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Has Construction Site Safety Changed in Ireland; and is Company Size the Key to Safety Performance Success?

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Has Construction Site Safety changed in Ireland; And is Company Size the key to Safety Performance Success?

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The purpose of health and safety procedures in the construction industry is to ensure the health, safety and wellbeing of workers. Due to the relative high accident rates on construction sites internationally, strong health and safety legislation has been devised to minimize accident causation and promote construction worker's safety. However, little attempt has been made to research the effects of those comprehensive health and safety interventions on the individual safety behaviour on construction sites. Therefore, the objective of this research was to investigate any changes to the health and safety on construction sites, specifically from the construction workers' perspective. The research also included an assessment relating to the effects of the recession on construction workers' health and safety practices in Ireland. The main findings demonstrated that company size predicted site safety behaviour on construction sites. Most noticeably, large organisations demonstrated higher levels of compliance to safety procedures, while medium sized organisations showed signs of regression and cited cost pressures as the main influencing factor. Small organisations reported a low level of compliance due to the cost required to ensure compliance to safety procedures and practices on construction sites.

Keywords: Health and Safety, Procedures, Construction Workers, Recession, Safety Performance

Introduction

It is widely accepted that five years ago Ireland's construction industry was considered to be at the height of what we would refer to in Ireland as the "Construction Boom" employing nearly twenty percent of the overall workforce. Five years on, Ireland is now experiencing one of the deepest economic depressions it has ever felt. This dramatic turn of events will be explored further throughout this research. Health and safety in construction industry is a well researched topic. Due to the high number of work related fatal and non-fatal injuries the construction industry has been a priority area for safety research and interventions. Construction work is one of the most well-known high-risk occupational areas in modern society (Larsson 2006) and among the most hazardous, as measured by work-related mortality, injury rates, and workers' compensation payments (McDonald 2009). Nowadays it is accepted that construction workers have a higher risk of work-related illnesses and accidents than workers in any other branches of industry and the public sector (Agarwal and Everett, 1997). The existing literature on accident causation in the construction industry establishes that the factors influencing accidents are in general similar in nature across different countries. Many studies demonstrate that the majority of accidents and resulting injuries in the construction industry are attributed to unsafe work practices of the construction workers rather than unsafe working conditions (Garavan and O'Brien, 2001).

Key Influencing Factors

A systematic review of the literature from journal articles and conference proceedings identified six major prevailing factors that influence the health and safety procedures and practices on construction sites.

Nature of Work and Complexity

Construction safety related accidents are influenced by the unique and complex nature of its activities (Behm, 2005). Safety in construction is considered complex due to the industry's unique work hazards, rapidly changing conditions and the characteristics of construction organizations (Choudhry and Fang, 2008). Furthermore, construction sites are changeable in nature, constantly changing in status, covering a huge range of construction processes of varying complexity and scale (HSE, 2009). The work processes and people change almost daily on sites and construction sites undergo frequent changes in topography, topology and work conditions throughout the duration of the projects (Rozenfeld, 2008). Construction projects are characterized by many unique factors, such as frequent work team rotations, exposure to various weather conditions, high proportions of unskilled and temporary workers.

Company Size

The construction industry is highly fragmented, both in the workforce and professional disciplines. A number of studies have found that the size of the company affects the frequency of accidents in the construction industry.

Further studies by Dawson (1988) and Gun (1993) established a relationship between the safety management and safety policies of construction companies and accidents. Rozenfeld, (2008) discussed the effects of economic and budgetary pressures on construction worker's safety and accident causation.

In particular small companies have a higher construction accident rate (Chi and Wu, 1997). The common key finding from those studies showed that the high accident rates were affected by the limited resources of small companies to avoid accidents (Colak, B., Etiler, N., Bicer, U., 2004). The assumption is that larger companies have access to more (financial) resources to promote an ensure compliance with health and safety procedures and practices on construction sites, resulting in lower accident rates.

Work Pressures: Time and Budget

The construction industry is under constant pressure to reduce costs and at the same time improve quality. This is particularly challenging with rising costs in labour and materials, and in building increasingly complex structures. It is suggested that higher frequencies of construction accidents are registered on projects that were subject to significant budgetary pressures and those that were competitively bid (Hinze, 1998). Research of the Australian construction industry by Holmes, Lingard, Yesilyurt, and De Munk (1999) found that the construction related hazards were largely attributed to the nature of the work, poor individual work practices, ignorance, and work pressure due to budgetary and time constraints.

In an article titled "Pace is the New Peril" Berzon (2008) examined how the accelerated scheduling of construction work was one of the contributing factors to safety problems and accidents. Berzon (2008) identified the underlying problem to be the sacrifice of safety in a rush to finish the job and whereby productiveness is placed before safety.

