The Contrasting Approach of Contractors Operating in International Markets to the Management of Well-being, Occupational Health and Safety

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Abstract

Organisational culture is affected by the regional, national and social contexts, which in turn affect Occupational Health, Safety and Wellbeing (OHSW) policies and practices. Health and Safety (H&S) outcomes vary between different countries. Less is known as to how contractors operating in international markets respond to and manage OHSW. This paper examines the extent of standardisation and contextualisation within such practices, and the tensions between them.

The focus is upon contractors working in different countries and their clients. It is found that contractors emphasise occupational health and more recently well-being policies with the expectation that this will induce positive H&S outcomes. There is less attention given to high-level standardised templates, while more attention is given to standardising local practices regardless of context. International contractors give autonomy to local management as part of a transactional approach. There are weak systems between the firm and projects. The findings show wide variance in policies and practices between firms in the supply chain and more significantly within the same firms, pointing to the need for a degree of international standardisation for H&S practices within which contextual variance is accommodated. This will also help the development of more transformational business models to support sustainable OHSW.

Keywords: Cultural Norms, Health and Safety (H&S), International Contractors, Occupational Health, Safety and Wellbeing (OHSW), Organisational Culture

1. Introduction

The majority of research into Occupational Health, Safety and Wellbeing (OHSW) and specifically Health and Safety (H&S) has centred on national contexts (e.g. Ugwu and Haupt, 2007). Limited attention has been given to the international arena (e.g. Saunders et al., 2010). Organisational culture is affected by the regional, national and social contexts in international markets for construction (e.g. Liu and Fellows, 2008). This in turn affects OHSW policies and practices. National H&S policies and practices also vary between different countries, especially between developing and developed countries. Less is known as to how contractors operating in international markets manage the international market and local contexts in regard to OHSW. This paper examines the extent of standardisation and contextualisation of OHSW practices and the tensions between them. It secondarily addresses the growing emphasis upon occupational health and more recently well-being. The focus is upon contractors, their supply chains and their clients, that work in several different countries. The research addressed in this paper asks how much consistency of practice is present in terms of OHSW among major contractors and international subcontractor in order to:

i) Deliver a consistent service,
ii) Consistently look after those who work for and with them.

This is a UK focused study, drawing upon of a programme of research comparing and contrasting UK and Hong Kong practices in construction OHSW management. The analysis presented here arises from the UK findings.

2. Literature Review

Schein (1996) clinically analysed and prescribed a *safety culture* in organisations of extreme high risk to address the H&S of operatives and the wider public. This implies a homogenous culture with standardised policies and practices. Contractors operating in international markets have long been aware of differences in organisational culture across international markets and in different countries (e.g. Strassman and Wells, 1988). There is an awareness of cultural differences between contracting organisations where joint ventures are employed (e.g. Liu and Fellows, 2008). There are also subcultures present in single construction organisations (e.g. Auch and Smyth, 2010). The echoes of this can be found on individual projects, whose cultures differ and can evolve over time (e.g. Kusuma, 2014). Organisational culture is heterogeneous, layered and subject to change at both firm and project levels. Culture is renegotiated in construction and differences are particularly evident between the firm and project levels due to weak systems both in general and for H&S (Roberts et al, 2012). This is largely for reasons of transaction cost minimisation. A multi-layered system is needed for H&S in construction (e.g. Lingard and Turner, 2017). What has not been fully addressed is the consistency of management across contractors whose operations are international. There are transactional reasons of cost and performance where in distant regions a more 'hands-off' approach has proved appropriate (e.g. Madsen, 1989). However, where good practices develop, there is an incentive to learn for the benefit of the whole firm in terms of OHSW, corporate social responsibility, reputation, as well as complying with regulatory and legal requirements in different markets. This benefit is and will become more imperative as construction markets internationalise. The definition of H&S and especially wellbeing lacks a shared understanding and definitions (Dodge et al., 2012). One example is provided below:

