation of my co-inductee revealed his response to the process as a whole; in this instance texting and staring at the table were noted.

Once the induction was complete, I was then directed to the site entrance and issued with a pass for that day. I was then free to walk around the site. The use of observation enabled both general and detailed impressions to be recorded. From a general tour of the site, several operatives could be seen to be not complying with Personal Protective Equipment (PPE) requirements. On a more detailed level I then questioned an operative further on this matter, utilising participant observation in the role of a site manager as suggested by Payne and Payne (2004). I was able to ascertain his explanation for this; he had just been on ‘brew’ and forgot to put them back on.

Due to the size of the site, I was also able to frequently interact with people by asking directions, with the explanation that I was ‘new on site’. This was a useful tool to start conversation with, and also proved very revealing in itself. In one instance I was guided by an operative through an open side door into a block and told ‘…don’t tell anyone I did’. The route was not an official walkway, and passed under a ‘cherry picker’ that was not in use at the time, but as the operative told me ‘…they’ll be back after brew, so you’ll have to go up there to get out’. I felt this particular interaction indicated that I was fully accepted on the site, being able to ‘tell’ meant the operative saw me as one of ‘us’ rather than one of ‘them’, the advantages of being, at least, a marginal ‘native’ (Geertz 2000).

Fieldnotes were made after all participant observation events, out of sight of the operatives that had been interacted with, following the guidelines of Kellehear (1993) and Silverman (2005). This followed an interaction early in the visit with an operative I have known for some time who was not
wearing his PPE. I asked him why and then jotted a fieldnote of his joking response (he is an ‘anti-establishment kind of guy’) whilst we were still talking. This note taking made him nervous as it seemed to make the conversation ‘…official’, however I was able to reassure him and continue with the discussion. This interaction illustrated the ease with which the Hawthorn Effect as described by Kumar (2005) can become relevant; the operative did not want his original response to be recorded if the interaction was ‘official’. It was not difficult to interact with operatives and a blurred line was found between general chat amongst participants in the site environment and a very informal interview structure. It was possible to ask relevant and specific questions in the guise of banter (‘what’s it like on here?’) and then record these discussions in the fieldnotes taken immediately after the event.

Photography (images) was found to be the most useful tool for recording a wide variety of data. I was able to record signage (wording and condition) in this way, noting the position of the signs in the project within the fieldnotes. Graffiti was also best recorded as an image, again with the position recorded within the fieldnotes. I was also able to record physical traces with images; this was most commonly seen in locations where safety barriers had been moved and not replaced, or where the ongoing development of the site had just overtaken the access management strategy. As predicted by Webb et al (1966), this data was highly illustrative – ‘do not move these barriers!’ signs cable-tied to barriers that had been clearly moved, informs not only on the site environment but also management methods used to implement control and the operatives’ response to this.

I was able to spend four hours in total on site, making constant notes on my clipboard and taking photographs when required. I was not questioned as to what I was doing at any time by site operatives, even when I was interacting with them directly. I was not met with any hostility or suspicion; people were keen to talk and at one point I was struggling to keep an operative out of the photograph I was taking of his access tower, so keen was he to smile and give me a thumbs-up for the record.

5. Discussion and conclusions

Building on the firm foundations established in the literature review, the pilot study has illustrated not only the potential of the methods chosen for an ethnography of the construction site, but also the potential of their implementation by the lead author. Having the ‘right’ appearance, and operating with confidence and comfort within the site environment clearly influenced the high level of acceptance from the site operatives and is likely to enhance the depth of the study overall. The freedom that the lead author will be able to achieve within the site environment will also prove beneficial, enabling the study to go beyond presented data and supervised visits.

The methods themselves proved easily applicable, and all proved appropriate for inclusion within the toolkit. The ability to use images for a wide variety of data sources is not only convenient, but will also enhance the robustness of the study, enabling peer review of the data and the subsequent analysis, interpretation and theory drawn from it. The fieldnotes protocol has been informed and modified by this pilot study and an observation protocol can now be established, also informed by the on-site
experience. That informal interview can be included within the toolkit will also benefit the study, providing another method to seek data. The toolkit can now be applied as appropriate within the full PhD study, although it will be constantly under review, and modified appropriately if necessary. The success of the pilot study and the ability to effectively implement a wide variety of methods from the toolkit has made a positive step towards the production of a credible and robust ethnography, upon which an informed framework for cultural change within UK construction sites can be established.

References


Meliorating Women’s Representation within Leadership Positions in the UK Construction Industry

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Abstract

The construction industry in the North West of England is one of the region's largest industries and fundamental to all other economic activities. However, a scarcity of women in leadership positions in construction has persisted despite their increasing numbers in construction training. The lack of women leaders in construction has been a concern for many years, attracting government and industry wide attention. This issue has been made more prominent recently due to the potential managerial skills shortage facing the industry. Hence, a research project was carried out in order to study the underlying reasons for the scarcity of women in leadership positions in the construction industry, and to discover ways to improve the current position of women leaders in construction, with a particular emphasis on the North West of England. The research project conducted both critical literature review and case studies in order to understand the role of female leaders, the barriers faced by women in leadership positions, the present status of organisational policies and facilities and their suggestions for further improvement in construction and to provide effective practice guidelines. This paper presents the overall findings from this project and the recommendations to improve the current position of women leaders in construction. Although, the recommendations to organisations are mainly focusing on developing women leaders it recognises the importance of gender mainstreaming to facilitate all employees’ career within the organisation.

Keywords: construction industry, initiatives, leaders, UK, women
1. Introduction

The construction industry is a significant industry which contributes approximately, a tenth of the nation’s gross domestic product and employs 1.9 million people in the region (Office of National Statistics, 2002). As per the Department of Trade and Industry (2002) the UK construction industry is one of the world’s strongest industries with an output which is ranked at global top ten. However, although the female population accounts for 51% and over 13 million women are employed in the UK, they still constitute only 12% of the construction industry’s workforce (CITB 2006). Women have progressed slowly and have confronted a greater number of barriers to their career development than their male counterparts. One of the main barriers is the under-representation of women in leadership positions in senior management to act as role models and to facilitate the entrance of more women in to the industry (Jackson, 2001). Further, previous studies (Still 1994; University of Salford, 2007) have found that the presence of women in leadership positions can assist the improvement of women’s representation within the construction industry. However, advancement opportunities for women for leadership positions had also been confronted with many barriers.

The literature on construction and women suggests that the obstacles to women's progress in to leadership positions are derived from several sources such as, constraints imposed upon them by society, by the family, by employers, and by women themselves. There is also a growing awareness that, women face various forces that prevent them from being seen as leaders or as leadership candidates in significant roles. This indeed, needs to be addressed if women participation is to be increased in the industry. Therefore, there is a necessity to find out the obstacles preventing women in taking leadership positions in the strategic apex in the construction industry to attract talented young females with different styles of management. In this context, the undertaken research project was aimed to study the underlying reasons for the scarcity of women in leadership positions in the construction industry, and to discover ways to improve the current position of women leaders in construction, with a particular emphasis on the North West of England. This project contained four work packages. This paper presents the findings of work package 4 of the project which aims to provide recommendations and good practice guidelines to address the barriers confronting women leaders in the construction industry. These recommendations and good practice guidelines are based on the findings from the earlier work packages of the research project.

2. Literature findings on improving the current position of women in leadership positions

Governments to individuals have recognised that they need to take practical initiatives to overcome the barriers to women in senior management in every aspect of education, training, recruitment and retention and, the culture to break the “glass ceiling” and “glass wall” (White, 1997). This section of the paper summaries the findings from previous studies related to remedies to facilitate women in management of organisations in construction and other sectors. The Federal government of Australia expressed the view that, if women wished to break the “glass ceiling” then they need to become a part
of solution. Another research states that, while legal remedies could provide a mechanism, women are needed to provide the content (Smith et al. 1992; Still, 1994).

Literature reveals that policies with the objective of facilitating women’s career retention and advancement in organisations have a great impact on women’s career. As Evetts (1997) indicates, ‘Opportunity 2000’ attracted a great deal of media attention for its objectives to increase the quantity and proportion of women’s participation in higher levels of management in public and private work organisations.

Further, commencing from the secondary education, young women should be made aware of the opportunities in construction to avoid the creation of any negative perception about the industry by having visits to the construction industry to create their interest (Fielden et al. 2001). The visits should be designed to create their interest to find more information about the industry. During their training in construction proper placements should be provided to overcome the negative perception of the culture and structure of construction organisations. The workers can also be encouraged to take their children to construction sites with adequate safety measures. Further the representation of women should be evidenced by the young women to find some role models in the industry at least at middle level of management. Most importantly the brochures and the hoardings regarding the construction firms or the industry should reflect the presence of women by having their values and interest on them (Fielden et al. 2001).

The reluctance to recruit women by the contracting organisations should be changed by having legitimate requirements and equal opportunities policies (Ellison, 2001). Further industry can make the recruitment and promotion processes transparent in order to provide equal chances to every qualified employee at open positions. The culture and practices of the organisation should change, so that they require managers to conduct performance reviews solely based on concrete results, rather than double standards, which can serve to undermine and undervalue women’s leadership potential. It was proposed in a research by Fielden and his colleagues (2001) that the employment of women in the industry could help to change the attitudes within the industry through challenging the stereotypes and encouraging the other women’s entry.

Women should be provided with adequate training to improve and develop their competencies (Still, 1994). However discrimination should be avoided in providing different levels of training to women and men. Although earlier theories stated that leaders are born, present theories state it could be developed by proper training. The organisation should recognise and curb stereotyping of women by instituting rigorous performance evaluation measures and accountability mechanisms to ensure that women are evaluated on performance and not on perception. During their pregnancy women can be allowed with flexible hours of work to continue their work without taking longer breaks. Further according to Aitchison et al. (1999), above three categories (Table 1) represent the additional measures that the employers in leisure services could take to enhance women’s prospects of career progression.
Further previous studies call for focus on leadership skills because it highlights that leaders can become better leaders, in part because skills represent capabilities that can be developed and by focusing on leadership skill requirements, the focus is shifted from the person holding the job to the job itself on leadership (Mumford, 2007). From previous conceptualisations of leadership skill requirements Mumford and colleagues (2007) suggested that these skills can be understood in terms of four general categories. They are Cognitive skills, Interpersonal skills, Business skills and Strategic skills. Cognitive skills are the fundamental skills comprised of skills related to basic cognitive capacities, such as collecting, processing, and disseminating information (Zaccaro, 2001). Interpersonal skills involve the interpersonal and social skills relating to interacting with and influencing others (Mumford et al., 2000). Further Business skill requirements involve skills related to specific functional areas (Zaccaro, 2001) that create the context in which most leaders work. Finally Strategic skill requirements are highly conceptual skills needed to take a systems perspective.
to understand complexity, deal with ambiguity, and to effect influence in the organisation (Zaccaro, 2001). These skills requirement are relatively more for senior job as it includes the important planning-related skills of visioning and systems perception that require the development of an image of how a system should work and determining when important changes to the system have occurred or are likely to occur (Mumford, 2007). However skill requirements changes with the work carried out, situations and the people involved in work.

3. Research methodology

The study was carried out using comprehensive literature review and case studies to collect primary and secondary data. Literature on the current status of women in leadership positions in the construction industry and the barriers confronting women leaders was critically examined. Case studies were selected as the most appropriate research strategy for this study because they provide an opportunity for studying real-life phenomenon in detail, without any control over the phenomenon. Yin (2003) defines case study as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between both are not clearly evident. A case study is strong in elaborating a real-life context because it is a very detailed research enquiry into a powerful, single example of a social process, organisation or collectivity seen as a social unit in its own right, and as a holistic entity and not into a sample of one (Payne and Payne 2004).

Four female leaders representing different disciplines of the construction industry were selected as the four main cases. Views regarding the selected leaders’ leadership and the barriers encountered by her were also obtained from their superiors, peers and subordinates. The unit of analysis, the central concept in connection with understanding, preparing and implementing a case study (Yin 2003) was determined as the female leader because conclusions were drawn from them at the end of the study. Semi-structured interviews and documentary analysis were used for data collection. Interviews were chosen due to their appropriateness, ‘for capturing the experiences and meanings of the subjects in the everyday world’, and as they allow subjects to convey to others their own situation, from their own perspective, and in their own words (Kvale 1996). Semi-structured type of interviews were used because they allow for the collection of both structured information and people’s views and opinions, allowing spontaneity in the interviewer’s questioning and the interviewee’s response (Moore 2000). Different interview guidelines were formulated in this research to obtain details from the women leaders, their superior and subordinates, and their peer employees.

The analysis of the interview responses of this research followed the process outlined by Hall and Hall (1996) which involves three activities: data reduction, data display, and conclusion drawing. The first stage was a process of selecting, focussing, and simplifying the interview transcripts. Before starting the analysis, all the interviews were transcribed. The data reduction was done by reading through the transcripts and extracting the most relevant data for all of the questions listed in the interview guidelines, and any additional questions that were raised during the interview. The second stage in the interview analysis process was the data display. This was done by producing a data matrix. A data matrix is produced by tabulating the interview data; the respondents were listed as columns and the questions as rows. This system makes it easy to identify patterns in the responses.
The matrix was also useful as a reference tool when providing recommendations, as it is simple to refer back to respondents that noted such issues, and to extract quotations. The final stage of analysing interviews was to display the data and draw conclusions. The analysed data were broken into relevant themes rather than a detailed account of each question, which would make the section very lengthy and unstructured. Additionally, organisational charts, employment records and other relevant documents from the respondents’ organisations were studied in order to understand their positions within the organisational hierarchy; their duties, roles and total number of females employed.

4. Findings

The project research findings suggest that family and work commitments, childcare problems, old boys networks and feelings of isolation when in meetings/events as the only female; are the most common barriers found within the study. Furthermore, male dominated cultures prevailing in the workplace, gender stereotyping or attitudinal barriers, work patterns like long hours of work, inequalities in advancement opportunities - were solely identified within the construction site environment. Thus female leaders who work on the construction site need to overcome more hurdles to progress in their careers. The acceptance of female leaders’ instructions by other employees is quite often a challenging task for the leaders within construction site offices. However female leaders who work in office environment do not face this problem within their organisation. A career break, for a female leader, is a major barrier that can challenge her career continuity unless she has a greater commitment and better understanding from her employer. Although this was quoted only by one of the respondents the importance of her experience needs to be considered for practice guidelines. A lack of women leaders in organisations presents many barriers for other emerging female leaders, since they may later need to challenge and demand their rights from their employers, which in turn can lead to lose of interest in moving up the career ladder. Further, women’s personality and self-motivation are also important factors that need to be developed from the beginning of their careers to develop women leaders within the construction industry.

The findings of the first three work packages of this project were analysed in detail and compiled in order to provide recommendations and good practice guidelines to overcome the barriers confronting women leaders in the construction industry. The first work package which aimed to understand the role of women leaders in the construction industry were used to identify the strategic skills including leadership styles which facilitate women to advance in their career. Work package 2 with the aim of identifying the barriers confronting women leaders in construction lead to provide recommendations through identifying remedies to overcome the barriers. Providing opportunities to explore the barriers faced by the women leaders in other different sectors with an understanding of similarities and differences of culture of different industries, work package 3 captured the lessons to be learnt from the other sectors, specifically from education and health, where there is a greater representation of women in the higher positions of organisations to promote women’s career advancement in construction. This section of the paper presents the recommendations and practice guidelines to address the barriers faced by females in leadership positions in the construction industry from the lessons learnt from education and health sectors as well. The recommendations, good practice guidelines and strategies
which are provided below are based on both literature and case study findings of the earlier work packages.

4.1 Family and work life balance

The issue of balancing work and family commitments has been found as a major barrier faced by females across many sectors. Most of the main respondents and their co-employees in this study stated it as a barrier to females’ career advancement. Further this barrier has a significant impact on females’ career towards leadership positions especially when they are deciding the importance which they need to give to their family and work. Interestingly one of the male respondent from the construction industry also mentioned that he is currently facing this barrier as his wife is also has important work commitments. This indicates the improvement in the support given by husbands or partners of female leaders. However, this has a lot of room for improvement especially during additional work period and critical times in female leaders’ career.

Recommendations

Although the understanding of the task of balancing family and work commitments in women’s career has changed from the past there is a need for further improvement in the understanding of the significance of work family balance in employees’ career advancement between employers and people in the senior management. This study proposes the following recommendations by considering the suggestions and problems of female employees.

- Develop a flexible working policy to encourage females to come for work when they are in a critical time without allowing them to leave the organisation. This may include,
  - Flexitime, which allows the employees to come for work where they can vary their start and finish times and lunch breaks within agreed limits
  - Part time working, which allows them to work less than the standard full time hours with different options
  - Compressed working week, which allows them to carry out a full time job in less than five working days per week
- Allow them to work from home when they really need to spend time for family responsibilities
- Allow Parental leave to employees who have a child or adopt, as an unpaid leave to assist them to bring up till a certain age of the child or adopt
- Encourage employees to have mentors or provide mentoring, which is providing guidance and advice to personal and work related issues to employees in order to assist
them to overcome barriers, to advise them about the existing paths for their career development and make them aware of the available training and development programmes and the policies and support systems to improve their career with better family life

- Personally employees can plan their work and family activities well in advance and build a good coordination between family members about the family and work responsibilities to improve their life

4.2 Career break schemes and child care facilities

The study found that women tend to suffer from career breaks due to child bearing. Respondents felt that some women do not get their original job title which they were occupying before their break or some do get degraded. Especially at the initial period after career break they find it difficult to cope up with child care responsibilities which ultimately make them to leave the organisations. In addition, some females take longer career break which eventually leaves them with less competence and benefits to demand for their rights after their career break. Further when females come back to their job after the gap in career they seem to be less confident and find difficulties due to their knowledge gap. Moreover, due to lesser support from their employers or superiors they tend to lose their interest in their career progress.

Recommendations

The above problems have led the female employees to realise the need for a better maternity structure and support systems to facilitate their career. Although currently construction organisations have maternity and paternity policies, the additional provisions to the judiciary requirements and the extent of its implementation need improvement. Therefore this study proposes the following recommendations and practice guidelines for the betterment of female leaders’ career.

- Provide better Maternity policies in addition to the judicial requirements which may include,
  
  o Allow them to work from home with a few office visits to enable them to get to know the current practices and changes
  
  o Provide support systems such as a laptop with connections to web and with limited access to the office network to work from home
  
  o Develop a flexible working policy to encourage them to come for work when they are fit to work without taking a longer career break due to early child rearing responsibilities. This may include,
- Part time working, that is working less than the standard full time hours depending on the company work demands

- Flexitime that is a system whereby staff can vary their start and finish times and lunch breaks within agreed limits. In this case staff can usually build up a debit or credit of hours work

- Flexible working hours, which allows a total flexibility over when the job is carried out depending on the type of work the female employee, is carrying out. Further in order to encourage them to come for work, a small payment can be given with a requirement of minimum number of hours or some measures to indicate their completion of work given

- Provide workshops to superiors and subordinates to improve their understanding to create a cooperative working environment

- Provide childcare facilities near to their work place which should try to accommodate additional working times to assist employees who have to work for long hours rather than for very limited hours which does not fit for employees from construction environment to cover the difficulties from both personal and organisational dimensions.

**4.3 Self development**

From the study it was found that many women tend to lose their courage to advance further when they reach a level in the management structure. One of the main reasons behind this is their lack of confidence in carrying out the tasks as some consider it as an intense responsibility and as scary. Therefore there is a need to develop their confidence, self aspiration and courage to move forward and take responsibilities in their career. In addition females should be encouraged to develop their competencies to create their demand for further effective management roles within the sector while they progress in their career.

Further the study identified the need to develop women’s leadership skills in order to carry out their roles and to advance and retain their leadership positions within organisations. Many respondents felt that women leaders need to possess skills related to team working, communication, inter personal management, multi tasking, organising and prioritising, negotiation, listening, delegation, time management, sound knowledge on their profession and the ability to stand on your ground with not feeling intimidated in aggressive situations. In addition they stress the need to have a broader and better understanding of work and people since they need to work with people who have different responsibilities as well. Besides leaders must be able express the ideas well and influence others in a more democratic way as this approach is been considered as better way of leading by other employees. However female respondents insisted the need to change their style of leadership depending on the people and the situations. Moreover the strategic leadership skills that were highlighted within this study involve planning, evaluating, problem solving skills, decision making,
figurehead, spokesperson, liaison, intellectual competence, system perspective and higher cognitive capacities such as complex investigations and judgements.

**Recommendations**

Females’ lesser confidence in continuing their career to higher positions found to be a common barrier in different sectors. However in order to promote more women in construction the construction industry should further take care about building the confidence and courage of all its female employees and provide training and development programmes to increase their potential. Especially it should assist female leaders to tackle the difficulties arising immediately after their career break due to child bearing and when they are applying for promotions. As previously mentioned women need to be encouraged to develop their competencies. In order to address the above issue the study recommends following suggestions.

- Provide special training programmes to create employees perseverance to improve their competencies and confidence
- Provide a better employer support to encourage women to develop their career further in the management structure
- Provide mentoring to all employees or grant additional benefits to have mentors
- Conduct training programmes to allow employees to get familiarised with the current organisational practices and developments or provide induction programmes to new employees or to employees who are after their career break
- Encourage female students to get involved in extra curricular activities from their school life to create their interest and the ability to hold leadership positions
- Conduct training programmes to develop leadership skills to effectively carry out their roles and develop other employees

**4.4 Improved working environment**

The culture of the organisation has a significant impact on employees. Lack of inhospitable culture within the construction organisations is one of the most significant barriers to women’s advancement and also a major factor in diminishing their satisfaction in work. Although the culture of the construction industry is slowly changing, the resonance of the macho culture can be found in many activities carried out throughout the construction life cycle. Gender stereotyping is one of the barriers found in the construction industry. Some female respondents felt that although they hold leadership positions men tend to expect them to carry out certain activities which they normal expect from females such as preparing tea for meetings. In addition they said that they feel they are isolated in certain events and meetings from other employees in construction environment as opposed to other
sectors. Men’s network between themselves acts as a barrier in allowing women to network well among other employees. Further they felt that the acceptance of their instructions is sometimes being challenged specially in construction sites.

**Recommendations**

It was found that the above problems have not been addressed well in organisational policies. In addition few respondents felt that generally the construction industry have minimal facilities compared to other sectors such as maternity structure, flexible working hours, etc. which help to maintain a better working environment through out their career. This study considers the following in addressing the above issues.

- Build committee to consider gender issues arising from harassment and bullying and grievances cases
- Provide a better mentoring facilities and employers support to employees who suffer from harassment
- Organisations should recognise the obligations under Sex discrimination act, Equal pay act and relevant Equal opportunity policies and legislations and ensure its compliance within the organisation
- Provide training which will enhance the understanding of the need for an equal opportunities programme

**4.5 Recruitment policies and advancement opportunities**

Although formal announcements do not reflect any discrimination some respondents felt that there are instances where promotion has taken place through word of mouth which resulted in demotivating their interest in career progress. Further some feel there are occasions where the recruitment has taken place through the network between exiting employees. However since construction is a male dominated industry females feel that there are inequitable procedures within organisations. In addition they feel employers support is a significant factor which helps to implement equitable recruitment and advancement policies.

**Recommendations**

In order to address the above issues this study proposes the following by considering the policies from other sectors considered for the study.

- Recruitment policies must be set to ensure that the selection criteria and its policies and procedures are maintained to treat individuals solely on the basis of the merits and abilities which are appropriate to the job. The above policies should indicate that the
organisation is offering opportunities to people of both sex and it must avoid any stereotyping of roles. Most importantly organisation should avoid the recruitment solely by word of mouth or through recommendations of existing employees to avoid unlawful activities

- Training and development programmes should be circulated widely to employees and should be monitored for any imbalances for corrective actions irrespective of gender difference

- All employees should be provided career guidance

- Access to advancement opportunities should be made available to suitable employees irrespective of gender or marital status.

- Organisation should have individuals in planning and monitoring the human resource management policies who are open minded in order to promote lesser gender discrimination, to develop better understanding of employee status and to encourage delegation of work for empowering employees

### 4.6 Arrangements to accommodate different work patterns

It was quite often noticed within the study that work patterns within construction environment hinder women’s career progress. Some respondents expressed the view that women tend to lose their interest in applying for promotions as they feel that they won’t be able to spend more time to work. A long hour of work is a major challenge to women leaders within construction especially when they need to look after their personal and family responsibilities. Besides, the construction industry requires its employees to allocate time to carry out the task within the specified period of time.

**Recommendations**

Within other sectors which were considered for the study, women have the flexibility to overcome the obstacle related to work patterns. Educational sector has the flexibility to accommodate their family and work responsibilities which ultimately assist women leaders to have better work family life. This study proposes the following recommendations to overcome to above problem.

- Allow compressed working week. However a specific timeline should be given to improve the work performance and to ensure the completion of the task given

- In critical situations organisation can allow job sharing, which is a full time job shared by two or more employees where salary and benefits are also shared.
- Allow flexible working policy which may include flexible working hours and home working. However the organisation should give the responsibility to the employee to ensure the completion of the task given

- Develop a better understanding between employees and senior management to accept and overcome the difficulty of sharing more time at work place to complete the tasks

- Conduct workshops to employees to adopt different arrangements between family members for a better work life

5. Conclusions

The Constructing Women Leaders project was established to identify the role of women leaders and to recognise the barriers encountered by women in leadership positions in the construction industry in order to provide recommendations. This paper which is based on the final work package of this project was aimed to provide recommendations and good practice guidelines to address the barriers confronting women leaders in the construction industry and to identify the strategic leadership skills which need to be developed within women leaders for their career progression.

The study found that women leaders need to develop skills related to team working, communication, interpersonal management, multi tasking, organising and prioritising, negotiation, listening, delegation, time management and the ability to stand on your ground with not feeling intimidated in aggressive situations. In addition it highlights the need for broader understanding of work and people with different responsibilities. Finally the research identified the strategic leadership skills such as planning, evaluating, problem solving skills, decision making, figurehead, spokesperson, liaison, intellectual competence, system perspective and higher cognitive capacities that need to be highlighted when providing training to employees who work specially in managerial positions.

The findings suggest different recommendations and practice guidelines to organisations and to female leaders under different categories based on the challenges face by female leaders. They are family and work life balance, career break schemes and child care facilities, self development, improved working environment, recruitment policies and advancement opportunities and arrangements to accommodate different work patterns. Although the recommendations to organisations are mainly illustrating about developing women leaders, it recognises the importance of gender mainstreaming to facilitate all employees’ careers within the organisation. Therefore some of the suggested recommendations for career development consider all employees irrespective of gender or sex.

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References


Contribution of Women Managers towards the Construction Industry: Preliminary Findings

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Abstract

UK construction industry faces many challenges such as low performance, high dissatisfaction among clients, low productivity, poor image, high fragmentation etc. Recruiting employees, particularly for senior/ middle level management, to fulfil the skills and labour shortages has also been a challenge faced by the industry for many years. The gender segregation pattern of the construction industry seems to be highly according to the societal expectations of the traditional gender roles. In evident to that, more than 85% of the women who are attached to the UK construction industry hold administrative or secretarial positions which are not construction specific occupations. This typical gender segregation has led the industry being unable to benefit from the diverse skills that women could offer. In this context, increasing the number of women managers may have an impact on the typical gender segregation pattern of the industry and in turn may help the industry fulfilling their skills needs. However, it needs to be assured whether the increment in the number of women managers will make the industry better. This research, therefore, explores and investigates the contribution of women managers towards the construction industry. The contribution of the women managers are analysed based on the leadership styles that woman managers typically exhibit in the construction industry. This research adopted case study as the research strategy and used questionnaires and semi-structured interviews as the research techniques. Based on the preliminary analyses of the case studies, all the women managers have demonstrated certain level of leading roles such as commanding, motivating and coaching while maintaining a balance between work and personal life. In terms of gender qualities, all women managers were found to be strong in both their masculinity and femininity adjectives. Further, the women managers perceive themselves as using transformational leadership styles more often than the transactional styles. The above mentioned preliminary findings of the case studies are presented in this paper.

Keywords: contribution, women managers, leadership styles, construction industry, UK
1. Introduction

1.1 Status of women in construction industry

The construction industry is one of the UK’s chief employers, employing over 2 million people that are more than 1 in 14 of the total UK workforce (CITB, 2003). The role of the women in employment is changing radically in most societies and in Britain women constitute just over half of the total workforce. However women currently make up around 10% of the UK construction workforce (NAWIC, 2009) compared to 50% of the total UK workforce. This means that there are fewer women in the construction sector.

Court and Moralee (1995) noted that the under-representation of women in construction only became an issue in the 1980s. In 1988, less than 7% of the full time construction industry workforce in Britain was women. The Equal Opportunities Commission (EOC, 1995) stated in its annual publication that ‘women continue to be significantly under represented in the primary sector (agriculture and energy and water), in most manufacturing, in transport and communications and, in particular, in the construction industry. Since then, there have been number of studies carried out by various researchers on the under-representation within the construction industry (Gale, 1994; Fielden et al, 2000). The studies in these areas have been invaluable in pinpointing the factors militating against the participation of more women in the construction work place, and in particular, the recruitment into the construction professions (Agapiou, 2002). Increasing the number of women in construction in the industry is seen as a good thing based on the assumption that ‘more’ will mean better (Greed, 2000). However Greed (2006) argues that more (women) does not necessarily mean better. What is important is to question whether an increase in the number of women entering the construction professions will result in changes in the culture of the construction industry (Greed, 2006).

The issue regarding lack of women in construction has been made more prominent, attracting government and industry wide attention, due to the skills and labour shortages facing the industry. The UK government and the industry, therefore, examine the ways to encourage women into traditionally male dominated jobs through various initiatives. Though researchers have focused on how to improve the participation of women in the construction workplace, the objectives seem to be aimed rather towards solving the labour resources crisis and skill shortages than improving equal opportunities for women (Agapiou, 2002). In contrast, certain benefactors such as UK Resource Centre (UKRC) and Women in Science and Engineering (WISE) for example, are mainly focussing on the equal opportunities of women. These bodies provide immense support to attract more women into construction by means of providing training to women, educating the women with the knowledge of construction career opportunities and providing mentoring. Thus it is important to understand the impossibility of building a modern nation on the basis of both exclusion and inequality.

Despite the number of initiatives which have been introduced to solve the skill shortages and to improve the equal opportunities for women, the industry has failed to make significant progress in
recruiting more women. The next section justifies the reasons why the focus is given on women managers.

1.2 Focus on women managers in construction industry

Among the 10% of the women in construction, more than 85% hold administrative and secretarial positions (CITB, 2003) and the rest 15% fall under professional and craft level jobs which are classified as construction occupations. That means the percentage of women contributing to the mainstream construction is very low as 1.5% in the total construction workforce. Therefore when encouraging the recruitment and retention of women in the industry, it is important to focus on women who can be employed in construction occupations in order to ensure their contribution will be towards the mainstream construction.

The under-representation of women in managerial positions may discourage potential female candidates who want to choose a career in construction by limiting the number of role models. Further, women gaining managerial positions will provide clear evidence that women really can progress in construction. This may also help to convince employers to consider the recruitment or promotion of women in construction. Women’s presence at managerial positions is one of the most effective ways of ensuring their participation in decision-making. Lack of women on recruitment panels was identified as a particular problem for the low representation of women in construction as it increases the likelihood of informal recruitment practices in the industry (Amaratunga et al., 2007). Taking all these issues into consideration, this research focuses on women managers in the construction industry for the following reasons;

- To ensure that the contribution of women will be directly to the mainstream construction
- To make an impact on the typical gender segregation pattern in construction and in turn to help tackling skills shortages.
- To ensure the equity of choosing the right person with the right skills for the right jobs.
- To manage the equality and diversity in construction
- To widen the limited recruitment base for the construction workforce
- To encourage the industry to recruit from wider pool of talents and skills to address skills shortages
- To address the recruitment difficulties the employers face at senior and middle managerial levels
- To promote more female role models so that it will improve the awareness of opportunities available for women in construction
• To inspire young people to choose a career in construction by making an impact on the image and the culture of the industry in the long run

• To make the industry have a better flow of people particularly from underutilised recruitment pools

This section discussed the importance of having more women managers in construction. There are number of researches carried out on various measures that the industry could take to recruit and retain more women in construction. However, rather than further investigating on what industry could do for women managers, it also seems worth investigating what women managers could do for the construction industry. In this context, this research intends to explore and investigate the contribution of women managers towards the construction industry. In order to analyse the contribution, their leadership styles are taken as the primary unit of analysis. Organisations have paid attention to leadership styles of their people who occupy managerial positions, as leadership is believed as an important factor. Accordingly, this research endeavours to investigate the leadership styles typically exhibited by women managers in construction and their contribution towards the construction industry.

The next section briefly explains the research philosophy, strategy and the techniques used for this study.

2. Research methodology

Research methodology refers to the overall approach to a problem which could be put into practice in a research process, from the theoretical underpinning to the collection and analysis of data (Collis and Hussey, 2003; Remenyi et al., 2003). The selection of an appropriate methodology is vital in order to achieve valid and reliable results.

2.1 Research Philosophy

The two contrasting views on how social science research should be conducted can be labelled as positivism and social constructionism/phenomenology (Esterby-Smith et al., 2003; Collis and Hussey, 2003; Remenyi et al., 2003). The key concept of positivism is that the social world exists externally and that its properties should be measured through objective methods, rather than being inferred subjectively through sensation, reflection or intuition (Esterby-Smith et al., 2003). The phenomenological paradigm assumes that the reality is not objective or external but is socially constructed and given meaning by people (Esterby-Smith et al., 2003). This research intends to explore and investigate the ways in which leadership styles of women managers may contribute to the UK construction industry. Thus, this research deals with intangible assets called ‘contribution’ and ‘leadership’. Further, leadership characteristics and styles mean different things to different people (Pedler et al., 2004), thus a socially constructed idea should be obtained in order to identify the appropriate styles. In this context, it could be said that this research takes the overall phenomenological stance. The research philosophy that is adopted contains important assumptions about the way in which we view the world. These assumptions will underpin the research strategy and
the methods one chooses as part of that strategy (Sauders et al., 2007). The three major ways of
taking about research philosophy are ontology, epistemology and axiology (Collis and Hussey,
2003; Sauders et al., 2007). These ontological, epistemological and axiological assumptions are
concerned with the nature of reality, the acceptable knowledge in the field of study and the values
respectively. These three assumptions also helped to position the research within the philosophical
continuum.

2.2 Research Strategy

A research strategy may be thought of as providing the overall direction of the research including the
process by which the research is conducted (Remenyi et al., 2003). The commonly used research
strategies in business and management research are experiment, survey, case study, action research
and ethnography (Sauders et al., 2007; Remenyi et al., 2003; Esterby-Smith et al., 2003).

This research takes case study as the most appropriate research strategy. Case study is an empirical
inquiry that investigates a contemporary phenomenon within its real-life context, especially when the
boundaries between phenomenon and context are not clearly evident (Yin, 2003). A case study is also
defined as a strategy for doing research which involves an investigation of a particular phenomenon
within its real life context using multiple sources of evidence (Robson, 1993). This research intends to
explore and investigate the contribution of women managers towards the construction industry. The
‘contribution’ is subjective and perceived differently by different people. Therefore it requires an in-
depth analysis on women’s leadership styles and their contribution towards the industry. Further this
research analyses a contemporary phenomenon within its real life context. These qualities of the
research adopts case study as the most appropriate strategy. This study takes the ‘individual’ as the
‘case’. In this scenario the ‘case’ is ‘woman manager in construction’. Three case studies have been
conducted in this research each case has a single ‘unit of analysis’ which is ‘the leadership styles
exhibited by women manager in construction’. Accordingly this research adopts a multiple, holistic
case study approach.

2.3 Research techniques

Research techniques refer to the specific methods used to collect and analyse the data. Data collection
and analysis are developed together in an iterative process in a case study (Hartley, 2004). This
research adopts 3 data collection techniques within the case study and one other technique outside the
case study. They are Multiple Leadership Questionnaire (MLQ), Personal Attribute Questionnaire
(PAQ), semi-structured interview and expert interview. MLQ was used to identify the leadership
styles exhibited by women managers in construction. The leadership styles that are exhibited by a
person are influenced by the person’s gender (Cubillo and Brown, 2003; Larson and Freeman, 1997).
Therefore it is appropriate to find out the gender qualities of the construction women managers in
order to see whether there is a relationship between their gender qualities and the leadership styles
they exhibit. To fulfil this purpose Personal Attributes Questionnaire (PAQ) by Spence et al. (1975)
was used. PAQ measures the degree to which a person can be classified according to masculine or
feminine adjectives. In addition to MLQ and PAQ questionnaires, interviews were also used to collect data from women managers in construction. This research uses semi-structured interviews. The interview guidelines prepared are aimed at capturing a wide range of issues related to the contribution of leadership styles exhibited by women managers. At the same time it was ensured that the interview is confined within the main research interest and is not deviating form it. Semi-structured interviews were, therefore, selected for this purpose, as they have the advantage of being a ‘halfway house’ between the rigid layout of a structured interview and the flexibility and responsiveness of an unstructured interview (Moore, 2000). Expert interviews, which are not part of case studies, were conducted prior to the case studies. The outcomes obtained through expert interviews were considered in designing the semi-structured interview for case studies. Expert interviews helped the researcher to ensure that all important issues related to construction, gender and leadership are captured.

