IS THE CONCEPT OF ZERO HARM AN ACHIEVABLE GOAL?

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The concept of zero harm is widely accepted to be the social norm across many industries; providing organisations at least with the 'opportunity' to go *"beyond simple compliance"* and into the realm of *"business sustainability"*. Achievability of these opportunities however is dependent on the workforce's capacity to successfully work under what is simply a well-branded slogan. Dependence on Zero Harm success at such a level creates for organisations a disconnection between management reporting and workforce performance driven by the quantifying of key performance indicator data. Viewing the Zero Harm concept through social constructivism provides an opportunity to explore the issues present rather than simply quantifying them. A case study approach utilising an inductive open-ended interviews strategy was used to explore the organisational relationships present within a construction company participating in a zero harm workplace. The approach assists in understanding what drives the collection and analysis of safety data and programming and the capturing of performance. Findings from the case study demonstrate that organisational expectations influence the overall Zero Harm approachability.

Keywords: case study, constructivism, organisational culture, safety performance, zero harm.

INTRODUCTION

Within Australia many leading companies utilise a 'Zero Harm', 'Zero Target' or 'Zero Goal' safety centric branding as a way to sell their commitment to workplace health and safety. A specific 'Zero' message that is continued across internal/external documentation, site hoardings, presentations and websites and a trend shared in other countries (Sherratt, 2014). For some companies this branding is supported by ongoing compliance to and certification of Health and Safety Management systems via AS/NZ 4801 and ISO 18001 (Reynoldson, 2008). Compliance to an organisational Safety Management System and system certification provides organisations with a justifiable reason to disconnect between providing the workforce with a manageable and user-friendly system (or perceptions) and a simplistic yet popular safety system branding (or attitudes) that ultimately form a safety culture (Reichers and Schnedier, 1990; Clarke, 2006; Mayze and Bradley, 2008).

The increasing popularity of the branded health and safety system is cause for concern, as it puts undue pressure on employees to perform their normal duties guided by unrealistic expectations (Reason, 1998; Cooper, 2002); further complicating organisational reporting capabilities and systems. The current industry trend is to promote the reporting of all incidents thus establishing a working environment that is safety empowered and proactive (DuPont, 1995). Underlining this empowered and

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proactive workforce is the expectation that what is reported will not be used to warrant retribution for the worker or the site, although this is not always the case (Taylor, 2002). Sherratt (2014) highlighted this focusing on the utopian and dystopian interpretations of 'Zero' vision programming in Scandinavian construction and the overarching tangibility of measurement and commitment to 'Zero' vision within UK construction (Jacoby, 2005).

The paper aims to explore the adoption of Zero Harm as part of a construction organisation's overarching Health and Safety management system. It will examine individual and group perceptions as well as awareness of the management, monitoring and performance of the system and conceptual achievability. Of particular interest is the role safety KPIs (key performance indicators) in understanding achievability across the organisation and how attitudes towards KPIs influence organisational culture.

THE CONCEPT OF ZERO HARM

A Need to Change

It is well documented that Australian construction has a poor safety record, injury and fatality rates are the 4th highest (17 per 1000 employees) across all industries (Workplace Relations Minister's Council, 2014). McCarthy and Hampton (2008) identified a number of factors contributing to Australia's poor safety record such as ongoing high rates of labour and subcontractor movement between companies, sites and projects and a lack of consistency in industry-wide acceptance of safety compliance. Despite an awareness of contributing factors, there has been minimal improvement in the type of recordable incidents.

To better understand industry awareness and monitor performance The Workplace Relations Minister Council led Australian Work Health and Safety Strategy 2012–2022 and subsequent yearly Comparative Monitoring Reports have established key reporting KPIs to assist in the assessment and benchmarking of performance. Although, typically these reports simply provide an awareness of construction performance comparative to quantitative requirements such as worker compensation claims, safety compliance and enforcement activities, without considering the subsequent awareness of safety within the organisation (Reynoldson, 2008). As Australian construction continues to move into the next decade the concept of zero harm is becoming more prevalent in safety management plans as organisation's attempt to provide workers, with a *"consistent and clear message that safety is critical"* (McCarthy and Hampton, 2008).

Increased awareness of the Zero Harm concept across the construction industry can be attributed to improving safety performance and programming in the mining industry going beyond compliance and toward better financial performance (Ekevall, Gillespie and Riege, 2008). The concept of zero harm emerged in the late 1990's in mining and was seen as a means to simplify already over complicated safety management systems. Companies believed a KISS approach (Kiss It Simple Stupid) would assist in promoting leadership qualities, better workplace conditions and behaviours as well as a proactive culture (Reynoldson, 2008; Dupont, 1998). The decision by mining companies has inadvertently impacted the Australian construction industry as more companies look for work in non-traditional construction fields as means to stay competitive (Ekevall, Gillespie and Riege, 2008).