Health relates to a person's physical and mental condition. Wellbeing is the subjective state of being healthy, happy, contented, comfortable and satisfied with one's quality of life. Mental wellbeing relates to a person's emotional and psychological wellbeing. This includes self-esteem and the ability to socialise and cope in the face of adversity. It also includes being able to develop potential, work productivity and creativity, build strong and positive relationships with others and contribute to the community. (NICE, 2017)

Health and wellbeing therefore include physical, material, social, emotional and developmental aspects and activities (e.g. Malina et al., 2004). Safety is more about maintaining physical wellbeing in construction (e.g. HSE, 2018). Definitions, as illustrated by the example above, tend to be general and holistic, and therefore broader than a functional discipline or departmental remit in an organisation. The implication is that any designated responsibility includes integration of OHSW into other activities. This echoes the concept of a safety culture (Schein, 1996), yet acknowledges other distinct activities. For example, a safety management system (SMS) could be reasonably expected to link to a knowledge management system (KMS) to achieve integration. At an operational level, technical problem solving would include H&S considerations, trial and error would lead to subsequent identification, and commercial decision-making factors in the impact of H&S failures to on-costs and reputational damage longer-term (Sherratt, 2016). Yet, the implementation of OHSW programmes is often weak or inconsistent in national and organisational cultures. Further, projects have no memory and are loosely coupled from their parent firms (Dubois and Gadde, 2002), and indeed H&S is often treated as a 'bolt on extra' in some cultures in construction, which implies a lack of learning in general (e.g. Anumba et al., 2005) and specifically around OHSW. The lack of learning in construction challenges the notion of the industry being on a path towards maturity (e.g. Smyth, 2018) and OHSW being on a similar trajectory towards maturity both in general (e.g. Parker et al., 2006) and specifically in construction (Roberts et al., 2012).

Construction work is risky and in certain respects unhealthy. It is not conducive to worker wellbeing. The industry exacerbates the inherent conditions by using short term work contracts, indirectly encouraging long hours, and inducing stress on time bound projects (Sherratt and Turner, 2018). This is compounded by poor site and safety management in many instances (e.g. Lingard and Turner, 2017). The implication is that any improvements are stuck in the transactional mould of working and the ability to more strategically address the business model and practices for transforming the service and OHSW is seriously constrained (Smyth, 2018).

3. Methodology and Methods

The research is interpretative, explaining the prevailing conditions through examining patterns and significant issues in the layers of operation (Smyth and Morris, 2007). Firms provide the unit of analysis in a case-based approach (e.g. Yin, 2009). The cases comprise two main international contractors, two international subcontractors, two sub-subcontractors and one self-employed operative. 28 interviews are drawn upon for reporting on this research although more have been conducted as part of the research programme. One interview was institutional in nature. Therefore the interviews were layered to address different organisations as well as being drawn from different management levels to understand the dynamics between the international operations down to site working (see Table 1). Two workshops were conducted to help scope the interview questions. A more detailed level of breaking down the interviewees is to say that 18 or 66% were working at operational level, if not on site then having responsibilities for managing operations across sites, for example H&S Managers who are not allocated to single sites. Of these half were operatives undertaking construction work on site (Table 1).

The interviews were all conducted from the base of their UK operations, although not all were UK owned firms. One subcontractor was part of a large international conglomerate that acts as client, contractor and subcontractor across its business units. The clients, contractors and subcontractors were part of the same supply chains.

Table 1. Schedule of Organisations and Interviews

Type of Organisation	Organisation	Interviewee Role	Subtotals	Total
Institutional	Government and Former Professional Body	Industry Expert and Chair of Professional Body	1	1
Clients	Infrastructure	Head of Commercial	1	
	Infrastructure	H&S Manager	1	
		Change Programme Manager	1	
	Developer	Head of H&S	1	
		H&S Manager	1	
		Office Manager	1	6
Main Contractors	International Contractor	National Head of H&S	1	
		HR Manager	1	
	International Contractor	H&S, Quality and Environment Manager	1	
		Operatives	3	6
Subcontractors	M&E	HSEQ/Improvement Manager	1	
		Electrical Project Engineer	1	
		Technical Services	2	
		Site Engineer	1	
		Apprentice	1	
	Structural Steel	Group HSE	1	
		H&S/Environment Director	1	
		Commercial Director	1	
		Assoc. Commercial Director	1	
		Operations Director	1	
		H&S Advisor	1	12
Sub-subcontractors	Control Systems	Operative	1	
	Plumbing	Supervisor	1	2
Self-employed	Ventilation	Supervisor	1	1
			Interviewee Total	**28**