Data analysis consists of examining, categorising, tabulating, testing or otherwise recombining both quantitative and qualitative evidence to address the initial propositions of a study (Yin, 2003). It is important to have a data analysing strategy as it will guide the researcher to select the appropriate data analysing tools, ensuring that the evidence is treated well, and to generate sound and convincing analytical conclusions while discarding the alternative interpretations (Yin,2003). The data collected through expert and semi-structured interviews was analysed using content analysis. In addition, the quantitative analytical techniques adapted with the MLQ and PAQ were also used to analyse the data collected through MLQ and PAQ respectively.

All the research techniques used to collect data for this study are combined and the relationships between different techniques and between the techniques and the potential outcome are illustrated in Figure 1. The outcomes from certain techniques are used as input for certain other as shown in Figure 1. The literature review and synthesis continuously support the research throughout its process
This section explained the research methodology adapted to this study and illustrated how the integration of various research techniques leads to draw conclusions. The next section provides the preliminary findings from the case studies.

### 3. Case study findings

This paper provides the preliminary findings where the findings are discussed under limited themes. The themes have been identified based on the objectives of this research. Accordingly it addresses the objectives about the role, gender qualities and leadership styles of women managers with the support of primary data collected.

#### 3.1 Profile of the cases

Women Managers in construction have been considered as the cases for the analysis. Managers and professionals in the industry can be categorised under four types as outlined by Bennett et al.(1999). Non-management roles- these positions are generally self-directed; Supervisory roles - these positions typically fulfil a supporting role to middle management; Middle management roles- these positions are mainly responsible for managing the whole process of a project and for leading a project team; Senior management roles- these positions are often the ones of power where company-wide decisions are made. For the purpose of this research, women managers at senior and middle level management
are focused. Accordingly, women managers who fall under last two categories above were targeted. Further as this study investigates their leadership styles, it had been ensured that the women managers who were taken for the case studies were performing at least one leading role such as leading a team, leading a project or leading a company.

Table 1 shows the profile of the case studies used for this research.

**Table 1: Profile of the Cases**

<table>
<thead>
<tr>
<th>Profile</th>
<th>Woman Manager A</th>
<th>Woman Manager B</th>
<th>Woman Manager C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case</strong></td>
<td><strong>Chairwoman, Director, Chief executive</strong></td>
<td><strong>Boar Director, Chief Higher Engineer</strong></td>
<td><strong>Senior Project Manager</strong></td>
</tr>
<tr>
<td><strong>Job title</strong></td>
<td>40</td>
<td>33</td>
<td>11</td>
</tr>
<tr>
<td><strong>Years of experience in construction</strong></td>
<td>Married</td>
<td>Single</td>
<td>Married</td>
</tr>
<tr>
<td><strong>Children</strong></td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### 3.2 Role of women managers in construction

The positions of the women managers in their organisations demand certain leadership roles. There are several leadership roles identified by researchers. The following are the leadership roles (Milligan, 2006) taken into consideration for the purpose of the analysis.

**Commander** - the leader knows the destination and how to get there. It’s the ability to steer the business in a direction that avoids being blindsided by changes in the business environment.

**Conductor** - the leader selects the right person for each position. It’s the ability to assign roles to each person in such a way that best match his or her talents, skills, experiences and interests.

**Team builder** - the leader has the ability to instill in the team a commitment to a common end – goal, outcome – and a team spirit such that they strive to meet both team and individual goals.

**Negotiator** - the leader aims to enlarge the ‘pie’ so that both parties can end up winning. It’s the ability to invent creative options and variables so that concessions can be traded whereby both parties get what they value most.

**Motivator and cheerleader** - it requires the leader to be positive, upbeat, and proactive even in difficult times.
**Supervisor and coach** – the leader has the ability to provide nurture the employee’s self motivation, be clear about performance expectations, provide abundance feedback, and continually provide opportunities for the employee/student to develop.

**Promoter and spokesperson** - the leader is the face of the research project to the outside world, which may include academic community, industrialists, funding bodies, professional bodies, general public.

**Acrobat** - this role has two sides such as handling multiple tasks in a rapidly-changing environment; and balancing work, family, and personal life. The former demands the ability to keep several ‘balls in the air’ and is keenly aware of the differences between urgent and important tasks whereas the latter demands the ability to balance the time and energy between one’s career demands, family pleasures and obligations, and personal life.

The roles women managers play in the construction industry are matched against the different leadership roles identified above and this is summarised in Table 2.

As seen in Table 2 all three women managers perform leading roles in the construction industry. The case study then tried to identify their gender qualities and the leadership styles they typically exhibit in the construction industry. The summarised findings are given in the following sections.

Table 2: Women managers’ roles vs. leadership roles

<table>
<thead>
<tr>
<th>Roles played by women managers in construction</th>
<th>Leadership role</th>
<th>Woman Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Making decision at industry level</td>
<td>Commander</td>
<td>√</td>
</tr>
<tr>
<td>Making decision at organisation level</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Making decision at project level</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Member of the recruitment panel / Assign roles to the staff</td>
<td>Conductor</td>
<td>√</td>
</tr>
<tr>
<td>Forming project teams by identifying the right mix of skilled personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managing the project while satisfying the individual and collective goals of the team members</td>
<td>Team builder</td>
<td>√</td>
</tr>
<tr>
<td>Contribute to resolve problems at organisation level</td>
<td>Motivator and Cheerleader</td>
<td>√</td>
</tr>
<tr>
<td>Contribute to resolve problems at project, team and individual levels</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Guiding the subordinates in the right direction</td>
<td>Supervisor and Coach</td>
<td>√</td>
</tr>
<tr>
<td>Responsible for and looking after all the technical subjects in the organisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Look after health and safety in the industry</td>
<td>Negotiator</td>
<td></td>
</tr>
<tr>
<td>Handling multi tasking, Maintaining a balance between work and life</td>
<td>Acrobat</td>
<td>√</td>
</tr>
</tbody>
</table>
3.3 Gender qualities

Gender qualities were identified using Personal Attributes Questionnaire (PAQ). The PAQ was used to measure the degree to which the leader can be classified according to masculine or feminine adjectives. It is a 24 item self-report questionnaire in which people are asked to indicate the extent to which they can be characterised in terms of various adjectives. The analysis of the PAQ will help to find out the personal characteristics of an individual in terms of masculine, feminine, or androgynous qualities. The scales used in the PAQ to measure masculinity and femininity adjectives are explained below.

**The instrumental scale (Masculinity):** Eight of the questionnaire items represent characteristics that ‘men are stereotyped to possess to a greater extent than women’ and ‘that are seen as desirable qualities for both men and women’. "Masculinity" as defined by the PAQ means being "self-assertive" or "instrumental." These qualities include such attributes as independent; active; competitive; can make decisions easily; never give up easily; self-confident; superior; stand up well under pressure.

**The expressive scale (Femininity):** Another eight items were chosen to represent the extent to which a person sees himself or herself as possessing characteristics that ‘women are generally seen possessing more than men’ and ‘that are viewed as desirable qualities for both men and women’. These qualities are in, in short, "expressive" or "interpersonal" traits. They include attributes such as emotional; able to devote self completely to others; gentle; helpful to others; kind; aware of feelings of others; understanding of others; warm in relations with others.

**The androgyny scale (Masculinity- Femininity):** The other eight items were originally designed to measure another construct, "androgyny." These eight items were chosen to represent the extent to which a person sees himself or herself as possessing characteristics that ‘men are generally seen possessing more than women (if considers one extreme)’ and ‘women are generally seen possessing more than men (if considers the other extreme)’. The masculinity extreme adjectives include very aggressive; very dominant; not at all excitable in a major crisis; very worldly; indifferent to others' approval; feelings not easily hurt; never cries; very little need for security.

However, this measure has generally been abandoned. Most researchers keep the full 24-item scale intact even though they don't score the androgyny subscale. Accordingly the questions that are used to measure androgynous scale are not utilised in the case study.

The Table 3 shows the outcome of the PAQ analysis which reveals the degree to which the leader could be classified according to of masculine and feminine adjectives.

In general, all 3 women managers are strong in their masculinity and femininity adjectives. But a detailed review of the results shows that Women Managers A and B have strong personality in both gender qualities. Whilst they have a high percentage of masculinity adjectives, they also have almost the same percentage of femininity adjectives. That interprets that they have a balanced adjectives of both masculinity and femininity.
Table 3: PAQ Results

<table>
<thead>
<tr>
<th></th>
<th>Woman Manager A</th>
<th>Woman Manager B</th>
<th>Woman Manager C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(0-32) Scale</td>
<td>%</td>
<td>(0-32) Scale</td>
</tr>
<tr>
<td>Masculinity in 100</td>
<td>27 84.38</td>
<td>30 93.75</td>
<td>29 90.63</td>
</tr>
<tr>
<td>Femininity in 100</td>
<td>28 87.50</td>
<td>29 90.63</td>
<td>23 71.88</td>
</tr>
<tr>
<td>Masculinity (M)/Femininity (F) distribution in the overall personality (the balance counts to androgynous)</td>
<td>37.5 38.89</td>
<td>41.10 39.73</td>
<td>38.16 30.26</td>
</tr>
</tbody>
</table>

These findings could be further supported by the followings;

“.....I can’t differentiate myself as an individual from the male/female stereotype. I think everybody has got a spectrum in them and it’s a matter of how much you show it. And I think one has got to look at the strong features and strong personality traits and positive aspects. I am putting together that they all bound out.. I don’t think you can exclusively put female traits in one box and male traits in other box. I think it is important to put together a group where different attributes work with each other to get better than some other parts....” (Women A)

“...leadership style is not necessarily a male/female thing. But I have to say that I followed some of the men’s working style. Well I didn’t have many other women role models in my age, so I learnt things from men. However, one of the values that I have found was of being different. I actually am making advantage of being different. So I did approach differently. I used different styles of leadership which is more feminine. It is not about the issue of being seen yourself as a male or female, but for the people just to see me for that I can deliver. That’s the most important thing to me....” (Women B)

But the Manager C has a bit more masculine personality compared to what she possess as femininity adjectives. The reason may be her cultural background as she is from a culture where being direct or showing masculine qualities is not a problem at all. This is supported by the following;

“....I think my masculine attributes will be being very direct. Because in the US I don’t think anybody may be ever thought twice about being direct. Most people who live in New York are pretty tough and direct. And they are pretty famous for that sort of attitude. But here I think I have got a bit of a criticism from both men and women about that being so direct and straight forward. I think it’s cultural” (Women C)...
3.4 Leadership styles exhibited by women managers in construction

Leadership styles could be categorised into nine distinct styles based on three major classes or styles: they are transformational, transactional, and Non-transactional (passive / avoidant) (Bass and Avolio, 2006). Transformational and Transactional leadership are both related to the success of the group. Success is measured with the MLQ using outcomes of leadership. Transformational leadership is a process of influencing in which leaders change their associates’ awareness of what is important, and move them to see themselves and the opportunities and challenges of their environment in a new way. Transactional leaders display behaviours associated with constructive and corrective transactions. The constructive style is labelled Contingent Reward and the corrective style is labelled Management-by-Exception. Transactional leadership defines expectations and promotes performance to achieve these levels. Contingent Reward and Management-by-Exception are two core behaviours associated with ‘management’ functions in organisations. Another form of Management-by-Exception leadership is more passive and "reactive": it does not respond to situations and problems systematically. It is also similar to laissez-faire styles or "no leadership". Both types of behaviour have negative impacts on followers and associates. Accordingly, both styles can be grouped together as 'Passive - Avoidant Leadership'. However this style is appropriate where the staff is highly skilled, experienced, educated, have pride in their work and have the drive to do it successfully on their own.

The most recent version of the form is Form 5X which has two types such as short and long. The former contains 45 items for survey whereas the latter contains 63. MLQ (5X-short) has been chosen for this study as it is a recommended questionnaire for research purposes. The MLQ (5X-short) contains 36 leadership items plus 9 outcome items. The leadership items measures the leadership on nine leadership styles scales, 5 of which are related to transformational leadership, 2 of which are related to transactional and 2 of which are related to passive/avoidant leadership. The outcome items measures the outcome on 3 scales namely extra effort, effectiveness and satisfaction. Figure 2 illustrates the combination of items and scales under leadership styles and leadership outcomes.

Figure 2: Combination of items and scales used in Multiple Leadership Questionnaire (Mind Garden Inc., 2006)
Table 4 provides the results of the MLQ analysis which reveals the frequency rating of the leaders together with the universal norm for all the leadership styles identified under transformational, transactional and non-transactional (Passive/ Avoidant) leadership types.

All 3 women managers exhibits a degree of leadership styles that is more than the expected universal norm and their level of exhibit is classified as high as the value is between 2.68 and 4.0. However in the styles Management-By-Exception Active (MBEA), Management-By-Exception Passive (MBEP) and Laissez-faire (LF), all have shown a lower value. In these 3 styles the leader’s involvement is minimal and these styles are appropriate to lead an individual or a group of people who are self-motivated and self-leading. Showing lower values in such styles interprets that the women managers do not avoid getting themselves involved.

Table 4: MLQ Results

<table>
<thead>
<tr>
<th>Leadership Types</th>
<th>Leadership Styles</th>
<th>Woman Managers</th>
<th>Universal Norm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td><strong>Transformational Styles</strong></td>
<td>Idealised Attributes (IA)</td>
<td>2.5</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>Builds trust</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Idealised Behaviours (IB)</td>
<td>3.0</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td>Acts with integrity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inspirational Motivation (IM)</td>
<td>2.8</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>Inspires others</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intellectual Stimulation (IS)</td>
<td>2.8</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td>Encourages innovative thinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individualised Consideration (IC)</td>
<td>3.5</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Coaches people</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transactional Styles</strong></td>
<td>Contingent Rewards (CW)</td>
<td>3.3</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>Rewards achievements</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management-By-Exception Active (MBEA)</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Monitors mistakes</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non Transactional (Passive / Avoidant Behaviour)</strong></td>
<td>Management-By-Exception Passive (MBEP)</td>
<td>1.3</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Fights fires</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laissez-faire (LF)</td>
<td>0.8</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Avoids involvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Outcomes of the leadership</strong></td>
<td>Extra Effort</td>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>Effectiveness</td>
<td>3.0</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>Satisfaction</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>
To give further understanding Table 5 provides the overall distribution of the classified leadership styles and the outcomes each woman manager exhibits.

In all 3 cases it shows that the women managers exhibits both transformational and transactional leadership styles at a higher frequency rate compared to the Non-transactional (or Passive/ Avoidant) behaviour.

Table 5: Overall distribution of the classified leadership styles and the outcomes (in %)

<table>
<thead>
<tr>
<th>Leadership Types</th>
<th>Woman Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Transformational Styles</td>
<td>31.65</td>
</tr>
<tr>
<td>Transactional Styles</td>
<td>25.92</td>
</tr>
<tr>
<td>Non Transactional (Passive / Avoidant Behaviour)</td>
<td>10.91</td>
</tr>
<tr>
<td>Outcomes of the leadership</td>
<td>31.52</td>
</tr>
</tbody>
</table>

At the same time all 3 women managers perceive themselves as using transformational leadership styles more often than the transactional styles. These results are in-line with some of the literature findings where several studies focusing on transformational leadership indicated that women seem to prefer transformational leadership styles (Eagly et al., 2003) and women are perceived, and perceive themselves, as using transformational leadership styles than men (Bass et al., 1996; Druskat, 1994; Rosener, 1990; Kark, 2004).

4. Conclusions and way forward

Identifying the contribution of women managers towards the construction industry is vital in order to find out whether the employability of women managers’ within the construction sector will make the industry better, while contributing to address the skills shortages in the industry. This paper presented some preliminary findings from the initial stages of the data analysis. From the samples selected for the case studies itself it was obviously evident that the women have the ability to lead in a male-dominated industry like construction. The women in managerial positions in the construction industry have demonstrated their leadership roles and their ability to lead. The case studies revealed that the women managers have balanced gender adjectives in terms of masculinity and femininity. This paper further discussed the leadership styles of women managers identified using Multiple Leadership Questionnaire (MLQ). Accordingly, women managers perceive themselves as exhibiting transformational leadership styles more often than the transactional styles. These conclusions were made based on the primary data collected through Multiple Leadership Questionnaire (MLQ) and
Personal Attribute Questionnaire (PAQ). In addition, as mentioned in the research methodology section of this paper, semi-structured interviews were also used to identify the leadership styles of women managers, to investigate the barriers or difficulties that the women managers face in exhibiting certain leadership styles in the construction industry and to explore their contribution towards the construction industry. These issues will be analysed as a way forward of this research and to address the research aim which intends to explore and investigate the contribution of women managers towards the construction industry.

References


Equal Opportunities Commission (1995), Job segregation linked to gender bias, Equal Opportunities Review, 60, March/April, Equal Opportunities Commission, Manchester.


A Study of Face-saving Tactics in Construction Claim Negotiations

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Abstract

Construction claim negotiations are commonly found to be inefficient and one of intangible factors playing a tangible and pivotal role in negotiations is ‘face’. ‘Face’ is defined as “the positive social value a person effectively claims for himself by the line of others assumed he has taken during a particular contact”. In construction, several studies have inferred ‘face’ as an imperative factor in managing conflicts and maintaining harmony. Notwithstanding, lack of research into the topic in particular of construction industry triggers this study. With regard to the fact that ‘face’ is specific to culture, this study explores the concept in the Asian context. Specifically, this study aims to (1) identify face-saving tactics from the literature and (2) evaluate the importance of the usefulness of the tactics to construction claim negotiations in Hong Kong. The result suggested that tactics scored high were found to be characterised as showing respect towards others while tactics with relatively lower scores were identified as saving others’ face by behaving passively to make concession. Though this study is purely descriptive, it lays an important groundwork for identification of the tactics. Developing generic types of the tactics in construction claim negotiations is suggested for a more comprehensive understanding. It is also suggested that further understanding can be made by adopting case study approach.

Keywords: face-saving, face, negotiation, claim
1. Introduction

It is pervasive to settle claims or disputes by the means of negotiation in construction industry. The use of this method can preserve relationship among parties (Ren et al, 2003). Nonetheless, construction claim negotiations are always found to be inefficient due to the diversity of intellectual background, numerous variables involved, complex human interaction and inadequate negotiation knowledge of construction participants (Ren et al, 2002). Human interaction is complex as multi-disciplinary professionals are of various individual biases, egos, personalities, attitudes, history of past dealings and psychology on both sides of negotiating table (Zack, 1994). Among these, ‘face’ is one of the intangible factors playing a tangible and pivotal role in the negotiation. It is defined as “the positive social value a person effectively claims for himself by the line of others assumed he has taken during a particular contact” (Goffman 1955, 1967). Wilson (1992) pinpointed that threatening one’s ‘face’ resulted in hostile attitude towards others, thus terminating the whole negotiation process. Many scholars (Brunner & Wang, 1988; Buttery & Leung, 1998; Zhu et al, 2007; Graham & Lam, 2003) have also acknowledged the role of ‘face’ as the key factor governing the behaviour of negotiators. In construction, ‘face’ is implied in several studies as a crucial factor in maintaining the harmony and managing conflicts (Harmon, 2004; Jong et al, 2003; Chua et al; 2003). In discussing the obstacles of China construction market, Chua et al (2003) commented that lack of a standard dispute settlement procedure and the preference for adopting “face-saving” makes the negotiation difficult. In addition, Harmon (2004) suggested that “face-saving” is one of the factors influencing the parties to settle disputes. In light of the prominent role of ‘face’ in negotiations and the increasing awareness of the implication of ‘face’ in the industry, lack of research into the topic in particular of construction industry triggers the present study. Specifically, this study attempts to

1. identify face-saving tactics from the literature
2. evaluate the importance of the usefulness of the tactics to construction claim negotiations

To this end, literature will be first reviewed on the definition of ‘face’, previous studies on facework and face-saving tactics.

2. Literature review

2.1 Face

‘Face’ was defined by Erving Goffman (1955,1967) as the positive social value a person effectively claims for himself by the line of others assumed he has taken during a particular contact. Redding and Ng (1982) defined it as the individual’s assessment of the way in which others views him or her. More recently, Ting-Toomy (1994,199), Oetzel and Ting-Toomy (2003) introduced a face-negotiation theory to explain how different culture view ‘face’ and manage conflict. She defined ‘face’ as an individual’s claimed sense of positive image in the context of social interaction. Definitions of ‘face’ from Western scholars abound, yet subtle difference has been drawn from Chinese culture. Chinese scholars identified ‘face’ as having two dimensions, ‘Lien’ and ‘Mian’. Hu (1944) explained ‘lien’ as
the moral face which relates to one’s dignity based on the moral code and social expectations in one’s social circle. ‘Mian’ in contrast is defined as one’s social face which is related to reputation, prestige and success, self-esteem (Yu and Gu, 1990), social, personal and relational identity (Gao, 2006). To be explicit, difference between ‘Mian’ and ‘Lien’ is that ‘Lien’ cannot be manipulated because it is internalized, while ‘Mian’ can be monitored as it is externalized. (Hu, 1944; Brunner et al., 1989; King, 1993; Lam and Wong, 1995). With regard to the fact that ‘face’ is specific to culture, this study adopts and investigates the concept of ‘face’ in the Asian context.

2.2 Previous studies on face-saving tactics

Facework is a collection of the communicative strategies to enact self-face and to uphold, support, or challenge another person’s face (Ting-Tommey, 1998; Oetzel and Ting-Tommey, 2003). Considerable amount of studies have been devoted to develop facework typologies in different contexts. As shown in Table 1, different facework typologies were developed as the cultural contexts vary. Given that the concepts of ‘face’ and ‘facework’ are specific to cultures, it is thus difficult to study within an inter-cultural environment (Keegan, 1999). In this regard, this study emphasizes the intra-cultural Chinese negotiation setting. Among the typologies, focuses will be put on studying face-saving as it is defined to embrace Chinese culture most specifically. It is defined as preserving or maintaining one’s ‘face’ which is closely related to prestige, social standing, reputation and dignity (Hofstede, 2001; Graham & Lam, 2003). Non-construction related studies have shed light on elaborating and long-listing the face-saving tactics (Gao, 2006; Graham and Lam, 2003). A list of tactics is identified and can be referred to Table 3. Nonetheless, a tailor-made face-saving tactics for construction dispute negotiation is scant.

As such, this study aims to (1) identify face-saving tactics from literature and (2) evaluate the importance of the usefulness of the tactics to construction claim negotiations. The objectives of the study are to be accomplished by conducting a questionnaire survey in Hong Kong. Data collected were analyzed by relative importance index (RII). The method and results are discussed in the next part.
Table 1 Summary on some of the facework typologies (Ting-Toomey and Cocroft, 1994)

<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lebra (1976)</td>
<td>“Lebra (1976) discussed the Japanese cultural ideal of balancing face-concerns in ritualistic interactive situations. Her facework typology focused on strategies which protected self-face and other face, and strategies which protected self-face while threatening the face of the other”</td>
</tr>
<tr>
<td>Penman (1990)</td>
<td>“Penman (1990) drew upon Brown and Levinson’s politeness theory and assumed that the major goal of facework was to maintain respect of self and avoid contempt. He developed a model of facework in which various microstrategies fell into one of two dimensions: respect-contempt, direct-indirect”</td>
</tr>
<tr>
<td>Lim and Bower (1991)</td>
<td>“Lim and Bower (1991) developed his typology in the context of the U.S. culture. He identified types of facework in correspondence with the types of face-needs. The facework identified were tact facework, solidarity facework and approbation facework. The facework typology was to examine the effects of relational intimacy, power difference, and the right to perform a given act in a given situation on tact, solidarity, and approbation facework”</td>
</tr>
</tbody>
</table>

3. Method

3.1 Questionnaire survey

To achieve the aforementioned objectives, a questionnaire survey has been conducted for the study. The questionnaire aims to obtain the demographic information of the participants. Second, they were asked to rate degree of usefulness of face-saving tactics in construction claim negotiation on a Likert scale of 1 (least useful) to 7 (most useful). The tactics are identified from literature and are summarized in Table 3.

Questionnaires were then administered by email to 252 construction professionals in Hong Kong. The list was compiled by identifying key personnel from the government and professional directories and websites of companies. A total of 78 valid responses were returned and the response rate was 31.0%. 67.9% respondents have more than 15 years working experience. Majority of respondents work in public sector (44.9%) and consultant firm (29.5%). The respondents’ profile is shown in Table 2. Data collected were then analyzed by relative importance index ($R_{II}$).
Table 2: Profile of respondents

<table>
<thead>
<tr>
<th>Experience (yrs)</th>
<th>No.</th>
<th>%</th>
<th>Cumulative %</th>
<th>Organization</th>
<th>No.</th>
<th>%</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 5</td>
<td>7</td>
<td>9.00%</td>
<td>9.00%</td>
<td>Developers</td>
<td>5</td>
<td>6.40%</td>
<td>6.40%</td>
</tr>
<tr>
<td>5-10</td>
<td>6</td>
<td>7.70%</td>
<td>16.70%</td>
<td>Consultants</td>
<td>23</td>
<td>29.50%</td>
<td>35.90%</td>
</tr>
<tr>
<td>10-15</td>
<td>12</td>
<td>15.40%</td>
<td>32.10%</td>
<td>Main Contractor</td>
<td>8</td>
<td>10.30%</td>
<td>46.20%</td>
</tr>
<tr>
<td>Above 15</td>
<td>53</td>
<td>67.90%</td>
<td>100.00%</td>
<td>Public Sector</td>
<td>35</td>
<td>44.90%</td>
<td>91.00%</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>9.00%</td>
<td>100.00%</td>
<td>Others</td>
<td>7</td>
<td>9.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>No.</th>
<th>%</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>2</td>
<td>11.50%</td>
<td>11.50%</td>
</tr>
<tr>
<td>Male</td>
<td>69</td>
<td>88.50%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Notes: All respondents are Chinese

4. Results and discussions

4.1 Relative importance index (RII)

Relative importance index (RII) method was employed to evaluate the importance of the usefulness of face-saving tactics to construction claims negotiation. It is a method commonly used in construction studies for determining the relative rank and importance of items (Kometa et al, 1994; Aibinu and Jagboro, 2002). The indices ranged from 0 to 1 and were calculated by equation (1).

Relative importance index (RII)  \( \sum_{A}^{w} \frac{w}{A \times N} \)  \((0 \leq RII \leq 1)\)  \( (1) \)

where \( w \) = weighting given to each face-saving tactics by the construction professionals

\( A = \) the highest rating of the scale (in this study, 7 is the highest rating)

\( N = \) the total number of respondent of the sample

By using equation 1, overall RIIs for the face-saving tactics were calculated and reported in Table 3. It was shown that RIIs for most of the face-saving tactics scored 0.5 or above, ranging from 0.828 to 0.485. This suggested that construction professionals generally found the face-saving tactics important in construction claim negotiations. The top three ranking face-saving tactics are ‘Not breaking promises’, ‘Allowing thinking time to calm down when counterparts feel insulted, angry or frustrated’ and ‘Polite talk and being courteous’. Graham and Lam (2003) remarked that ‘breaking promises’ would invariably result in a mutual loss of face especially at the Chinese negotiating table. ‘Being polite and courteous’ prevailed in Chinese business dealing (Woo and Prud’homme, 1999). Gao (2006) identified ‘allowing room or leaving leeway’ as a tactful strategy of saving ‘face’. In essence, tactics scored high were found to be characterised as showing respect towards others (e.g. not
breaking promises, being polite and courteous etc.). On the other hand, tactics with relatively lower scores were identified as saving others’ face by behaving passively to make concession (e.g. Remain silent when having disagreement in negotiation, Ask irrelevant questions to change subjects to prevent direct confrontation). The result was generally in line with other construction study which suggested that use of avoiding styles was less influential in achieving functional negotiation outcomes (Cheung et al, 2006).

The result obtained deepens the understanding of face-saving tactics in negotiating claims. The ranking of the tactics reveals that particular types of face-saving tactics are likely to be more useful than others. A more rigorous examination on the structure of the tactics is speculated to provide insight into the result. On the other hand, the result is purely descriptive while the underlying reasons remain to be explored. Are the tactics useful in the different scenario? Why do the tactics characterized as behaving passively to make concession score lower? Though this study is not able to provide an adequate answer for these questions, it lays the groundwork for suggesting further research direction. A combination of qualitative analysis such as case study is suggested for further advancing the understanding. As Tracy and Baratz (1994) stated, case study approach can expand analyzing the scope and nature of facework strategies. Interviewing construction professionals on how they adopt face-saving tactics in different situational contexts shall be a tantalizing direction to provide further insight.

Table 3 Relative Importance indices and ranking for the face-saving tactics

<table>
<thead>
<tr>
<th>Face-saving tactics</th>
<th>RIIs</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not breaking the promises3</td>
<td>0.828</td>
<td>1</td>
</tr>
<tr>
<td>Allow thinking time to calm down when counterparts feel insulted, angry or frustrated 5, 6, 7</td>
<td>0.789</td>
<td>2</td>
</tr>
<tr>
<td>Polite talk and being courteous 2</td>
<td>0.785</td>
<td>3</td>
</tr>
<tr>
<td>Not displaying negative emotion at the negotiation table3, 4</td>
<td>0.730</td>
<td>4</td>
</tr>
<tr>
<td>Not criticize others1, 2, 7</td>
<td>0.692</td>
<td>5</td>
</tr>
<tr>
<td>Avoid discussion of specific issues that cause embarrassment 7, 8</td>
<td>0.641</td>
<td>6</td>
</tr>
<tr>
<td>Be soft spoken1</td>
<td>0.632</td>
<td>7</td>
</tr>
<tr>
<td>Moderate one's fault by the use of disclaimer10</td>
<td>0.599</td>
<td>8</td>
</tr>
<tr>
<td>Apologize when facing criticism in the negotiation11</td>
<td>0.557</td>
<td>9</td>
</tr>
<tr>
<td>Remain silent when having disagreement in negotiation 7</td>
<td>0.496</td>
<td>10</td>
</tr>
<tr>
<td>Ask irrelevant questions to change subjects to prevent direct confrontation7, 9</td>
<td>0.485</td>
<td>11</td>
</tr>
</tbody>
</table>


5. Concluding remarks

The study aims to (1) identify face-saving tactics from the literature and (2) evaluate the importance of the usefulness of the tactics to construction claims negotiations. The relative importance indices
suggested that construction professionals generally found the face-saving tactics important in construction claims negotiations. Tactics scored high were found to be characterised as showing respect towards others while tactics with relatively lower scores were identified as saving others’ face by behaving passively to make concession. Though this study is purely descriptive, it lays an important groundwork for identification of the tactics and paves the way for developing generic types of the tactics in construction claim negotiation. It is suggested that further understanding can be made by adopting case study approach.

References


Promoting ‘Mount Heritage’: An Alternative View to Recruitment into Building Conservation and Heritage

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Abstract

The major developing skills shortages within the UK’s building conservation and heritage sector has been highlighted in various reports (NHTG 2005, NHTG 2008). These have prompted a drive for committees and organisations, from grass roots to government, to start initiatives and action groups tasked with improving the workforce levels in both the craft and professional sides of the sector. However, with no clear identity and many different organisations, course providers and practitioners using a variety of names to describe the sector including building heritage, architectural conservation, ancient buildings, restoration and renovation, the sector needs some joined up thinking if it is to promote itself effectively as an exciting career prospect. This paper explores the use of a landscape analogy as a tool to demonstrate to the sector the need for a holistic approach to identity, promotion and recruitment and forms part of a PhD which investigates the skills supply shortage and skills gaps in the Built Heritage sector of the UK and explores approaches to recruiting young people into a professional career in this area.

Keywords: building conservation, careers, culture, heritage, skills shortage
1. Introduction

This paper discusses a key emerging theme drawn from a wider PhD thesis that is concerned with the underlying reasons for the skills supply shortage and gaps in the professions within the UK’s Built Heritage sector. The PhD seeks to explore the viability of a new approach to improve recruitment in this area among young people. The Built Heritage sector of the UK encompasses many professions and has the potential to attract many people at different stages of their careers. The need for research on young people pursuing professional careers in the Built Heritage sector is particularly important as the past decade has seen a major skills shortage develop within the sector. Many historic buildings are being subjected to inappropriate repairs and alterations by architects and surveyors unversed in the techniques and philosophies required by historic buildings (NHTG, 2008). The key emerging theme from the PhD discussed in this paper looks at how perception and image of the sector by young people, play a key role in the recruitment process and discusses how the analogy of a ‘careers landscape’ can help inform the sector in future recruitment initiatives. This paper begins by introducing the Built Heritage sector and outlines the issues concerning the low workforce levels and how young people are informed about building conservation as a career choice. The paper then looks at how career decisions are made and how perception and image affect the career choices of young people. The paper concludes by discussing how elements taken from the literature could inform future recruitment strategies in the Built Heritage sector.

2. Understanding Britain’s built heritage sector

Britain has over 6 million historic buildings, a definition that refers to any building constructed pre 1919 (NHTG, 2008). These buildings play an important role in the future of Britain’s built environment. The upkeep and maintenance of Britain’s historic buildings represents a large proportion of the mainstream construction industry, with the UK spending approximately £5 billion a year on conservation and restoration within the historic built environment (NHTG, 2008). There is a large network of skilled building professionals needed with the knowledge and understanding of the methods and materials required to restore, maintain, conserve and repair the UK’s historic buildings in line with a strong conservation philosophy, ensuring these buildings will be around for future generations to enjoy.

2.1. Low levels of workforce within built heritage conservation

The last 10 years have shown an increasing awareness of the major developing skills shortage within the Built Heritage sector. Employment within the sector falls within two main categories, craft and professional. According to the sector skills organisations, traditional building craft skills such as stone masonry and thatching are in noticeable short supply (NHTG 2005). There seems also to be a
distinct lack of traditional building knowledge and awareness within professional practitioners in architecture and surveying (NHTG, 2008). The two areas of employment, craft and professional, seem to have different issues in terms of employment and skills shortages. Feedback from the craft side of the sector demonstrates that although building owners and people specifying works to historic properties may realise the need for a specialist, they often struggle to find one or have to wait long periods until someone appropriate is available (NHTG, 2005). However within the professional side of the sector, much of the work to historic buildings is being carried out by practitioners who are not trained in building conservation and this can often result in unsuitable works being carried out, sometimes having devastating and irreversible effects (NHTG, 2008).

The PhD research from which this paper is drawn, focuses more specifically on the professional side of the sector, an area which appears from the available literature to be much further behind in terms of identifying key issues related to skills and knowledge gaps and in discussing strategies to address these issues. Over the years the conservation of Britain’s historic fabric has expanded from simply the craftsmen and their skills and has matured “into a professional discipline with its own body of knowledge, practical methodology and professional community of practitioners and educators” (Matero, 2007 p.287). When referring to the professionals of Built Heritage conservation, it is important to define who this professional community consists of and what their remit is. For the purpose of this research, the professional within the building conservation sector includes architects, building surveyors, building control officers, planners, conservation officers, civil engineers, project managers, conservation material specialists and anyone who works at a professional level and whose role has an impact on works to or affecting historic buildings.

When considering the need to recruit more people into building conservation, it is important to look at what already attracts people to building conservation career paths and at what stage in their lives the decision to enter the sector is made. Presently the main route into historic building conservation is via the built environment and construction industry. The majority of training in conservation takes place at post graduate level following an undergraduate course in a construction related subject such as architecture or surveying. In the recent past questions have been raised as to the amount of contact undergraduate students on courses such as architecture and surveying actually have with conservation. This in turn has an impact on the knowledge about conservation philosophies and techniques that the construction professionals possess (ICOMOS 2005, NHTG 2008).

For some time within the sector, there has been alarm and subsequent debate over the diminishing amount of building conservation on mainstream construction related courses such as architecture. The International Council on Monuments and Sites (ICOMOS) held a one day workshop in Bath in September 2005 to discuss the need to understand the importance of including conservation in architectural education. The workshop report highlights ICOMOS’s underlying argument that whilst most architects are at some point in their career involved in the preservation and enhancement of pre 1919 buildings or their surroundings and their suitable adaptation and extension to present day needs, the current architectural education system focuses almost entirely on the design architect with
conservation rarely making an appearance (ICOMOS, 2005). As well as the potential of imparting historic building knowledge through university courses, there is also an important role of generating in younger people an appreciation and inspiration for historic buildings and the need to conserve them appropriately.