Much has been discussed about Zero Harm and the positive characteristics that a simplistic approach brings to any organisation (Ekevall, Gillespie and Riege, 2008; Herbetson, 2008; Reynoldson, 2008). Central to the adoption of the Zero Harm concept is a need to review and understand the social aspects of the organisation, a view proposed by Agnew and Snyder (2002). Leadership is a central strategy of the Zero Harm movement which seems to allow organisations the ability to change already existing safety management systems without impacting too heavily on the social aspects present within the organisation (Cooper, 1998; Herbtson, 2008; Reynoldson, 2008; Spigener, 2009). Underpinning the leadership approach is the development of organisational business standards and policies, linked to procedures, practices and behaviours, which is supported by both systems and people (i.e. leadership) that then lead into the Zero Harm concept (refer to figure 1 Road to Zero Harm). Within Australia this road map is adopted by a number of companies and used as a means to not only drive zero harm but also as a means to continually evolve their subsequent safety management systems (Ekevall, Gillespie and Riege, 2008). Although a program driven by leadership can only provide so much substance.

The problem that is prevalent within industry is that there is not one true representation of Zero Harm. Rather the language, metrics and rhetoric of Zero Harm is concerned about the counter argument to the already consultative and collaborative safety management system (Jones, 2012).

The Zero Harm Environment

The fundamental application of Zero Harm is similarly represented across the construction industry and is aligned to the overarching commitment to health and safety of employees, contractors and visitors (Herbertson, 2008). The structured approach of the Health and Safety Management system within any workplace enables for a certain level of performance management, managed through key performance indicator data (Safe Work Australia 2012).

Demonstrated commitment is typically represented through the implementation and continuous improvement of the overarching Health and Safety Management system. The system provides a central standard for the management of health and safety issues, and applies to all units across all sites and business activities (Zou and Sunindijo, 2015). Within the system the roles, responsibilities and accountabilities are clearly defined, with workforce participation to be demonstrated through specific reporting lines.

The differing application being Zero Harm models being developed to create proactive cultures, overcome existing prevailing cultures and to foster shared values (for example, Holcim; Taylor Rail; Leighton Holdings; Siemens; BMD; Downer Group).

The Zero Harm Pledge

The Zero Harm commitment ultimately is of differing representation and is typically influenced by the nature of supply chain relationships present in contractual agreements (Ormond, 2014). A google search of Australian construction contractors working closely with mining companies identified 45 of 60 companies currently working within construction delivering Engineering, Procurement and Construction (EPC) services as upholding the Zero Harm concept as part of their ongoing safety commitment.

The rapid uptake of Zero Harm branding in construction has been identified as a serious cause for concern, due to the cynical nature of the construction industry and the level of commitment by an organisation to essentially change the way things are done (Ekevall, Gillespie and Riege, 2008). The impact on the workforce, who the health and safety management system is designed, lacks the clarity that is required when a paradigm shift to the system occurs (Herbertson, 2008; Jones, 2012).

The Problem

In its current form Zero Harm is representative as little more than a vision, a philosophy, a commitment or a short term goal to ensure ongoing work (Jones, 2012). What is unclear and an underlining issue is the concept's applicability within a multi-level workplace environment, although there has been some debate within academia regarding application at site level (Sherratt *et al*, 2011, 2012; Sherratt, 2013, 2014), concept measurement (Mayze and Bradley, 2008) and leadership (Herbertson, 2008; Reynoldson, 2008).

This paper explores the fundamental approach and application of a construction organisation making the decision to implement a Zero Harm safety programme. The exploration of zero harm's fundamental application within an organisation is central to understanding the purpose, structure and the culture in which the concept exists.

METHODOLOGY

The central theme to the paper is perception, therefore a constructivist approach is considered (Denzin and Lincoln, 2009; Bryman, 2008). The constructivist nature of the paper examines the different perceptions, awareness and discourse present within an organisation during adoption; further allowing a focus on understanding the issues rather than the quantifying of safety achievements.

Data was collected via 8 face-to-face interviews and 2 focus groups (up to 8 participants) over a 8 month period, incorporating the decision, implementation programme and initial roll-out. The purpose of interviews and focus group was to provide a multi-layered perception and awareness of the zero harm concepts and the organisational culture, as were as follows:

- Corporate WHSEQ perspective - 3 interviews conducted across head office and the focus site (Interviewees 2, 4 and 8);
- Management and site perspective - 5 interviews conducted across head office and the focus site (Interviewees 1, 3, 5, 6 and 7);
- Worker perspective - 2 focus groups conducted with the focus site (FG 1 and FG 2).