4. Findings and Analysis

4.1. Definitions and a Coordinated Approach at Firm Level

Contractors are aware of differences in organisational culture across international markets, in different countries, and differences right down to the level of individual firms and projects. This research was aligned with this; there was no evidence for Schein's (1996) proposition of singular safety cultures. Interviewees did not refer to an organisational 'safety culture'. They referred to differences between firm and project levels, between permanent and contract staff, and between ethnic groups working on site. Culture is heterogeneous in construction organisations. This creates barriers to the pursuit of stardardised approaches to H&S from strategic prescription to tactical implementation. There was emphasis upon procedures in efforts to induce consistency. The success and limitations of this are addressed below, but the point to draw out at this stage is that management do not appear to be applying coherent and consistent standardised approach to OHSW to manage and accommodate cultural differences at every level and scale of the construction firm and at the level of project management.

Prior research shows the lack of management consistency of across firms whose operations are international. There can be benefit to accommodate differences in management approach (e.g. Madsen, 1989). However, in construction it is the lack of management support for transactional cost reasons that leads to inconsistent approaches (e.g. Smyth, 2018) in several ways for:

i) Delivering a consistent service, including OHSW,
ii) Consistently looking after those who work for and with their organisations.

Contractors and clients have become more aware of cultural issues over the last decade in both national and international contexts according to a key institutional representative who has worked extensively in the UK and Hong Kong (Industry Expert and Chair of Professional Body). Yet, it was repeatedly reported that there is a lack of definition of wellbeing, and to an extent H&S. Indeed the two were sometimes conflated. Representative of statements on wellbeing are provided below to demonstrate the range within the responses:

Health is mainly about occupational health whereas wellbeing is mainly about mental health. (H&S Manager, Developer)
Making sure that people are happy not only on site but off-site as well (Operative, International Main Contractor I).
Wellbeing is a state of mind; people keep that to themselves. (Commercial Director, Subcontractor II)
To make sure they go home as well as the first day they walked in here. (H&S, Quality and Environmental Manager, International Main Contractor I)

If there is a lack of definition from the industry level, there is little chance of standard approaches being developed at the firm and project levels across nations and in any one nation.

There was more shared understanding about H&S, although this was almost always perceived as a matter of compliance with the laws and industry norms, rather than as an integral part of the business model, a source of competitive advantage or a means to increase the strike rate when bidding as noted indirectly by several respondents (e.g. H&S Advisor, International Subcontractor). H&S was largely perceived as an operational matter – tactical implementation around procedures and tasks. It was found that main contractors in the UK have placed an increasing emphasis upon H&S and recently wellbeing policies in the belief that this will also induce positive H&S outcomes and improved performance. The subcontractors echo this picture although they lag a little behind the main contractors. This appears to reflect a lagged and slowly emerging trend among developing countries. The two international contractors were aware that their H&S approach in the UK was not followed in nor influenced the OHSW practices in other countries. Two of the subcontractors had international operations, one part of a larger utilities and infrastructure conglomerate, where the same picture prevailed. The result is that none of the organisations had a generic template, in this case for OHSW, which provided a high level of standardised policy and implementation from the firm to operational levels on site at a high level, with tailored OHSW policies at the national level of the firm and tailored services to accommodate the needs of the client and supply chain contexts for each project. It was reported, for example, that main contractors were not addressing standards at a firm level in the context of international operations (HR Manager, International Main Contractor I). The absence of templates, hampered management from strategically developing standardised approaches with context specific responses.