2.2. Informing young people about building conservation

The importance of informing and educating the young about the value of historic building conservation is not a new concept and was raised in 1975 at the end of the Council of Europe’s European Architectural Heritage Year in the Amsterdam Declaration, which emphasised that “the architectural heritage will survive only if it is appreciated by the public and in particular by the younger generation. Educational programmes for all ages should, therefore, give increased attention to this subject” (Congress on the European Architectural Heritage 1975 p.1). English Heritage plays a large part in educating the general public, helping them to understand the value and importance of the historic environment with the aim of passing on the desire to care for it. The Department for Culture, Media and Sport (DCMS) has stressed the importance of the historic environment as an educational resource as both a valued learning experience and as a tool for other disciplines. Their report *The Historic Environment: A Force for our Future* states that "whether at school, in further and higher education or in later life, the fabric of the past constitutes a vast reservoir of knowledge and learning opportunities" (DCMS, 2001, p. 17).

In 2005 the Heritage Lottery Fund published the results of an evaluation of *The impact of HLF funding for curriculum-linked learning for 5-19 year olds* and in 2006 the National Trust published *Changing Minds: the lasting impact of school trips*. These studies reported that heritage education is linked to all areas of the school curriculum although history, art and design, science and geography were the subjects referred to most. There is an indication within the available literature (DCSF 2004, HEREC 2007, Kendall, S., Murfield, J. and Wilkin, A. 2007) that effort is being made to introduce more vocational style learning into the classroom as well as engaging young people with learning experiences outside the classroom. Aspects of Britain’s heritage and the built environment can be explored through many different school subjects however Kendall, Murfield and Wilkin (2007) have identified, through teachers, head teachers and governors, that whilst school staff appreciate the built environment as a means of cross-curricular applications, they are often uncertain of how to integrate it into lessons. The idea that the heritage message is not reaching career conscious young people is echoed by the NHTG who report that a “lack of awareness of the career opportunities, a poor image of the heritage sector, and less than adequate coverage of traditional building techniques in relevant mainstream undergraduate curricula are thought to be responsible for the lack of interest in the sector by new entrants” (NHTG, 2008, p.13). To understand better the skills gaps and shortages within the professional side of the Built Heritage sector requires an understanding of the factors that influence career choices made by young people.
3. How young people make career decisions & the importance of perception & image

In England careers education supplemented by personalised information, advice and guidance is provided to all young people. The aim of which is to provide a structured introduction to the potential opportunities ahead (DCSF, 2009). Careers education helps young people to develop the knowledge, confidence and skills they need to make well-informed choices and plans that enable them to progress smoothly into further learning and work (DCSF 2009). Gatewood, et al. (1993) explains that the career choice process can be characterised by a series of decisions made by an individual as to which jobs to pursue for possible employment. Encouraging more young people to consider a professional career in the Built Heritage sector requires careful consideration as to how this process of choice occurs and a detailed look at what influences this choice.

It is believed that a major component of early job choice decision is image (Fombrun & Shanley, 1990). Foskett & Hemsley-Brown (1999) believe that images form from early childhood and are the product of a range of stimuli. These include personal contact with a job or profession, for example doctors or teachers, images conveyed by adults regarding careers and jobs they come into contact with, such as bank workers or solicitors and images portrayed by a range of media that young people are exposed to, for example footballers or chefs. Once received, these images are filtered and reworked in line with the individual’s perspectives and personal circumstances. If young people are not exposed to various career areas either through the media, a third party or from direct contact, these career areas remain invisible to the individual (Foskett & Hemsley-Brown 1999).

Foskett & Hemsley-Brown (1999) discuss invisibility and comprehensibility and form the distinction between children’s world and adult’s world jobs, highlighting that children are only exposed to a portion of the jobs and careers available. Each young person is subjected to a different life experience and ‘chance personal events’ that will impact in either a positive or negative way on different young people (Hodkinson & Sparkes, 1997), for example, the child of an engineer will have far greater understanding of engineering than a child who is bought up among rural trades (Foskett & Hemsley-Brown, 1999). It could be argued that much of the work carried out by heritage and conservation specialists is beyond the realm of most young people and many adults too and therefore could be described as an invisible element within the construction industry. The formation of ideas and perceptions of possible future career aspirations develop from early in childhood and in order to reverse the imbalance of stereotypes formed through partially invisible careers, Foskett & Hemsley-Brown (1999) suggest that young people need to be ‘drip-fed’ through long exposure to information about these careers throughout their school years. The way young people perceive different career paths and jobs and the influences that young people are exposed to and how they see themselves in relation to the world of work is complex but essential to understand if lessons are to be learnt in regards to understanding the lack of people choosing to work with historic buildings in the UK.
Identifying how people make career choices has been an area of research for the past 100 years since Parsons (1909) proposed the concept of person-job fit. Since then career researchers have attributed career decision making to a number of variables including, vocational interests, skills, personality, values and perceived abilities (Russell, 2001). These personal variables can be linked together to form ‘work values’. Elizur & Sagie (1999) explain that work values refer to career related desires such as making money or contributing to society. Duffy & Sedlacek (2007) refer to work values as to what outcome an individual desires from work and what components of a job are important to them. Matching the work values of particular jobs to an individual requires that individual to identify a sense of how the self will fit into various work roles, a perceived occupational efficacy. The perceived self-efficacy as an expression of personality needs then to be ‘matched’ with particular characteristics of an occupation (Holland, 1985). Once this sense of self and the favoured work values have been recognised they can be applied to the images and perceptions of various jobs and career paths held by the individual to find compatibilities (Hodkinson 1998).

There is a possibility that what attracts people to conservation and its work values or working culture is different to what attracts people to the more mainstream built environment and construction disciplines and their work values and therefore these possible cultural differences and the possible effect on recruitment need to be explored.

3.1. Working cultures explored

“The object of conservation is to prolong the life of cultural heritage and, if possible, to clarify the artistic and historical messages therein without the loss of authenticity and meaning. Conservation is a cultural, artistic, technical and craft activity based on humanistic and scientific studies and systematic research.”
(ICCROM, 1995 p.5)

This definition of conservation is taken from the International Council on Monuments and Sites (ICOMOS) Training Guidelines for Conservation and portrays conservation as a cultural and artistic activity that is married with technical aspects within both humanistic and scientific spheres. The question “Does culture impact on recruitment?” is not one concerned with the ‘cultural’ subject and nature of the conservation of historic buildings, but one which questions the type of people attracted to the profession and the ‘working culture’ or environment that is present within it and how this may differ from other working cultures present in the built environment and construction industry.

Much of the literature suggests that the construction industry suffers from a poor image and this is often linked with the working or organisational culture that exists within the industry (Egan, 1998; Greed, 2000; NHTG, 2008). However the literature on culture in the built environment was found to have few references to the Built Heritage sector. Greed (2000) writes about the negative culture that, she argues, exists within certain elements of the construction industry and describes construction as "a
hostile world inhabited by the construction tribe, which is itself divided into competitive, aggressive sub-tribes, corresponding to the different professional bodies and specialism’s within construction" (Greed, 2000, p. 1). Dainty et al. (2000) corroborates this, describing the on-site construction culture as being a masculine, threatening environment where conflict and crisis are engrained. However, as Gurjao (2008) explains, although the image of construction is one associated with brick laying and brute strength, the industry is becoming high-tech, requiring more mental strength in a complex industry that includes consultancy, design, manufacturing and supply. Gurjao further highlights that the construction industry is making significant changes to enhance inclusivity and diversity in the workforce and argues that as well as the current recruitment initiatives, the industry also needs to focus on translating qualifications into employment and the retention of its diverse workforce. The construction industry consists of many sub groups with a range of cultures and while Built Heritage is one of those sub groups, the cultural attributes of this sector may not exhibit the negative and masculine culture attributed to construction as a whole (Buxton 2001). This is a potentially critical point to note when considering how best to attract people to careers in conservation. The construction industry may be improving its working culture but this in turn needs to filter through to the general public in order to change people’s perception and image of the industry if it is to attract more young people as the main route through to historic building conservation.

4. Implications for the built heritage sector?

If the Built Heritage sector is to launch an effective strategy aimed at increasing the number of young people entering the sector, there are many issues that will need to be considered.

Young people are faced with a myriad of paths and directions when it comes to making career decisions. To contextualise the complexities of the choice and decision process in relation to how one best markets a career, the decision making process of the young person could be viewed as a journey in a careers landscape (Foskett & Hemsley-Brown 1999). This is a three dimensional view of the whole education and careers field where the hills and mountain ranges represent different career areas which vary in height and width in proportion to the status and achievement required to reach the top. Mountain ranges represent linked career areas that share common foothills. Each individual will view the landscape differently depending upon where they are standing and what has influenced them in their lives. Some will focus on the foreground while others only see the mountain peaks (Foskett & Hemsley-Brown, 1999). Within this landscape each individual will aim for a different part of the landscape depending upon their personal experience. They may have heard ‘travellers tales’ about attractive destinations or know someone who has been there. Likewise, if the individual has never heard of a destination, they will most likely not end up on that mountain, or may wonder onto it by ‘accident’. The implications for those wishing to attract people to certain careers mean that they must ‘sell’ their mountain at the boundaries of the landscape (Foskett & Hemsley-Brown, 1999).
In the case of the Built Heritage sector, it would involve not only advertising ‘mount heritage’ but also providing travellers with a map, a description of the whole experience that is travelling to, climbing and viewing ‘mount heritage’ from the top. It would also involve promoting it through local villagers who are in contact with the travellers and speak their language, even though many of them will not have been to ‘mount heritage’ they must be persuaded that it is a good destination to recommend to others (Foskett & Hemsley-Brown, 1999). The complexities of the careers landscape needs to be understood by the stakeholders within the Built Heritage sector in order to develop effective promotional and navigational tools. The skills shortages and skills gaps that exist within the Built Heritage sector may well be caused in part by the lack of awareness of careers in this area but also the lack of a clear directions on how to reach ‘mount heritage’, what the journey will be like, how long it will take and what it will be like once travellers get there.

One aspect of effective promotion is the naming and branding of ‘mount heritage’. This paper uses the terms ‘Built Heritage sector’ and ‘historic building conservation’ to describe the area of work that involves working with buildings with historic values. However others within this sector also use terms such as ‘building conservation’, ‘architectural conservation’, ‘refurbishment’, ‘restoration’ and ‘ancient buildings’ which is reflected in the names of societies, professional bodies and professional titles for job roles, such as historic building surveyor and conservation surveyor. Tadelis (1999, p. 548) asks the question, “What is a name?” and explains that it is a “label that summarises the physical attributes, past behaviour and other characteristics of the carrier of the name” and that “we label everything we can perceive or recognise with a unique name in order to distinguish it from everything else in our world”. The Built Heritage sector does not have a single unique name to distinguish it from other careers, but has an array of adopted names that are used by people within the sector. The lack of a single unique name is likely to throw up issues when it comes to branding and marketing of ‘mount heritage, conservation, restoration and refurbishment’.

Foskett, Dyke, & Maringe (2003) highlight the importance of marketing and promotional strategy in the influence of choice by young people, which corroborates research findings that indicate that mere exposure to information is central to an individual’s perception of image and that exposure to a greater amount of information positively correlates with the intention of pursuing employment in that field (Gatewood et al. 1993). This suggests that the more times people are exposed to ‘historic building conservation’ the more chance it has of being explored as a future career option by some young people.

As the previous literature highlights, young people are exposed to different experiences, situations and backgrounds which will help to shape the decisions and choices they make (Foskett & Hemsley-Brown, 1999). Providing the Built Heritage sector with a recognisable name and identity may help to present the sector within the many career options available to young people but it will not necessarily make young people want to take up the subject. For young people to understand what opportunities are available to them and to get excited about potential career opportunities, they to experience what is on offer.
4.1. Promoting historic building conservation in schools

Part of the PhD research from which this paper is drawn, used year 9 (14-15 year olds) students in a North of England school to investigate how young people could be introduced to careers in historic building conservation. The school study was carried out in partnership with the North of England Civic Trust’s Heritage Skills Initiative which is concerned with raising the participation in heritage skills and careers. Fourteen students volunteered for the study where they were introduced to the careers available within the Built Heritage sector and taken on an interactive trip to Durham Cathedral. The trip focused on the building itself rather than its historical past, and the students had a chance to meet with the Surveyor to the Fabric and visit the Stone Mason’s yard for an in depth look at how the building is maintained and by whom. The students were then tasked with a ‘heritage careers challenge’ which asked them to research a professional career and a craft based career, such as an historic building surveyor and a traditional leadworker. They had to make career posters detailing what each role involved, where they could train and how much they could earn. This challenge was set up to discover how easy it was for young people with an interest in historic buildings to find careers information about certain jobs within the sector.

The findings of the study show that by interacting with the students to introduce the heritage sector, all of the student’s knowledge of the careers available in the heritage sector had increased and more than half of the students said that they would consider doing work experience in the heritage sector. The feedback from the poster exercise demonstrated that the majority of the students used Google and Wikipedia to search for heritage careers information followed by the National Trust and English Heritage websites. Only one out of the 14 students had used any of the specialist heritage careers information providers such as the National Heritage Training Group or the Society for the Protection of Ancient Buildings. The verbal feedback from the students was that it was straightforward to find information on the standard careers such as architecture or plastering, but difficult to find any information on the heritage versions.

Applying the findings of the school study to the careers landscape demonstrates that an interactive approach within schools can have an impact on ‘selling’ a destination, such as ‘mount heritage’. However finding the relevant information on getting there is a challenge. This information does exist but is currently not easy enough to access by young people unfamiliar with the organisations. The school study provided a snapshot image of the effectiveness of portraying information to young people about career choices as highlighted in the literature by Foskett & Hemsley-Brown (1999). Months after the school study a second wave of feedback occurred as the teacher involved made contact to express an interest made by one of the students to arrange a work experience placement with a heritage professional which the North of England Civic Trust was able to arrange.
5. Conclusion

Career choice is characterised by a series of decisions made by an individual as to which job to pursue for future employment. The images and perceptions young people hold about certain jobs are accumulated over their lifetime and influenced by a range of stimuli. Young people are only able to perceive jobs they have heard about in some way. If they have no access to certain careers, that path remains invisible to the individual. The complexities that make up the career choices made by young people and the impact this information has on the Built Heritage sector can be viewed using the analogy of a ‘landscape’, made up of mountains and foothills with various paths to be travelled. Each individual has a different view of the landscape depending upon their perspective and focus point. ‘Mount heritage’ lies within the landscape but currently without a clear distinctive name or route map explaining to the potential traveller what the route is like, how long it will take and what it is like once the summit is reached. Research findings suggest that close interaction with schools can have an impact on introducing the possibilities of a career in the Built Heritage sector but more needs to be done to promote the agencies out there who have the information or ‘route map’ on how best to access career paths. It is hoped that this paper can demonstrate to the sector that a clear view of the ‘heritage landscape’ needs to be understood if it is to effectively promote itself effectively to young people in an attempt to address the low workforce levels within historic building conservation.

References


What Do Production Managers Mean by Saying “I Appreciate the Freedom on the Site”

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Abstract

Production managers from construction often explain that they appreciate the freedom on site. But what do they really mean with freedom? Is it the freedom to influence decisions related to the project or the process, e.g. develop and use technical solutions that are perceived to be better than what the designers suggest? Is it the freedom to influence their own working situation, such as when to work, where to work, what project to work on, what pace to work in, with whom to work etc. Or do they by freedom mean to work outdoors under a blue shining sky without the limitations of office walls? The individual interpretation of the word freedom has to some extent been focused upon in the literature. Individual freedom is often interpreted as the possibility to influence or to make decisions. It is also often related to a social context. On the same time there is a trend in construction for increased standardisation. With better knowledge of what the production managers mean by freedom the firms can chose what to standardise in order to avoid decreasing the feeling of freedom that production managers appreciate.

Little research regarding how production managers actually understand freedom has been identified. The purpose of this paper is to increase the understanding of what production managers in construction mean when they say: “We appreciate the freedom on the site”. By interviewing production managers from four Swedish companies related to construction, a picture has been developed. The paper employs a deductive interpretative approach where open-ended interviews with nineteen production managers are analysed. Field notes and recorded interviews have been analysed using a comparative method. To increase the understanding of what is included in the freedom concept, as it is used by production managers, can enable construction companies to increase their competitiveness and flexibility in projects by increasing standardisations without decreasing what production manager’s value as freedom. Some key elements of how site managers value freedom are identified and presented.

Keywords: standardisation, construction projects, production management, individual freedom
1. Introduction

When focusing on literature regarding how to avoid uncertainties related to construction, the answer often suggested is to increase standardization. Different suggestions of how and what to standardize can be found. E.g. Santos, Formoso, et al. (2002) suggest that standardized management approaches such as visual management, total productive maintenance, time-based competition and value based management should be more integrated. Hiyassat (2000) agree to the same point and argue that the implementation of ISO 9000 standards could be used as a means to increase standardizations. Hsieh and Hsieh (2002) take a different approach and question whether job standardization and job burnout may be related.

Alongside with the debate regarding increased standardization in construction a debate concerning the individuals feeling of freedom is on the rising. The perceived needs of freedom on the level of middle managers in organizations have already been identified and to some extent analyzed (e.g. Djebarni 1996; Styhre and Josephson 2006). Kondo (2000) argues that “…sense of responsibility towards work cannot be created by treating people as a substitute for a machine or robot, …” he continues “for the motivation of people, we should try to allow them as much freedom as possible in the means and methods they use in performing their work” (p. 7). However, little research, that focuses on the construction industry and especially the production managers’ role and their view of increased standardization or need for freedom has been found.

Questions whether it could be the freedom to influence; when to work, where to work, what project to work on, what pace to work in, with whom to work or the freedom to work outside without the boundaries of office walls, freedom to develop own technical solutions that are better than the designers solutions still remain unanswered. Also if it is one or all of these aspects of freedom that is appreciated by production managers in construction has not yet been sufficiently focused on. Could some of the presented freedom factors be perceived as more important than others by production managers? It is valuable to explore if or how production managers perceive the importance of, and what they actually perceive as, freedom. Maybe freedom is what production manager need to find value in their work? If production managers value freedom how do they perceive the need for increased standardisation that often is stressed in the literature (Egan 1998; Gibb and Isack 2001)?

The main question for this article is to explore what production managers mean by saying “we appreciate the freedom on site”. The results will be used to investigate how the concepts of standardisation and freedom interrelate and if what organisations include in standardisation must exclude what production managers perceive as freedom?

2. Production managers

In line with Schaufelberger and Holm (2002) foremen, site-managers, projects-managers and project-engineers are referred to as production managers in this article. They are key players in Swedish
construction projects and project processes, in charge of procedures and assess the conditions and uncertainties in their projects. Often without consulting superiors (Winch 2002). Individuals with these roles are for the purpose of this article distinguished from production managers from other industries even though they are, in some literature, referred to as middle managers from large hierarchical originations e.g. Styhre and Josephson (2006). However when comparing middle managers in the classical *line manager system* to production management in construction organizations differences in work roles are identified, both concerning how originations have implemented standardization and how much freedom the individuals are given.

To further motivate why the roles of production managers in construction should be distinguished from other production managers, the different organizational structures can be evaluated. Large hierarchical organizations often adopt line management where the task and responsibilities of middle managers are clearly defined and restricted (Holden and Roberts 2004). Compared to production managers in Swedish construction organizations, the individual’s responsibilities, and their connection to the larger organization vary (Styhre and Josephson 2006). Also controllability from higher management level of the two production managers’ roles (line management and constriction) differs dependent on in what organizational structure the production manager is acting.

Another identifiable difference between the role of production managers in production and construction is the level of decentralization in the organizations. Production managers in construction often describe their role as “*running their own firms*” or “running a company within the company” while production managers from production originations e.g. car/truck or furniture manufacturers instead perceive their roles as part a bigger organization (Holden and Roberts 2004). Holden and Roberts further argue that the middle managers often feel trapped in their roles in their organization.

Simu (2009) in her thesis about risk awareness among site managers at NCC argues that site managers are made responsible for making projects succeed with “*legal responsibility for the work environment and built environment, financial responsibility representing the main contractor, quality and functional objective set in the contractual document and responsibility for keeping to the timeframes*” (Simu, 2009, p.5).

Since the production manager roles differ between construction and production industries, perceived freedom factors in the roles may also vary. It would therefore be inaccurate to equate their roles in this article. Before the freedom concept is further analysed the organisations perceived need for increased standardisation will be developed.

### 3. Standardization in construction

Standards are mainly implemented in construction through designated roles for project personnel, standardized contracts, governmental rules, standard procurement methods and standardized work
processes (Gibb and Isack 2001). Santos, Formoso et al. (2002) argues that “standardisation involves the development of pre-set procedures and referential materials for performing a particular process or operation” (p.27). However few standardized approaches of procedures to deal with uncertainties have been successfully implemented in the Swedish construction industry (SOU 1997:177). This leads to that the backgrounds and experiences of each individual production manager are reflected in their way of dealing with upcoming uncertainties. The difference in assessment results in that production managers from construction run projects differently (Styhre 2007). Such non-standardized approaches to construction projects may lead to misunderstandings between subcontractors and on-site workers (Knauseder 2007). Misunderstandings can lead to unnecessary activities and waste (Womack and Jones 2003; Liker 2004; Josephson and Saukkoriipi 2005).

The individual differences in project approaches may also lead to that how a production manager encourages a subcontractor to act on one project may not be acceptable for another production manager in another project of a similar nature. Much depends on individual preferences and on the contingencies that arise. This means that the production managers’ background, experience and style have considerable effect on the final product and its impact on customer satisfaction (Josephson and Saukkoriipi 2005; Simu 2009).

That there exists few standardized approaches to deal with uncertainties on production manager level can partly be blamed on that the construction industry consists of different kinds of projects (Gibb and Isack 2001), that every project is viewed as unique (Josephson and Hammarlund 1999; Craig and Sommerville 2006) and that every project has its own organization with few connections to the larger organization (Winch 2002). As an example Gibb and Isack (2001) in their study regarding the clients view of standardizations argues that the construction of factories, warehouses, education, health, offices, environments, shops, roads, water, gas, communications, and rails differs to such an extent that they should be viewed and analyzed differently. They interviewed individuals from all categories of construction work and weight them to get a holistic picture of the industry.

A strategy to increase customer satisfaction could be to reduce the uncertainty and to increase the predictability and continuity of construction processes. This means efforts to reduce the variability of materials, processes, procedures and organizational structures - in short increased standardization (Gadde and Håkansson 2001; Santos, Formoso et al. 2002). However Styhre and Josephson (2006) state that neither the managers’ influence on projects nor their impact on customer satisfaction have been focused on. In order to increase the reliability of projects increased standardization of products; processes and project organizations is often suggested (Santos, Formoso et al. 2002; Josephson and Saukkoriipi 2005; Josephson and Saukkoriipi 2009).

When implementing standards the balance between standardization of activities and the need for motivation of the employees through their influence on the creation of the standards must be emphasized (Womack and Jones 2003; Liker 2004). If standardization principles are to be incorporated in
construction projects the production managers have to adapt to them and accept them. This means moving away from their own ways of assessing the uncertainties. An important question to ask is if this change would affect what makes the individuals motivated to continue working in the industry. If increased standardizations are implemented, may the feeling of freedom be lost?

4. Freedom

Freedom is a complex term with many meanings and interpretations. Prendergast (2004) refers to Isaiah Berlin (1969, p.131) who distinguished between two concepts of freedom (liberty) “a negative view in which freedom consists in “not being prevented from choosing as I do by other men” and a positive view in which freedom consists in being ones own master”. Prendergast (2004) continues by arguing that according to Taylor (1979, p. 213), positive freedom involves “exercising control over one’s life”. In contrast to Berlin, Taylor views negative freedom as an opportunity concept, where being free is a matter of what is open to the individual to do regardless of whether or not anything is done by the individuals to exercise the options. As can be identified from this is the difficulty to create a truism about what freedom really is. Sandoff and Widell (2009) presents the picture below (figure 1) and discusses the difference between docility at work and freedom at work. Their reasoning presents the two terms as mutually exclusive and uses docile instead of standardization. However equalities between the terminologies often used regarding standardization can be found.

Prendergast (2004) quotes Sen (1999, p. xii) who states that freedom is rather interpreted from individual to individual and culture-to-culture. He claims that it is important to give simultaneous recognition to the centrality of individual freedom and to the force of social influences on the extent and reach of individual freedom. Ljungqvist (1987) who writes about freedom from a psychological perspective assumes that freedom is found somewhere on a scale between total dependence and total isolation. Prendergast (2004) argues that in order to counter the problems that are faced when defining freedom, individual freedom has to be recognized as a social commitment to adapt to the rest of society and other individuals needs.

Both Ljungqvist (1987) and Sandoff and Widell (2009) describe freedom from a psychological aspect where the focus does not have to be actual freedom (known as liberté in France or liberty in America) but what is perceived as freedom for the individual. Sandoff and Widell (2009) suggest that if you feel compassion for your work, if seek pleasure instead of pain and allow yourself to take on responsibilities you will feel freedom in your role. This feeling of freedom might be different dependent on the individual and therefore perceived freedom is difficult to define. This fact raises the question, what is perceived as freedom, to another level where the individuals has to be understood and the individuals needs must be taken care of.
4.1 Freedom from a production managers perspective

Production managers can be described as both leaders and followers (Djebarni 1996). Krause (2004) investigates whether leaders can influence the innovation process of their subordinates by granting them what she calls freedom and autonomy. She found that granting freedom and autonomy was positively related to various types of innovative behavior, including the generation, testing, and implementation of ideas. Sandoff and Widell (2004) refer to Andrews and Farris (1967) who concluded that providing subordinates with more freedom to explore, discuss and challenge ideas was associated with higher innovation performance. In a study conducted by Sthyre and Josephson (2006), 13 out of 13 site managers claimed that they “appreciated their jobs and the freedom entailed by the work role” (p.524). Further in the study the site managers “pointed to the creative part of their work, that they actually contributed to a real building” (p.524).

According to Djebarni (1996) production managers need some freedom for assessing uncertainty, assemble the project organizations, making judgments and taking decision as work proceeds. He claims that this is relevant in order for them to find value in their work. Djebarni 1996; Chen and Partington 2006; Styhre and Josephson 2006; Styhre 2007; Simu 2009 view the production managers as individuals in charge of the operation who carry responsibility for the on-site activities during the production phase. The production managers are assumed to ‘create value’ for the customer and thus also for the end user of the product (Josephson and Saukkoriipi 2009). Simu (2009, p.12) describes the site manager and their efforts as “vital to the production process”.

The managers’ need for freedom and independence could also to some extent be interpreted as a natural reluctance to change. This conservative bias among managers and coworkers is common as explained by Bruzelius and Skärvad (2004). An unwillingness to change may not be specifically directed towards increased standardization or reduced freedom. Chen and Partington (2006) have suggested that a number of well-established standards that reduce variability have already been implemented in the production managers’ practices regarding tools, appropriate techniques and acceptable concepts. If Chen and Partington (2006) were correct in their suggestion it would indicate that production managers are not more unwilling than other managers to accept changes that lead to less variability in the procedures to make their work easier. Chen and Partington further argue that production managers may even be more willing to accept changes because the existing standards presently used have been recently implemented and are not as well established as in other industries.

Simus (2009) study of risk awareness among site managers agree to the reasoning of Chen and Partington (2006). It suggests that site managers have a greater need for rules and supervision than other project managers from other industries but in similar positions (Simu 2009 p. 114). She continues her argument (p. 114) by stating that production managers from construction are more confident in their professional role than project managers from other industries and maintains that production managers from construction have “a higher threshold for working at the knowledge base level” (ibid. p. 114). Simus
results stand in conflict with the understanding that production managers require more freedom in their role than other individuals in managerial positions.

Sandoff and Widell (2009) somewhat continues this reasoning by identifying which factors that can make individuals docile workers or free challenging co-workers which moves the freedom concept further. They state that individual feel freedom when 1. There is an internal locus of control (individuals can affect the processes) and 2. there is a coherence between the individual and organizational values. They further divide this into four categories of employees: Integrated, role constructor, follower and victim as presented in figure 1.

![Figure 1: Sandoff and Widell (2009) presentation about docility and freedom in the individuals work role.](image)

5. Methodology

The study presented in this paper is part of a more extensive study that focuses on production managers work situation in four Swedish construction related companies based in the Gothenburg region. After 20 open ended qualitative interviews with follow up questions the interviewers realized that the importance of freedom was often presented as an important reason to why individuals choose to work as production managers in construction. In the interviews a need for standardization was also presented. Here, we have analyzed the results focusing specifically on the perceived need for freedom and standardization in the individuals work roles and what production managers really mean by saying “I appreciate the freedom on the site”.

Each interview has been analyzed and recapitulated. Significant observations and statements from the interview, mainly with regard to standardization and freedom, were noted, one observation per note. The observation was discussed and placed on a whiteboard. We have taken turns to put up the notes to avoid individual biases. Each of the researchers has contributed with approximately 10 - 15 observations from every interview. After discussing an interview we individually, on a scale from one to five, estimated the
credibility of the interviewee and the researchers individual understanding of how the interviewee 1. today thinks of the industry in regards of standardization and need for freedom and 2. how s/he would prefer the industry to become.

When all interviews from a company had been discussed, characteristics for that specific case were sought after. The whiteboard was then further divided into two sections, to the left, freedom and to the right standardization, upper part of the board, positive aspects and lower part of the board negative aspects. When all three organizations had been analyzed different categories were identified as reoccurring in all cases.

After the analyses of the interviews the results have been presented and discussed with 18 actors from the Swedish construction industry, all with production manager roles, in a two-day workshop session with a similar method as Gibb and Isack (2001) have used in their study. Some of the results especially regarding their interpretation of freedom were discussed intensively. Parts of the discussion and conclusions bases on the ideas from this workshop.

6. Results

In the interviews the importance of maintaining the already high level of freedom was often presented as a key issue for the production managers. However it was interesting to note that also an increased degree of standardization was suggested to be necessary in the site managers work role. Increased standardization was often viewed to lessen the responsibilities, which was presented as both positive and negative. We have interpreted the answers from the interviews, as there exist different levels of standardization and freedom. In some levels freedom and standardization does not have to affect or exclude each other. E.g. increased standardization of scheduling was by some interviewees presented as a trespass on their integrity and ability to control their projects. Others interpreted standardization of scheduling as a relief of responsibility.

Others interviewees interpreted freedom as the possibility to influence with whom to work and to allowed to focus on the teambuilding of the project organization, which they in turn thought, should not be standardized. One interviewee stated, “every team is unique and no standardized solution can be found to manage people”.

Another example of interpretations of freedom was the purchasing of goods. Some production managers viewed this process as important not to standardize. They argued that to purchase from non-standardized suppliers was important since the best prices could then be found for each purchase. It was argued that the freedom to find and suggest other materials or other solutions to the customer where important to deliver a better product and to reduce costs. They argued that the prices from suppliers differ significantly and it was suggested that if only one supplier was chosen s/he could take advantage of the situation and raise the prices of the products. Other interviewees perceived a central purchasing organization as the most
beneficial system and stated that a predefined supplier makes one know where to call and what to expect, and argued that long-term relationships with suppliers would prove valuable also in the long run. One of the interviewees suggested, “if we don’t use our pre-established purchasing channels we wont be able to negotiate prosperous conditions”. Some argued that the cost of the time it takes to try to find the cheapest gypsum boards or windows easily exceeds the cost of using a central material supplier with sometimes slightly more expensive goods.

Also the economy and autonomy of projects was presented from positive and negative aspects. Some production managers maintained that the part of their work that focused on economy increased their insight in project success and viewed the autonomy from the bigger organization as imperatives for them to control the projects and “run my own company within the organization”. Others suggested, “Economy and accounting is the most boring part of my job, I would actually be glad to be rid of it”. Some suggested that this was mainly secretary work and the autonomy of projects decreased their participation and relation to the bigger organization. Others suggested that the decentralized organizational structures provided them with authority and controllability.

In regards of what was perceived as freedom some of the production managers answered that the projectified nature of the industry could be perceived as freedom in itself. They stated that the feeling of starting on something new, leaving the old mistakes behind with every project was a freedom factor with significant importance.

When discussing the interviews and the perceptions from the interviewees’ situation analysed, it was identified the individuals had a clear desire to move towards increased standardisation in their work roles, the right half of the figure (figure 2). It was also identified that few of the individuals were perceived to demand more freedom than they already have in their present work roles.
These results can be interpreted in different ways. Some of the production managers may feel that their organizations have little control or support of the undertaken projects and feel that s/he is left with too much or too many responsibilities. The trend that could be interpreted in the movement of the arrow can instead be that the organization manages controls the production managers to an extent where they feel constrained. It must however be stressed that the results in figure 2 only represents the researchers perceptions of the interviewees. Therefore the reliability of these observations may be questioned. The observation is still interesting to further discuss.

7. Discussion and conclusion

The discussion if increased standardization in construction projects has to decrease the production managers feeling of freedom and further what production managers really mean by freedom is interesting but difficult to undertake. The interviewee’s answers have been interpreted by the researchers and discussed after the interviews. Furthermore the study cannot be fully representative in giving a picture of the construction industry. Only 20 interviews and a few workshops mainly with actors from the Swedish construction industry can hardly represent a global picture. However the need for freedom among production managers is important to attend to since it is arguably them who actually create value in the construction process.

The words freedom and standardization can both to some extent be regarded as negative or positive. Gibb and Isack (2001) drew the same conclusion when focusing on standardization and Prendergast (2004) when considering freedom. When exploring the terms from the perspective of production managers in Swedish construction, our perception is that standardization does not have to be viewed as a threat to their work situations and feeling freedom. In some situations standardizations can be viewed as a means of avoiding too much responsibility or a too heavy workloads. The Interpretations presented regarding
freedom is also represented in a similar way. Too much freedom may arguably be perceived as unbeneficial for the processes and the projects.

Further it can be identified that the picture presented regarding standardization and freedom by the actors from the construction industry involved in this article is somewhat different from picture drawn up in the literature. As can be expected the terms are related more to the individuals work situation but also interpreted in a more holistic way than presented in e.g. Styhre and Josephson (2006) and Djebarni (1996) in regards of freedom and as presented by Santos, Formoso et al. (2002) or Ungan (2006) in regards of standardization. All aspects have been brought up in the interviews. From standardizing the screw head to only need one bits to release time for the blue collars, to increasing the freedom created when finding more individual time and creating a more innovative environment.

It could after interpreting the interviewees be argued that the terms standardization and freedom should not be viewed as antagonists to each other, at least not in the eyes of production managers. Instead the terms, when referred to on management level in Swedish construction project organizations, are suggested to have the ability to complement each other to some extent. The organizations need for increased standardization as presented by Josephson and Saukkoriipi (2005) does not have to hamper the production managers perceived need for freedom. Increased standardization can even create more time for the production managers so that they can focus on what they perceive as the most important tasks.

This view is strengthened when also considering results from the workshop with actors from the construction industry. As an example “comfort/safety” where suggested as key terms when focusing on both freedom and standardization. It is recognized that similarities between the terms are few but so are also the direct contradictions. Some contradictions that were discussed in the interviews and also in the workshop was restrictions and predictability that are connected to standardization, and flexibility that is related to the freedom. However, different categories of flexibility and predictability may have been considered when dividing the terms freedom and standardization. This difference does not have to exclude one term or the other in the construction process. Figure 3 presents how the two terms were perceived in the workshops. The outer circles show the direct contradictions between the terms (what cannot be combined) and the circle in the middle shows perceptions that can be combined. By shrinking the circle in the middle through collaboration and communication the distance between the extremes may be decreased.

![Fig 3. Inclusiveness and exclusiveness between standardization and freedom as presented in the workshops.](image)
The reasoning above suggests that the two terms standardization and freedom does not have to be entirely mutually exclusive in the minds of production managers.

With increased standardization the need for taking critical decisions may be decreased. Even so the production managers will still be managing alone on the work sites and their role will not be perceived as less importance if increased standardization is implemented. It is thus important that the production managers are encouraged to find value in their work and if the feeling of freedom is a means of finding this value it should be maintained to some extent. It becomes more important to understand what aspects of freedom production managers appreciates and thus what aspects of standardization should be focused further on by the construction organizations. I think the most effective way of implementing the “right” standardizations would be to simply involve the production managers in the standardization processes as suggested by (Ballard and Howell 2003). Also if production managers are involved in the actual implementation process the standardizations are more likely to be accepted and to succeed on the work sites.

Since individuals who have the production manager role carry much responsibility (Josephson and Saukkoriipi 2005; Simu 2009) and that they are the ones who actually creates value for the customer or at least the ones who ensures that the building process continues hopefully on time and on budget. Production managers are generally highly competent and have great knowledge in their field. It could be argued that it would be unjust to compare them to middle managers in large hierarchical organizations. Production managers in constructions acts mainly on own authority, they are more likely to take own decisions in critical situations than line managers in production organizations.

### 7.1 What do production managers mean by freedom

After the interviews and the workshop the question, regarding the freedom concept, as used by production managers in the Swedish construction industry is still difficult to clearly answer. Whether it could be the freedom to influence; when to work, where to work, what project to work on, what pace to work in, with whom to work or the freedom to work outside without the boundaries of office walls, still in some perspectives remain. However we can now present our understanding of what was presented to us during the interviews and the workshop. We hope that this will shed some light over what production managers really mean when they say “I appreciate the freedom on site”.