Safety Perception

Behaviour among construction workers in particular may be guided by some principles whereby the benefits of unsafe behaviour often appear to outweigh those of safe behaviour (Zohar & Luria, 2003). Some researchers go even further and argue that safe behaviour most often results in non-events, while unsafe behaviour appears in most cases to lead to tangible benefits. Baarts (2003) cited that the construction industry is characterized by traditional masculine values such as freedom, independence, resourcefulness, and toughness, with an often informal culture, in which safety knowledge is not openly expressed. This results in safe behaviour being inhibited at construction sites whereby project performance goals are often prioritized over safety goals.

Health and Safety procedures

In accordance with current legislation, standard policies and procedures for mitigating the risk of accidents rely on increasing workers' safety awareness, through incentives, training, hiring, feedback communication and participation. At the same time a number of coordination and prevention policies, such as erecting temporary protections, guardrails or safety nets, wearing personal protective equipment and planning the coordination of tasks, have to be implemented (Behm, 2008). However, most construction companies consider the hazard identification and evaluation, as part of their health and safety procedures, as a burdensome requirement that they must fulfil in order to avoid government fines. As a result, they often neglect the proper implementation of these plans (Saurin, Formoso, & Cambraia, 2008).

Recession

A recent survey by the HSE in the UK found that 26% of organisations were under pressure to cut their business costs during the recession. Also Brian Nimick, Chief Executive of the British Safety Council states that with the recession the fear for safety may increase, due to unsafe practices. Unfortunately, safety practitioners were one of the first casualties of the downturn. However, management need to be careful that the levels of safety do not decrease and rebound with serious consequence. It is well to remember that responsibilities on employers,

clients and their management have become more explicit in recent years with levels of personal liability also increasing and now specifically detailed in safety legislation (Section 80) (Bruce Shaw, 2010).

Research Goals and Methodology

This research involved face to face interviews of fifty one construction site personnel with management responsibilities, working for a minimum of five years in the Irish construction industry. The interviews were carried out during Sept 2010 through to April 2011 and the semi-structured interviews were designed to elicit the construction worker's experience relating to site safety procedures since 2006 and compare with the present day. The focus of the study was in particular on the interviewee's perception of the safety behaviour (procedures and practices) on construction sites. The collected data was graphed, analysed and correlated in much detail.

The methodology consisted of recruiting part-time college attendees who were actively engaged in the Irish construction industry and had been working for a minimum of five years. The interviewees were from the construction industry and mainly based in the Dublin metropolis. They included site engineer's managers, quantity surveyors and health and safety practitioners. The majority of the cohort was in the 25- 35 age group and over 90 % were male. Their company size included very small (1-10 employees), small (11-49 employees), medium (50-250 employees) and large (250+ employees) companies. SME's regarded the above categories as reflective of the economic demographics of Ireland.

Limitations

The primary objective of this present study was to identify any changes in the health and safety procedures and practices on construction sites over the past five years from the construction workers' perspective. The study also included an assessment on whether the recent economic slowdown had any effects on the health and safety procedures and practices on construction sites, in Ireland. Although the statistics used in this study do not represent the attitudes or opinions of all those within the industry, they express the grounds for this study which have arisen from attitudes of those involved in the industry towards health and safety.

A grounded theory was adopted Corbin (1990) to identify emerging themes during the data analysis. Related particular pieces of conversation were identified and the common elements were placed under a separate theme. It is important to mention that different factors were not expressed equally by all respondents. The interview questionnaire had been developed from a pilot interview and comprised 10 questions that would help understand the operative's experiences over the last five years. The approach used by Mullen (2004) in designing the questionnaire framework allowed respondents to tell their own story in their own way and style.

This research had been conducted in Ireland and the cohort is all in part-time third-level education, along with the interviews having specific focus on the Irish construction industry. The weights and attributes may be strongly influenced by the local environment and culture.

Data Analysis and Results

According to the literature review, little attempt has been made to research whether health and safety procedures have changed on construction sites over the last five years. This may be surprising, in particular in the context of the relative high accident rates on construction sites globally and the emphasis on strong health and safety regulation and legislation internationally aimed at minimizing accident causation and promoting construction worker's safety.

Sample distribution

The participants for this study (86%) were young male professionals, 87% of the cohort being Irish. The majority (72%) is considered highly educated. 86% spent less than 15 years in construction. A total of 69% are working in a supervisory role with management responsibility and 98% have spent over 2 years in current employment. It is noted that over half the cohort, 57% of participants worked for medium to large companies.