Interviewees were able to say what was or was not part of their 'business model', but there were inconsistencies between interviewees representing the same firms. Therefore, it can only be concluded that there was no commonly communicated and internalised business model. The term 'business model' is commercial jargon, often giving the false impression of coordination and integration. In one firm, wellbeing was part of the Human Resource function, yet decoupled from H&S (H&S, Quality and Environmental Manager, International Main Contractor I). In all the firms OSHW was not factored into annual reviews and personal development plans of staff (Group Business HSEQ/Improvement Manager, International Subcontractor).

Drilling down from the general to the functional levels, it was reported that there is a lack of consistent practices within the same firm among clients and main contractors. A major infrastructure client said they do not have a consistent way of learning and distributing lessons learned for future projects with regards to H&S. This finding is part of a wider problem identified in the literature where projects in general have no memory and are loosely coupled from the firms (Dubois and Gadde, 2002). Learning is not transferred. Knowledge management systems (KMS) were partial, confirming prior research (e.g. Anumba et al, 2005), and H&S

relies upon separated and segregated safety management systems (SMS). SMS were more about information sharing rather than learning for reapplication (e.g. Commercial Manager Infrastructure Client I). The communication of H&S information was reported as "broken" in one major client organisation (Change Manager, Infrastructure Client II). However, there were pockets of consistent practice. One client and one contractor had an emphasis upon wellbeing, applying it to the "power of four", meaning customers, employees, partners and other stakeholders, although most effort was focused upon staff (Office Manager, Developer; H&S Manager, Developer) rather than the supply chain. The client had a series of best practice documents, applying them prescriptively in a directive fashion.

The main contractor and supply side also lack consistent practices within their firms with an emphasis upon information sharing rather than knowledge application. Again the SMS was decoupled from any KMS. One international contractor tried to address this by appointing a Director of Culture and People, H&S and Communications. It is premature to assess whether the initiative will have effective results. The general pattern is an emphasis upon information sharing among actors from the contractors which does not always reach across and down into parallel and sequential projects (National Head of H&S, International Contractor I) because the information sharing requires SMS and KMS to be an integrated system. At operational levels, problem solving did not necessarily involve H&S consideration: *In this company everyone looks after each other* (Operative 2, International Contractor II). Trial and error may have led to technical lessons being applied on subsequent projects. However, H&S did not figure strongly. On site, some skilled and experienced operatives were able to foresee issues but were not always given scope to apply their knowledge because of top-down operational procedures (Operative, Sub-subcontractor; Technical Services, International Subcontractor).

One of the consequences of the detailed prescriptive measures is that client organisations are increasingly imposing H&S practices on their suppliers, especially on megaprojects (Industry Expert and Chair of Professional Body). All organisations have adopted prescriptions that were described in terms of "easy and obvious activities" (H&S, Quality and Environmental Manager, International Main Contractor I), which covered three criteria that were repeatedly mentioned:

1. Compliance with industry regulations and statutory requirements;
2. Can be easily formulated and are easily implementable both in-house and along the supply chain;
3. Are measurable in order to show compliance and rates of improvement.

The consequence is that the prescribed measures tend to be quite detailed and hence develop into procedural requirements that allow little scope for adjustment to context on the basis of:

- Cultural norms in different regions or countries across the world;
- Cultural norms of different ethnic groups working in any one country and project;
- Site specific contexts that may be better conducted by agreeing alternative safe working practices;
- Task specific contexts where the experience and expertise of operatives can be applied to adapt prescription to the task at hand.

For example, one manager noted that their organisation "concentrates on small things", especially RIDDORs (Associate Commercial Director, Subcontractor II) rather than the means and methods for addressing issues. The same applied to wellbeing: "easy and obvious" awareness creation did not induce engaged worker responses (H&S, Quality and Environmental Manager, International Main Contractor I), but it also was motivated by compliance and transactional inputs rather than by transformational intent concerning the workforce.

In sum, standardised policies for the international scale were not developed, but where flexibility was needed at the local and contextual level, prescription was high. Therefore the current and detailed prescriptions, driven top-down from the firms, mitigates against developing strategies and a higher level template of practices for OSHW that can be applied generically yet tailored in specific locations and contexts at the programme management level.

This is a major barrier to developing OHSW practices on a consistent basis worldwide at the firm and programme management level. Addressing this shortcoming could provide a basis for improvement, especially where OHSW statistics have plateaued.