The perception after the interviews is that production managers have to carry many responsibilities. They have complex working situations and they feel that they must be in control of what is happening on “their” sites. They perceive their projects as autonomous companies within the companies, but have in many cases expressed some need for standardization of what they perceive as the less important tasks to help them focus on what they perceive as important. During the interviews change was often presented as important which stands in contrast to the conservatism the industry is often blamed for. Better feedback systems were also presented as necessary and some of the interviewees maintained that more efficient
knowledge management was important for the organization. Also some frustration that the organizations did not really take care of their feedback could be interpreted. But during all those suggestions of change they themselves felt that that had to be part of the changes or they had to be able to influence the decisions in some way. Some of the interviewees regarded having to deal with economy as the most boring part of their job. When asked if they wanted someone else to do this task they said -no, and explained that they still wanted to do the economy since it gives them a feeling of control and an increased insight in how their projects is performing.

Therefore we argue that the freedom concept is much related to the ability and possibility to influence and affect the individual work role for production managers. Some of the interviewees connected freedom with responsibility and controllability. We maintain that freedom is and should be individually interpreted from case to case but that there is a trend to focus on the psychological and not physical aspects of freedom. We have not received any answers that connect freedom to avoid the boundaries of office walls. Few of the interviewees have brought up or connected the ability to influence where to work, what project to work on, what pace to work in which could be interpreted as they also perceive these factors as less important or less related to freedom. What on the other hand have been presented as important is the possibility to affect and influence how to work, how to plan their own time and with whom to work. These factors are directly related to the production manager’s ability to influence his direct work environment and role in the project. If these are the most important factors that contribute to the feeling of freedom among production managers in construction and if this is what they mean when they sat that “I appreciate on site freedom” there are seemingly many standardizations that can be made without influencing this freedom.

We hope that this gives an idea about what can be changed but also which parts one should be careful to change when trying to increase the efficiency and effectiveness of construction projects. In the presented case there is a perceived willingness to change. If the production mangers are involved in these change processes the implementation of the changes may be more effective. However, to validate the results more interviews are needed and a study to confirm the results is of value. For further research a more quantifiable study is suggested where the subjects asked to self assess their situations and what they perceive as freedom and standardization.

References


Using Culture’s Influence for Construction Innovation: Challenging the Industry

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Abstract

In the nowadays economic downturn, construction industry has been severely hit. Where at the one hand only negative news is published regarding this, at the other hand there are also appearing new opportunities for this sector to recover. However, at least these developments can give a fertile soil for starting, introducing and implementing innovations. This paper focuses on the positive part of these developments, merely as a challenge, i.e.: How to ‘boost’ construction innovation, and especially how to make a positive use of the influence of organization’s culture for such a ‘boost’? It describes and analyzes an actual case study, existing of an innovation project within a consortium of parties, originating from the healthcare industry and from the construction & real estate industry. The described project ‘Twentse Aanpak’ focuses on an innovative integrated approach for transition of the healthcare industry and its (housing) facilities, which is actually (i.e. December 2009) under roll-out with the start-up of (pilote)projects in The Netherlands. The results are be divided in project-aspects and consortium-aspects. Broadly, the results represent the fact that ‘innovation’ as a goal can only function if it is put seriously on the central management’s actual agendas. Parallel to that, it points out that there is a need for a hands-on approach and defining clear goals when starting (complicated) innovation projects; especially, because of the fact that decision-making about choosing solutions seems still to be very complex. Other results focus on the experiences that (during working with practitioners as well as experts) create a very challenging environment, often resulting into different viewpoints and input, but therefore also assuming different ways of communication-levels and -styles (i.e. different business-cultures). And because of the different branches working together within such an innovation-consortium, the general active business-cultural backgrounds of these branches (here: healthcare vs. construction-real estate) do also lead to differences in behaviour and understanding. A perfect match will be difficult, but being aware of these differences might lead to a better and more succesful (management of the) consortium and its innovative project-results.

Keywords: challenge, construction, culture, innovation, international
1. Introduction

Making new things is obviously not a real problem in construction industry. Everyday designers, engineers, contractors, sub-contractors, suppliers etc. are working on new projects like e.g. tunnels, bridges, houses, offices, energy-plants, etc.

And one of the common aspects that all these activities do in fact need is: investment-capital. However, that is just what is urgently lacking during crisis-times: Especially banks are hardly able and/or willing to supply investment-capital for the development, construction and use of such projects, although the private sector (investment-funds, developers, etc.) would still be willing to supply a certain amount of capital. Especially the private sector is hit by this, whereas the public sector still continues, because of e.g. large subsidizing-programmes and the opportunity to contract at inevitably lower construction-prices during such crisis-times.

So the obviously unwillingness of the banks seems to cause a lot of trouble in construction-industry (and thus not only there, regarding the several branches relying on construction-industry’s activities). A fact (which makes this phenomenon even more a nuisance for the industry) is, that several of those banks just recently have been supported with public money (i.e. ‘taxpayers’ money’...) to keep them alive and to stimulate again the (investments) economy. However, this supposed ‘mechanism’ still does not seem to work properly, so -parallel to this- other challenges may be needed to keep the industry ‘going’ again during crisis-times. So far, the (Dutch) government uses this situation also to stimulate construction industry e.g. by tendering own public (infrastructure)projects nowadays (= thus some years earlier) in the market, thus influencing the construction industry directly positively. Figure 1 schematically represents the current ‘lock-up’ situation for construction-industry and its clients/end-users within the governmental ‘economic stimulus cycle’.

Figure 1: Schematic view of the current crisis-situation with the governmental ‘economic stimulus cycle’, acting as a ‘lock-up’ for construction-industry and its clients/end-users.
However, as was also described by Collins in his recent publication on market-leaders (Collins, 2001), a negative market situation can still lead to a successful business as long as the parties are acting along clear and focused strategies, although this may still need a long time.

2. Innovation: Just doing?

There has been a lot of research on innovation-issues. Not only on a local or a national scale, but also on an international scale. Results of international research on innovation strategies are e.g. described in the form of strategies on -international- technology-transfer (Steenhuis, 2000) or in the form of the use of e.g. government’s input to influence -innovative- sector developments (Baranson, 1978), etc. However, a basic guideline-principle within innovation-strategies seems on how to organize the innovation-process, i.e.:

a. Innovation by the company itself (i.e. the so called ‘stand alone scenario’);

b. Innovation by a group of companies (i.e. the so called ‘platform scenario’)

Ad a:
Especially this ‘stand alone scenario’ has traditionally be the situation in industry. Not only in construction, but also in other industries like e.g. machinery, electronics, IT, etc. It still has its value as long as the company itself can bear the large amount of investments needed to perform such innovations successfully, and to get the positive results/spin-offs of them accordingly. Basic assumption on this strategy may be seen a ‘the power of having knowledge’.

Ad b:
During e.g. last decennium the ‘platform scenario’ seems to become more popular; not in the least because of its possibility to share the costs of innovations with others (e.g. Halman, 2004; Halman, Hofer & Vuuren, 2005), but also to take advantage of the possibility of a fast dissemination inside the expanded business-networks of the participating companies. Basic assumption on this strategy may be seen a ‘the power of sharing knowledge’.

When focusing more into detail at construction-industry, there is still a tradition from the past that the stand-alone scenario seems to be still industry’s favorite. See e.g. the several –national and international- actions of e.g. the CIB-working commissions and task groups on trying to get together industry to join in ‘open innovation networks’.

Although it is gradually moving towards a more mature status now, this has really taken a long time effort to convince the industry about the advantages of sharing knowledge. Nevertheless, especially from a British (Egan, 1998) and Dutch (Vos et al, 2002) construction industry perspective, their recent industry-crisis regarding collusion-cases and conflictuous behaviour really seem to have lead to a more open mind industry: Several initiatives have been started inside and outside CIB-related activities (e.g. Edkins, Smyth & Morris, 2008), and the industry really seems to take care now of ‘learning by sharing knowledge’.
3. Case-study: Tender for integrated transition of the long-term healthcare industry and its facilities

3.1 Introduction

In The Netherlands the business- and finance-structure of the healthcare industry is quite under reconstruction, especially because of its large impact and influences by e.g. politics, health insurance-companies and, not in the least, critical and demanding client-groups.

Parallel to these issues, the need for a stronger and more proven business-model for this industry is becoming more actual: E.g. due to the increasing average age of the client-groups, thus needing increasingly more healthcare and –cure within the ageing (Western European) society, the demand for this industry comes under large pressure due to obviously not being able to deliver their services in time and with the right price/quality ratio to their clients (patients).

All these described developments stimulated the Dutch National Ministry of Healthcare, Well-Being and Sport (the so called ‘Ministerie van Volksgezondheid, Welzijn en Sport – VWS’) to challenge the industry to deliver proposals for new business-models, facilities-approaches, etc. Thus, focusing on starting a real ‘transition’ of this industry. The so called ‘Transitie Programma Langdurende Zorg – TPLZ’ was established, and tendered during 2008 a request for innovative business-proposal. One of the key-criteria was that the requested proposals should contain real ‘drivers’ for establishing a ‘transition’ of the healthcare industry (see for a first overview e.g.: DRIFT, 2009). As one of the 166 proposals, the consortium for the so called project ‘Twentse Aanpak’ was awarded with one of the 16 available stimulating innovation packages, existing of an innovative integrated approach for transition of the healthcare industry and its (housing) facilities, which is actually (i.e. December 2009) under roll-out with the start-up of several (pilote)projects in The Netherlands (Dutch National Government, 2008).

The following case-study is analyzing the way how the consortium of real-estate and healthcare-related parties was organized during the pre-tender and tender-phase, resulting into acting as a succesful ‘platform’ for stimulating a joint innovative approach within this (often experienced as ‘complex’) healthcare industry.

3.2 The selection process

As one of the initiators of the consortium was already in earlier days since ca. 2003 pro-active in business and developments on own risk for e.g. real-estate and facilities, they created in ca. 2005 a strategic joint-venture with two large multi-regional healthcare-organisations, focusing on a more structured approach regarding project-development for healthcare industry. This provided a win-win approach: The real-estate developer was securing in an early stage project-rental income and interests, while the healthcare-organisations secured within the same time early involvement with fit-for-
purpose facilities-solutions. This model has grown quite well since those early days, and nowadays they play a significant role within project-driven developments regarding healthcare-facilities. One of the examples is the foreseen scheduled large location ‘Reggevalley™’ of about ca. 10 hectares within suburban region, featuring a complete new integrated healthcare/living/working environment. See e.g. figure 2 with a picture of the location entrance, being part of a sub-urban traditional style rural landscape (NTGroep, 2005).

![Figure 2: Picture of the location entrance of the foreseen integrated project ‘Reggevalley™’ (NTGroep, 2005).](image)

However, why was this consortium selected within the described large national TPLZ-tender with their participation project ‘Twentse Aanpak’? The answer seems to be based on e.g. a foreseen hands-on approach and a realistic goal-setting:

Because of their good joint experiences during daily practices, there grew quite a ‘common sense’ on where and how to update and/or to improve the solutions made in the past. And this approach gave a sort of ‘joint innovating culture’ within this team, which more or less automatically created a ‘fertile soil’ for focusing on an innovative attitude within their respective businesses. So:

- **There was not just only a focus on business/money...**

  ...but merely a first focus on:

- **How to create better solutions, resulting in probably better business/money?**

The knowledge and experience with the real hands-on business practice within healthcare and facilities in their (geographical and social) environment, obviously played an important role in this: i.e. Because of the increasing daily need for help/creativity/quality and the experienced shortage of
financial budgets and qualified people and capacities within this industry, the healthcare industry continuously needs to improve themselves by rationalizing the processes, etc. Not in the least by the ‘pressure’ of the healthcare-insurance industry, who continuously strives for cost-reduction, parallel to the governmental policy. Figure 3 represents a schematic view of the basic consortium structure.

Figure 3: Schematic view of the basic consortium structure for the project ‘Twentse Aanpak’.

3.3 The organisation of the project

After the appointment of the consortium for the development and implementation of innovative business models and accompanying facilities (i.e. real-estate facilities), there were defined three basic phases:

a. Definition and concept phase;

b. Operation and testing phase;

c. Implementation and realisation phase.

Ada: Definition and concept phase:
During this phase the development of knowledge-related ‘products’ is evident. It means the basis for the implementation furtheron in the process. Therefore during this phase the role of the knowledge institutions was quite important. However, delivering the knowledge means that especially here there are collaborative actions between experts and practitioners. And that was quite exhausting, e.g.: What is the most suitable solution for the foreseen problems/questions? Or: How to communicate them regarding the specific (business)cultures? Etc. Nevertheless, on the one hand the interaction between these two main consortium-branches (‘healthcare’ vs. ‘construction-real estate’) led to quite interesting solutions: It brought employees from both sides closer to each other; however, on the other hand the ‘culture’ area was and is still quite sensible, which means that having the ability and sensitivity to understand one’s background/context is very much needed. And the knowledge-institutions as third party (or so called ‘third cultures’ (Sanders, 1995)) parallel needed really to act
according the context and interests of the two initiating consortium-branches ‘healthcare’ and ‘construction-real estate’.

Within this context, the total project was defined as a total of three main sub-projects, within which the parts of the innovative business-developments took place; this meant that within these three sub-projects there was a phase of concept-development, followed in the next phase by a practical hands-on testing of the developed concepts, thus (partly) following a ‘learning-by-doing’ approach (Tijhuis, 2002). The final implementation will be done within the fourth sub-project, which in fact functions as an integrator-project during realization. At the moment of writing of this paper (i.e. December 2009) the total project ‘Twentse Aanpak’ is in the operating and testing phases of the several sub-projects. Figure 4 represents a schematic view of the described project-structure.

![Figure 4: Schematic view of the project-structure, (partly) based on a ‘learning-by-doing’ approach, leading to the integrating project ‘Reggevalley™’](image)

**Fig. 4: Schematic view of the project-structure, (partly) based on a ‘learning-by-doing’ approach, leading to the integrating project ‘Reggevalley™’**.

**Ad b: Operationl and testing phase:**
The formal decision on the final version of the total developed and tested concept was quite a difficult one. This, because when working with professional experts within e.g. the knowledge-institutions, according to them there always seems e.g. to be ‘a better solution available’. And this caused quite often discussions about ‘when to stop’ with the the further optimization of the developed concept. Especially during that decision-process the (cultural) differences between sectors/branches became evident: At the one hand the more practitioners of the healthcare and construction-real estate, and at
the other hand the professional experts from the knowledge-institutions: In fact it was the challenge of ‘keeping progress’ versus ‘searching for the best’.

In the end the decision was made by the consortium-management, that the practitioners (i.e. the sub-project-managers) within the three sub-projects 1, 2 and 3 were fully autonomous in decision-making regarding the use or not of extra (external) expertise. This was done, by highlighting the initial long-term goals of the project, i.e.:

- Serving the daily practice by supporting the clients’ and employees’ satisfaction.

In practice, this has lead to the situation that the outcomes of these operational and testing phase per sub-project were collected, and will be integrated and optimized within the foreseen sub-project 4 ‘Reggevalley™’ according these long-term goals.

Ad c: Implementation and realisation phase:
A ‘famous’ British saying is ‘the proof of the pudding is in the eating’. This was and is also the case for this innovation project, where the long-term goals are kept as guidelines for the implementation and realisation phase. Because of the fact that during the writing of this paper this phase was still not finished, the author is unable to use the results of this phase in the total outcomes and discussion. Nevertheless, the first results of this phase are used for describing a realistic first vision to readers on how to act during participating in such a (multi-branches) innovation consortium.

3.4 Outcomes & discussion

The total project ‘Twentse Aanpak’ focuses on developing innovative integrated approaches for transition of the healthcare industry and its (housing) facilities, by using a joint innovative approach within a consortium of healthcare and construction-real estate parties. Although the fact that the implementation and realisation phase was still not finished during the writing of this paper, the following already realised (sub)outcomes and discussion-themes are highlighted:

Consortium-aspects:
Working with different parties within a consortium is a challenging process. Not only during ‘normal’ operational issues, but also and especially during innovation-issues. What to think e.g. about the decision when to stop innovation? How can one see/decide about the ‘level’ of innovation, suitable for the foreseen project-goals? Such discussions are often ongoing between the more practical people and the more theoretical/academic people. However, the guideline of ‘learning by doing’ might also be here one the useful and convincing solutions. Especially when working within a time-schedule of setting small steps, reaching and defining small ‘sub-results’ (also known as ‘low hanging fruit’), working towards clearly defined end-goals, thus keeping the consortium ‘spirit’ positive and ongoing.

Project-aspects:
If one is looking for innovative solutions (or at least challenging discussions between team-members), or more popular defined as ‘out-of-the-box-thinking’, one should suggest to combine
people/parties from totally different branches together, also supported by the part(s) of business fields, being part of the focused solution(s). In this case: healthcare vs. construction-real estate, added with experts from information-technology and semi-governmental policy-makers. An advantage of such a ‘consortium-mix’ might be the incorporated positive chance to overcome ‘traditional’ barriers, often existing inside branches and/or branche-thinking. However, such an approach needs a well-organised management/coaching for getting the best results out of the people/parties involved.

When focusing e.g. on the innovation project, described in this case-study, the results are challenging, and indeed a recommendation for further ongoing developments of such a kind.

4. Conclusions & recommendations

Although the innovation-project (described within the case study) still wasn’t finished during the writing of this paper, the author gives the main results of its present status, presented in the following conclusions and recommendations.

a. The still somewhat unlogical ‘connection’ between two so different branches within the established innovation-consortium (here: healthcare vs. construction-real estate) has led to surprisingly interesting and challenging developed innovations. Nevertheless, a full support by the central management of the parties involved, including a strong and supporting consortium-management, is undoubtedly necessary to become succesful. So ‘innovation’ as a goal can only function if it is seriously put on the central management’s actual agendas.

b. There is a need for defining clear goals when starting (complicated) innovation projects. Especially, because of the fact that decision-making about choosing solutions is still very complex, e.g. related to influences like ‘keeping progress’ versus ‘searching for the best’.

c. Using small development-steps within an approach of ‘learning by doing, including reaching for sub-results (‘low hanging fruit’), has proven to be a succesful method in these, although foreseen end-goals should be defined clearly, to keep the consortium ‘spirit’ positive and ongoing.

d. Working with practitioners as well as experts creates a very challenging environment. On the one hand there is a need of different viewpoints and input, but on the other hand this often means different ways of communication-levels and –styles (i.e. different business-cultures).

e. Because of the different branches working together within an innovation-consortium, the general active business-cultural backgrounds of these branches (here: healthcare vs. construction-real estate) do also lead to differences in behaviour and understanding. A perfect match will be difficult, but being aware of these differences might lead to a better and more succesful (management of the) consortium and its innovative project-results.

Acknowledgement

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References


Collins J. (2001) “Good to Great – Why Some Companies Make the Leap...and Others don’t”; *Book*; Harper Collins; USA.


Institutionalisation of Ethics: Perceptions of Workers in Construction Companies

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Abstract

Construction companies face public scrutiny as various unethical practices have come to light. This raises the question what construction companies do to prevent, detect and correct unethical conduct. To date, there are various studies regarding the institutionalisation of ethics in companies. To the best of our knowledge, little is known about the institutionalisation of ethics within the construction industry. To examine the institutionalisation of ethics in construction companies, data from a 2008 cross-section of 132 company executives and 194 lower-level employees from 132 Dutch construction companies are used. In this paper, we present the results of a first stage of our study. We examine the differences in perceptions between company executives and lower-level employees regarding the embeddedment of ethical culture qualities and ethics program components within the organization. The results indicate that company executives more often perceive ethical culture qualities and components of ethics programs embedded in the organization as opposed to lower-level employees. Regardless the differences in perception, the results also indicate that some ethical culture qualities are more visibly embedded than others are. The existence of components of an ethics program also varies. From a managerial and scientific point of view the results raises new questions about which approach contributes the most to the institutionalisation ethics and whether different approaches may be required for different types of organizational members.

Keywords: business ethics, ethical culture, ethics program, executives, employees
1. Introduction

Corporate conduct has captured the attention of the public in today’s business environment. Without exception, construction companies also face public scrutiny. The literature have documented various cases which illustrate the ethical and moral difficulties of construction companies (FMI/CMAA, 2004; Glass and Simmonds, 2007; Ho et al. 2004; Kolk and Pinkse, 2006). By establishing internal control mechanisms, incentives and organizational schemes companies attempt to institutionalise ethics in order to prevent, detect, and correct unethical conduct.

To date, there have been various studies regarding the institutionalisation of ethics in organizations, documenting the scope and reasons for specific organizational efforts (e.g. Center for Business Ethics, 1986 and 1992; Robertson and Schlegelmilch, 1993; Soutar, McNeil and Molster; 1995; Nakano, 1997; Weaver, Treviño and Cochran, 1999a; Guillén, Melé and Murphy, 2002; Singh, 2006).

To the best of our knowledge, little is known about the institutionalisation of ethics within the construction industry. This study intends to fill this gap. Using data from a 2008 cross-section of 132 company executives and 194 lower-level employees from 132 Dutch construction companies we examine in this first stage of our study the differences in perceptions between company executives and lower-level employees regarding the embeddedment of ethical culture qualities and ethics program components within the organization. For organizations to effectively institutionalise ethics, it is relevant to know whether organizational members are aware of the internal control mechanisms, incentives and organizational schemes that contribute to the prevention, detection and correction of unethical conduct.

The contents of this paper is as follows. First, the ways of institutionalising ethics are presented. Second, the survey and descriptive statistics of the sample are discussed. Next, the empirical results are presented. Finally, conclusions, implications for management and directions for future research are discussed.

2. Institutionalising ethics

The institutionalisation of ethics can be defined as the incorporation of ethical values (Center for Business Ethics, 1986) into all daily decision making and work practices (Weber, 1993) for all organizational members (Weaver, Treviño and Cochran, 1999a).

Ethical values can be institutionalised within organizations in a variety of ways. These ways can be labelled as informal, implicit, or soft controls on one side and formal, explicit, or hard controls on the other (Brenner, 1992; Treviño, Weaver and Reynolds, 2006; Kaptein, 2009). In this study, the terms informal and formal are used. Informal ways refer to the ethical culture of organizations whereas formal ways refer to the existence of an ethics program within the organization.
Generally, organizational culture includes the values, norms, and experiences in the organization. The organizational culture provides the rules of conduct and ways of viewing the world outside and inside of an organization, giving guidance to people’s behaviour (Champoux, 2001). Ethical culture can be defined as “a slice of the organizational culture that influences employees’ ethical behaviour” (Treviño, Weaver and Reynolds; 2006:966). Various aspects of the ethical culture can foster ethical behaviour and practices. Kaptein and Wempe (2002:251-256) identified seven qualities which organizations can embed in the organizational culture that encourage employees to engage responsibly when faced with ethical dilemma’s: (1) clarity, the extent to which the organisation’s expectations of ethical employee behaviour are accurate, concrete and complete; (2) consistency, the extent to which the organization’s expectations of employee behaviour are coherent; (3) achievability, the extent to which the organization enables employees to meet the expectations; (4) supportability, the extent to which the organization stimulates employee commitment; (5) visibility, the extent to which employee conduct and the effects thereof are manifest; (6) discusssibility, the extent to which ethical issues can be raised and discussed; and (7) sanctionability, the extent to which ethical behaviour will be rewarded and unethical conduct will be punished. An ethical culture can support ethical conduct or frustrate it. The manner in which organizational members respond to ethical concerns will create a value pattern towards either ethical or unethical conduct (Sims, 1991; Weber, 1993; Valentine, 2009). As a consequence either one of these orientations will become institutionalised over time.

As indicated, next to an ethical culture organizations may have an ethics program. Ethics programs are the formal systems of organizational control on ethical conduct. Generally, organizational control systems can be used to coerce behavioural compliance or by generating employee identification with organizational goals (Weaver and Treviño, 1999). An ethics program may have adopted one of these orientations. An ethics program may consist of various components. This study includes some of the frequently cited components of an ethics program: (1) a code of ethics; (2) an ethics officer or ethics office; (3) ethics training; and (4) a dedicated reporting system (Kaptein, 2009). Ethics programs may support or frustrate ethical conduct. To be effective, the components of an ethics program should be mutually consistent and founded on or express shared values (Laufer and Robertson, 1997). Stansbury and Barry (2007:239) argue that “the control cultivated by ethics programs may weaken employees’ ability and motivation to exercise their own moral judgement, especially in novel situations.”

To the extent that an ethical culture and an ethics program are embedded in the organization, ethical values are expected to be more institutionalised and in turn, unethical corporate conduct is expected to be rarer.

3. Method

The data comes from a questionnaire held in the second half of 2008 among Dutch contractors, registered at Cordares Pensions. These data were part of a larger omnibus questionnaire that contacts companies and employees on an annual basis. The population includes both real estate construction firms and firms specialized in civil engineering. The 2008 population comprise 7,022 firms with 125,761 employees measured in terms of full time equivalent (fte).
The data were gathered using computer assisted face-to-face interviews (CAPI) with company executives and lower-level employees. The use of CAPI mitigated problems of social desirability bias and interviewer bias (Malhotra and Birks, 1999). We retained Veldkamp TNS NIPO, an independent market research firm, to administer the interviews. After receiving a written announcement, Veldkamp TNS NIPO contacted 2,145 company executives by phone and visited 2,458 lower-level employees at their home. If contact was being made, these individuals have been questioned whether they wanted to participate in the research. 965 company executives and 1,012 lower-level employees reacted positively and have been interviewed later. Interviews with company executives were conducted at their company office. These participants received a research report for their participation. Interviews with lower-level employees were conducted at their home to safeguard privacy. These participants received a 5 euro gift certificate for their participation. For this study, company executives and lower-level employees responding to the questions and working for the same company were selected. The data were matched by company-id. The resulting sample contains 132 company executives and 194 lower-level employees. The construction companies are each represented by one company executive.

Table 1 presents characteristics of the data with company profile on the left hand side and employee characteristics on the right hand side. Regarding the construction companies, 78 percent were specialized in real estate construction and 22 percent in civil engineering. The companies involved in the industry represented a variety of activities. Average business size was 178.7 persons. Regarding the employees, 94.8 percent were men, average age was 43.5 and roughly 60 percent were operatives. The sample obtained does not fully represent the population in each aspect. The sample under-represents small firms, yet over-represents large firms measured in the number of employees.

Table 1: Sample characteristics

<table>
<thead>
<tr>
<th>Company characteristics (N=132)</th>
<th>Employee characteristics (N=194)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector</td>
<td>Percent</td>
</tr>
<tr>
<td>Real estate</td>
<td>78.0</td>
</tr>
<tr>
<td>Civil engineering</td>
<td>22.0</td>
</tr>
<tr>
<td>Primary activity</td>
<td></td>
</tr>
<tr>
<td>New residential construction</td>
<td>39.4</td>
</tr>
<tr>
<td>New non-residential construction</td>
<td>25.8</td>
</tr>
<tr>
<td>Building renovation and maintenance</td>
<td>12.9</td>
</tr>
<tr>
<td>Roads</td>
<td>14.4</td>
</tr>
<tr>
<td>Civil concrete structures</td>
<td>3.0</td>
</tr>
<tr>
<td>Telecommunications, energy and water</td>
<td>3.8</td>
</tr>
<tr>
<td>Other civil engineering</td>
<td>0.8</td>
</tr>
<tr>
<td>Size (# of employees)</td>
<td></td>
</tr>
</tbody>
</table>
Table 2 shows the mean (M) and standard deviations (SD) of the respondents’ perceptions of ethical culture qualities embedded in their organization. Means of company executives and lower-level employees have been compared. One-way ANOVA tests determined the significance level (Sig) of the hypothesis of equality of the means in the two subpopulations.

The variables used to describe the perceived ethical culture of an organization are based on the seven ethical culture qualities as defined by Kaptein and Wempe (2002). A three-point Likert type scale ranging from “1 = disagree”, “2 = partly disagree/partly agree” and “3 = agree” was used. Prior to analysis, items were recoded to dummy variables. The options 1 and 2 were recoded to 0 and the option 3 to 1 as this study defines ethical culture as a quality that persists over time and exists as part of the daily functioning of the organization. Next, the items were summed and a dummy variable was created where the sum of items was recoded to 0 if the sum was 4 or lower, and to 1 if the sum was 5 or higher.

Overall, company executives more often perceive ethical qualities embedded in the organization compared to lower-level employees. Except for the variable of sanctionability, all variables show significant differences. Regardless the differences, in the eyes of company executives and lower-level employees clarity and consistency were among the top qualities of ethical culture embedded in the organization. About one third of the company executives and lower-level employees indicated sanctionability as least embedded within the organizational culture. Respectively, 68 and 51 percent of the company executives and lower-level employees indicated at least five of the seven ethical culture qualities embedded in their organization.

4. Results

4.1 Ethical culture

Overall, company executives more often perceive ethical qualities embedded in the organization compared to lower-level employees. Except for the variable of sanctionability, all variables show significant differences. Regardless the differences, in the eyes of company executives and lower-level employees clarity and consistency were among the top qualities of ethical culture embedded in the organization. About one third of the company executives and lower-level employees indicated sanctionability as least embedded within the organizational culture. Respectively, 68 and 51 percent of the company executives and lower-level employees indicated at least five of the seven ethical culture qualities embedded in their organization.

Table 2: Mean perceptions of ethical culture qualities embedded in organization

<table>
<thead>
<tr>
<th>Variable</th>
<th>Company executives (N=132)</th>
<th>Lower-level employees(N=194)</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Dummy clarity</td>
<td>.87</td>
<td>.34</td>
<td>.69</td>
</tr>
<tr>
<td>Dummy consistency</td>
<td>.88</td>
<td>.33</td>
<td>.71</td>
</tr>
<tr>
<td>Dummy realizability</td>
<td>.79</td>
<td>.41</td>
<td>.65</td>
</tr>
<tr>
<td>Dummy supportability</td>
<td>.80</td>
<td>.40</td>
<td>.70</td>
</tr>
</tbody>
</table>
4.2 Ethics programs

Company executives and lower-level employees were also asked to indicate the existence of four different components of ethics programs in their organization (e.g. code of conduct, ethics training, ethics office or officer, dedicated reporting system). Again, mean, standard deviations and significance levels are depicted (see table 3).

A response scale from “0 = does not exist”, “1 = exists” and “999 = unsure / no opinion” was used for each component. Following Kaptein (2008) the option 999 was recoded to 0 (non-existent) as this study defines ethics programs as a formal system. A dummy variable was created if any of the components were present in an organization.

Compared to lower-level employees company executives more often indicated the existence of a component of an ethics program in their organization. All variables show significant differences. Regardless the differences, both company executives and lower-level employees indicated a ‘code of conduct’ or ‘ethics office(r)’ as the most implemented components of an ethics program. About one third of the company executives indicated the existence of an ‘ethics reporting system’ or ‘ethics training’ within the organization. For lower-level employees the latter was least visibly embedded. Respectively, 82 and 62 percent of the company executives and lower-level employees indicated the existence of at least one of the four studied components of an ethics program in their organization.

Table 3: Mean perceptions of existent components of ethics programs within the organization

<table>
<thead>
<tr>
<th>Variable</th>
<th>Company executives (N=132)</th>
<th>Lower-level employees (N=194)</th>
<th>Sig(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy code of conduct</td>
<td>.55</td>
<td>.36</td>
<td>.00***</td>
</tr>
<tr>
<td>Dummy ethics training</td>
<td>.34</td>
<td>.10</td>
<td>.00***</td>
</tr>
<tr>
<td>Dummy ethics office(r)</td>
<td>.54</td>
<td>.37</td>
<td>.01***</td>
</tr>
<tr>
<td>Dummy ethics reporting system</td>
<td>.34</td>
<td>.24</td>
<td>.03**</td>
</tr>
<tr>
<td>Dummy ethics program</td>
<td>.82</td>
<td>.62</td>
<td>.00***</td>
</tr>
</tbody>
</table>

\(^1\) * Significant at 10%, ** significant at 5%, *** significant at 1%
5. Conclusion, discussion and implications

In this study we surveyed company executives and lower-level employees in 132 construction companies. In the first stage of our study we examined the differences in perceptions between company executives and lower-level employees regarding the embeddedment of ethical culture qualities and components of an ethics program within the organization.

The results indicate that some ethical culture qualities are more visibly embedded than others. The existence of components of an ethics program also varies. Nevertheless, more than half of the respondents indicated at least five of the seven ethical qualities embedded in their organization and at least one of the four studied components of an ethics program. If different qualities and components are adopted, management needs to know what works best to prevent, detect, and correct unethical conduct. This raises the question what determines the adoption of certain qualities or components to vary. And more importantly, what is the relationship between the adoption of certain qualities or components and the ethical values being institutionalized? In the next stage of our study, further analysis will take into account company characteristics and will also be focused on specific behavioural principles in practice.

Comparisons between company executives and lower-level employees indicate that company executives more often perceive ethical culture qualities and components of ethics programs embedded in the organization as opposed to lower-level employees. These findings are consistent with previous research. Differences in roles and their corresponding identification may explain these different perceptions (Callan, 1993; Harden-Fritz et al., 1999; Treviño, Weaver and Brown, 2008). As Treviño, Weaver and Brown (2008) argue, the possibility of differences in perceptions should be taken into account by company executives in order to make sound decisions about the management of ethics. The differences in perceptions between company executives and lower-level employees raises also new questions. Can we expect to see differences in perceptions regarding specific ethical values being institutionalised and in turn, the perceived occurrence of unethical conduct? If so, the differences in perceptions may imply that for management to effectively institutionalise ethics, different approaches may be required for different types of organizational members. In the next stage of our study, further analysis will take the differences in perceptions between company executives and lower-level employees into account.

References


Team Morale and Leadership Styles of Project Managers in China Construction Projects

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Abstract

The relationships of project team morale and the supervisory styles of project leaders are examined in this paper based on P-M theories which assume dichotomous styles of performance-oriented and maintenance-oriented leadership. In P-M theories, leadership affects motivational arousal directly through a combination of pressure and support where the work structuring aspects of leadership, which affect motivation by clarifying paths to goals, are less central. Generally, previous research supported both P- and M-oriented leadership styles being consistently and positively related to organisational performance measures, although the M-oriented style of leadership was found to be more effective in functional organisations and P-oriented leadership was more effective in the engineering project field of temporary organisations. Situational contingencies in this study are assumed to affect subordinates’ interpretations of leadership primarily, i.e. the leadership styles reported by subordinates are assumed not to reflect the objective level of leadership behaviour. Instead, those measures reflect the amount of a leadership function that subordinates experience given their own personalities, cultural background and the situational contingencies that they face. The subjects in an exploratory study of joint venture projects in China reported in this paper reflect the influence of leadership styles on the level of team morale and project time performance in given sets of situational contingencies.

Keywords: leadership style, project leader, team morale
1. Introduction

The project supervision system in China defines the status of the project leader (supervision engineer) and provided the framework for developing roles and functions of various project participants. The relationships of project team morale and the supervisory styles of project leaders are examined in this paper based on P-M (performance – maintenance) theories which assume dichotomous styles of performance-oriented and maintenance-oriented leadership.

The subjects in an exploratory study of joint venture projects in China reported in this paper reflect the contextual meaning of leadership styles through the elicited responses on the level of team morale and project time performance in the given set of situational contingencies where culture plays a role in the adoption of leadership style through the ‘intercultural adjustments’ by expatriate project leaders in China.

The research objectives are:

1. to investigate the effects of performance-maintenance leadership on team morale, and

2. to investigate the project situational context – the time-completion criterion in joint venture projects – in which the leadership influences team morale.

2. Project procurement in China

In order to understand the project management practice in China, it is necessary to explain the managerial mechanism and particular relationships among the participants such as the government authorities, the clients and the contractors. There are many other organisations that participate directly or indirectly in the project procurement activities, e.g. banks, suppliers, manufacturers, insurance companies, the supervisor or supervision engineer (otherwise known as project manager in the West), and the designers (equivalent to the professional consultancy team).

Despite recent economic reforms to decrease the number of state-owned enterprises (SOE), a large number still exists, especially in major industries such as metallurgical, petrochemical, chemical enterprises, communication and transportation. Central government delegates different ministries the power to regulate these SOEs. The management of these corporations is undertaken by the responsible bureaus and the ministries in the government.

The Ministry of Construction was renamed the Ministry of Housing and Urban-Rural Development (MoHURD) in 2008 and is under the administration of the State Council of China. By 2006, there were 60,166 construction enterprises employing 28,781,600 persons (http://www.stats.gov.cn/tjjs/ndsj/2007/indexeh.htm; accessed February 2009). As the construction industry developed, there was an increase in the non-state-owned construction enterprises in the 80s,
e.g. the collectives under the responsibility system and some privately owned enterprises. The restructuring of ownership of firms is reviewed in Han and Ofori (2001).