Health and Safety procedures

Risk Assessment procedures were in place five years ago for 59% of companies. 82% of the respondents indicated that their companies have changed the Risk Assessment procedures in the last five years. The majority (58%) of the participants believe there has been no relaxation in the current Health and Safety procedures. Nearly half the participants (47%) believed that Health and Safety will be enforced more during the recession.

Method Statement procedures were in place five years ago for 49% of companies. 64% of the participants' companies have changed their procedures in the last five years. 29% of participants believed Health and Safety in now stricter applied on construction sites. 29% believe there is greater awareness in relation to Health and Safety procedures in the last five years. The research shows that 66% of the participants experienced Safe Working Systems within their organisations. 53% of interviewed construction worker's companies changed their Systems in the last five years. 41% of the interviewees experienced more focus on Safe Working Systems within their organisations in the last five years.

Work Pressures

A large majority (86%) of the interviewed participants experienced a change in external pressures in the last five years. 77% of participants experienced pressures from within their own organisations. The source of the pressure for 75% of participants was believed to be driven by Cost ('Time is Money!'). Over half (59%) of participants also experienced a change in external pressures. 45% of participants state that Health and Safety is more of a concern today than it was five years ago. Nearly half (41%) of participants believed the recession to be a key factor in the changes relating to Health and Safety in the last five years.

Health and Safety inspections

From the interviewees 57% did not believe they would receive an inspection on-site five years ago. The majority 83% of participants now believe they could receive a HSA inspection in the current climate. The research showed that a majority (69%) of participants state that the belief of a real unannounced HSA inspection to site would change their attitudes towards safety behaviour on site.

High Risk Activities

Over half (66%) of interviewees stated that there has been a change in High Risk activities on site, compared with five years ago. Nearly all of those respondents (63%) indicated to have experienced improvements in Health and Safety in relation to High Risk activities and the majority (69%) believed those changes to be positive. The large majority (75%) of participants outlined to have noticed the change in procedures on site around the year 2007.

The majority (79%) of respondents stated that they experienced a change in attitudes to High Risk activities. 69% of participants believe now that the general operative has greater awareness the hazards involved with High Risk activities. 82% believed that the change in attitudes was a positive change. Over half (59%) of participants believe now that operatives are less inclined to put themselves at risk. It is noted that only a small minority (6%) of participants believed that the recession has not had an impact on Health and Safety on construction sites. An overwhelming 82% believe that the recession has had an impact on Health and Safety on sites.

Discussion and Reflection

The results from this study explored the operative's perspective on health and safety procedures and practices on construction sites and can form a contribution to further policy making, in particular relating to health and safety procedures and practices.

Documentation and Safe Working Systems

Procedures and rules form the core component of Safety Management systems (Mohamed, 2002). The key contributing factors to the high incidences of construction related accidents, as identified by Haslam et al. (2005) were linked to deficiencies in risk management procedures. The present study showed that 53% of the participants indicated that their companies had changed and modified the Safe Working Systems over the last five years. Three themes emerged from the research data as driving factors for these changes in Safe Working Systems: stricter enforcement, external influences and cost pressures.

This research also identified that 55% of companies experienced more procedures, more documentation and more training relating to health and safety on construction sites over the last five years. The results indicated that 49% of the construction worker's companies did have Method Statement procedures in place five years ago, yet the size of the construction site and nature of the construction project work were a key factor that influenced whether the procedures were in place. The results are largely in line with the findings of Helander (1991), whom found that many of the safety practices are specific to the different job classifications.

Construction workers' attitude towards safety is mainly influenced by their perception of risk, management, safety rules and procedures (Coble and Haupt, 1999). In this research, 41% of participants perceived a stronger focus on Safe Working Systems within their organisations in comparison to five years ago. The research indicated that in particular operatives on larger sites carried out Method Statement procedures, while operatives on smaller construction sites carried out such procedures to a lesser extent. When the research results are put in the context of Helander's (1991) findings that construction workers typically underestimate the particular hazards in their work, they can provide new insights on how the motivation for adopting safe working procedures can be positively influenced.

Regulation and Enforcement

Many assume that after drafting the regulations, compliance will automatically follow (Amodu, 2008). However, socio-legal researchers indicate that compliance is not a logical consequence of regulatory efforts and achieving better compliance is a difficult task. Even in highly standardized work tasks it is impossible to rigidly follow procedures, since circumstances even in such work vary substantially and a large number of ad hoc adjustments must be made. For example, the findings of this research demonstrate that five years ago (what could be considered the height of the construction boom in Ireland) nearly half of the respondents (47%) stated that there were no procedures in place for carrying out Method Statements, even though this is and was a legal requirement across the industry.