4.2 Implementation at the project front-end and during execution

The organisations strongly address H&S at the construction project front-end, that is prior to work on site. H&S is placed as a top priority either ahead of or equal to profit making. The method statements identify ways of working and safety issues are scoped for risk. After winning the job, H&S issues depend on managers and operatives on site (H&S, Quality and Environmental Manager, BAM). Here commercial decision-making can dominate other factors, including H&S. This lack of coordination and integration along the project lifecycle was reported across many of the organisations, for example marketing and business development were not linked to bid management to aid tailoring OHSW to client expectations and needs, and there were weak systems between the front-end and the start of execution on site (Commercial Director, Subcontractor), which rendered it hard to be consistent around OHSW. Method statements address H&E, in particular the RAMS in one subcontractor firm (Technical Services, International Subcontractor), but less so wellbeing and there was no explicit link to SMS or KMS for improving OHSW practices during delivery.

A primary areas of conflict identified was the way in which resources were allocated through bidding at the front-end and from commercial managers during execution. Assumptions are made across the main and subcontractors that people will travel long distances to site, work long hours and work away from home during the week. This leads to stress, strain and fatigue. This is a wellbeing issue regarding quality of life and a H&S risk on site (e.g. Operative, Sub-subcontractor). There have been some recent improvements in site welfare and for temporary living quarters, yet there remains a conflict with wellbeing. This is not being addressed as many see wellbeing and site welfare as synonymous (Commercial Director, Subcontractor).

The lack of coordination and integration over the project lifecycle concerning OHSW have led the firms to be reactive (Group Business HSEQ/Improvement Manager, International Subcontractor). Subcontractors are more reactive than the main contractors. Main contractors are more prescriptive compliance to their policies in the next supply chain tier. Most clients emphasise compliance – the so-called tick box approach, although this approach can embody high prescriptive levels (Commercial Director, International Subcontractor). However, compliance with prescriptions further down the supply chain is less about H&S than commercial requirements, which includes clients paying in a timely way as this has an impact on wellbeing down the supply chain (Head of Commercial, Infrastructure Client; H&S Manager, Developer). All the main contractors had different practices through procurement prequalification and buying, for bidding and construction management during execution (Group HSE Director, International Subcontractor; H&S Advisor, International Subcontractor). It also meant that on occasions centralised buying of main and subcontractors led to the inappropriate materials being selected (Operative, Sub-subcontractor). It was found that there are extensive discrepancies between the planned and actual practices, suggesting bottom-up revision on site among contractors and subcontractors (cf. Sherratt, 2016). Subcontractors attend the briefing meetings on site (Operative 3, International Contractor II). They are sometimes asked their views and contribute to problem-solving (e.g. Operative, Sub-subcontractor). This is partly because subcontractors have better systems than many main contractors (Associate Commercial Director, International Subcontractor) and sometimes because only the operatives have the requisite knowledge and experience. It was repeatedly stated by site management and operatives alike that main office staff who come through the university route into employment lack the necessary knowledge yet tend to think they know more than they do, issuing procedures and prescriptions without sufficient grounding (Operations Director, International

Subcontractor; Associate Commercial Director, International Subcontractor; Technical Services Manager, International Subcontractor).

It was reported that prescription is increasing as main contractors try to place more emphasis upon leading indicators rather than lagging key performance indicators (KPIs) (Head of Commercial, Infrastructure Client; H&S, Quality and Environmental Manager, International Main Contractor II). This is particularly relevant to the smaller subcontractors, who plan less. However, prescription not only has its own systematic shortcomings in that it discourages proactive planning at a tactical level, but it also raises scope for misinterpretations and operatives from divergent cultural backgrounds, further exacerbated by language barriers (Head of Commercial, Infrastructure Client; National Head of H&S, International Main Contractor). There also appears to be a great deal of prescriptive work that is not reaching along industry supply chains. One is a matter of management commitment. Films and videos illustrating good and bad practices are made, placed on the intranet, shown only once at induction meetings and/or streamed to ipads and mobile phones (Group Business HSEQ/Improvement Manager, International Subcontractor). Hence, management are committed to taking due care as compliance rather than transforming practice, thus such initiatives simply become fads (Operations Director, International Subcontractor). Further, there are anomalies between streaming videos on site and whether or where operatives can use social media in situ to access the videos (Supervisor, International Subcontractor).