Further changes occurred after China’s accession to the WTO. In 2002, market access was opened to foreign enterprises through the *Foreign Investment Design Enterprises Regulations* and the *Foreign Investment Construction Enterprises Regulations*, e.g. since 2004, exclusively foreign-owned construction firms are allowed to carry out work on four approved types of construction projects; and since 2006, exclusively foreign-owned design consulting firms are allowed to practise. Enterprises can now be categorized into:

- State-owned enterprises (SOE)
- Collective-owned enterprises
- Shareholding/limited companies
- Private
- Others: e.g. foreign-owned (partial or full) enterprises

The major changes since the 80s are that (1) the establishment of the tendering system has transformed the industry (from undertaking solely state-allocated projects) to undertake private-investment commercial projects; (2) the formation of the Project Supervision System, which represents the national model in project management, has led to consolidation of standard contracts, management standards, construction safety standards etc. and encouraged the development of other professional disciplines in construction.

China has developed the Project Supervision System (PS) for 20 years since 1988. The PS system, which is sometimes known as the Agent System, began as a construction quality supervision system. However, the current Agent System has transformed into a holistic management system which encompasses every aspect of project construction supervision/management, e.g. briefing, programming, design, tendering, construction and post-construction maintenance.

The professional team develops the technical and engineering design according to the specifications and cost limit in the approved feasibility study. In order to comply with the law and state policy, every client must employ an organisation to undertake the duty of project supervision (or project management). The scope of supervision duties can be design supervision, purchasing and supplying supervision, construction supervision or any mixture of these. The supervisor acts as an independent representative of the client to supervise and monitor the implementation of project activities. Usually, the bidding for construction begins after the completion of preliminary design. The client and/or the supervisor prepare the bidding brief. At present, there are three approaches: public (open), nominated (selective), and negotiated. For large or medium scale industrial projects which are funded by the government or domestic clients, nominated bidding (selective tendering) is the most common method. For building projects and other smaller projects, public bidding (open tendering) is usually employed.
As for those specialised projects such as military defence in which special construction techniques are required, the contracts may be negotiated.

In the construction stage, the management and implementation of construction works are the predominant activities. The government stipulates that only after the client obtains “the license for construction project” can the construction activities begin. At the completion stage, the client, the supervisor, the professional team and other specialists from the institutional authorities check and appraise the performance of the contractors in terms of the quality, cost and completion time of the works. In recent years, there has been a rapid development in the field of project management – project leadership has been given much research attention in China.

3. Leadership theories and team morale

The concept of leadership theory lies in the possibility of labelling and objectifying an otherwise confusing diversity of behaviours. Such precision would be particularly attractive if it allowed generalisations about leader behaviours within differing organisations (as exist in the ministerial corporations environment) and/or different cultural contexts (as often the case in international project procurement). Managerial tasks are inherently hectic, diversified and reactive (e.g., Kanter 1983). Much research investigates the relationship between managers’ behaviours and outcomes of managerial tasks, i.e. the objective criteria for measuring leadership effectiveness such as subordinates’ satisfaction and work performance. The assumption is that “supervisor styles achieve their impact only insofar as they are perceived by subordinates and others toward whom supervisors address themselves” (Tayeb 1995). Most of these behavioural research are based on pioneering studies performed in the Ohio State University during the 1950s which identified relevant facets of leadership by means of factor analysis (the Leader Behaviour Description Questionnaire LBDQ and Supervisory Behaviour Description Questionnaire SBDQ) (Hemphill 1950; Halpin and Winer, 1952).

Subordinates usually perceived their supervisor’s behaviour in two distinct categories (Fleishman, 1953; Halpin and Winer, 1957)), task-oriented (i.e. the initiating structure) and relationship-oriented (i.e. consideration). The initiating structure consists of those activities which the supervisor engages in defining and structuring the various tasks and roles of team members in order to attain group goals and fulfil organisational mission. Consideration refers to those activities toward subordinates that aim at maintaining good relationship, mutual trust, openness and understanding. Related development includes work of Fiedler (1967), Stogdill (1963) and Misumi (1985).

Misumi (1985) and his colleagues (see Misumi and Peterson 1985) develop a taxonomy of P-M supervisory styles based on decades of research in Japan. P-style is performance-oriented and M-style is maintenance-oriented. The former is the function of contributing toward a goal achievement or problem solving, and the latter is that of promoting a group’s self preservation or of maintaining and strengthening the group process itself. The multiplicative functions of P and M behaviour contribute towards the effectiveness of managerial activities (Misumi 1985, Misumi and Peterson 1985).
The theoretical roots of the PM function-based conception of leadership lie in the symbolic interactionism and in the structural functionalism that characterised group dynamics research of the 1950s and 60s (see Cartwright and Zander 1968). The PM theory of leadership suggests that a person’s contribution to fulfilling one of these functions supports or ‘catalyses’ the effects of fulfilling the other, i.e. the two functions are not conceptually viewed as separate dimensions but as abstractions which provide a way to describe integrated leadership types. House (1987) argues that the PM theory’s ‘above average – above average’ representation of leadership is empirically quite different from the ‘high-high’ representations of leadership in analogous U.S. research (Blake and Mouton 1982). PM theory also differs from Western research traditions in the intervening processes and criteria emphasised for explaining the effects of leadership. In PM theory, leadership affects motivational arousal directly through a combination of pressure and support. The work structuring aspects of leadership that affect motivation by clarifying paths to goals are less central to the PM theory (Hersey and Blanchard 1982).

Since every leader emanates actions which can be categorised into P-oriented or M-oriented style, the differences across different leaders in the P-M taxonomy are merely quantitative and not qualitative. Thus, the leaders can be classified into four subsets of pm, pM or M, Pm or P, and PM. The pm leaders show no conscious effort in management (such as laissez-faire), the M leaders emphasise M-oriented activities and show less concern in P-oriented activities, the P style leaders focus upon P-oriented behaviours rather than M-oriented behaviours, the PM style leaders display both distinct P-oriented and M-oriented behaviours. According to Misumi (1985), both P- and M-oriented leadership are consistently and positively related to organisational performance measures, i.e. those leaders display P-oriented and/or M-oriented behaviours seem to be associated with higher organisational performance.

Morale is generally regarded as a state of individual psychological well-being based upon a sense of confidence and usefulness and purpose, it denotes a spirit, as of dedication to a common goal, that unites a group (www.thefreedictionary.com/morale). Thus, morale is “the state of the spirits of a person or group as exhibited by confidence, cheerfulness, discipline, and willingness to perform assigned tasks”. Morale is a motivational construct defined by Baynes (1967) and Mannings (1991) as the enthusiasm and persistence with which a group member engages in prescribed unit.

The impact of leaders’ behaviour on subordinates’ attitudes and performance has typically been addressed in the context of a single leader’s influence on individuals or units. Mael and Alderks (1993) examine situations in which multiple leaders of a unit form a leadership team – multiple leaders who are arrayed hierarchically or laterally – as in a military platoon, and suggest that leaders should pay more attention to the impact their cohesion or dissension may have on team morale and performance. According to Mael and Alderks (1993), while loss of harmony leads to dissension and nullify horizontal bonding, cohesive leadership improves members’ confidence in the team and perceptions of team effectiveness.

Previous research findings have also shown the relationship of team morale with leadership styles and stress etc. (e.g. Misumi, 1985; Brooker, Molyneux, Deverill and Repper, 1999). For instance, morale factors from Misumi (1985), with which a relationship with leadership style is found, include
motivators, job satisfaction, satisfaction with compensation, satisfaction with teamwork, group meeting quality, communication adequacy, mental health and performance norms. Furthermore, Oliver’s (1988, cited in Mael and Alderks, 1993) meta-analysis finds a relationship between group cohesion and unit performance. Hence, a decrease in motivation, organisational identification and intent to remain (commitment) in the organisation could be expected if there are negative attitudes among members in team cohesion because of lack of / insufficiency in leadership (Mael and Alderks, 1993).

4. Research approach

4.1 Data collection instrument

As Misumi’s (1985) research was based on the Japanese, their questionnaire was more appropriate to be adopted in this study for the Chinese community with a similar Asian management philosophy. The main target respondents of this research were project managers and their project team members working in Chinese mainland for foreign construction companies on joint venture projects. The Misumi questionnaire which measured (1) morale factors and (2) leadership style was used for data collection. The sample of respondents came from joint venture (JV) or wholly-owned foreign projects under construction in Beijing in 2006. From a preliminary search on the internet and local press release, there were around 40 JV/foreign owned project organisations at the time and 30 of them were approached. A total of 10 such organisations, with a portfolio of around 50 projects, agreed to participate in this research. This study was based on 23 projects undertaken by 10 JV/foreign owned organisations in Beijing. There were 184 project participants eligible as respondents to whom the questionnaire was sent. A total of 59 responded, a response rate of 32%.

In Misumi’s (1985) study, planning and performance questions correspond to ‘planning, control and coordination’ behaviours, and maintenance questions correspond to behaviours which are seen as ‘supporting team members and showing consideration for people’. The leadership styles are defined by calculating the total score of respective performance and maintenance related questions. If the leader has a P score higher than the average P score of all the respondents, then s/he is a P-style leader. Project managers whose P and M scores both exceed the average are classified as PM leaders and those whose P and M scores fall short of the averages are the pm leaders. The remaining are those whose P scores exceed the average as P style leaders (or Pm) and those whose M scores exceed the average as M style leaders (or PM).

Morale questions (Misumi, 1985) relate to the six factors of motivators, job satisfaction, satisfaction with compensation, satisfaction with teamwork, group meeting quality, communication adequacy. This study has omitted the two factors of mental health and performance norms as it is deemed inappropriate for the team members to assess the project leadership’s effect on these variables.
4.2 Data analysis

Among the 10 JV/foreign owned organisations 6 were from European countries, i.e. Germany, Austria, Netherlands, and the UK. There were also 3 from Hong Kong and one from the USA. Two levels of analysis were carried out at individual-level and project-level. Individual-based analysis was carried out based on respondents’ morale scores and the leadership (style) scores of the leader of the project organisation that the individual belongs to. The respondents were treated as individual cases (as project team member) and the morale score of each respondent was obtained by adding up the scores of all the five morale factors. The project-based analysis was carried out at project level based on the leadership (style) score of the project manager and the project morale score was the average of morale scores of the project team members.

4.2.1 Individual-based analysis

The correlation coefficients of leadership style and team morale factors are given in table 1. Morale factors are motivators, job satisfaction, satisfaction with compensation, satisfaction with teamwork, group meeting quality, and communication adequacy in Misumi’s (1985) questionnaire. The distribution of the 59 respondents by project organisation type and their team roles is given in Table 2.

Table 1: Individual-based Analysis: Leadership Style and Team Morale Factors

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Motivator</th>
<th>Compensation</th>
<th>Teamwork</th>
<th>Meeting satisfaction</th>
<th>Communication adequacy</th>
<th>Morale score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual-level (N=59)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership style</td>
<td>.337(**)</td>
<td>.319(*)</td>
<td>.289(*)</td>
<td>.096</td>
<td>.126</td>
<td>.309(*)</td>
</tr>
<tr>
<td>M-oriented</td>
<td>.599(**)</td>
<td>.480(**)</td>
<td>.264(*)</td>
<td>.091</td>
<td>.468(**)</td>
<td>.552(**)</td>
</tr>
<tr>
<td>P-oriented</td>
<td>.108</td>
<td>.145</td>
<td>.295(*)</td>
<td>.081</td>
<td>.047</td>
<td>.183</td>
</tr>
</tbody>
</table>

| **Individual-level excluding project managers and head office management staff (N=33)**# |
| Leadership style | .473(**) | .541(**) | .275    | -.011               | .534(**)              | .503(**)    |
| M-oriented       | .645(**) | .731(**) | .420(*) | .283                | .707(**)              | .776(**)    |
| P-oriented       | .167     | .223     | .185    | .105                | -.007                 | .192        |

#Individual-level analysis excluding project managers (N=20) and head office management staff (N=6)

* Correlation is significant at 0.05 level (2-tailed); ** Correlation is significant at 0.01 level (2-tailed)
Table 2: Distribution of Respondents’ Project Organization Type and Team Roles

<table>
<thead>
<tr>
<th>Role in Project</th>
<th>N</th>
<th>%</th>
<th>Organization Type</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project engineer</td>
<td>31</td>
<td>52.5</td>
<td>Wholly-owned foreign enterprise</td>
<td>42</td>
<td>71.2</td>
</tr>
<tr>
<td>Project manager</td>
<td>20</td>
<td>33.9</td>
<td>Joint Venture</td>
<td>15</td>
<td>25.4</td>
</tr>
<tr>
<td>Project management staff in head office</td>
<td>6</td>
<td>10.2</td>
<td>JV hold by State owned Chinese enterprise</td>
<td>2</td>
<td>3.4</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>3.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (no. of respondents)</td>
<td>59</td>
<td>100.0</td>
<td>Total (no. of respondents)</td>
<td>59</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The correlation results show that leadership style (consisting of all the questions under P and M) has a significant relationship with team morale at the individual level, and that the maintenance(M)-oriented, rather than the performance(P)-oriented, questions are responsible for this effect.

4.2.2 Project-based analysis

There are 23 projects undertaken by the 10 organisations in this exploratory study. In total, there are 20 project managers involved (where some project managers are responsible for more than one project). Data presentation includes (1) morale scores (table 3) and (2) correlation of project leadership style with morale factors (table 4).

Table 3: Mean Scores of Project member’s Morale Factors under Different Leadership Styles

<table>
<thead>
<tr>
<th>Leadership style</th>
<th>Motivation</th>
<th>Compensation</th>
<th>Teamwork</th>
<th>Meeting satisfaction</th>
<th>Communication adequacy</th>
<th>Morale score (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>21.46</td>
<td>15.92</td>
<td>21.00</td>
<td>19.00</td>
<td>18.85</td>
<td>96.23</td>
</tr>
<tr>
<td>M</td>
<td>21.83</td>
<td>16.00</td>
<td>20.83</td>
<td>19.33</td>
<td>18.00</td>
<td>96.00</td>
</tr>
<tr>
<td>P</td>
<td>19.11</td>
<td>13.11</td>
<td>19.56</td>
<td>19.11</td>
<td>16.33</td>
<td>87.22</td>
</tr>
<tr>
<td>P</td>
<td>18.60</td>
<td>13.00</td>
<td>20.20</td>
<td>19.00</td>
<td>16.20</td>
<td>87.00</td>
</tr>
</tbody>
</table>

Table 4: Project-based Analysis: Leadership Style and Team Morale Factors

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Motivation</th>
<th>Compensation</th>
<th>Teamwork</th>
<th>Meeting satisfaction</th>
<th>Communication adequacy</th>
<th>Morale score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project-level (N=23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership style</td>
<td>.402</td>
<td>.376</td>
<td>.477(*)</td>
<td>-.112</td>
<td>.211</td>
<td>.407</td>
</tr>
<tr>
<td>M-oriented</td>
<td>.704(**)</td>
<td>.617(**)</td>
<td>.341</td>
<td>-.112</td>
<td>.426(*)</td>
<td>.599(**)</td>
</tr>
<tr>
<td>P-oriented</td>
<td>.135</td>
<td>.087</td>
<td>.168</td>
<td>.137</td>
<td>.482(*)</td>
<td>.276</td>
</tr>
</tbody>
</table>

* Correlation is significant at 0.05 level (2-tailed); ** Correlation is significant at 0.01 level (2-tailed)
At the project level, although leadership style in general does not have a significant relationship with team morale, M-style bears a significant positive relationship with team morale.

4.2.3 Interviews

Subsequent interviews are carried out with one purpose:-

Based on the finding that the PM style relates to the highest morale score, interviews are carried out to investigate whether the leadership styles are related to project outcome – in this case, project outcome is assessed as works completion time.

Table 5: Completion Time and Leadership Style

<table>
<thead>
<tr>
<th>Project Status</th>
<th>Leadership Style</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PM</td>
<td>P</td>
</tr>
<tr>
<td>completed in advance</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>completed on time</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>on schedule (works in progress)</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>extension of time given</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>behind schedule (works in progress)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total (no. of projects)</td>
<td>9</td>
<td>3</td>
</tr>
</tbody>
</table>

The interviews are carried out with the client’s site representative and project staff to explore whether the leadership style is associated with one of the project performance indicators, i.e., work progress within the time planned (Table 5).

5. Discussion

It is too small a sample to analyse the national cultural traits with leadership style and this study is not designed for that purpose. However, questions are included to indicate a spread of the power distance profile of the managers to provide insight to formulating further research questions. Thus, data collection includes power distance which can be expressed in a Power Distance Index (PDI) following the same rationale adopted from the original research carried out by Hofstede in 1980. The theoretical range of the index is from -90 to +210. Low PDI indicates a perceived equality of ability, autonomy and independence, and high PDI indicates a prevalence for authoritarian, conformity and centralized decision making.

The sample is small and the validity of the power distance calculated can be an issue if further analysis is based on it. Hence, no statistical analysis is further pursued and the PDI findings are: (1) the overall PDI mean value is 45.79, (2) the mean value of PDI for German project managers is 35.96,
for Hong Kong project managers is 47.5, for the American project manager is 85, for the Chinese project managers is 68.33, for Canadian project managers is 60, (3) based on the origin country of the company, mean values are 34.04 for German company, 85 for Hong Kong Company, 85 for American company, 26.67 for Dutch company, and 85 for Austrian company, (4) the German project managers’ PDI values range from a low of -15 to a high of 85, (5) the highest PDI is found for a Hong Kong project manager from a Hong Kong company (110), while the lowest is also found for a Hong Kong project manager but working in a Dutch company (-40). The result indicates that construction projects with western project managers often have lower PDI value compared to those with project managers from China and Hong Kong. This is consistent with result from previous research, e.g. Hofstede (1980) that western society has lower PDI. However, the high PDI for the American project manager is an exception. From the interview with his project staff, it is found that this project manager has worked in China for less than a month, the high PDI maybe due to language difficulty and other communication issues with his Chinese project staff.

Schermerhorn Jr and Bond (1997) find that there is a relationship between power distance and followers’ behaviours, e.g. individualist moderate power distance leader finds collectivist and high power distance followers to be conforming, reserved, and with tendencies toward in-group agreement and groupthink. In this study, the scatter plot shows no relationship and it is inconclusive whether the PDI is correlated with leadership style (as this research is not designed with this objective). This exploratory study reveals that there can be a vast range of PDI in projects where the managers come from the same country (the German project managers’ PDI) but organisational culture may have a direct influence (the Hong Kong managers in a Dutch company and a Hong Kong company). Further research in the construction context, especially in international joint ventures, should be conducted. Recent research on empowerment within the project teams at the individual level and project level (Tuuli and Rowlinson, 2009) sheds light on the empowerment climate within the organisation which future research could build on.

It is noted that the PM-style is related to the highest morale score and that M-style has a positive and significant effect on team morale. There are two limitations in this analysis. First, the correlation results of leadership style with team morale scores make use of the grouping of the maintenance-related questions and the performance-related questions to correlate with the morale factors. It fails to show the PM-style correlation with team morale. Second, the sample in the individual-level analysis consists of all respondents (N=59), hence, a further analysis (N=33) excludes the project managers and the head office staff, thus leaving the project staff in the analysis. However, the sample of 33 is too small to draw conclusions, except to highlight issues to be further explored. It is recommended to carry out future study with a larger sample to analyse the project staff, excluding the project managers, at the project level.

6. Conclusion

The leaders in this study are classified into four subsets of pm, M, P, and PM. The pm leaders show no conscious effort in management (such as laissez-faire), the M-style leaders emphasise relationship building/maintenance, the P-style leaders focus upon planning and performance behaviours, the PM
leaders display both distinct P-oriented and M-oriented behaviours. In this study, the highest morale score is associated with the PM style (followed by M, pm and P) and the least morale score with P-style, hence, the least effective leadership (in terms of fostering team morale) is from the performance-oriented leader. Correlation analysis at the individual level shows that team morale correlates with project manager’s leadership style and that the project manager’s maintenance (relationship) orientation, in particular, fosters team morale among the members. At the project level, the effect of leadership style on team morale is not significant although the project manager’s maintenance orientation is found to correlate significantly with team morale.

Out of the 23 projects, there are nine projects with PM-leaders, five with M-leaders, three with P-leaders and six with pm-leaders. At the interviews with project staff and the clients’ representatives on site, it is found that out of the 23 projects, none of the pm-leaders are responsible for projects which have been completed on time whereas there are five projects with PM-leaders and four projects M-leaders which have timely completion. The pm leaders are responsible for the only project which is behind schedule and all the five projects which have been given ‘extension of time’. This study supports the findings of Misumi (1985) where those leaders who display P-oriented and/or M-oriented behaviours seem to be associated with higher organisational performance; alternatively, the pm-leaders are associated with lower performance.

Whether leadership style is associated with power distance as a national culture dimension is not investigated in this project. While Schermerhorn Jr and Bond (1997) have found such relationship, it is recommended to carry out future study with a larger sample at the project level to analyse the relationship of power distance and leadership in the sample of project teams.

References


Culture as a Component of Complexity in Construction

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Abstract

Both culture and construction have been suggested to be complex – culture as relating to, even governing, human behaviour and construction as a context in which human activities occur in the design, production, occupation, and use and disposal of major artefacts: buildings and infrastructure. Indeed, construction has been subject to various definitions and categorisations of complexity to assist analysis of the processes employed in the realisation and use of its outputs; including consideration of managerial and technical complexity. Historically, intuitive understanding of what constitute complex construction projects was supplemented with naïve objective measurements – such as the proportionate cost of building services. However, such approaches have failed to be very helpful in gaining understanding of the relationships between inputs to the realisations, the transformations within the processes and the resultant performance outputs. Following on from chaos theory, the emerging field of complexity theory, with its emphasis on linkages within systems and the ‘softer’ elements, has significant potential for providing insights. Hence, this paper examines culture in the context of and application to construction organisations and projects using the perspectives of complexity theory towards helping to determine a more detailed research agenda in the hope of gaining significantly greater understanding through this paradigm.

Keywords: complexity, culture, performance, systems
1. Introduction

A common caricature of something that is complex is that many component parts are incorporated and the links between those components are numerous and intricate. That description suggests that things which are complex must be systems. Components may be similar or extremely diverse in their properties and actions within the system, and the linkages likewise. What tends to be required for the presence, and extension, of complexity is many, possibly divergent, interdependencies between the components, potentially extended by diversity amongst the components themselves. That concept is reminiscent of the investigation and findings of Lawrence and Lorsch (1967) concerning differentiation and integration – as division of labour/specialisation increases, the need for, and difficulty of, integration multiplies; hence, the concerns over performance debilitation of construction through fragmentation (see, e.g., Latham, 1994; Egan, 1998; Construction Industry Review Committee, 2001).

Complexity is part of our lives and so, people adopt norms for levels and types of complexities which are encountered to yield ready classification of systems into simple, normal and complex. Thus, certain tasks are (virtually) always simple (e.g., drinking a glass of water) whilst others are complex (e.g., producing an aeroplane); many, however, are contingent upon what is available for use and the circumstances. In construction, norms of complexity depend upon the functional use type of project and the prevailing nature of the local industry – one guide is the cost significance of producing any given constituent of the project, encapsulated as whether it must be measured, or ‘measured separately’, according to the appropriate ‘standard method of measurement’.

Thus, complexity is associated with high cost, together with requiring longer time for the process required to complete the product/output and, usually, greater attention necessary for achievement of the requisite quality. Complexity implies risks and (potential) problems – notably, ‘wicked’ problems which, by definition, do not have programmable solutions and so, require individual attention and analysis.

A conventional systems approach adopts the logic of Newtonian reductionism in which understanding is achieved through deconstructing the system into components which can be analysed individually. The results of the analysis of each component’s behaviour and its outcome are, then, reassembled, often additively, to yield the total system and its predicted behaviour and outcome – such as in critical path programming of construction projects. A further step in such systems modelling is to introduce measures of probability (as in PERT), and, then, to incorporate probability combination effects at ‘merge events’ to yield a more realistic model of project duration requirements and dependencies (critical path(s), sub-critical paths and criticality indices for paths). Although still compliant with reductionism, the progression of approaches moves from simplistic determinism to stochasticism in analysing and predicting project durations, although synergy/holism remains unaddressed.


2. Complexity

Axelrod and Cohen (2000: 15) distinguish complicated systems, which comprise many components (such as those noted, above), and complex systems, which comprise “parts which interact in ways that heavily influence the probabilities of later events” or/and current events. Commonly, complex systems exhibit emergent properties. Emergence concerns simple rules yielding patterns in the system as a whole and relates to both synergy and holism. Anderson (1999) notes that “Complex systems change inputs to outputs in a nonlinear way because their components interact with one another via a web of feedback loops”. “Complexity Theory states that critically interacting components self-organize to form potentially evolving structures exhibiting a hierarchy of emergent system properties” (Lucas, 2004).

Given that definitions of complexity are many, and somewhat varied, and associated concepts include chaos, complex adaptive systems, complex evolving systems, and dynamic complex open adaptive systems, Lucas (2005) distills the characteristics of complex systems to be autonomous agents – components of the system can act on their own; nonlinear relationships (links between agents) – due to the feedback loops; and non-uniform parts – occur as agents and relationships may vary throughout the system.

In examining complex systems, systems theory is combined with organic conceptualisations and connectionism. Applying organic concepts to systems gives systems metabolism in that they are both self-producing and self-maintaining (autopoietic). Further, the systems are quite open and hence, responsive to changes in the environment to which they adapt and innovate by developing new behaviour. Control in such systems is distributed and the systems are self-organising. The connections between the agents of the system facilitate communication which, in conjunction with the numerous feedback loops, causes attractors to occur.

The independence / autonomy of the agents within the system means that the system has an anarchic power symmetry at its outset. As the system develops, the parts evolve with each other to fit the broader system and its environment (coevolution); its self-organising properties can develop a control structure / leadership with an asymmetrical distribution of power. Such self-organising also concerns dynamical attractors being present in the system which yield areas of stable operation. Because a complex system contains many dynamical attractors, the system has a variety of possible behaviour; as under chaos theory, the actual behaviour of the system depends on its initial conditions and configuration as well as subsequent perturbations – thus, the history of the system determines its behaviour and the development of the system is not a reversible process.

Kaufmann (1993) classifies systems as ordered, complex, and chaotic. Complex systems are, commonly, regarded as being ‘at the edge of chaos’ as they exhibit some order through interactions of their internal components, notably the feedback loops which generate dynamical attractors.

Table 1: Classification of Axioms of Complex Systems (Sources Lucas, 2005; Bertelsen, 2003; Bertelsen and Emmitt, 2005)

<table>
<thead>
<tr>
<th>AUTONOMOUS AGENTS</th>
<th>UNDEFINED VALUES</th>
<th>NON LINEARITY</th>
<th>NON EQUILIBRIUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomous agents:</td>
<td>Fitness: The distribution of optima can be modelled by the concept of fitness landscapes</td>
<td>Attractors: Systems contain multiple dynamical attractors; similar systems may behave differently, depending on their histories</td>
<td>Fuzzy functions: Systems’ functions co-evolve through combinations of emergent values</td>
</tr>
<tr>
<td>Systems comprise independent agents; initially anarchic power symmetry; structure/leadership emerges through self organisation</td>
<td>Non-uniform: Parts – agents and relationships – evolve separately according to different rules</td>
<td>Emergence: Systems’ properties are higher level functions of the systems, notably synergistic</td>
<td>Instability: In the long period, step changes or catastrophes occur with sudden swaps between attractors</td>
</tr>
<tr>
<td>Co-evolution: The parts evolve in conjunction with each other to fit the system’s environment; such fitting is dynamic</td>
<td>Undefined values: The meaning of systems’ interfaces with their environments evolve</td>
<td>Nonlinear: Outputs are not proportional to inputs; the whole is different from the sum of the parts; holism applies</td>
<td>Mutability: Random internal changes occur yielding new internal configurations</td>
</tr>
<tr>
<td>Downward causation: The parts create the whole system but also the parts are affected by the emergent properties of the whole</td>
<td></td>
<td>Phase changes: Feedback leads to sudden jumps in systems’ properties</td>
<td>Non equilibrium: Systems operate far from equilibrium; they are dissipative; energy flows establish semi-stable modes as dynamical attractors</td>
</tr>
<tr>
<td>Non-standard: Systems contain structures in space and time which are heterogeneous and changing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-modification: Parts can change their associations/connectivity freely – randomly or by evolved learning</td>
<td></td>
<td>Unpredictability: Systems are chaotically sensitive to initial conditions</td>
<td></td>
</tr>
<tr>
<td>Self-reproduction: Systems can replicate themselves; new structures can occur in the copies</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Whilst organisations, their members (and stakeholders) and groupings (markets and industries) seem to desire order to facilitate prediction and control to foster own performance towards pre-determined objectives, changes in the environment and perturbations within the system, at various levels – inventions and innovations, etc. – provide frequent disturbance of any (static) equilibria. Thus, a variety of equilibrium perspectives have developed – notably, the profit maximising equilibria of the firm and of the industry according to neo-classical economics, and the alternative analyses for firms according to Cournot, Bertrand, and Nash equilibria.

The notion of dynamic equilibrium, a system being in dynamic equilibrium when inputs equal outputs, has proved interesting but has been overtaken somewhat by chaos theory and its development into complexity theory. In complexity theory analyses, although parts of a system may appear to be close to, or in, equilibrium (attractors) that situation does not prevail and so, when considering the whole system, it is far from equilibrium, although it may exhibit order on occasions.

Thiétart and Forgues (1995) examine three types of equilibrium which, largely, are determined by the natures of feedbacks within the system. Negative feedbacks, via their effect of dampening the influences of variables, act to return a system to its prior/initial state – stable equilibrium. Positive feedbacks reinforce changes made by variables and so, small changes increase geometrically – explosive equilibrium (leading to collapse of the system). When both positive and negative feedbacks are present in a system simultaneously, the system may reach a stable equilibrium (point attractor), may return to a previous state periodically – reach periodic stability (periodic attractor), or its behaviour can be more complex, including being completely erratic, or ‘chaotic’ – the system’s behaviour is contained within a strangely-shaped surface (strange attractor). In the final condition, the system is sensitive to initial conditions. The state of a system is dependent upon the natures and strengths of the relationships between its agents.

The recognition of the essential impact of the relationships between the agents in a system contrasts with more traditional paradigms of systems in which the agents are the focus in designing systems as deterministic, predictable chains of summable parts to achieve a specified ‘primary task’. In such systems, feedback is regarded as, essentially, a monitoring/reporting mechanism to inform management so that control (and performance improvement) can be exerted; feedforward, analogously, operates for predictive control.

The autonomous nature of the agents in the system and the constantly evolving relationships between them, as well as the other axioms of complex systems (see table 1), determine that not only are the outputs from the system unpredictable but also control cannot be exerted/imposed from outside. Such a situation is in stark contrast with much traditional organisational theory and analysis which employs external and internal controls to enhance performance towards that predicted, in pursuit of a pre-determined primary task. Complex systems do have order rather than being totally chaotic, there is structure but it is self-determined and coevolving, there is control but within the system rather than imposed on it, the system does respond selectively to environmental forces but the outputs remain unpredictable.
3. Construction project realisation

Construction projects are realised through the combination of a great diversity of activities constituting design, construction, and regulation/control functions (see figure 1). Either end of the realisation processes, client/customer – demand side – activities variously occur as the rationale for commissioning the project and for its occupation, use, adaptation(s) and final disposal, increasingly with (partial) re-cycling into subsequent projects.

Figure 1: The Project Realisation Process (developed from Fellows, 2009).

Notes:

(1) Performance leads to satisfaction of participants and, hence, (perspectives of) project success.

(2) Performance-Satisfaction-Success also produces feedforward in the ‘cycling’ of project data and information to aid realisations of future projects through participants’ perception-memory-recall filtering (‘experiences’).

(3) A similar model applies to projects in use (beneficial occupation) but with ‘Facilities Management’ and ‘Maintenance and Adaptation’ replacing ‘Design’ and ‘Construction’ as major functionary groups.
Robertson (2004) notes that if agents and relationships, the totality as depicted in figure 1, are considered as a system, it is possible that the system is complex. That observation is reinforced by Feigenbaum (1978, 1979) who asserts that chaotic behaviour is probable when the number of agents exceeds two.

Over many years, construction project realisations have been widely criticised for poor performance, criticism which has been levelled at the performance of the products also. The bases of such generic criticisms, which, commonly, concern fragmentation, are founded in traditional organisational management theories and assumptions, epitomised in rational behaviour and the quasi-mechanistic paradigm. That paradigm sees organisations through a reductionist lens with organisations being quite stable systems with pre-determined, rigid (formal) structures such that input requirements, transformation processes and resultant outputs are deterministically predictable with ease and accuracy, irrespective of the procurement approach adopted. Changes can be problematic but are addressed by adaptation of mixes of resources, most of which are available quite readily (especially, given adequate funds).

Weick (1977), Quinn and Cameron (1988), and many other researchers have questioned the ‘traditional’ perspective of organisations, suggesting, instead, that “…political games between organizational actors, intuition, and random events come into play in shaping an organization’s future” (Thiétart and Forgues, 1995). Further, the structure of the construction industry has undergone significant changes in many countries since 1980 such that ‘main contractors’ no longer execute any construction operations themselves (using directly-employed operatives) but, exclusively, manage subcontractors. Further structural changes have been occasioned through the widespread use of concession arrangements for procurement by public sector clients – notably, the various forms of public private partnerships (PPP) – which have brought about new financially-driven organisational structures, including (more) temporary consortia (Gruneberg and Hughes, 2006).

4. Organisational culture in construction

Organisational culture, which develops from the organisation’s founders and others who are influential in its history, is how we do things in this organisation (Schneider, 2000), or, “…the collective programming of the mind which distinguishes the members of one organization from another” (Hofstede, 1994). Schein (1984) determines two primary types of organisational culture: ‘structured’ – a bounded, rigid organisation with clear rules and requirements; ‘free flowing’ – an unbounded, egalitarian organisation without much formal structure, thereby encouraging debate and internal competition (analogous to the mechanistic-organic typology of Burns and Stalker, 1961).

Even if not employing ‘competing values’ (e.g, Cameron and Quinn, 1999) directly, use of dimensions to assess cultures operates similarly (e.g., Hofstede, 1994: Process – Results Orientation, Job – Employee Orientation, Professional – Parochial, Open – Closed System, Tight – Loose Control, Pragmatic – Normative). The characteristics of organisational cultures, which are constructed by combinations of the measurements along the various dimensions, may be represented as power, role, task or person (Handy, 1985); an alternative is market, hierarchy, clan, adhocracy (Cameron and Quinn, 1999).
The Tavistock Institute of Human Relations (1966) noted the importance of informal, social systems for performance on construction projects. “…informal structures emerge and persist in a way that is remarkably robust to changes in the formal organizational structure” (Anderson, 1999). Management, whether addressing formal or informal structures (systems), according to more ‘traditional’ perspectives, is the active factor (agent) to determine and achieve performance through securing and organising the other resources (agents) in the system. That perspective leads to a definition of management – making and implementing decisions concerning people to perform tasks in pursuit of objectives. However, Simon (1964) considers that it is questionable if decision making in organisations is goal-directed but suggests that it is directed at determining new courses of action which satisfy the perceived set of constraints and so, accepting bounded rationality, may be more akin to the ‘garbage can’ model.

Meyer and Rowan (1977) note that organisations must optimise several performance criteria, both output and maintenance (Scott, 1992) to survive and to grow. Those criteria are increasing in number and diversity and so, organisations, and their managers, must juggle a diversity of expectations and constraints that lead to a complex payoff function beyond optimisation (March and Simon, 1958). Thus, commonly, organisations pursue new goals in reaction to environmental forces, as characterised by Tavistock (1966) in respect of construction projects as temporary, multi-goal coalitions.

Given the widespread criticisms of construction – projects, organisations and the industry – portraying a dangerous, dirty, macho, opportunistic, etc. culture in which performance is unreliable, risks are high and returns inadequate, it remains widely beloved by its members – a way of life, with a jovial, innovative, and ‘can do’ side to the culture (witness ‘Bob the builder’!). The industry contains, and, further, is very closely associated with a vast diversity of organisations; likewise the organisations’ activities and the projects which are executed. Hence, even for a single country, the construction industry is a cultural conglomerate, more extensively so through mobility of labour and multiplied on major, international ventures.

Examining organisational culture profiles in construction yields notable spread on whichever dimensions are employed for both individual dimensions and their aggregation. Those cultural profiles are both impacted by the national culture(s) and impact on the organisational climate. A further set of interactions occurs through globalisation. What is important is that culture arises informally and dynamically through humans and their relationships and, although aspects may be embodied in formal structures, only the formalities which appropriately represent the members and relationships between them are sustainable.