Size of Firm

A significant finding in this research was that of all the participants, in particular in larger companies, affirmed that no relaxation of Health and Safety procedures was visible. Nearly half the participants believed Health and Safety regulations will be enforced more strictly during a recession, with larger firms experiencing the highest levels of stricter enforcement. Good Health and Safety practices are considered a strong requirement for good public relations in order to obtaining the next job; this is a widely accepted concept amongst the participants of this study.

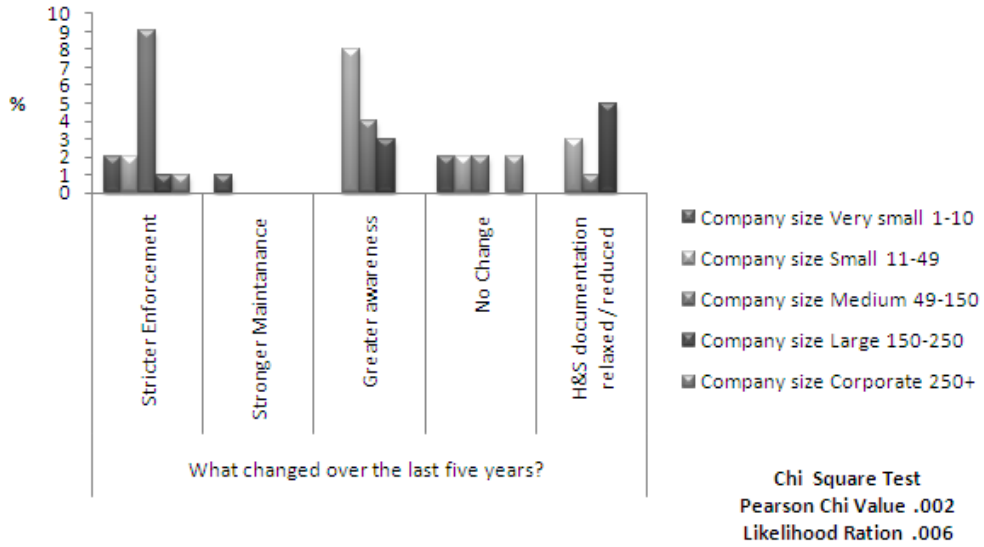

Figure 1. **Changes – Size of Firm**

As can be seen in Figure 1 above a small percentage of the participants in this study experienced no change in health and safety procedures compared to five years ago. The participants appear to work mainly with very small and small organisations. This may warrant the question whether Health and Safety procedures and

practices were in place five years ago (and still are in place) or whether Health and Safety procedures and practices were perhaps never in place for very small and small organisations.

The research shows that Health and Safety procedures and practices changed and the size of the site was a determining factor. The larger firms appear to strengthening and implement their procedures stricter, while smaller companies tried to avoid the strict implementation of health and safety procedures or keep them to a minimum on smaller sites. A significant finding was that Health and Safety danger were ignored by operatives within smaller/medium organisations. This data validates the findings of Hay (2003) that sites with small numbers of workers have a greater likelihood of serious accidents occurring.

Cost Pressures and Cost of Paperwork

Most construction companies consider the hazard identification and evaluation as part of their health and safety plans, as a burdensome requirement that they must fulfil in order to avoid government fines. Within the findings of this research there are strong indicators to support this statement. Increased costs were cited as the reason for change relating to Risk Assessment procedures over the last five years. The increased costs included the cost of accidents but also the cost of maintaining health and safety systems within an organisation. Over 54% believed there is now a significant increase in paperwork relating to Health and Safety procedures.

An interesting perspective was presented by one of the respondents regarding the increased costs for the administration of Health and Safety procedures. The example presented by the participant suggested that the cost element for tendering of potential work should require separate pricing for Health and Safety procedures. Working at height in particular requires pricing for different elements depending upon the work being carried out, such as scaffolding, PPE and harness equipment, which can be costly elements.

Furthermore, the Safety, Health and Welfare at Work Act, 2005 requires that employers must release employees for relevant Health and Safety training without a penalty (HSA 2006). The costs and the resource burden relating to this legal Health and Safety requirement have to be carried by the construction organisations. This corroborates a recurring theme that the implementation of health and safety procedures contributes to an increase in a company's cost base. The Health and Safety related costs include: Safepass, Construction Skills Certification courses and Basic Scaffolding. Also, renewal costs are to be taken into account and occur at five-year intervals. Other costs associated with both CSCS and Safe-pass would include the cost of releasing employees to attend the training days. In addition, there are significant legal requirements for construction companies to maintain and continuously update all the required Health and Safety documentation.