4.3 Wellbeing

Wellbeing practices embody tensions and conflict. Firms are improving office and site facilities, and making better provision for working away from home during the week. These interventions are designed to make people more productive, work longer, hence they are away from loved ones longer, as well as carrying the risk of inducing greater fatigue (H&S Advisor, International Subcontractor; Project Engineer, International Subcontractor), which potentially has long-term effects upon household structure and stability: working with same people on a project means “they become your family” (HR Manager, International Contractor I). Firms are seeing more consequences of mental issues (e.g. H&S, Quality and Environmental Manager, International Contractor II; Operative, International Contractor II). Yet firms are also exacerbating these issues as they address them by indirectly encouraging long working hours to increase the pay over extended working days when working away from home. This can be fed by a growing problem, namely the use of drugs on site to keep going. Drugs have become a larger issue than alcohol (Group H&S Director, International Subcontractor). In addition, the ability to monitor for and measure the use of marijuana encourages the use of less detectable yet harder drugs, particularly cocaine. This has the perverse effect of worsening wellbeing and inducing H&S risks. This applies to office and site staff, and most potently to agency staff, where subcontractors are prepared to turn their head when long working hours, fatigue and other related issues begin to become evident (Group Business HSEQ/Improvement Manager, International Subcontractor). There is no transactional incentive for them to intervene.

Ethnicity, sometimes associated with language barriers, is a further issue that is highly contextual. Projects in city locations tend to attract more migrant and temporary contract staff from diverse backgrounds. The lack of a common template was most evident around this issue, to address different norms and linguistic understanding. Firms had very varied practices regardless of location from having interpreters on site to no support at all, hence carrying H&S risks by default. Regular problems can be that signage and temporary notices are in English and important instructions regarding emergent situations are not understood by some operatives (Technical Services, International Subcontractor).

Yet at the micro-level of OHSW operations on site, there is huge diversity of rigor and content which cannot be explained by contextual factors of regional culture, location and site. Therefore the only explanation is a lack of standardised processes as part of high level template for

national and international operations. Tactical processes tended to be subscribed, whereas strategic policies were not or less so. It could be expected the reverse would be the case: prescribed strategic policies for firms in an increasingly global market, tailored to local contexts. There was no distinct pattern. Firms operating on the global stage to a greater or lesser extent do not offer their clients, stakeholders and specifically their workforce in their supply chain any consistent service or wellbeing. It has therefore to be suggested that there are only regulatory and cultural factors than distinguish OHSW in different international, national locations; it is not the management of the firms.

5. Conclusions

The aim of most commercial organisations is to establish an overall reputation brand and adjust management and operations at the more local and contextual level. The findings for this research found the reverse in the case of OHSW management. There was not overview of strategic policies, business model or shared systems to articulate a consistent service. In other words there was no generic template. On the other hand, there were efforts to impose centralised tactical measures at a national firm level within the firms and also to an extent within their supply chains. At the level of the firm, there was variation between the prescription and practice. There was a combination of issues at play to create this picture. First, there was inconsistency induced by weak systems. Weak systems were evident between functions along the construction project lifecycle, for example between bid management and construction management, human resources and H&S. There were weak systems between the firm and site operations, for example in consistently implementing initiatives concerning the use of H&S videos, and between professional and university trained staff on the one hand and skilled operatives on the other hand that potentially led to divergent and risk-laden practices. The emphasis upon regulatory compliance rather than transformation also meant that management were largely accepting of the status quo, partly because the cultural norms of behaviour and practice meant that their thinking was taken for granted (cf. Roberts et al., 2012). Therefore, standardised policies for the international scale were not developed, but where flexibility was needed at the local and contextual level, prescription was high and any flexibility was motivated more by dysfunction than addressing the context.