5. Discussion: construction cultures in complex (system) organisations

Boisot and Child (1999) depict the (informal) organisational transaction-governance structures of bureaucracies, clans, fiefs and markets in 3-dimensional I-Space. The dimensions of codification, and abstraction of information yield C-Space (culture space, Boisot and Child, 1996) and are supplemented with diffusion to yield I-Space; codification and abstraction measure cognitive complexity while diffusion measures relational complexity. Thus, bureaucracies exhibit low
transactional complexity, fiefs and markets are medium, and clans are high; those positionings relate to their relative locations along the spectrum from ordered to chaotic regimes. Examination of the adhocracy form of organisation (culture) results in its being high complexity, particularly due to its emphasis on invention/innovation hence, quite high in both cognitive complexity and relational complexity, placing it potentially the closest to the chaotic regime, as noted in table 2.

Table 2: Locations of Organisations, by culture typologies, in I-Space (developed from Boisot and Child, 1999; Cameron and Quinn, 1999)

<table>
<thead>
<tr>
<th></th>
<th>Undiffused Information</th>
<th>Diffused Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Codified Information</strong></td>
<td>Bureaucracies</td>
<td>Markets</td>
</tr>
<tr>
<td></td>
<td>Information diffusion limited, under central control</td>
<td>Information diffused extensively but no control</td>
</tr>
<tr>
<td></td>
<td>Relationships impersonal and hierarchical</td>
<td>Relationships impersonal and competitive</td>
</tr>
<tr>
<td></td>
<td>Submission to superordinate goals</td>
<td>No superordinate goals, individuality</td>
</tr>
<tr>
<td></td>
<td>Coordination hierarchical</td>
<td>Horizontal coordination by self-regulation</td>
</tr>
<tr>
<td></td>
<td>No need to share values and beliefs</td>
<td>No need to share values and beliefs</td>
</tr>
<tr>
<td><strong>Uncodified Information</strong></td>
<td>Adhocracies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information diffusion limited by diversity, little control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationships personal and competitive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Submission to superordinate goals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coordination horizontal through self-regulation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No need to share values and beliefs</td>
<td></td>
</tr>
<tr>
<td><strong>Feifs (Hierarchies)</strong></td>
<td>Information diffusion limited by lack of codification to face-to-face relationships</td>
<td>Information is diffused but limited by lack of codification to face-to-face relationships</td>
</tr>
<tr>
<td></td>
<td>Relationships personal and hierarchical</td>
<td>Relationships personal and non-hierarchical</td>
</tr>
<tr>
<td></td>
<td>Submission to superordinate goals</td>
<td>Goals are shared through negotiation</td>
</tr>
<tr>
<td></td>
<td>Hierarchical coordination</td>
<td>Horizontal coordination through negotiation</td>
</tr>
<tr>
<td></td>
<td>Need to share values and beliefs</td>
<td>Need to share values and beliefs</td>
</tr>
</tbody>
</table>

Unlike most production industries, but in common with other project industries, construction, via unique assemblies of components, in individual locations, at different times, usually produces bespoke products for which performance targets are contracted in advance. However, unlike most other project industries, the norm in construction is not only the separation of design and production but, further, the vast fragmentation (individuality of activities and organisations) within design, production and assembling in the project realisation process. Thus, the agents in a construction system are only partially connected – as expressed in standard contract terms and in industry procedures – which generates areas of order (Anderson, 1999) and, given the temporal changes in construction
realisations, the systems evolve dynamically. Further, both inter- and intra-projects, the agents and relationships between them are in flux which generate both instability and additional complexity.

Notoriously, agents within a construction system tend to adapt opportunistically to changes which they perceive (and/or predict) in endeavouring to improve their own rewards. Their actions seem to accord with a temporal, episodic model – the present’s actions both depend on past actions (and their consequences) and impact on actions in the future – and to accord to a power law (as in economic time series, etc.); therefore, construction systems and their agents comply with those aspects of complex behaviour. The systems’ operating landscapes also change continuously because rewards to an agent are believed to depend on the actions of other agents and so, adaptations produce coevolving, local, temporary order/equilibria (denoting the presence of attractors). Holland and Miller (1991) note that such systems operate at considerable distances from their optimal performance equilibria.

For strategy, Thiétart and Forgues (1995) observe that “…systematic, coordinated, planned and thought-out approaches are combined with muddling through, hesitation and impulsive responses….Reality contains elements of rationality, formality and order mixed with intuition, informality and disorder.” Further, “Experimentation, innovation and individual initiative…are sources of instability” hence, those attributes, which are highly valued in project managers, also contribute to chaotic or complex system behaviour. So, acknowledging that such organisations’ futures cannot be predicted (except possibly partially in the short term only), managers tend to progress incrementally and regard alternative futures as gambles rather than relying on forecasts which they consider (if only through experience) to be highly fallible.

Unfortunately, the usual processes for securing work in the industry, commonly fuelled by vested interests and simplistic techniques in widespread usage, serve to inculcate false certainty over prediction and control of the future. Thus, with performance realisations being significantly different from those predictions, dissonance and, consequent, dissatisfaction, lead to recriminations, conflicts and compensation claims. Particularly due to increased power of those who exercise demand and their (understandable) desire for certainty, coupled with intense competition in supply, construction suffers by acceding to such desires, rather than following the reality of the supply situation and, at least, adopting stochastic approaches to performance forecasting.

6. Conclusions

Construction projects are complicated, comprising many different resource inputs, from independent participants, subject to increasing regulations, in varying locations, at particular times, impacted by changing environments, using alternative processes, and all in bespoke combinations. Thus, it is common for the industry to be viewed as unique and for realised performance to be considerably different from desires and forecasts. Reugg and Marshall (1990) articulate a major contributor to such generic problems – that construction activities are stochastic processes but common forecasting techniques are deterministic and operate as ‘best-guess’, conglomerate estimates of input variables but treated as certain estimates with results presented in single-figure, deterministic terms.
Examining the features of construction projects, organisations and the industry in the context of complexity theory, it is evident that the axioms of complexity are applicable in construction. Thus, evolutions in construction, its autonomous agents and relationships between them, and the (essential) responsiveness to the environment, indicate the operation to be in a complex regime. Hence, stability (equilibrium) is only local/temporary, control occurs through self-development, and forecasting (of performance) is more hazardous than, even, common stochastic methods accommodate.

Although this study is an initial exploration of theory and literature, it is clear that the emerging paradigm of complexity offers much potential for gaining understanding of construction. That requires the establishment and execution of a thorough agenda of research in the complexity paradigm which casts aside the staid perspectives on construction to undertake open and rigorous investigation – a cultural development and paradigm shift is highly desirable.

References


Creating Villages: A Teambuilding Strategy Using Tribal Rituals

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Abstract

Generally observed tribal and ritual behaviors are typical to all aspects and levels of life: business, social, religious, and political. These behavioral tools are a participatory means for the individual to both communicate and comprehend others within the greater whole of culture. This paper speaks to the obvious parallel characteristics of the effective business team and of the healthy tribal society. Such a concept is often referred to as “Ubuntu”, an African term which is the inspiration for this strategy. This strategy calls for all team members involved in the ritual to be interconnected and share responsibility so that they are no longer regarded as individual parts but as a united team. The rituals of life unite the abstract through symbolism, emotional attachments, and repetition. On the business team level, members of the team take part in numerous levels of ritual with symbolism, emotional attachments, and repetition. These levels may include rites of initiation and retirement, team identity establishment, social connection, decision making, conflict resolution, and celebration, and shall include particular symbolic acts permitting the business teams to recognize the reoccurrence of such acts. In the end, this approach is intended as a means to motivate business persons to use rituals in varied teambuilding situations.

Keywords: tribal/ritual behavior, teambuilding, Ubuntu, symbolism, emotional attachment
1. Introduction

Although we observe ritual behavior all around us in business, social, religious, and political life, most rituals are viewed as simple habits. Everyday rituals, such as handshaking, dress codes, initiation ceremonies, funerals, and weddings hold little or no meaning.

Rituals are a participatory way for individuals to understand and reiterate a society or organization’s culture, values, ethics, and expected behaviors. They use symbolism to store and transmit information in a dramatic and active fashion (Turner, 1968). French positivist sociologist, Émile Durkheim believed that rituals translate a human need or aspect of life, either individual or social, and through the performance of such rituals, members strengthen the bond attaching oneself to society (Durkheim, 1915). When the symbolism is understood and taken seriously, rituals provide a powerful tool for communication and connecting. Symbolism gives the ritual action importance and meaning (Kertzer, 1988).

It was this project’s intent to understand the common kinship, community, rituals, and ceremonies of tribal life and translate this understanding into a teambuilding strategy for modern teams within business organizations. This project is based upon the mindset that by studying “other” people and cultures we can learn more about ourselves (Maybury-Lewis, 1992).

2. Significance of problem

Teams are a fundamental organization of human power and are central to all types of organizational processes (Hartzler and Henry, 1994). The modern organization is built on teams. From the early 1980’s to the present, organizations have increased their reliance on teams versus that of the individuals (Ilgen, 1994). As such, the concept of teamwork training has skyrocketed in the last 15 years (Ilgen, 1999).

The benefits of teamwork are numerous and well documented. One such benefit of groups is an increased ability to problem solve. A study by the Department of Psychology of the University of Illinois at Urbana-Champaign found that groups have a greater ability to recognize and reject errors, recognize and accept correct answers, and produce multiple insights into effective strategies which lead to the superiority of groups in problem solving activities (Laughlin et al., 2003). Another study published in the Journal of Engineering and Technology Management shows that within a specific technical area the ability to solve problems and complete tasks are improved with effective and synergistic teamwork (Hoegl and Parbateeha, 2007). Overall, teams provide more perspectives, information, opinions, and effort than individuals alone (Bandow, 2001).

The importance of teamwork is rarely overstated. Teamwork can literally be a matter of life and death. Robert Huckman and Gary Pisano of Harvard Business School found that teamwork plays a major role in performance. Huckman and Pisano’s study of heart surgeons practicing at multiple hospitals found that death rates from similar procedures at each hospital varied up to 5 times. The two
professors point to differences in “team human capital” and “complementarity” as reasons for the discrepancies of performance. Team human capital is explained as a nonmaterial asset that is derived from customs developed by team members, and complementarity is the familiarity between a worker and other human, physical, and organizational assets of the firm (Huckman and Pisano, 2006). In this study, the interactions between a surgeon and other team members, such as anesthesiologists, nurses, and technicians, are crucial to the procedure, demonstrating the importance of effective teamwork and collaboration. The fact that the surgeon’s performance is not transferable between hospitals is evidence of how vital it is to have the right team members and resources available within a firm.

Although the positive outcomes of teamwork have been demonstrated and justified, this achievement still remains elusive and difficult to reach. It is a common practice within organizations to give more attention and importance to the task itself, rather than to team development. Team members are routinely expected to complete the task at hand and learn how to effectively work as a team simultaneously (Bandow, 2001). This project focused solely on teambuilding activities and attempted to help various organizations learn how to work more effectively as a team.

2.1. Statement of purpose

This project developed a strategy designed to increase teamwork within business organizations. It focused specifically on increasing the trust, commitment, and communication of teams within business organizations by using tribal rituals. Although this teambuilding strategy may be applicable to teams outside of business organizations, it is solely focused on rituals that could be used within a work environment. The strategy is applicable to executives, managers, and team members within business organizations and identifies specific actions that engage teams while fostering these three focuses. The term “business organization” can be a public or private entity, a for-profit or not-for-profit entity, or any other type of firm that uses teams of people to produce a good or service.

Although verbalized and communicated to people within an organization, this strategy is considered informal. It does not dictate absolute rules and regulations for a team or organization to follow. It attempts to create a culture, a feeling, and an overall understanding of possible ways to increase the trust, commitment, and communication within teams. Those using the strategy can utilize its examples and ideas and adapt them to their specific situations and members. They are free to incorporate the strategy as they see fit. The strategy serves as an education tool. Since each team and business organization is unique, creating a policy with specific rules and regulations would appear counterproductive. Instead, it is intended to create a culture and environment where trust, commitment, and communication can flourish freely within teams.

The strategy is organized to address three specific criteria (trust, commitment, and communication) in hopes of creating ways to increase their magnitude, occurrence, and effectiveness. In choosing to focus on these three, this strategy concentrates on the most common and vital elements of effective teamwork. Also, these three criteria are broad and encompass more specific traits, such as toleration, empathy, shared purpose, participation, honesty, and vision alignment. These sub-traits are discussed and analyzed in their own right, but the strategy will organize and summarize them into the respective
overall criteria (trust, commitment, communication). This strategy can be developed into training programs, workshops, retreats, handouts, gatherings, and other communicative or educating devices pertinent to a team or a team’s overall organization. The deliverable focus of this project, however, was solely to develop the strategy.

The basic contents of the strategy are as shown below:

- Justification / Introduction of Strategy
- Teamwork Fundamentals
- Tribal Society Overview
- Tribal Rituals and Wisdom
- Specific Ideas for Ritual Practice within Organization/Team

2.2. Literature review

The review of literature for this project was performed in three distinct steps. Step one was to research the basic question: “Why do we work in teams?” The second step was to research tribal rituals and wisdom, and the third step was to research literature that dealt with both topics (teams and tribal rituals). The research for all three steps focused on academic and professional journal articles and books. Journal articles were secured via Purdue University’s online library system and focused mainly on psychological, anthropological, and business journals. Books were obtained from the local public library (Chicago’s Harold Washington library).

The first step of the literature review yielded studies performed by psychology professors, government professors, business researchers/writers, and organizational behaviorists. First, the benefits of working in teams were demonstrated by studies comparing a team’s outputs/results to an individual’s outputs/results. These studies provided insight into the potential of teamwork and the possible advantages of working together. Specific studies are summarized in more detail in Section 2.1.

The first step of the literature review provided an understanding of the most common traits of effective teams as well as the most common dysfunctions of teams. In the numerous journals and books reviewed, many different traits were mentioned and discussed, varying from specific behaviors to broad concepts. This project, with the help of the literature review, summarized the most commonly mentioned traits into three easily understood criteria (trust, commitment, and communication). All of the specific behaviors and sub-traits can be found in each of these three criteria, as they are seen as spawning from the host trait.
The second step of the literature review was to research tribal rituals and wisdom using anthropological, psychological, and religious journals, and books as the primary source of data. The research began by defining what is meant and implied by the terms “tribal” and “ritual.” This review was focused on the works of major analysts of rituals and their meanings, Emile Durkheim and Victor Turner. Both have written numerous books on the subjects of rituals, rites, ceremonies, and religious processes of tribal and indigenous societies. For this project, the research of these two anthropologists focused on their most well known works, The Elementary Forms of the Religious Life by Emile Durkheim (1915) and The Ritual Process: Structure and Anti-Structure by Victor Turner (1968). These two books provided this project with first-hand accounts of indigenous tribes’ rituals, rites, and ceremonies and the meanings behind each. Both of these books dealt with the religious and survival techniques resulting from rituals. Neither book commented on the application of rituals to business or teams. In researching these books, the intent was to understand the ritual process, the meanings behind it, and how it affects its participants. From this understanding, the project could then draw connections between ancient rituals and modern team functions.

The third step in the literature review was to research studies that attempted to apply tribal rituals to modern business functions. Relevant studies were minimal, but did surface. The relevant studies can be grouped within two categories: South African studies of Ubuntu, and all others. The African concept of Ubuntu can be summarized as the culture of mutual caring, compassion, reciprocity, and dignity in maintaining communal living. Post-apartheid South Africa has struggled to effectively integrate native Africans into the workplace. Ubuntu is a concept that South African professors and businesses reference and utilize to deal with the vast differences and diversity within its workplaces and communities as it teaches humility, compassion, and connection among mankind and natural life. In researching Ubuntu and its business applications, this project focused on the work of six major authors on the subject. Numerous articles by Lovemore Mbigi, Barbara Nussbaum, N. Poovan, M.K. du Toit, A.S. Engelbrecht, E.D. Prinsloo, and R.J. Khoza were researched. These Ubuntu articles were insightful but had limited application. More details, examples, and practical ideas were desired after reading such articles. The authors chose to focus on the concept of Ubuntu in an introductory sense and failed to bring actual practices, rituals, and applications to the text. Few tangible ideas were given on how to apply Ubuntu to the work setting. The aim of this project was to establish concrete ideas, practices, and options available for all team members.

The articles that dealt with tribal rituals and business and did not reference Ubuntu were minimal, but proved insightful. Christian Lange’s article, “Ritual in Business: Building a Corporate Culture through Symbolic Management,” was a brief introduction on the concept of establishing a corporate culture through ritual and symbolism (Lange, 1991). The article focused on a few key rites and rituals and gave specific examples in workplaces across the world. While this article provided a few helpful examples of rituals in business, its focus was broadly based on corporations of any type, as opposed to business teams. No mention of teamwork, teambuilding, or the characteristics of teams were mentioned in the article, although, general management techniques were discussed. Also, the ideas in the article were commonly known and provided little new insights or possibilities.

Two other articles, “Creating Tribes” by Elisa Robyn (2000) and “The Power of Corporate Tribes” by Ayelet Baron (2005) were of lesser relevance. Both were extremely brief arguments for the treatment
of employees or students as tribes (instead of “teams”). They offered inspirational words and justification, but fell short of demonstrating actual applications or examples.

Based upon the information available, it was decided that this project’s proposed strategy would apply the tribal practices and wisdom described by Durkheim (1915), Turner (1968), and Maybury-Lewis (1992) to the three criteria of teamwork (trust, commitment, and communication) for use in modern business organizations. While ritual techniques have been referenced to business in past articles, no such study has focused team engagement.

2.3. Procedures

The deliverable aspect of this project was a corporate strategy for teambuilding using tribal rituals. The goal of this strategy is to motivate, inspire, and educate personnel on the subject of teamwork. In order to develop such a strategy, this project followed five procedures:

1. **Justification for teamwork and teambuilding strategies** - Addressed its target audience and justified its existence. The importance of teamwork was illustrated and proven.

2. **The fundamentals of teamwork** - Explained the characteristics of effective teamwork and the common dysfunctions of teams.

3. **Tribal society overview** - Presented examples, histories, and practices of indigenous and ancient tribes across the world. The focus was on the social bond, kinship, and organization of such tribes and the rituals, rites, and ceremonies used by them.

4. **Tribal wisdom** - Explained the function, meaning, and purpose of each ritual referenced in the preceding procedure.

5. **Relevance and tangible ideas** - Addressed the importance and relevance to its audience. Explained how it can benefit teams within business organizations and demonstrated specific practices and ideas that the audience can utilize.

3. Deliverable strategic plan: results

3.1. Introduction of teambuilding strategy

Teams are a fundamental organization of human power and are central to all types of organizational tasks. Through teamwork we can create synergy, develop social networks, and tackle complex problems. While teamwork is important and powerful, it is difficult to achieve. As individuals, we each bring specific histories, opinions, ethics, and traits into a group. Finding a common vision or
similarities among individuals can be difficult causing the cohesiveness of the group to suffer. Building a team is an enduring process that requires commitment, training, and exercise.

This strategy will attempt to provide team members with specific practices to increase the trust, commitment, and communication within organizational teams. Detailed below are rituals for participation by all team members in order to increase the magnitude of these three criteria. These rituals have been inspired by tribal societies throughout the history of man. Tribal societies have used rituals to communicate important information, cultures, ethics, history, and identities. This strategy attempts to borrow upon this sentiment in order to understand the symbols included in such practices.

The tactics explained below call for an open-mind and a culture of empathy and tolerance. While some rituals detailed in this strategy may seem commonplace or understood, serious study of each is essential. Rituals are lost when they are not taken seriously. Rituals contain a quantity of information in the form of symbolism that communicates our world, ideas, and emotions. If the symbolism is not fully understood, the ritual becomes a meaningless habit. The intent is to fully comprehend the history and message of each ritual.

3.2. Ritual practice in teams/organizations

The following are six ritual practices/categories that teams within business organizations can use to strengthen trust, commitment, and communication. Each is defined, given context, and explained. They are presented for the development and generation of ideas and can be tweaked or used as described. Some may or may not be applicable to every business organization. This is not an all-inclusive list, but a listing of common rituals inspired by tribal societies that can easily be implemented into today’s business environment.

3.2.1. Rites of passage

Initiation ceremonies: Introduces the organization or team’s culture, values, identity, and ethics. These ceremonies strengthen the commitment to the team by its members.

History and Examples – Initiation ceremonies have been used by countless societies for thousands of years to symbolize, celebrate, and transition people into different stages of their lives. They instruct members of the ways of the group and test them to ensure they are worthy of membership.

- Scarification (body modification)
- White Coat Ceremonies (doctors)
- Bar Mitzvah
- Religious Confirmation
• Hazing
• Baptism
• Vision Quest

Applications for Business Organizations

• Orientation for new team members - Introduces them to the culture and other members of the team and acts as a welcoming
• Initiation Oaths - Confirms the norms, expectations, values, and ethics of the team
• Celebrations for transitions within team members (ex. baby showers, weddings, graduations, etc.)
• Hazing - Tests mental, physical abilities, and dedication
• Scarification/Branding - Creates an identity and tests dedication to group as well as mental and physical strength

Death Rituals: Celebrates the vitality of life in the face of death with the intent to conquer the fear of death. Celebrates the achievements of the deceased and their impact on others.

History and Examples – There is evidence of the earliest humans performing death rituals. Whatever the belief system, death ceremonies are common in every culture throughout human history.

• Flowers
• Reflection
• Funeral dances, songs, and activities
• Memorial statues, etc.

Applications to Business Organizations

• “Death” can be replaced with retirement/leaving the team/organization.
• Retirement Ceremonies (ex. celebrations, recognition)
• Remembrance of ex-members (ex. plaques, pictures) – These attempts to remember and acknowledge ex-members’ contributions to team show the history of the team
• Willed Items - Items of significance that are handed-down to other team members upon leaving the team/organization (ex. a clipboard, a stuffed animal, an autographed photo of Patrick Ewing)

3.2.2. Identity Rituals

Establishes the team’s culture, values, identity, and ethics. These ceremonies strengthen the commitment of each member to their team. They create a distinct identity and create conformity within the team.

**History and Examples** – Tribal societies have long distinguished themselves from rival tribes and peoples. Face paint, body modification, symbols, and colors were distinguishing factors they used to create an identity. Each symbol had a spiritual meaning and function to the tribe. Mythography and storytelling were ancient ways in which pre-literate societies communicated their history, identity, and wisdom of past generations.

• Face Painting and Body Painting
• Tribal Flag, Symbol, Color
• Mythography and Storytelling
• Branding and Tattooing

**Applications to Business Organizations**

• Vision Alignment Ceremonies - Individuals share their history, life vision, and goals. The ceremony should focus on the interconnection of team members and the similarities within the different histories and visions. Vision alignment ceremonies insure that each member has similar goals and ambitions, thereby, creating a single, shared purpose within the group.

• Team Flag Creation – Creation of a flag with symbols, colors, and ideals that represent the group’s vision.

• Dress Code - Dress codes are an outward way to represent the team’s identity.

• Team Song - Creates connection to ideals via music.

• Team Handshake - Creates a symbol of acceptance, welcoming, greeting, and friendship thru the physical touch of another member.

• Team Name - The process of brainstorming a team name can influence togetherness and shared ideas.
• Team Motto – A repetitive slogan that represents a team’s values and vision

3.2.3. Social connection rituals

Enhances the connection between individuals. Personal differences are forgotten when common characteristics and interconnection are at the forefront of these rituals, fostering a sense of trust within participants.

History and Examples – While a broad category of ritual, social connection rituals are historically prevalent and well documented. These rituals attempt to bring a feeling of community and harmony to the tribe or village.

• Singing and Dancing – Emotional, artistic displays of human emotion. Symbolizes harmony among peoples.

• Drum Circles – A symbol of equality. There is no lead. The main purpose of a drum circle is to create a group consciousness. A collective voice of the group develops and connects its participants.

• Feasting – A universal gathering used by numerous cultures. Feasts celebrate community through the power of food and sustenance. It creates a communal feeling and social connection, and provides fun for all.

• The Kula Ring – Since the earliest times, the exchange of gifts has been the main way for humans to relate to one another. In Papua New Guinea, a gift exchange ceremony named “Kula” has been used to create obligation and connection between different tribes among an 18 island area.

• Sport – Non-competitive sports have been used for generations to display human power and teamwork.

Applications to Business Organizations

• Drum Circles - These are becoming popular among contemporary businesses. They create an artistic outlet for team members as well as creating a communal harmony.

• Communal Feasts - Sharing casual or formal meals with team members creates an opportunity for socializing and community.

• Gift Exchanges – Can be used throughout the year to create obligation and connection between members.
• Sports - Sport leagues competing against other organizations or teams can enhance the community of a team. Each member recognizes the singular goal of the team and plays their role to achieve the goal.

• Art

3.2.4. Decision-making rituals

Decision-making rituals attempt to recreate the atmosphere of a tribal village with no central authority. The goal of these rituals is to create an egalitarian, consensus decision-making environment. Such an environment fosters demonstrates trust among members.

History and Examples – Tribal villages have long used the process of consensus decision-making. Consensus decision-making is an active process that involves empathy, understanding, and open-mindedness.

• Iroquois Native American Indians traditionally used consensus decision making

• Mennonites used the process of consensus decision-making

Applications to Business Organizations

• Quality Circles - Create a medium for all team members to express concerns, brainstorm ideas, and propose suggestions.

• Consensus Decision Making Ceremonies - Major decisions are made by the process of consensus decision-making. Options are proposed, concerns are voiced, and consensus must be achieved before decision is made.

3.3. Strategy execution action steps

Table1: Strategy Execution Action Steps

<table>
<thead>
<tr>
<th>Actions</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Communicate this strategy to all company executives upper management, team leaders, and team members within organization</td>
<td>Company Executives, Upper Management</td>
</tr>
<tr>
<td>2. Hold regular meetings (at least monthly) to incorporate the ritual practices that are relevant to the team</td>
<td>Team Leaders</td>
</tr>
<tr>
<td>3. Create a purposeful, serious environment for rituals. All parties should know the reason, symbolism, and communication associated with the rituals.</td>
<td>All Parties</td>
</tr>
<tr>
<td>4. Evaluate and assess the ritual program</td>
<td>All Parties</td>
</tr>
</tbody>
</table>
4. Conclusions & observations

This strategy is intended to motivate, educate, and suggest a deeper, more thoughtful approach to applying rituals to teambuilding situations. It promotes a more attentive view of symbolism and messages within rituals. Its application is intended for teams within business organizations, companies, and corporations. The rituals described in the strategy are intended as recommendations for teams to practice. They are not intended to be regulations or absolutes for teams to follow. Some rituals may or may not be applicable to a particular team. It is the job of the team leader or individual team members to choose which rituals seem most appropriate and benefiting. This is not an all-inclusive list of rituals.

The strategy is probably best suited for smaller teams with 2 to 12 participants. Such rituals may overwhelm a larger group of participants and diminish the positive effects of the rituals. A smaller group will allow participants to be more open, honest, and vulnerable.

A definitive aspect of rituals is their repetitiveness. So to be most effective, the rituals should be practiced regularly. The intent, message, and symbolism should always be understood and communicated when performing the rituals. The practice of going through the motions will not be worthwhile or effective. The rituals are intended to create inward reflection and spiritual pondering.

References


Assessment of Organisational Culture and Innovation Practices of Construction Companies in Southwest Nigeria

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Abstract

Innovation is an engine of growth. The ability of the construction companies to innovate in today’s construction business environment which is highly competitive and rapidly changing is very critical to their survival. This ability depends on the type of extant organisational culture in the companies. This paper investigates the organizational culture and innovative practices of small, medium and large sized construction companies that are based in the southwest geopolitical zone in Nigeria. Survey instrument was adopted in the collection of data. The data were analysed using percentage and mean score and presented in a table format. The results indicate that power culture is dominant and innovation practices are encouraged by the three categories of companies with the aim of achieving growth and making use of technical and managerial assets efficiently. Smaller companies appear to be more innovative than the larger ones. Fragmentation and technological problems were identified as strong barriers to innovation. The paper recommends that construction organisations build, maintain and promote appropriate organisational culture for innovation to thrive if they are to remain competitive and successful and that there is a need for them to give innovation its due place in their budget.

Keywords: organisational culture, innovation, construction companies, business environment, Nigeria
1. Introduction

Innovation is very critical to the survival of any organisation. Hence innovation in the construction industry has of recent been a subject of discussion in driving the performance of the construction industry (Egan, 1998). In comparison with manufacturing and other industries, low rate of innovation is believed to be responsible for the poor performance of the construction industry (Winch, 1998; Gann, 2000). Therefore, the industry is associated with backwardness and branded as an industry that fails to innovate in comparison to others (Winch, 2003). The fragmentation and low level of investment in research and development (R&D) have also been highlighted in some studies (Egan, 1998) as being responsible for the lack or low level of innovation. Literature evidence has shown that innovation has room for improving the construction process (Widen, 2002) and hence performance. There is need for the construction industry to innovate in order to satisfy the needs and aspirations of the clients and thereby improve competitiveness (Latham, 1994; Egan, 1998).

Research evidences in Nigeria suggest that the Nigerian construction industry is not meeting the yearnings and aspirations of its clients. Fragmentation and low level of investment in R&D have been identified in literature as major barriers to innovation. These pervade the length and breadth of the industry and seem to be the prevailing culture in the Nigerian construction organisations. Therefore what the construction organisations have in common is organisational culture which is shared experiences, values, norms, assumptions and beliefs that govern their actions. Culture plays a vital role in an organization's ultimate success. Literature evidence (Pfeffer, 1998; Cameron & Quinn, 1999; Rashid, Sambasivan & Johari, 2003; Towers, 2006) lends credence to this assumption. The ability of the construction companies to innovate is therefore dependent on leadership, resources available and capability which are some of the dimensions of culture. Culture is therefore primary determinant of innovation (Ahmed, 1998). This paper investigates the dominant type of culture, level of importance attached to innovation outcomes and hindrances to innovation in the industry.

2. Literature review

2.1 Organisational culture

By viewing organisational culture as the result of various overt and covert decisions, actions and events that have transpired over time, it becomes possible to identify the elements of culture. Culture consists of two contrasting aspects - the visible and the invisible. The visible culture embraces things like the vision, mission and values, organisational charts, policies and procedures, and formal processes. The invisible includes but not limited to the norms, unwritten rules, taken for granted beliefs and shared assumptions. These invisible parts are deep seated in the employees. It is this deep seated aspect that really supports or inhibits organizational culture and the ability of organisations to innovate.
Hofstede (1984) describes culture as the values, attitudes, beliefs and behaviours that represent an organisation’s working environment, organisational objective, and vision. Culture can also be described as a combination of artefacts or practices, values and beliefs and veiled assumptions that organisational members have in common about proper behaviour (Cameron & Quinn, 1999; Hofstede, 1997).

Culture acts as a blueprint influencing all aspect of life. It knits a collection of individuals into an integrated entity called "organisation." Culture within organisations is reflected in the manner that people perform tasks, set objectives and administer the necessary resources to achieve objectives (Barthorpe, Duncan & Miller, 2000). The simple and most commonly cited definition is “the way we do things around here” to succeed (Lundy & Cowling, 1996). A collection of a number of key elements and factors that have been recognized over a period of time as being intrinsic within organisations is known as “organisational culture”.

### 2.2 Types of organisational culture

Literature reveals four types of organisational culture (Berrio, 2003). These are the People, Adhocracy, Market and Hierarchy which are variously labelled by different authors.

- **The people culture:** This is characterized as a family type of organization where people share a lot of themselves. It is an organization that concentrates on internal maintenance with flexibility, concern for people and sensitivity for customers. It emphasizes individual development, morale, teamwork participation and consensus (Cameron & Quinn, 1999).

- **Task culture:** This refers to a non permanent organisation structured to solve a particular issue and is disbanded once the issue or task is completed (Hodge & Anthony, 1991). It concentrates on external positioning with a high degree of flexibility, individuality and discretion rather than seeking stability and control. Its key values are creativity and risk taking.

- **Power culture:** This is an organization that focuses on external maintenance with a need for stability and control in order to have a competitive position. It focuses more on external (market) rather than internal issues. This culture tends to view the external environment as threatening, and seeks to identify threats and opportunities as it seeks competitive advantage and profits (Cameron & Quinn, 1999).

- **Role culture:** This refers to an organization that focuses on internal maintenance with the need for stability and control. The culture focuses more on internal than external issues and values stability and control over flexibility and discretion. It is the traditional "command and control" model of organizations.
2.3 Organisational culture and innovation

Innovation is different from creativity in that creativity is the production of novel ideas and it is an indispensable precursor to innovation (Goh, 2006). Innovation requires a mindset that probes perceived boundaries to bring new ideas to realization by breaking new ground and giving new outputs from less or different inputs (Goh, 2006). An organization needs to be truly creative in order to be truly innovative. It must be able to implement creative ideas largely through its culture.

Therefore organizational behaviours, norms and values that promote the production of creative ideas within an organization must be cultivated by the leadership of the organisation. Risk-taking, gathering of ideas from various angles, teamwork and a strong sense of ownership are among organizational behaviours that promote creativity and innovation. If leaders want to encourage creativity and innovation in their organization, they need to develop and support an appropriate culture to that effect.

For innovation to take root in an organisation employees must be integrated and be highly culturally involved (Denison, 2008). The speed and frequency of innovation depends on the following criteria which are implicitly the dimensions of organisational culture: risk taking, resources for innovation, widely shared knowledge, specific targets, tools and techniques, reward systems and rapidly formed relationships (Twati and Gammack, 2006). Hence culture is the primary determinant of innovation (Ahmed, 1998; Damanpour, 1991). We therefore submit that innovation is an outcome of organizational culture.

2.4 Building innovative culture

Building innovative culture lies with rewarding creativity, encouraging entrepreneurship and tolerating risk (Xie & Li-Hua, 2009). To be an innovative company, employees must be given intellectual freedom; and free exchange of ideas within and between units or departments must be encouraged (Xie & Li-Hua, 2009). Creative and enthusiastic individuals must be motivated and given opportunity to release these ideas and use them to develop the organisation (Murray & Steele, 2004). Managers must also work closely with the units or departments to launch new services. This calls for the development of an innovative culture. Social interaction is an essential ingredient in innovation and it constitutes a key element in the process of innovation which requires the existence of a vision of knowledge (Aramburu, Sa’enz & Rivera, 2006). To sustain innovation, Wang and Ahmed (2003) notes that knowledge and organizational learning processes are essential.

Promotion of a culture for innovation is of paramount importance in achieving and sustaining competitiveness. According to Murray and Steele (2004), fostering a culture of innovation and creativity involves installation of a strategy that will ensure that: cross-fertilisation of ideas is encouraged; the amount of creative ability at all levels of the organisation is adequate; the creative
potential of staff is identified; the opportunity for the exercise of creativity on all projects is analysed with the aim of matching tasks and people.

2.5 Innovation and its importance

Examination of the innovation literature shows diversity in views and approaches to what innovative activity is. Many definitions introduce tangential concepts. Therefore innovation has variously been defined as change, creative thinking, perception, invention and entrepreneurial philosophies. However the various definitions can be summarized as the implementation of creative ideas within an organization. Innovation is central to economic competitiveness and constitutes a principal determinant of organisational growth in most developing economies (Goh, 2006).

These viewpoints mean that the primary focus of competitiveness and growth must be centred on innovation-driven initiatives if an organisation is to remain competitive and be efficient in the utilisation of scientific, technical, organisational and managerial assets. Innovation could be one single key success factor that brings about success in tough economic conditions. It is required by organisations to stay buoyant in the marketplace due to its potential to create new markets and new industries (Goh, 2006).

2.6 Barriers to innovation

There are many factors that have been identified in literature as militating against innovation in organisations in many developing countries. Prominent among them are literacy rates, property rights, high risks, low literacy rates, weak higher educational systems, inadequate intellectual property rights protection, long gestation periods and huge amounts of financial resources (Goh, 2006). Also taxation of new products, processes and services, which are undergoing the transition to full commercialisation, acts as a barrier (Knight, 1996). Additionally, inappropriate government tax is seen as a barrier as it restraints innovation (Pihkala Ylinenpaa & Vesalainen, 2002). Other barriers that could be identified are size of domestic market, access to international markets, government interference, insecurity, mismanagement, the type and level of government support, fragmentation and low level of investment in R&D.

3. Research methodology

The study population is made up of selected construction companies in the southwest geopolitical part of Nigeria. A total of sixty questionnaires were administered through personal contact and research assistant on the selected construction companies. The samples were randomly selected from the list of companies that registered with the Federation of Construction Industry (FOCI). Only 40 questionnaires representing 66.67% were validly completed, returned and analysed. Most of the questions were based on ordinal scale using Likert-like scale. Respondents were asked to rank the barriers to innovation. The data were analysed using percentage and mean scores.
3.1 Results and discussion

3.1.1 Profile of the respondents and the companies

Table 1 and Table 2 show the profile of the respondents and the companies respectively. Majority of the respondents constituting 52.5% had working experience above 5 years, all of them had tertiary education and belong to one profession or the other with only 22.5% being professionally qualified. However, a larger percentage constituting 70% is above lower management cadre as shown in Table 1. These imply that their opinions on the organisational and innovative culture of their companies including barriers to innovative practices can be considered reliable baring biases. The 52.5% respondents with working experience above 5 years gives the confidence that their opinion can be reliable as it takes a minimum of five (5) years to achieve a self-sustaining new culture in an organisation (Wilson, 1993).