Work Pressures

The findings of this research support previous studies as the participants did indeed significant experience external pressures on site to have increased over the last five years. The common pressure to construction related work is the financial pressure, with most of those interviewed stating that "Time is Money!" This is largely in line with findings by Holmes, Lingard, Yesilyurt and De Munk (1999) that risk on a construction site is largely attributed to budgetary and time constraints

The single most important dimension of safety culture in a construction environment is the role of the managers, through their potentially positive attitudes in reducing the number of unsafe acts by employees and in turn reducing accident rates. The fundamental role and behaviour of the manager positively influences employees' involvement and active participation in safety activities (Fernández-Muñiz, 2007).

The majority of those interviewed confirmed to experience work pressures from within their own organisations and nearly all of those experienced increased pressures from their direct line manager. Another significant finding was that five years on, in what can be considered a recession, 34% of the participants stated that time pressures were the predominant concern.

Recession

The impact of the recession on Safety & Health was the focal point at the recent Health & Safety Lawyers Association seminar. The issues served to highlight the importance of actively managing health & safety in the current economic climate. According to Bruce Shaw (2010) safety practitioners were one of the first casualties

of the downturn. This research revealed that a large majority of the participants believed that the recession is a main influence to the changes that they experienced regarding Health and Safety compared to five years ago.

However, this research showed that Health and Safety departments were the first to be affected by downsizes in the current climate. It can be argued that management should be careful that the levels of safety do not decrease and rebound, as levels of personal liability have also increased and are now detailed in safety legislation.

High Risk Activities - Working at a Height

A study by Gillen (1997) among construction workers who had sustained non-fatal falls, explored their perceptions of the safety climate of the worksite where they were injured, and their perceptions of job demands, decision latitude, and co-worker support as possible contributing factors to the severity of their injuries. Also Helander (1991) stated that many of the safety hazards are specific to the different job classifications and found that construction workers typically underestimate the particular hazards in their work.

In the present study 66% of participant's state that they were involved in High Risk activities on construction sites over the past five years. Only a small percentage experienced deterioration over the last five years in High Risk activities. In contrast, the majority of the participants in this research believed there are significant improvements in Health and Safety procedures and practices for High Risk activities on site.

Awareness, Training, Attitudes

A large number of factors determine the employees' attitudes and behaviours with respect to risk, compliance and an organization's safety culture, such as visible commitment to safety by management, workforce participation and ownership of safety problems and solutions, trust between management and employees, good communications and a competent workforce (Fernández-Muñiz et all, 2007).

The findings of this research identified that the majority of the operatives are less inclined to put themselves at risk, in particular in relation to High Risk activities. This result adds merit to the belief that the general operative has a greater awareness of health and safety risks on construction sites. The positive change in the awareness of health and safety risks and changes in attitudes relating to High Risk activities on construction sites may suggest that individual safety behaviour has improved compared to five years ago.

Organisation's perceptions of legal risk play a far more important role in the organizations behaviour than the objective likelihood of legal sanctions (Shapiro, 1999). A majority of construction workers in the present research reported that hearing about legal sanctions against other firms had prompted them to review, and often to take further action to strengthen, their own firm's preventative program.

Conclusion and Future Research

The effects of the recession on health and safety procedures and practices are not clearly understood by the policy makers, the construction management and the construction workers alike. However, the negative effects of the recession on the health and safety procedures and practices are already visible.

The main findings of this study demonstrated that especially the company size predicted site safety behaviour (procedures and practices) on construction sites. Most noticeably, the large organisations demonstrated higher levels of compliance to safety procedures and practices on construction sites. Large companies consider good Health and Safety practices a strong requirement for public relations and to obtaining the next job; the medium sized organisations showed signs of regression relating to their efforts to continue to comply with health and safety procedures and practices. Cost was suggested as the main factor and as a result the health and safety related aspects of the business are impacted by ongoing cost pressures. Small organisations reported a low level of compliance to safety procedures and practices on construction sites compared to five years ago. For small companies the cost relating to compliance remains relatively high and the probability of health and safety inspections is perceived low.

Based on the results of this study in the Irish construction industry, the health and safety regulation and enforcement may need to be more tailored to support small and medium sized companies with the implementation of their health and safety procedures.

The limited available data emphasises the need to further explore the changes relating to health and safety procedures and practices in the construction industry. In the context of the strong increase in health and safety legislation and regulation in construction sites internationally and the recent economic slowdown globally it is eminent to achieve a better understanding of the changes relating to health and safety procedures and practices in the construction industry.

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