In sum, the current and detailed prescription, driven top-down from the firms, mitigates against developing strategies and a higher level template of practices for OSHW that can be applied generically for tailoring in specific locations and contexts. This is a major barrier to developing OHSW practices on a consistent basis worldwide at the firm and programme management level. Addressing this shortcoming could provide a basis for improvement, especially where OHSW statistics have plateaued.

References

Anumba, C, Egbu, C, Carrillo, P (2005) *Knowledge Management in Construction*, Blackwell Science, Oxford.

Auch, F, Smyth, HJ (2010) "The cultural heterogeneity of project firms and project teams", *International Journal of Managing Projects in Business*, **3**(3), 443-461.

Dodge, R, Daly, A, Huyton, J, Sanders, L (2012) "The challenge of defining wellbeing", *International Journal of Wellbeing*, **2**(3), 222-235.

Dubois, A, Gadde, L-E (2002) "The construction industry as a loosely coupled system", *Construction Management and Economics*, **20**, 621-631.

HSE (2018) *Health and safety statistics for the construction sector in Great Britain*, Health

and Safety Executive, http://www.hse.gov.uk/statistics/industry/construction/index.htm. Accessed Wednesday 21st November 2018.

Kusuma, I (2014) "The cultural ecosystem of megaprojects", *International Journal of Architecture, Engineering and Construction*, **3**(2):82-97.

Lingard, H, Turner, M (2017) "Promoting construction workers' health: a multi-level system perspective", *Construction Management and Economics*, **35**(5): 239-253.

Liu, AMM**,** Fellows, R (2008) "Organisational culture of joint venture projects: case study of an international JV construction project in Hong Kong", *International Journal of Human Resources Development and Management***, 8**(3), 259-270.

Madsen, TK (1989) "Successful export marketing management: some empirical evidence", *International Marketing Review*, **6**, 41-57.

Malina, RM, Bouchard, C, Bar-On, O (2004) *Growth, Maturation and Physical Activity*, Human Kinetics, Leeds.

NICE (2018) "Healthy workplaces: improving employee mental and physical health and wellbeing", https://www.nice.org.uk/guidance/qs147/chapter/quality-statement-1-making-health-and-wellbeing-an-organisational-priority. Accessed 20th December 2018.

Parker, D, Hudson, P, Lawrie, M (2006) "A framework for understanding the development of organisational safety culture", *Safety Science*, **44**: 551-62.

Roberts, A, Kelsey, J, Smyth, HJ, Wilson, A (2012) "Health and safety maturity in project business cultures", *International Journal of Managing Projects in Business*, **5**(4): 776-80.

Saunders, LW, McCoy, AP, Kleiner, BM, Lingard, H, Cooke, T, Mills, T, Blismas, N, Wakefield, R (2016) "International benchmarking for performance improvement in construction safety and health", *Benchmarking: An International Journal*, **23**(4): 916-936.

Schein, EH (1996) *Organizational Culture and Leadership*, Jossey-Bass, San Francisco.

Sherratt, F (2016) *Unpacking Construction Site Safety*, Wiley Blackwell, Oxford.

Sherratt, F, Turner, M (2018) "Exploring the hidden social consequences of working in construction with q methodology: developing a study for Australia and the UK", *Proceedings of the Joint CIB W099 and TG59 Conference Coping with the Complexity of Safety, Health, and Wellbeing in Construction*, 1-3 August 2018, Salvador, Brazil.

Smyth, HJ (2018) *Castles in the Air? The evolution of British main contractors*, www.ucl.ac.uk/bartlett/construction/castles-in-the-air.

Smyth, HJ, Morris, PWG (2007) "An epistemological evaluation of research into projects and their management: methodological issues", *International Journal of Project Management*, **25**(4): 423-436.

Strassman, P, Wells, J (1988) *The Global Construction Industry*, Croom Helm, London.

Ugwu, OO, Haupt, TC (2007) "Key performance indicators and assessment methods for infrastructure sustainability: a South African construction industry perspective", *Building and Environment*, **42**(2): 665-680.

Yin, RK (2009) *Case Study Research: design and methods*, Sage, London.