Table 1: Profile of Respondents (N = 40)

<table>
<thead>
<tr>
<th>Years of Experience in Present Company</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td>19</td>
<td>47.5</td>
</tr>
<tr>
<td>5 – 10</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>11 – 15</td>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>16 – 20</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Above 21</td>
<td>2</td>
<td>2.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level in Hierarchy of Management</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Management Cadre</td>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>Middle Management Cadre</td>
<td>23</td>
<td>57.5</td>
</tr>
<tr>
<td>Lower Management Cadre</td>
<td>7</td>
<td>17.5</td>
</tr>
<tr>
<td>Supervisory Cadre</td>
<td>5</td>
<td>12.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational Qualification</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Level</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>City &amp; Guilds or below</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Diploma</td>
<td>29</td>
<td>72.5</td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>Master Degree</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Professional Designation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architect</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Builder</td>
<td>13</td>
<td>32.5</td>
</tr>
<tr>
<td>Engineer</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Estate Surveyor</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Quantity Surveyor</td>
<td>21</td>
<td>52.5</td>
</tr>
<tr>
<td>Membership Grade of Professional Body</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate</td>
<td>31</td>
<td>77.5</td>
</tr>
<tr>
<td>Corporate</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>Fellow</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Licensed Members of Professional bodies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>No</td>
<td>31</td>
<td>77.5</td>
</tr>
</tbody>
</table>

Table 2 shows that the ages of all the companies are above 5 years which means they must have had a matured full blown culture. The companies are into various contracting businesses but majority constituting 42.5% of them are found in the Building construction area while the remaining 57.5% are into diverse areas. Also the small sized companies (1-50 employees) are in the majority (47.5%) while
the large sized companies (>300 employees) are in the minority (22.5%). The companies have different business and ownership structure with Private Limited being the dominant business structure with 35% and with majority (52.5%) being entirely owned by Nigerians.

Table 2: Profile of companies (N=40)

<table>
<thead>
<tr>
<th>Years of establishment</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-10</td>
<td>15</td>
<td>37.5</td>
</tr>
<tr>
<td>11-15</td>
<td>13</td>
<td>32.5</td>
</tr>
<tr>
<td>16-20</td>
<td>6</td>
<td>15.0</td>
</tr>
<tr>
<td>21-25</td>
<td>6</td>
<td>15.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Contracting business</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building construction only</td>
<td>17</td>
<td>42.5</td>
</tr>
<tr>
<td>Civil Engineering construction only</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Building &amp; Civil Engineering Construction only</td>
<td>14</td>
<td>35.0</td>
</tr>
<tr>
<td>General Construction Contracting only</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Mechanical &amp; Electrical Services only</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>Steel Construction only</td>
<td>1</td>
<td>2.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Employees</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-50</td>
<td>19</td>
<td>47.5</td>
</tr>
<tr>
<td>51-300</td>
<td>12</td>
<td>30.0</td>
</tr>
<tr>
<td>Above 300</td>
<td>9</td>
<td>22.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Business Structure</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sole Proprietorship</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>Partnership</td>
<td>10</td>
<td>25.0</td>
</tr>
<tr>
<td>Public Limited</td>
<td>7</td>
<td>17.5</td>
</tr>
<tr>
<td>Private Limited</td>
<td>14</td>
<td>35.0</td>
</tr>
<tr>
<td>Cooperative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Statutory</td>
<td>1</td>
<td>2.5</td>
</tr>
</tbody>
</table>
### 3.1.2 Types of organisational culture

The construction companies appear to be operating various types of organisational culture but it seems **Power Culture** is the dominant type of culture in the industry as shown in Table 3 with small, medium and large sized companies having mean score of 3.89, 3.92 and 3.80 respectively. This is understandable as the construction environment is becoming more competitive and the environment is rapidly changing. Hence construction organisations need organisational culture that is compatible with the market environment. This is also consistent with the view of Cameron and Quinn (1999) on Power Culture which is claimed to be suitable for competition in a changing market environment.

**Table 3: Type of Organisational Culture**

<table>
<thead>
<tr>
<th>Type of Culture</th>
<th>Small (N=19)</th>
<th>Medium (N=12)</th>
<th>Large (N=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>People culture</td>
<td>3.47</td>
<td>3.50</td>
<td>3.60</td>
</tr>
<tr>
<td>Task culture</td>
<td>3.85</td>
<td>3.58</td>
<td>3.60</td>
</tr>
<tr>
<td>Role Culture</td>
<td>3.57</td>
<td>3.42</td>
<td>3.73</td>
</tr>
<tr>
<td>Power culture</td>
<td>3.86</td>
<td>3.92</td>
<td>3.80</td>
</tr>
</tbody>
</table>

### 3.1.3 Level of importance placed on innovation outcomes

Six innovation outcomes were assessed as in Table 4. First in the level of importance is ‘Company growth’. This suggests that innovative culture is cultivated with the aim of achieving growth. Closely following as 2nd is ‘efficient utilisation of technical assets’. Since construction requires heavy equipment with heavy capital outlay, this suggests that efficiency in the utilisation of the equipment for profit maximisation is of paramount importance. The 3rd in rank is ‘efficient use of managerial assets’ implying that without making use of the skills and creativeness of the management staff, achieving the organisational goals may be difficult. The last innovation outcome in rank is the ‘efficient utilization of scientific assets’. This ranked last possibly due to the reluctance of the construction industry to invest in R&D.
It appears that small sized construction companies with overall mean score (OMS) of 3.85 tend to be more innovative than the medium sized with OMS of 3.76 and large sized with OMS of 3.46. This seems strange as the small and medium construction companies do not always have the capital to embark on R&D like a few large sized companies. However, this can be explained in the context of the need for growth and survival through available means. In summary, construction companies regardless of size, attach some importance to innovation outcomes with the grand mean score of 3.69.

Table 4: Level of Importance Placed on Innovation Outcomes

<table>
<thead>
<tr>
<th>S N</th>
<th>Innovation Outcomes</th>
<th>Size of Company</th>
<th>Overall</th>
<th>Over all Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Small (N=19)</td>
<td>Medium (N=12)</td>
<td>Large (N=9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mea Ranki</td>
<td>Me Ranki</td>
<td>Ranki</td>
</tr>
<tr>
<td>1</td>
<td>Economic competitiveness</td>
<td>3.79 5</td>
<td>3.92 2</td>
<td>3.44 4.5</td>
</tr>
<tr>
<td>2</td>
<td>Company growth</td>
<td>4.11 1.5</td>
<td>4.08 1</td>
<td>3.44 4.5</td>
</tr>
<tr>
<td>3</td>
<td>Efficient utilisation of costs</td>
<td>3.26 6</td>
<td>3.50 6</td>
<td>3.00 6</td>
</tr>
<tr>
<td>4</td>
<td>Efficient utilisation of costs</td>
<td>3.95 3</td>
<td>3.83 3</td>
<td>3.78 1</td>
</tr>
<tr>
<td>5</td>
<td>Efficient utilisation of costs</td>
<td>3.89 4</td>
<td>3.58 5</td>
<td>3.56 3.5</td>
</tr>
<tr>
<td>6</td>
<td>Efficient utilisation of costs</td>
<td>4.11 1.5</td>
<td>3.67 4</td>
<td>3.56 3.5</td>
</tr>
<tr>
<td></td>
<td>Overall mean and ranking</td>
<td>3.85 1</td>
<td>3.76 2</td>
<td>3.46 3</td>
</tr>
</tbody>
</table>

3.1.4 Perception of Innovative Practices

Table 5 reveals that the small, medium and large sized construction companies sometimes engage in innovative practices with the overall mean score of 3.38, 3.23 and 3.26 respectively. The Table indicates that the number one innovation practice of the construction companies is to make necessary resources available for innovation as this was ranked first in the overall mean score. The second and third practices are to embed innovation in their vision and mission and encourage teamwork and collaboration though both appear to be given equal attention as shown in the Table. Surprisingly, ‘budgeting for innovation activities’ which is an essential ingredient to the provision of resources for innovation was the lowest in rank. This suggests that the resources being made available for innovation are funded from the budget from other areas and innovation is not specifically budgeted for. Ranking ‘budgeting for innovation activities’ as the last innovation practice seem to reinforce the belief that construction companies feel reluctant to invest in R&D.
Table 5: Perception of Innovative Practices

<table>
<thead>
<tr>
<th>S/N</th>
<th>Innovative Practices</th>
<th>Size of Company</th>
<th>Overall mean</th>
<th>Overall ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Small (N=19)</td>
<td>Medium (N=12)</td>
<td>Large (N=9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean score</td>
<td>Ranking</td>
<td>Mean score</td>
</tr>
<tr>
<td>1</td>
<td>Soliciting innovative ideas from employees</td>
<td>3.16 9</td>
<td>3.64 2.8</td>
<td>2.56 12</td>
</tr>
<tr>
<td>2</td>
<td>Teamwork and collaboration</td>
<td>3.81 3</td>
<td>3.79 1</td>
<td>3.56 2.5</td>
</tr>
<tr>
<td>3</td>
<td>Motivation and reward for innovative ideas and creativity</td>
<td>3.21 8</td>
<td>2.82 10</td>
<td>2.94 9</td>
</tr>
<tr>
<td>4</td>
<td>Tolerating risk</td>
<td>2.53 12</td>
<td>2.55 11</td>
<td>3.22 6.5</td>
</tr>
<tr>
<td>5</td>
<td>Freedom of expression of intellectual ideas.</td>
<td>3.53 7</td>
<td>3.36 7</td>
<td>3.22 6.5</td>
</tr>
<tr>
<td>6</td>
<td>Usage of new innovative ideas</td>
<td>3.63 6</td>
<td>3.45 6</td>
<td>3.11 8</td>
</tr>
<tr>
<td>7</td>
<td>Making necessary resources available for innovation</td>
<td>4.16 1</td>
<td>3.64 2.8</td>
<td>3.56 2.5</td>
</tr>
<tr>
<td>8</td>
<td>Inclusion of innovation in the vision and mission of the company</td>
<td>3.8 4</td>
<td>2</td>
<td>3.6 2.8</td>
</tr>
<tr>
<td>9</td>
<td>Involvement of leadership in innovation activities</td>
<td>3.7 9</td>
<td>3.6 8</td>
<td>3.3 4</td>
</tr>
<tr>
<td>10</td>
<td>Establishment of formal processes to promote innovation</td>
<td>3.0 5</td>
<td>11 2.9 1</td>
<td>2.7 10</td>
</tr>
<tr>
<td>11</td>
<td>Budgeting for innovation activities</td>
<td>2.6 8</td>
<td>5 2.1 12</td>
<td>2.6 11</td>
</tr>
<tr>
<td>12</td>
<td>Training managers in the concepts and tools of innovation.</td>
<td>3.1 1</td>
<td>10 3.0 8</td>
<td>3.3 5</td>
</tr>
</tbody>
</table>

**Overall mean and ranking**

| Overall mean and ranking | 3.3 1 | 3.2 3 | 3.1 7 | 3.26 |

### 3.1.5 Barriers to innovation

From Table 6, the most challenging barrier to innovation seems to be the fragmentation of the industry. This appears to be so because the design and construction process are under different
management umbrella. This arrangement brings about adversarial culture. Whereas the two aspects—design and construction need each other’s cooperation for innovation to be successfully carried out. The next most potent barrier appears to be the difficulties in assimilating new technologies for innovation development. Nigeria is a developing country. Her level of technological development is still at its infancy. Therefore it is no surprise that this could rank high in the barriers to innovation. The implication of this for other developing countries is that more attention should be directed on the area. Closely following is the lack of essential human capital which ranks third. The reason for this seems to be the problem of brain drain due to the prevailing economic conditions in the country. Long gestation periods of innovation projects and huge amounts of financial resources involved in innovation activities which appear to be pointer to why construction companies feel reluctant to innovate were considered the weak hindrances to innovation. This suggests that given the right atmosphere, the Nigerian construction industry may embrace in totality the culture of innovation.
<table>
<thead>
<tr>
<th>S N</th>
<th>Innovation Barriers</th>
<th>Size of Company</th>
<th>Overall mean</th>
<th>Overall ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Small (N=12)</td>
<td>Medium (N=12)</td>
<td>Large (N=9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean score</td>
<td>Ranking</td>
<td>Mean score</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overall mean</td>
<td>Overall ranking</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Difficulties assimilating new technologies for innovation development</td>
<td>9.68</td>
<td>3</td>
<td>9.50</td>
</tr>
<tr>
<td>2</td>
<td>Lack the essential human capital to leverage on technological developments</td>
<td>7.42</td>
<td>11</td>
<td>10.4</td>
</tr>
<tr>
<td>3</td>
<td>Lack of scientific knowledge and technical skills</td>
<td>8.32</td>
<td>8</td>
<td>9.25</td>
</tr>
<tr>
<td>4</td>
<td>Inadequate intellectual property rights protection</td>
<td>6.42</td>
<td>13</td>
<td>7.38</td>
</tr>
<tr>
<td>5</td>
<td>Lack of incentive for innovation development</td>
<td>8.21</td>
<td>9</td>
<td>5.67</td>
</tr>
<tr>
<td>6</td>
<td>Lack of incentive to carry out research and development (R&amp;D).</td>
<td>7.47</td>
<td>10</td>
<td>6.58</td>
</tr>
<tr>
<td>7</td>
<td>Long gestation periods of innovation projects</td>
<td>5.89</td>
<td>14</td>
<td>3.42</td>
</tr>
<tr>
<td>8</td>
<td>Huge amounts of financial resources involved</td>
<td>4.05</td>
<td>15</td>
<td>5.58</td>
</tr>
<tr>
<td>9</td>
<td>Taxation of products, processes and services resulting from innovation</td>
<td>8.37</td>
<td>7</td>
<td>6.92</td>
</tr>
<tr>
<td>10</td>
<td>Inappropriate government tax</td>
<td>9.79</td>
<td>2</td>
<td>8.58</td>
</tr>
<tr>
<td>11</td>
<td>The size of domestic market and access to international markets</td>
<td>6.63</td>
<td>12</td>
<td>7.92</td>
</tr>
<tr>
<td>12</td>
<td>Government interference and lack of interest.</td>
<td>9.32</td>
<td>5</td>
<td>10.10</td>
</tr>
<tr>
<td>13</td>
<td>Level of insecurity in the country</td>
<td>8.58</td>
<td>6</td>
<td>9.42</td>
</tr>
<tr>
<td>14</td>
<td>Mismanagement of fund meant for research and development.</td>
<td>9.53</td>
<td>4</td>
<td>7.25</td>
</tr>
<tr>
<td>15</td>
<td>Fragmentation of the construction industry</td>
<td>10.30</td>
<td>1</td>
<td>11.8</td>
</tr>
<tr>
<td></td>
<td>Overall mean and ranking</td>
<td>7.99</td>
<td>7.99</td>
<td>7.95</td>
</tr>
</tbody>
</table>
4. Conclusion and recommendations

This study reveals that the dominant culture in the Nigerian construction industry is the power culture which appears to be most suitable for the present economic reality in the country. The outcome of the study shows that construction companies attach some importance to innovation and they engage in some innovation practices with the aim of achieving some measure of growth. Making resources available, capturing innovation in their vision and mission and encouraging teamwork and collaboration appear to be the most prevalent practice in the industry but surprisingly innovation does not receive specific attention in their budget. However there are some strong barriers confronting their attempts at embarking on successful innovation. The fragmentation of the industry and technological problems stand out as presenting the strongest hindrances to innovation. For innovation to thrive in the construction industry there is a need for construction organisations to pay the due attention to it by giving it a place in the budget. It is important that construction organisations build, maintain and promote a culture of innovation if they are to remain competitive and successful.

References


Emerging Organizational Structure and Cultural Trends in Public Agencies

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Abstract

A company’s organizational structure can have a pronounced effect on the success of a construction project. Interrelated with this, the type of project delivery system selected by an owner and the culture within an organization can have far-reaching effects on the outcome of a project. In the public sector, a functional-based organizational structure was chosen most predominately in the past, in part, because it was closely correlated to a Design-Bid-Build (DBB) project delivery system. However, the pressure placed upon owners to deliver projects faster, and for less cost, has resulted in the move away from a traditional DBB type of project delivery system and toward the use of Design-Build (DB) as an alternate project delivery system. Since DB may be performed by either an integrated design-builder, joint venture of two or more firms, engineer–led entity, or contractor–led entity, there is considerable internal interaction among all parties involved in the project during the course of performing work. Since project culture is not a well-understood concept, this interaction can lead to clashes due to misunderstandings regarding each party’s cultural bias. As alternate forms of project delivery become more popular, there will be an increased need to determine which organizational factors result in the successful interaction both between, and within these firms and ultimately, the success of the project.

Keywords: organizational structure, organizational culture, project delivery system, design-build
1. Introduction

According to the Project Management Institute (PMI)\(^1\), a project can be defined as a temporary endeavor undertaken to create a unique product or service. Furthermore, PMI\(^2\) states that two attributes that make construction projects unique are the involvement of both a team of hired specialists in the design and construction disciplines and the many stakeholders engaged in the project.

The design and construction phases of a project have been predominately performed, until recently, by separate companies. This has resulted in the design and construction industry being described as the most fragmented and disparate of all of the major industries in North America\(^3\). In part, this has been the result of university education, industry training, business operations, and legal impediments, which have fostered the separation of facility design from construction for more than a century. Yet, the process of design and construction relies heavily on the contributions of many different organizations, the success of which depends upon an integrated team that works harmoniously and efficiently towards shared goals. This paper focuses on assessing the organizational structures and cultures that result in successful interaction between design professionals, construction specialists, and owners; which contribute to the success of teams managing design and construction projects.

2. Background

The design and construction industry is one in which each project assembles people with different talents in accordance with their profession, knowledge, and experience; and requires them to work with others from diverse companies. This inter-organizational team approach - with representatives from the owner, designer, and contractor, as well as subcontractors and suppliers - is widely used to produce a project’s desired results. According to Albanese\(^4\), there is a unique difference between inter- and intra-organizational teams. Intra-organizational teamwork focuses directly on enhancing an organization’s effectiveness and indirectly on contributing to a project’s effectiveness; whereas inter-organizational teamwork focuses directly on a project’s effectiveness by addressing the relationship of owner, designer, and contractor. Within a Design-Build (DB) project delivery system both types of teamwork are found, with the strength of each type dependent upon the structure of the DB entity.

In an environment of organizational change, owners are looking for an approach to determine the most appropriate strategic use of capital project resources in their work relationships with contractors. In the current environment, managers have to assess the value that their organizational resources contribute to successful project development and execution; and those aspects of the project that have financial, life cycle cost, and legal implications for their company.

The increasing effects of globalization are inducing owner organizations to continuously alter their capital project organization in an attempt to reduce fixed costs while improving operational efficiency. Owners are “rightsizing” capital facility engineering and construction capabilities globally, in an effort to better leverage resources and expertise by supplementing them with contractor personnel and third party consultants wherever possible.
3. Organizational structures and characteristics

A company’s organizational structure can provide significant insight into its ability to perform a project. Per PMI², owner or customer organizations are more commonly assembled as a functional organization as shown in Figure 1; while contractors are more frequently structured along the lines of a projectized organization as shown in Figure 2.

![Figure 1: Functional Organization](image1)

In a classical functional organization, there is a clear hierarchical structure and each employee reports to a single supervisor. The opposite of this is found in a projectized structure, where most of an organization’s resources are involved in project work, team members are often collocated, and project managers (PMs) have almost complete autonomy.

![Figure 2: Projectized Organization](image2)

A matrix structure, similar to that shown in Figure 3, is more commonly used by engineer/constructor organizations and has a blend of functional and projectized characteristics. The PM’s role can vary from that of a project coordinator in a weak matrix to that of a full-time PM with considerable authority in a strong matrix.

![Figure 3: Matrix Organization](image3)
Table 1 shows key project-related characteristics of the major types of organizational structures. The table has been annotated to incorporate the typical organizational structure for an owner, engineer/constructor, and contractor. By including the typical key team member types of organizations at the bottom of the table, several observations can be made. First, there is little authority given to the project manager in an owner organization, while almost total authority exists for a PM in a contractor organization. This has the potential for problems when the two PMs are engaged in decisions on a peer-to-peer basis. The same issue may exist, on a more limited basis between an owner PM and their counterpart in the matrix structure of an engineer/constructor organization.

Table 1: Organizational Characteristics

<table>
<thead>
<tr>
<th>Project Characteristics</th>
<th>Functional</th>
<th>Matrix</th>
<th>Projectized</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weak Matrix</td>
<td>Balanced Matrix</td>
<td>Strong Matrix</td>
</tr>
<tr>
<td>Project Manager’s Authority</td>
<td>Little or None</td>
<td>Limited</td>
<td>Low to Moderate</td>
</tr>
<tr>
<td>Percent of Performing Organization’s Personnel Assigned Full Time to Project Work</td>
<td>Virtually None</td>
<td>0–25%</td>
<td>15–60%</td>
</tr>
<tr>
<td>Project Manager’s Role</td>
<td>Part-time</td>
<td>Part-time</td>
<td>Full-time</td>
</tr>
<tr>
<td>Common Titles for Project Manager’s Role</td>
<td>Project Coordinator/Project Leader</td>
<td>Project Coordinator/Project Leader</td>
<td>Project Manager/Project Officer</td>
</tr>
<tr>
<td>Project Management Administrative Staff</td>
<td>Part-time</td>
<td>Part-time</td>
<td>Part-time</td>
</tr>
</tbody>
</table>

Organizations which perform project-related work are typically executed by an organizational structure that is larger than the sum of their projects; the maturity of the organization with respect to its project management system, culture, style, and organizational structure can influence a project’s performance. Organizational culture may be defined as the social energy which guides human behavior in an organization, and it may provide implicit direction for an organization’s members. Organizational cultures have a direct influence on project decision making. For example, an entrepreneurial organization may be more willing to accept an unusual or higher-risk approach on a construction project than a larger, more conservative organization. In addition, a project manager with a highly participative style may encounter problems in a rigidly hierarchical organization, while a PM with an authoritative style may be equally challenged in a participative organization. According to PMI, the importance of organizational culture may be emphasized on construction projects when the performing organization’s (the design and construction entities) culture differs from that of the owner or customer. Furthermore, such melding of different cultures needs to be recognized to effectively manage the decision process for the project to be successful. In addition to the cultural differences, the management of construction is sometimes made more difficult when several organizational structures intersect because of the various stakeholders’ differing viewpoints and agendas.
According to Dillard Partners LLC, regardless of how one measures organizational success, contemporary management theorists agree that an organization is more likely to succeed if it takes steps to align its actions with its mission…its behaviors with its vision. This is the guiding principle of organizational culture. Projects should measure and improve organizational culture and effectiveness along specific criteria that (a) impact the success business performance improvement methods, models, and theories-in-use, (b) affect the utilization of human, structural and relational capital, and (c) determine individual, group, and organizational outcomes.

4. Impact of culture on organizational effectiveness

In a recent study of construction companies, twenty-two (22) variables that determine organizational effectiveness were identified and the data from one-hundred sixteen (116) construction projects analyzed. The authors defined organizational effectiveness as the selection and utilization of strategies, organizational structure, culture, resources, and capabilities most appropriate for the organization to be able to reach its long-term objectives. The study concluded that strength of culture within an organization was among those variables that were found to be most significant. The authors concluded that a strong and well-shared culture in organizations was a key factor to organizational efficiency, and was as important as technical or financial capability.

In another study, a review of public literature was conducted to determine the strategies that organizations could deploy in order to enhance their project delivery capability. The expectation was to determine and access those factors that would enhance project delivery capabilities measured in terms of project effectiveness; or the degree of accomplishment of project cost, schedule, quality, and customer satisfaction. The authors identified seven (7) factors, two (2) of which included project organization and organizational culture. Following the identification of capability factors, hypotheses were created to test for significance and validity for each factor. These hypotheses included the belief that “the better the project organization, the higher the project delivery capability”, and “the stronger the project culture, the higher the project delivery capability”.

The study was conducted through a questionnaire completed by 42 design firms and 34 construction organizations. The study concluded that the first hypotheses “the better the project organization, the higher the project delivery capability” had a high correlation coefficient and was confirmed. The second hypotheses “the stronger the project culture, the higher the project delivery capability” was not supported. The authors concluded that project culture is not a well-understood concept. Many project managers may have concluded that project culture is the same as organizational culture, which is in the domain of executive management and not project oriented.

Research scholars have generally agreed that organizational culture refers to shared assumptions, values, beliefs and patterns of practices within an organization. These shared assumptions, beliefs and values are always subject to the different organizational structures. It may be more appropriate to say that, as an abstract concept or a hypothesis, the meaning of organizational culture has not been clearly defined yet.
5. Growth of design-build

An interesting development in the design and construction industry has been the increased recognition of the value added and contributions provided by major subcontractors to the overall success of projects. In a design-build project, specialty and subcontractor services are often procured on the basis of best-value or qualifications. This creates (for the duration of the project) an organization that has a relatively flat, team-based management hierarchy. An example of this for a civil project, with both intra- and inter-organizational reporting relationships, is shown in Figure 4. This DB organization has elements of a projectized structure, with the project engineer, construction manager, and all team members reporting directly to the PM; as well as a strong matrix, with the PM reporting to the company project director and construction operations’ manager.

The execution of a design-build contract is different from a traditional design-bid-build (DBB) contract in that the detailed project scope is not clearly defined when the price and schedule are determined. In this type of environment, some general contractors have had difficulty in transitioning to team-based relationships, where the construction contractor must become a team player. In addition, the same situation can exist with independent design consultants who may have a cultural bias or preconceived ideas regarding the work performed by contractors.

5.1 Design-Build Institute of America

According to the Design-Build Institute of America (DBIA), over the past 20 years, DB has jumped from less than 10 percent to more than 45 percent of all U.S. non-residential construction and, is currently the dominant mode of project delivery. During the same time period there has been a corresponding decrease in traditional design-bid-build project delivery and a relatively unchanged amount of CM at risk. DB and DBB together comprise over eighty percent of all project delivery, while together with CM at risk, the three methods delivery over ninety percent of all projects.
Within the DB arena, there are several different types of organizational structures which may be utilized. In a survey conducted by the Design-Build Institute\(^8\), the four principle types of organizations are contractor-led, integrated design-builder, designer-led, and joint-venture. Contractor-led organizations comprise over one half all DB entities, while joint-venture (JV) teaming arrangements are least used at less than ten percent of the time.

Currently, there is no uniform consensus on the most appropriate organizational structure suitable for implementing design-build delivery systems. However, determining the best structure for any specific project is fundamental to meeting the changing markets of construction\(^9\). This information could provide significant insight for companies pursuing strategic planning to enter the design-build market, restructure corporate skills for DB market entry, or optimize and reorganize its DB organizational structure.

### 5.2 Cross-industry study

In a survey\(^6\) conducted amongst the top three-hundred and forty (340) top designers, builders, and DB professionals, responses were solicited for several data categories, including the general nature of organizations conducting design-build, organizational responsibilities, and structure of DB entities. The participants in the study were comprised of 45\% engineer/construction contractors, 39\% contractors, and 6\% architect/engineers as shown in Figure 5.

The size of the firms varied from $10M to $1.4B, with the largest area of respondents (20\%) from large companies of $550M. The predominant organizational structure was a matrix configuration (73\%) followed by a projectized configuration (22\%). A functional organizational structure (5\%) shown in Figure 6 was used by the least amount of respondents.

![Figure 5: Distribution of Survey Respondents\(^6\)](image1)

![Figure 6: Structure for In-House DB\(^6\)](image2)

Figures 5 and 6 indicate that the predominant type of firm responding to the survey was an engineer/constructor (45\%), and the most common organizational structure was a matrix configuration (73\%). This is followed by a contractor organization (39\%) with work performed in a project team (or projectized) structure (22\%). This compares favorably with Table 1, which indicates that the most common organizational structure for engineer/constructors is a matrix configuration, and the most common type of structure for a contractor is a projectized organization.
6. Changes in owner organizations

6.1 City of Los Angeles Department of Public Works

In another study\textsuperscript{10}, the Bureau of Engineering (BoE) for the City of Los Angeles Department of Public Works (LAPDW) documented the implementation of their transformation from a functional organizational structure to a matrix organization. The functional structure that the BoE had traditionally operated under is shown in Fig. 7. This structure placed emphasis on the technical expertise of the functional divisions. When one functional division group completed their portion of the project, the project was passed on to the next functional division group.

![Figure 7: LADPW (Initial) Functional Organizational Structure\textsuperscript{10}]

Under this approach, section heads would work on many projects without any overall guidance with respect to budget and schedule. Often, projects would be reworked and redesigned many times. In other cases, time constraints led to designers passing work along when the design work had errors or was not complete. The primary thought process of the designers was that there were multiple layers within the organization and any errors that remained would be eventually corrected at a higher level. Technical groups could never be sure when a project would be ready for their review. Hence, resources were poorly allocated and bottlenecks formed.

Prior to adopting a matrix structure, the department considered two other restructuring options. The second restructuring option was an independent program concept with all resources needing to complete a program or project included within the program. This option required an increase in BoE staff, because technical designers and specialists would be housed within each self-contained program. Staff would not be shared from program to program. Under this approach, the program projects would certainly be completed but at a premium staff cost because of duplicate staff requirements. The third restructuring option was based upon a geographical concept with all resources divided into regions within the city. This approach would have been the most responsive to immediate political needs, but emphasis on long-term capital improvement programs were missing and sharing of knowledge and expertise within the Bureau was absent.
The adopted organizational concept, shown in Figure 8, was developed based upon the recommendations of three large, in-depth, independent studies of the BoE’s operations. The adopted structure is a program-based matrix, given that each program contains a matrix of project managers and direct technical staff with additional support from shared technical resources. In their final analysis the BoE opted for a program-based matrix because they wanted to maintain the technical expertise found resident in a functional organization. Despite the inherent communication difficulties of a matrix organization, the BoE felt that without the dedicated PMs described in a matrix, the project management process would be weakened and would result in reduced authority, project decisions needlessly performed at inappropriate levels, or an increase in executive meddling overall.

Figure 8: LADPW (Final) Matrix Organizational Structure

This new organizational structure has fewer layers and is centered on just three positions: Project Managers, Program Managers, and Technical Team Leaders. The reorganization is based on increased value being supplied by each position.

6.2 Canadian airport terminal

In a public agency case study, the authors used an ongoing fast-track project for an airport passenger building to investigate the effect of different organizational structures on project coordination. The management team developed an organizational structure and a roles and responsibilities chart at the beginning of the project. Realizing that there were overlaps between different stages in the project, the management team set-up various departments to take care of the departmental benefits, responsibilities, and initiated coordination between the interfaces.

In this case study, the project work load and degree of coordination were not fully appreciated at the initial design stage. Some work, which customarily would be completely designed prior to the start of construction on a traditional design-bid-build project, had to be coordinated between designers and constructors during construction due to the time constraint in the design phase for this fast-track project.
The authors presented three potential organizational structures for their design/construction project. The first was a disciple organization based on the knowledge and skill required for the specific project. In this case, specialists with different expertise work on different sections of the project and collaborate to fulfill the project goal.

This structure was discarded due to several drawbacks. People in this type of organization are specialists rather than generalist – they are very knowledgeable within the discipline but have limited information from other disciplines. In addition, barriers of coordination exist between disciplines due to the authority hierarchy. Managers need to spend considerable effort on coordination to ensure that information flows efficiently; managers in higher positions need to make decisions based on technical issues as well as coordinate between disciplines.

The second organizational structure was a multidivisional organization based on building function, customer basis, or physical location. In this type of organization, the division manager organizes the division teams based upon the sum of the different division’s goals and the result of achieving project objectives. This structure was abandoned due to its inherent disadvantages. For one, specialists are distributed in different divisions based upon different divisional goals; therefore, it is not easy to share the discipline knowledge among peers and standardize the design and building process across divisions. In addition, due to the segmentation of divisions, different specialists may develop similar designs, whereas this information could have been shared. The division manager is more concerned about maximizing the benefit of the division rather than that of the whole project. The division manager does not encourage cross-division coordination, and barriers exist for resource sharing.

The chosen organizational structure was a matrix, where the role of coordination lies on managers at different levels. Depending upon the stage of progress, project manager would need to coordinate among, and specialists would need to report to, either discipline or division managers. However, discipline and division managers would function separately to avoid authority confusion. This type of structure depends strictly upon coordination – the project manager must determine the point at which shifting the organization from discipline management coordination to divisional management coordination should take place. This organizational structure is shown in Figure 9.

![Figure 9: Canadian Air Terminal Matrix Organizational Structure](image)
6.3 Downsizing of owner organization

A survey covering the period from 1990 to 1994 was conducted to determine industry perceptions on organizational changes. This survey involved 41 owner companies and 72 contractor companies. The findings from this survey included the following:

- Owner-contractor relationships were changing, due in part to owner downsizing.
- Owner capital project organizations were reduced by 17% in size (number of people).
- Most owner companies had downsized their capital project staffs.
- More project development and execution work was being outsourced.
- Owner project skills that were reduced or eliminated were detailed design, project management, process engineering, construction management, technical expertise, and project controls.

The principal findings of this survey were supported by a subsequent study covering the period from 1994 to 1998. Data analyzed during this study was based on 274 projects, submitted by 31 CII owner companies. The data was classified into four industry sectors; namely heavy industrial, light industrial, buildings, and infrastructure. Key findings of this study were as follows:

- The relationship between owners and contractors has changed significantly.
- Owners’ workforces are shrinking.
- Alliances are used to fill gaps.
- Work processes and resources needed to manage change have been slow to catch-up.
- New skills are needed to manage complex relationships.

7. Conclusions

The high degree of fragmentation within the construction industry impedes the ability for success on a project. According to Thiry and Deguire, the current dominant organizational paradigm is that instead of looking for ways to adapt an organization to a project-based approach, most organizations look for ways to force-fit a project approach to existing organizational structures. This has facilitated a movement within owner organizations to change from a traditional functional organization to a more project-based matrix organization. At the same time, public agency owners are downsizing and outsourcing more of their project development and executing work to private parties. These recent developments represent a trend by public agencies to move toward a more establish business based project management approach.

8. Areas for future research

Future research efforts by the authors will concentrate on investigating the use of lean construction and relational contracting as it relates to the organizational structure and team effectiveness. These two areas collectively represent the current trend toward improving construction industry performance based upon the common need for more efficient team performance. Clashes in organizational structure or culture will require the need for greater partnering arrangements between all project participants.
References


Barriers to Women in Professional Roles in the UK Construction Industry

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Abstract

The UK construction industry is the country’s number one employer with over two million workers and contributed over 9.2 per cent of the country’s Gross Value Added (GVA) in 2007. Although tempered by the current global economic slowdown and credit crunch, the industry sector still faces critical problems in a shortfall of skilled workers. This problem is exacerbated by a rapidly ageing workforce that lacks diversity. This paper aims to analyse, assess and discuss issues that have been identified that contribute towards a lack of women workers in professional roles in the UK construction industry. The research findings of this paper are based upon the government funding received by Construction Skills for the Women and Work: Sector Pathways Initiative which aims to facilitate the entry, retention and progression of under-represented women workers. Empirical data analysed via key-word analysis from a series of semi-structured questionnaires and focus groups has identified a number of issues and themes which are analysed and discussed in this paper. Although the findings cannot be generalized beyond the context of this study, the data gathered indicates that male dominated organisational cultures, inflexible working practices and a lack of training, support and mentoring networks adversely impact upon women in this sector. This paper analyses and discusses these issues and themes and concludes that the evidence
outlines a need for the strategic expansion of Continuous Professional Development (CPD) training in soft management and communication skills, alongside the promotion of networking and support systems to facilitate the retention and progression of women in the UK construction industry.

**Keywords:** culture, women, equal opportunities, discrimination
1. Introduction

The Office for National Statistics (ONS) took over the role of classifying and collating the statistics of the UK construction industry from the Department for Business, Enterprise and Regulatory Reform (BERR, 2008) on 1st of March 2008. Based upon the most up to date calculations of price and cost indices and outputs, the UK construction industry contributes a healthy 6% of the country’s Gross Domestic Product (GDP) (ONS, 2008). The sector consists of a broad range of over 250,000 businesses that include the production, supply and installation of construction materials and products, the building, operation and refurbishment of buildings; contractors, sub-contractors and professionals.

The most recent research from the sector’s Learning Skills Council (LSC) outlines that within these broad range of businesses and despite the credit crunch, the construction industry is still facing a severe ongoing skills shortage and that recruitment levels are inadequate in meeting the current severe skills gap, ConstructionSkills (2008).

Although there has been a numerical increase in the numbers of women and Black and Minority Ethnics (BMEs) entering the industry, this is only in line with the overall growth of the industry sector. In ‘real’ terms, percentiles have remained relatively unchanged; consisting of between 10-12% of women and 2-4% of BMEs since the year 1990, although figures can vary according to differing measurements. Some theorists place the number of women as consisting of around 13% of the employee base (Gale and Davidson, 2006). For this paper, those put forward by the Office for National Statistics (ONS, 2008) will be utilised and are outlined in Table 1.

It can be stated that regardless of whatever measurement is referenced, the low numbers of women in the UK construction industry falls far beneath the current all-industry standard of 46% for women and 8% for BMEs (ConstructionSkills, 2008).

<table>
<thead>
<tr>
<th>Year</th>
<th>Quarter</th>
<th>Employees (thousands)</th>
<th>Self-Employed (thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>2007</td>
<td>Q1</td>
<td>1,250</td>
<td>189</td>
</tr>
<tr>
<td>2007</td>
<td>Q2</td>
<td>1,257</td>
<td>196</td>
</tr>
<tr>
<td>2007</td>
<td>Q3</td>
<td>1,327</td>
<td>191</td>
</tr>
<tr>
<td>2007</td>
<td>Q4</td>
<td>1,310</td>
<td>191</td>
</tr>
<tr>
<td>2008</td>
<td>Q1</td>
<td>1,280</td>
<td>199</td>
</tr>
</tbody>
</table>

Further to concerns over a lack of gendered diversity in the industry sector is the issue of a ‘workforce time bomb’. This is due to the progressive increase in an ageing workforce alongside an inadequate equivalent supply of replacement workers over the longer term. The percentage of workers aged over 40 has increased by an average of 2% per year since 1990 and those aged over 60 has doubled from 4% in 1990 to 8% in 2007, ConstructionSkills (2008).

The current organisational culture and make-up of the UK construction industry hinders attempts of implementing a knowledge based economy and lifelong learning to promote workforce diversity due to “…the small firms who make up the vast majority of employers within the sector, normative labour market and taxation policies and quasi-regulatory attempts to control the industry’s employment and training practices…..” (Chan and Dainty, 2007, p. 375). Indeed, concerns over the unique UK industry sector organisational culture in failing to provide effective skills training and support in meeting the skills gaps and shortages has historically been recognised as problematic for women (Agapiou et al, 1995) and this situation is predicted to continue (Chartered Institute of Building, CIOB, 2008).

This paper will begin by providing a background literature of organisational cultures within the UK construction industry. It will not discuss societal cultures which can also be engendered (Hofstede and Hofstede, 2004) as the limited data prevents an analysis of this type. The paper will then draw upon some of the most recent salient research carried out in the area of the UK construction industry. The authors take a firm (and to some, a controversial) stance in not drawing upon research done in the Science, Engineering and Technology (SET) field. The authors argue that within the limited space available in this paper, an analysis of the unique formation and organisational culture existent in UK construction industry is merited as opposed to applying a ‘gender themed’ brush that generalises issues of gender to all other industry sectors. The data in this paper is limited within the context of the UK construction industry. The industry sector possesses an inherently (and in some ways uniquely) large number of fragmented Small and Medium Enterprises (SMEs) and organisations that have faced a specific journey of adaptation and evolution in line with governmental policies and frameworks that have impacted upon the industry sector. While it may well indeed be argued that gender issues and concerns over-lap other industry sectors (and society as a whole), the authors make no claims on this beyond the context of this study. Ontologically and epistemologically, the authors are social constructivists. Therefore, concepts such as gender are seen as being relative and subject to constant change; although we recognise that such concepts can be influenced by factors of social consensus, i.e. internal coherence. Knowledge construction within this stance is seen as a random variation of existing knowledge and the reflective and selective retention of new knowledge within each context of experience. The findings and discussions of this paper are therefore placed within the context of the data and environment being studied; of those women we studied and analysed within the UK construction industry.
The next section outlines a specification of the methods and tools that were utilised within the project. Here, the usage of the Grounded Theory (GT) is discussed, whereby issues and literatures have become emergent via an ongoing analysis of the empirical data. In this methodology, it is the data that is central in directing the discovery and expansion of the literature, in an ongoing and emergent process. The methodology section will outline the number of participants, their professions and age groupings and the nature and origin of the qualitative data will be given. This paper outlines the key themes, issues and areas outlined by the study participants for the enactment of positive change, including requests for the introduction of Continuous Professional Development (CPD) training in managerial and communication skills and expansion of mentoring and support networks. This paper concludes by arguing for further research to more fully investigate the role and impact of these changes in the promotion and expansion of women in the industry sector to improve longer term levels of workforce diversity.

2. Historical context

In order to better understand the UK construction industry as it stands today there is a need to view it within its specific historical context. In the 1980s the industry was opened up to freer market along with a reduction in levels of direct governmental involvement. This led to a greater fragmentation of the industry, with contractors increasingly sub-contracting work, leading to a more competitive and aggressive market place that was led by price and risk factors. By the 1990s, the industry sector hit a recession, with the collapse of over-inflated prices in the housing market. These problems deepened with attempts by the government to control inflation and facilitate external investments with overly high exchange rates, and unnaturally low interest rates, which resulted in economically damaging cycles of boom and bust.

Within this economic climate, the UK government commissioned the ‘Constructing the Team’ report by Sir Michael Latham (1994) in an attempt to identify the problems existent within the struggling industry sector. The report outlined the importance of having wider economic stability and for a return to having greater governmental direct contact, in order to improve the business and work flow base of the sector. The report outlined over 30 recommendations on how to achieve this, far too many to mention within the limited space of this paper. Further to these recommendations, Latham (1994) identified a number of critical problems within the industry itself; including its natural fragmentation, severe skills shortage, a lack of training opportunities for its workforce and its overall negative image. The report called for a greater uniformity of the sector, the promotion and utilisation of best practice guidelines and for changes in UK legislation to reduce or remove ‘adversarial’ disputes that had become increasingly commonplace.

Despite this report, little positive change occurred over the years that followed. This led to a further report being commissioned by the government by Sir John Egan (1998). Egan (1998) found that research and development had by now fallen by nearly 80% since 1981; that workforce trainees had almost halved since the 1970s and that the industry was dangerously both time and price inefficient with extremely low levels of client satisfaction being reported. These findings led to ‘Rethinking Construction’ initiatives that
eventually formed Constructing Excellence, of which the authors today form part of the North West hub. Egan (1998) called for the standardisation of quality assessments and policies and for the introduction of partnering strategies to aid in reducing the negative effect of industry fragmentation. The report also recommended improved Health and Safety training alongside expanded training opportunities at all levels to facilitate beneficial outcomes. Of the many reports commissioned by the UK government over the years, an ongoing area of concern is the fragmentation of the industry sector which poses two problems; 1) there are too many companies involved in the construction process, with subsequent supply chain wastage where information on potential improvements get lost and; 2) the vast majority of companies are very small with only a handful of employees (Dainty et al, 2005). This restricts both abilities and resources being made available to impact upon the supply chain.

In addition to its fragmented and competitive nature, the construction sector arguably places ‘profit over people’ (Dainty et al, 2007) which can undervalue women (Bagilhole et al, 1997) as well as other minority groups. Chan and Dainty (2007) argue that the problem of skills and people covers; 1) shortages (in quantity) and 2) shortages in area (of gaps). These two areas of concern need to be differentiated but also seen in the context of the industry sector as a whole, in order to give a broader picture of the problems inherent in the industry sector.

Investigations into the entry, retention and progression barriers of BMEs (Commission for Architecture and the Built Environment (CABE, 2005, CIOB, 2008)) and of women (Ellison, 2003, Greed, 2000, Dainty et al, 2000, Gale and Davidson, 2006, Worrall et al, 2008) in the built environment profession is ongoing. Of the ‘untapped resource’ of women (Fielden et al, 2000) that overcome the initial barriers of entry, such as the industry’s poor image and limited training and recruitment barriers, women also face entrenched sexist attitudes and stereotypes that can place limitations on expectations of their roles and responsibilities, while also having to cope with work-life balance difficulties. Indeed, for nearly a decade, research has outlined that family friendly policies aid the retention of white collar workers in this sector (Lingard 2000). In this currently restrictive working culture, theorists such as Ellison (2003) state the benefits of expanding flexible working practices and opportunities and for the expansion of training opportunities and this call is ongoing (Worrall et al, 2008). Expansions in flexible working practices and training will lead to improvements in the adversarial organisational culture inherent in the industry (Gale 1992) and enhance the industry’s ability to match workforce needs and demands (Agapiou et al, 1995). The need to promote diversity in the construction industry sector has never been so critical. The latest UK governmental policy directives outlined in the Equality Bill (Equalities Office, 2008) which has had its second reading in the House of Lords in December 2009 stipulates that when the Bill becomes law in 2010, companies will be required to introduce greater levels or transparency, workforce auditing, monitoring processes and introduce elements of positive action in order to enhance their ability to procure essential governmental contract work.
Managerial, communication and soft skills training are indicated as being of the greatest potential benefit for the growth of diversity based recruitment and progression opportunities for women. The CIOB (2008) predict that demand for senior and middle managerial skills will be in the greatest demand as far ahead as 2011, second only to demand for Crafts and Trades skills. Demand for these skills is growing due to governmental plans to build more schools in the UK, expanded housing targets and the 2010 London Olympics. The application of such skills to our women participants is very timely for three reasons; 1) it provides a skills set that is predicted to be in the highest demand as far ahead as the year 2011, second only to Craft and Trades skills and 2) these skills serve to equip women to stay and progress in a white male dominated organisational culture and 3) or women participants have placed a great level of demand to receive this type of skills training; so we are meeting the needs of women in the context of their working experiences, contexts and environments. This paper will now discuss the methodology utilised for the gathering of empirical data and provide details of the women participants of this study.

3. Methodology

The research has utilised Glaser’s (1992) GT methodology which is based upon qualitative data. The authors view GT as being ideal for this type of study as it is inherently inductive in nature. With GT, theories, issues and themes emerge within an iterative and ongoing analysis of the data. For example, even at the start of our study, data emerged from many women communicating directly to the authors of this paper the need to receive CPD training in managerial and communication skills; to assist them in working in white male dominated organisational cultures. This initial feedback then impacted upon our analysis of literature on organisational cultures in the UK construction industry. From these initial findings and literatures, we then designed our semi-structured questionnaires and focus groups topics to further investigate and explore these issues. The questionnaires and focus groups were specifically designed to be semi-structured, to encourage additional data to emerge as part of the research process. GT embraces theoretical sensitivity. This enables researchers to uncover insights from initial data that are conceptual rather than concrete. This is referred to as the creative aspect of GT. Following this process, researchers can then gain experience and knowledge that enables them to identify important data and also to potentially formulate dense theory.

The women participants were drawn from a random and diverse age grouping of 18-65 years within administrative, professional/managerial and other roles (e.g. customer liaison managers). The numbers of participants within each of the nine focus groups varied between 20-30 women for each CPD training event. At each event, participants sat at a circular shaped table sized to accommodate between 6-8 people. These seating arrangements were chosen to facilitate face-to-face interactions with other women as part of a networking and action based learning setting. Prior to each event, all participants were given a full background regarding the research aims of the project and were informed of the confidentiality and anonymity of the research data as well as the voluntary nature of investigation and 231 semi-structured questionnaires were returned.
All respondents were asked to identify their age grouping and their profession categorisation. Participants were also asked to provide information on how many years they had worked in the construction industry; to outline the top two barriers that they had faced in staying or progressing and any other additional personal or professional barriers that they had (or still are) facing in being a woman in the UK construction industry. Additional questions were also asked regarding what type of training they would find most useful in the future and whether they had any recommendations that would help women enter, stay or progress within the UK construction industry. The questionnaires were handed in either at the end of each workshop or posted back to the research team after the training event had taken place. All research findings were analysed in an iterative process and themes and issues were identified via usage of keyword analysis in a series of Word documents. Both the literature and data has been analysed in an ongoing GT basis, to which the findings have become emergent regarding the issues and identified themes, discussed later in this paper.

Table 2 outlines the age and broad profession category of the women participants. The table outlines that the majority of women are either in the 25-35 year or 36-45 year age group; with a smaller number being present in the 18-24 or 56-65 year age group. With regards to job roles, 78 were professionals/managers, 140 administrative and 13 in other job role categories, such as customer liaison officers.

Table 2: Age and Profession

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>18-24</th>
<th>25-35</th>
<th>36-45</th>
<th>46-55</th>
<th>56-65</th>
<th>65 +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional/Managerial</td>
<td>4</td>
<td>20</td>
<td>41</td>
<td>6</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Administrative</td>
<td>2</td>
<td>45</td>
<td>52</td>
<td>27</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>68</td>
<td>94</td>
<td>35</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td>231</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It should be stated that the numbers of women in our study were too small to be statistically significant and that participants may also have been affected by the nature and type of training on offer. However, it was of interest to note the apparent ‘bell shape’ distributions of age ranges in our participant group; although a much greater number of participants would need to drawn to ascertain the validity or reliability of these findings.

4. Perceptions and experiences

The vast majority of respondents gave examples of the negative impact of lowered self-esteem and reduced levels of confidence due to sexist and negative perceptions, attitudes and behaviours. A highlighted area of concern was ‘on site’ experiences more so than those based in office environments.
“Being referred to as ‘darling’ or ignored in group conversations with men”.
36-45 year Other

“Perception that a woman can’t work on site or deal with build issues”.
36-45 year Professional

There was feedback which also indicated that some women were made to feel less capable, were automatically assumed to be doing a junior role, or felt that they were being undermined:

“I give instructions on site but they are often ignored because I am a woman”.
36-45 year Other

“Being the first person asked to make the tea or coffee”.
36-45 year Professional

“Perception that women only do administrative jobs in construction”.
25-35 year Administrator

It should be stated that some of the respondents outlined that they were receiving managerial support. However, the type, extent and nature of this support was shown to vary widely between differing individual managers, company departments and work sites. The degree and type of managerial support was also found to be indicated in concerns by women facing a potential ‘glass ceiling, with one woman contentiously stating her belief of existing regional variations:

“Hit glass ceiling in mid career (mid 30s). North West has more traditional attitudes to women than London...”.
36-45 year Professional

“Senior management progresses the careers of my male colleagues faster”.
25-35 year Professional

Many of the respondents felt that that they needed to out perform their male colleagues in order to establish acceptance by male colleagues in the first instance, in order for them to then progress their careers:

“I needed to prove myself more than a man but now all fine”.
36-45 year Professional

“First I had to out shine the men, which was hard but worth it in the end”.
36-45 year Professional

The feedback on attitudes, behaviours and perceptions forms one part of a very complex picture in the UK construction industry. There are further issues and themes, including those of the working culture and practices inherent in the industry sector itself.
5. Inflexible working practices

Taken as a whole, the UK construction industry seems to disadvantage those who require greater flexible or part-time working patterns to fit in with work life balance issues and needs. Those who have these needs and requirements, who can often be women, have reported negative impacts upon their promotion and career opportunities:

“Part time working barrier to promotion, change in work/role”.  
46-55 year Professional

“Long hours culture does not fit into my family commitments”.  
36-45 year Professional

The inflexible working culture and practices in the industry do not seem to recognise the importance of supporting and retaining experienced and skilled women workers, to which more flexible working policies and practices could potentially be of the greatest benefit. The next section will outline a further lack of support regarding the overall provision of training.

6. The cost of limited training

Taken as a whole, the findings indicate that the UK construction industry lacks a breadth and depth in providing funded training opportunities:

“Access to funding for training. Making the transition from being office based administrator to being recognised as a professional on site”.  
25-35 year Administrative

“I was funded for my 1st year of HNC building through ‘women in construction’ but...no longevity in the funding”.  
25-35 year Professional

Respondent feedback seems to indicate that the funding for training that is available is either severely limited, with no completion monies being set aside for HNC courses or limited to very short term CPD day courses only. Although some of the larger employers do offer more substantial support; the findings indicate that this is a somewhat ‘hit and miss’ practice that varies widely across different companies and organisations, with some women experiences limited or even no, CPD opportunities. Furthermore, over half of the respondents from the larger companies and organisations, stated that they had experienced barriers or limitations on what type and level of CPD that was made available to them.

The majority of respondents outlined a need for expansions in knowledge, skills and training in managerial and communication skills; to enable them to deal with ‘difficult’ or ‘toxic’ people, teams and for assertiveness training:
“Assertiveness, influencing skills, dealing with difficult people”.
25-35 year Professional

“Managing people, confidence building training”.
26-45 year Professional

Associated requests from respondents included training in how women could present and communicate themselves in a more positive light within the male dominated industry sector:

“Communication barriers, dealing with a typical male industry”.
36-45 year Professional

“How to best present my skills and show they are transferable”.
25-35 year Professional

Two of the respondents went further in wanting to be trained in how to ‘fit in’ (or appear to do so) within the male dominated working environments in order to stay and progress their careers in their chosen professions. However, it needs to be stated that this was by far a minority request:

“Similar interests with males”.
18-24 year Administrator

“How to be fake because they’ve been belittled ones and want to prove a point”.
25-35 year Professional

Elven of the respondents stated a need to receiving training in organisational management skills and Human Resources (HR). This exampled a potential move away from technical and professional roles in largely male dominated areas, to areas such as HR, which are traditionally more associated with roles undertaken by women:

“Possibly continuing management qualifications and look at HR qualifications”.
36-45 year Professional

The picture is complex with regards to training and requests to move into certain professions. Some of the women wanted to do this due to experiences barriers in moving into more technical roles; others outlined an original interest in this type of profession. There were indicators from over a third of our participants that some of the limited training that was on offer, was viewed as merely being given to enable them to be ‘fit for purpose’ in their current job role. Over half of the respondents outlined an additional barrier of being considered ‘less capable’ or just generally ‘overlooked’ when particular advanced training or career advancement opportunities arose. By far the vast majority of the respondents outlined a great need for women to receive increased support and networking opportunities, which is discussed in the next section.
7. Gender isolationism

The study findings outlined an inherent ‘isolationism’ that exists for many of our respondents. In response, many of the respondents provided recommendations on how to counter-balance this experience:

“Mentors would be useful, plus events to target school girls – encourage them into the industry”.
25-35 year Professional

“Networking events and opportunities for women are really important”.
36-45 year Professional

Over half of the respondents requested access to mentors and all the respondents outlined the benefits of networking schemes, both physical and virtual based, to aid women in receiving advice and guidance from other women who had already successfully progressed their careers within the industry sector. Part of the recommendations from respondents included a call for the proactive encouragement of women within more senior management positions. Interestingly, this would fall in line with the Equalities Bill (2008) and its future requirement in 2010 for the expansion and implementation of positive action practices.

There was also a recommendation for the expansion of job shadowing opportunities to enable women to learn about new career growth opportunities and to gain knowledge, skills and experience in other job roles and professions:

“Not all women realise what work is open to them”.  
36-45 year Professional

The request by all of the respondents to expand networking opportunities for women, led the authors to design an interactive website which not only disseminates information on CPD training workshops, but also enables opportunities for synchronous and asynchronous communications with the use of Social Networking Software (SNS) facilities. At present, this website serves the needs of women in the North West region and the Midlands, with the longer term aim to expand it to the rest of England due to its increasing popularity. However, the authors would argue that in addition to our investigation’s website, companies and organisations in the industry sector need to respond and listen to their women workers and their requests for support, and to take proactive action towards the promotion of in-house mentoring, job shadowing and both internal and external networking opportunities for women.

8. Conclusions

The benefit of supporting and facilitating the retention and progression of women in the UK construction industry sector possesses a strong socio-economic argument and pedigree. When viewed in purely economic terms, as the country’s top employer with over two million workers that contributed over 9.2
per cent of the country’s Gross Value Added (GVA) in 2007, the industry sector generates a significant proportion of the nation’s wealth. Despite the current global economic slowdown and credit crunch, the sector still faces a shortfall of skilled workers, along with a rapidly ageing workforce that lacks diversity. Women (and other minority groups) therefore represent a largely ‘untapped resource’ of workers who can help to meet this shortfall. Furthermore, the lack of workforce diversity in the industry sector can no longer be ignored. From 2010 the Equalities Bill will demand the growth of equality and diversity in industry sectors such as construction, or else companies and organisations will find that they will struggle to successfully procure contract work from government funded projects and schemes.

When placed within a socio-economic footing; the literature review revealed the historical events that led to the fragmentation and competitive-centric nature of an industry sector that values ‘profit over people’. This organisational culture has led to reductions in diversity opportunities that have never really recovered since the 1990s. Women are especially disadvantaged as they struggle to stay and progress in a male dominated industry sector, struggle with inflexible working practices while also facing ongoing discriminatory attitudes and perceptions regarding their job roles and abilities. The opening up of CPD in managerial and communication skills training for women helps fill an identified need by the women respondents, while also meeting the second largest skill set area predicted to grow until at least 2011. More women in managerial and senior professions would open up the potential for further debate and opportunities for flexible working practices. This would have a potential beneficial impact and domino effect to all employees (male and female) in the industry sector; with the possibility of changing the organisational working culture of the industry sector from within itself. The greater the number of women in the construction industry sector, with differing roles and responsibilities and levels of seniority will also, in time, possess the potential to promote the establishment of expanded networks, mentoring and support opportunities for women.

It is most certainly the case that further research is required to ascertain whether the promotion and expansion of women in construction is best achieved within a ‘bottom up’ process of the promotion of CPD training and growth of mentoring and support networks; or with a ‘top down’ process of legislative enactments such as the Equalities Bill (2008). For our part, the authors will continue to use GT to analyse the ‘bottom up’ process and future publications will report upon our research findings.

References


The Traditional Iranian Courtyard: an Enduring Example of Design for Sustainability

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Abstract

This paper describes the traditional Iranian domestic courtyard. It demonstrates its significance as an architectural form that is not only functionally appropriate for the harsh climatic conditions in which it is found, but also culturally significant in terms of social considerations and substantive values related to notions of a meaningful life for the individual. The paper considers the environmental, socio-ethical, and economic aspects of this form of architecture, as well as its relationship to higher values, which include legend and myth, religion and spirituality, aesthetics and psychological aspects, and relationships to nature. The findings that emerge from this study of an enduring architectural form can be instructive with respect to our contemporary understandings of, and responses to, sustainability.

Keywords: traditional Iranian courtyard, sustainability, culture, substantive values, contemporary
1. Introduction

The courtyard is an architectural element that is commonly found within the traditional Iranian home. Its origins are lost in history, but it has been a characteristic of Iranian domestic architecture for thousands of years (Ardalan, 1973, p.68). This discussion examines this typical architectural element from a number of perspectives. Firstly, the development of the courtyard, within the larger context of domestic architecture, is described in terms of its relationship to the climatic conditions of Iran. This is followed by a discussion of socio-ethical and cultural issues, including economic considerations that make use of local materials and labour, and the mythological, religious and spiritual associations that this built form has acquired over time. In addition, the psychological aspects of the courtyard are discussed, including aesthetics and our relationship to the natural world. The significance of this study lies in its relevance to contemporary ideas of design for sustainability, which is discussed in the final section.

2. Environmental considerations and context

To understand how the inner courtyard of the traditional Iranian house has become an appropriate architectural form for living in a hot dry climate, it is necessary to consider the climate conditions of the region, the characteristics of the urban and rural contexts, and the generalised forms of buildings. These considerations will enable us to understand how the traditional Iranian courtyard - as the focus of this discussion - evolved over thousands of years to become a fitting answer to the environmental context in which it was developed.

The climatic conditions, in which the traditional Iranian home design developed, with its inner courtyard as a significant architectural element, can be characterised as hot and dry, with relatively little annual rainfall; such areas constitute one seventh of the country and mostly in the centre and eastern parts (Ghobadian, 1995, p123). Specifically, these climatic conditions, especially for the Isfahan region, can be summarised as follows:

- Hot to very hot summers with peak daytime temperatures reaching 36-37 degrees C in July and August, with night time lows at 19-20 degrees C.
- Cold dry winters with daytime temperatures in January reaching 6-12 degrees C, dropping to -4 degrees C at night or lower.
- Low annual rainfall – precipitation occurs mainly in the months December to March where it averages 15-25mm per month. In the summer months precipitation is rare.
- Dry air and low relative humidity. Daytime relative humidity ranges from 60-74% in the winter months, and the low 40s during the summer. However, due to high summer temperatures, humidity can cause discomfort.
- A relatively large diurnal range —as much as 20 degrees C in the summer months.
• Dusty winds mainly in the summer months

(BBC, 2009)

Such conditions mean that vegetation is sparse. Thorn bushes are present in the deserts areas, characterised by sand dunes, but in the oases there are tamarisk, poplar, date palm, myrtle, oleander, acacia, willow, elm, eucalyptus and fruit trees such as fig, pomegranate, plum, mulberry and vines.

To cope with these climatic conditions, traditional Iranian domestic architecture developed over thousands of years and attained forms that were the result of practical experience. The architecture that evolved offered ways of living and domestic environments that suited the conditions, to enable desirable ways of living in the region.

In general, urban and rural contexts have the following features (Ghobadian, 1995, p.128):

• Concentrated building forms – with houses and other buildings in close proximity or attached. This decreases the amount of external surfaces but maintains the internal volumes - thus reducing thermal exchange through external walls in both summer and winter

• Public spaces (squares and courtyards) and private spaces (domestic courtyards enclosed by built form).

• Narrow and covered alleys and streets – reducing sun penetration and increasing opportunities for air movement due to thermal currents.

• The orientation of buildings is based on the direction of the sun’s rays and the directions of the prevailing winds – allowing primary living rooms to remain shaded and comfortable during the hot summer months, but allowing sun penetration (due to the low sun angle) during the winter months.

The characteristics of the building forms are:

• Enclosed and inwardly oriented

• A planted courtyard within each building - that sometimes has a basement and wind catcher, which directs the winds down to a below-ground water cistern. In this way the air entering the courtyard, and surrounding rooms, is cooled via natural processes that do not require artificial sources of energy.

• The courtyard is an excavated inner area that lies below the level of the surrounding rooms and passages.

• Use of thick walls and use of high thermal capacity materials such as unbaked mud and baked bricks. These create a high thermal mass which helps maintain a more constant internal
temperature by attenuating temperature fluctuations between night and day and winter and summer (Energy and Resources Institutes, 2004, p.113).

- High walls that provide shade in the open spaces – both the public alleyways between buildings and the private spaces, including the inner courtyard.

Thus, the traditional domestic home built around an inner courtyard, has evolved over the generations into an architectural form that appears to be singularly appropriate for the prevailing climatic conditions (Koenigsberger, 1974). For example, overnight cold air - that is heavier than hot air - remains in the courtyards. During the daytime, high walls around a courtyard means that much of the surface of the courtyard remains shaded. Thus, the courtyard, especially when planted with trees and when it features a water pool (a common element) effectively maintains a comfortable, shaded, and humid micro-climate. In addition, all the rooms are open to this enclosed space and in this way the interior rooms of the house remain sheltered from dusty winds in summer and from cold winds in winter.

Thus, in the arid climate of the Iranian plateau, the courtyard is a way of creating a desirable living environment that includes shade from trees, water pools, shade from high surrounding walls and a gentle breeze. These elements are rarely found in such a climate and so the courtyard is an invaluable space inside each house, even though it is likely that many of the people of Iran, rich or poor, do not realise the many other meanings and associations of this courtyard design (see below).

### 3. Socio-ethical considerations

The group dynamic of those who lived in the traditional Iranian house with an inner courtyard can be divided into two main types:

- An extended family: including father, mother, children, grandparents, aunts and uncles etc.

- A group of workers who work for an employer.

In both groups there was a community in which people helped each other (e.g. cooking and looking after their children), as well as sharing spaces and tools (such as kitchen, pool of water, garden, yard). There was cooperation, collaboration, and mutual support, with collective activities between men (repairing the house, tending the garden) and women (preparing ceremonial meals together, sewing, and weaving). Sometimes everyone, men and women together, would prepare and decorate the house and yard for festivals, such as for ‘Moharam’ (an important Shia festival) or a wedding. Also, the courtyard would be regularly used for communal entertainment. Such activities are consistent with contemporary understanding of sustainable lifestyles that entail communal activities and sharing of resources (Manzini, 2003).
4. Economically viability

Traditionally, houses were built by local people or the home-owners themselves from basic, affordable, locally available materials. Earth was removed to create a courtyard at a lower level than ground level. A water pool in the courtyard would serve as the water supply for the household. The earth from the courtyard excavation would then be used to make bricks for the construction of the house. Due to the generic style of architecture, from the external appearance of the house, it was not possible to gauge whether the residents were rich or poor. In the public realm, this helped create a sense of social equity among the various inhabitants. Such perceptions of social equality are important aspects of communal wellbeing and of sustainable ways of living (Wilkinson & Pickett, 2009, 263).

5. The traditional Iranian courtyard and substantive values

The physical and mental effects associated with the open space of the traditional Iranian courtyard are also important aspects to be considered. In spite of all the benefits that the traditional Iranian courtyard has in terms of its environmental, social and economic consideration, it also has important philosophical and spiritual meanings. These can be appreciated from a number of different, but related, perspectives:

- **Philosophical Meanings**: within the Islamic culture of Iran, the notion of the ‘void’ has an important philosophical meaning. The void is significant in pattern and decorative styles, in music - as the silence between sounds, and in calligraphy between black and white. The traditional Iranian courtyard is an example of the void in architecture. The “negative space” of the courtyard, surrounded by rooms as “positive”, built forms, has roots in the “metaphysical principle of unity” of Islam. The void has spiritual significance and the courtyard as a void is a symbol of the presence of the divine in all things (Nasr, 1987, pp.185-186).

- **Legend and Myth**: the courtyard has a number of ancient symbolic meanings that refer to essential aspects of life. Firstly, in pre-Islamic and pre-Zoroastrian Iranian culture the presence of the god of the sun, Mitra, and the goddess of water, Anahita was found inside the house (Ahmadi, 2009). Sunshine, which is abundant in this region, penetrates the courtyard. Water, which is rare in this arid climate, is continually present in the courtyard pool. This presence of sun and water is important symbolically as well as functionally. According to Ahmadi (2005), sun and water, two essential life-giving natural elements, have shaped much of the mythology of the central Iranian plateau along with the creation of spaces in Iranian architecture, including the domestic courtyard. The courtyard is seen as a place to meet Mitra and Anahita. Secondly, the rectangular courtyard, which is oriented to the four cardinal points, is symbolic of the “place” as the centre of the world and of “time” and its passing (day, season, and year). Thus, the courtyard manifests “place” and “time” together. “Place” is the symbol of durability and “time” the symbol of ephemerality. So the courtyard became an archetype which simultaneously represents both (Ahmadi, 2005, p.93).
Thus, we see that the mythological meanings of the open courtyard - a ‘place’ of permanence and change – represent essential aspects of life.

- **Religion and Spirituality**: The courtyard came to be seen as a symbol of a lost paradise (Ardalan, 2002). According to Sufi beliefs, human beings were cast out of Paradise, and throughout history up to the present, they have been searching to find it again and settle down. However, they have only a vague memory of that lost paradise, and almost all traditional artists and artisans have attempted to create it in their works; in paintings, carpets, cloth and even in architecture. The Iranian walled-garden was designed and built with a pavilion in its centre, just as Paradise is described in the Koran (47:15).

- **Aesthetics and Psychological Aspects**: The various aesthetic aspects of the courtyard, such as the beauty of nature, and the sounds of birds and flowing water, combined with spiritual understandings help nurture and contribute to the higher needs of the individual. This is referred to as self-actualization by Maslow in his well known Hierarchy of Needs (1975, p.194). Drawing on Maslow’s work, it is evident that a traditional Iranian household courtyard covers many human needs, both as an individual and as a member of a social group. Specifically, it satisfies the basic physiological needs of adequate shelter in an arid climate, as well as water and food; the needs of safety, love and belonging; and those of esteem and reputation (the traditional house design, and particularly the various rooms, was based on a hierarchy within the household, which centred on the inner courtyard). Aesthetic needs, beauty, balance, form and self-actualization are also satisfied within the courtyard. As Ahmadi (2005, p.95) points out, the courtyard is a secluded place for a Sufi to be in a relationship with the universe. This relationship occurs through the courtyard, which is connected to the earth (place) and to the sky and sun (time). The Iranian people can experience a true sense of freedom inside their own houses, as they often have strong feelings of belonging and responsibility to their family, even though outside the house they may feel restricted by rigid social rules (*ibid*, p.95).

- **Humankind’s relationship to nature**: The courtyard provided a way of bringing natural elements into the centre of the home. This includes the growth of plant life, awareness of the seasons, and so on. Throughout history people have tried to settle down in a place where they have easy access to water, soil for planting, as well as temperate living conditions – all in order to remain healthy. Wherever they were able to settle and make their lives, people have always done their best to create acceptable conditions, which would enhance their surroundings. And in the arid climate of Iran, people have for centuries created a distinctive form of dwelling. Within this domestic architectural form, it is through the courtyards - by inviting the sun, water, air and earth (the four basic elements of life) inside their houses – that they have been able to live in a serene and calming environment, despite the extreme climate conditions outside. It has brought them a sense of tranquillity, peace and comfort, which means their body and soul have been in balance. Day (2002 p.29-76) writes in detail about these four basic elements. He points to the four “levels of place” that are essentially elemental levels. He maintains that substance, flow, mood and spirit are the principles of earth, water, air and fire. Earth is ageless and about roots. Human kind is rooted in the earth as Adam was
formed of clay; earth anchors us and offers a sense of stability. Water washes both soul and body. Water is more (symbolically) necessary for the soul than the body to make it clean, free and restful. Air is mobile, like water; for life, it is more important than food, water and warmth. Air is also closely connected with the transfer of emotion. Fire is transient but it connects us, again symbolically, to a basic archetype - both for nature as a principle and as flame for developing of humankind. Day believes that these are important archetypal qualities both for creating a healthy place as well as a healthy person (Day, 2002, p.30). The presence of these four elements is immediately apparent in the courtyard; the adobe walls and buildings that surround it, the pool of water, the presence of the sun and the air, because the courtyard is an open space. To live with the four elements on a daily basis, which Day believes are important for human health, is readily provided by the traditional Iranian courtyard home (ibid).

6. Conclusions

The courtyard, which is the core of traditional domestic architecture, especially in the desert regions – is a housing element that is common to many Islamic countries. It is found in North Africa, the Middle East and Persia. It can be traced back to the pre-Islamic period in Iran, and as far back as 3000 years ago, so it has been sustained for thousands of years.

The traditional Iranian courtyard evolved and developed over the centuries being adapted through environmental considerations, cultural values, and the changing social context. Micro-climate control is achieved through natural processes. The seasonal positions of the sun and the direction of the prevailing winds create natural cooling effects, shaded areas and comfortable humidity levels. In terms of socio-economic considerations, the traditional courtyard is constructed from basic, affordable, locally available materials, and usually by local workers. Most commonly, an extended family would live in this kind of traditional Iranian housing. In this family-based community, cooperation, collaboration, mutual support between men and women, as well as collective activities and the sharing of spaces and tools, all contributed to its socio-economic sustainability. Current principles of sustainability align well with the traditional courtyard, and include environmental adaptability, social responsibility and economical considerations.

Beyond these utilitarian considerations, however, the courtyard has acquired an extraordinarily rich set of cultural meanings that contribute to, and are essential for, social and individual wellbeing. These include aspects related to mythology, religious understandings and spiritual needs, as well as aesthetics, psychological considerations and our relationship to nature. Its presence as a 'void' within the building refers to a philosophical meaning and religious belief in Iranian culture, a symbol of lost paradise within the domestic setting, a place for communing with sun and water - two gods of legend that have mythical meanings. The courtyard is a place that invites water, air, fire(sun), earth into the heart of the home-the four elements that human beings needs to survive and be healthy. It is a place that provides a spectrum of all human needs, from the basic physical need of shelter to the highest needs of self-actualisation; with respect to the latter, the courtyard is a secluded place in which one can be in relation with the universe. Hence, the courtyard can be categorised as an example of an
enduring artefacts that includes all the characteristics of three broad groups, the Functional, the Social/Positional, and the Inspirational/Spiritual, as classified by Walker (2006, pp. 39-51).

Contemporary discussions of sustainability are often considered in terms of the so called triple bottom line i.e. economic viability, social responsibility and environmental care. We see in the traditional Iranian domestic courtyard an example of design that is not only in complete accord with these three elements but which surpasses this rather inadequate understanding of what constitutes a sustainable way of living. The traditional Iranian courtyard also contributes to and nurtures our highest needs as individuals – the aesthetic, the spiritual, the psychological and our relationship to, and awareness of the natural world. Alexander (1976 & 2004) has called such a characteristic in things "the quality without a name" in the" timeless way of building".

Figure 1: A Traditional Iranian Domestic Courtyard (photo by P. Yazdanpanah, September 2009)

Figure 2: The Courtyard Water Pool (photo by P. Yazdanpanah, September 2009)
References


Ahmadi, F. (2009) personal interview conducted September 2009 at Isfahan, Iran.


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