Secondary documentary data including roll out packaging was also analysed as means to understand the communicative methods in practice within the organisation. This approach allows triangulation of the research across data sources and emerging key themes to be assessed (Potter and Wetherell, 1992). The data was analysed utilising a thematic analysis framework to identify similar themes of core concept awareness and recognition of the agenda underpinning supplementary documentary data (Boyztis, 1998; Silverman, 2006). The results are presented in a case study format, further providing the opportunity to analyse holistically the literal and theoretical replication between that is or may be present between organisation groups (Flyvbjerg, 2006; Yin, 1994; 2013). The results highlight a clear lack of perceptive awareness from the leadership team driving the 'Zero Harm' adoption, which is a direct contrast to the

themes presented in existing safety research (Lardner, 2002; Mayze and Bradley, 2008; Herbetson, 2008; Reynoldson, 2008).

FINDINGS AND DISCUSSION

Participants were asked a series of closed and open-ended questions addressing their understanding and awareness of the:

- Organisational environment;
- Zero harm concept; and
- Safety Culture.

These interview topic areas form the main themes of the findings and discussion.

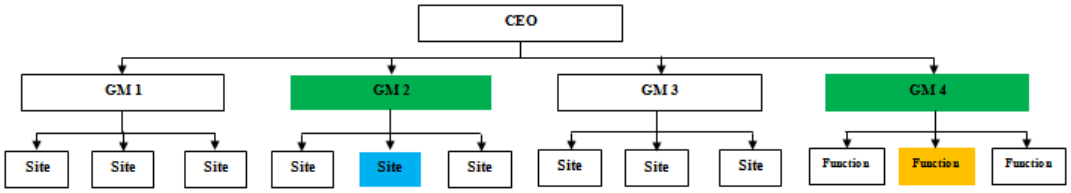
The Organisational Environment

The organisation is an international construction company providing electrical engineering, procurement and construction (EPC) capabilities; providing services across all major Australian markets incorporating infrastructure, mining, residential and commercial. Within the organisation the safety culture is underpinned by a simple motto providing employees with a simplistic understanding of the overarching safety commitment.

The bureaucratic structure of the organisation (as shown in Figure 1 Organisation Structure) highlights a clear leadership disconnection between operational functions and the operating sites. The selected site is located in Queensland Australia and is involved in providing support capabilities for engineering, procurement and construction as well as operational support during commissioning. The GM of this site is based at the NSW head office travelling to the site once every 6 months. All sites operating within this region are supported by 1 functional advisor who directly reports to the state manager while indirectly reporting to the functional group manager.

Within the WHSEQ function all team members are located at head office or within 100km of head office. The location of the WHSEQ team highlights a clear physical disconnection which can influence the fundamental application of Zero Harm within the organisation. One might considered this physical separation to be a key factor is the un-achievability of Zero Harm.

Figure 1: Organisation Structure



Strong and central leadership has been often discussed as a core requirement for successful adoption of zero harm (Reynoldson, 2008; Herbertson, 2008; Elvisker, 2008). Leadership is not just representative of top-down relationships but also from the bottom-up, within safety it is encouraged to have leadership driven by the workers rather than management (Dupont, 1995); although management still provide set guidelines. The organisation is in a difficult position in terms of their ability to achieve a zero harm lead safety culture; due in part to the organisation being underpinned by a complex management structure. The organisational structure is driven by a bureaucratic style of management, characterised by silo like

communication channels representative by 5 divisional senior management leaders managing up to 8 separate sites across those 5 divisions. Problems occur in the spread of the WHSEQ function across those sites lead by 4 personnel in advisory roles tasked with the responsibility of ensuring compliance to the overarching reporting system as developed by the function. The organisation has 3 senior WHSEQ representatives who rarely visit satellite sites, managing the reporting from the corporate head office. The bureaucratic structure of the organisation promotes a reporting environment that is typically reactive in its ability to commit to ongoing reporting capabilities; made worse by the lack of involvement from senior management and WHSEQ representatives as illustrated by discussions with worker focus groups (group 2):

"…..we continually get told we need to be doing and doing this without impacting zero safety targets, but we don't get proper support from WHSEQ. It's difficult when we get blamed for not following instructions…"

The focus group here is highlighting a clear dependence on the top-down leadership approach, highlighted by the group's use of getting told what they need to do. They see corporate as setting the practices, but do not see that site management is responsible for the communication and supporting of set instructions. To the workforce it is seen that the WHSEQ team don't do enough to support sites as system changes occur, this is representative of the 'blame' the workforce experiences. The emphasis on 'zero harm safety targets' highlights a disconnection between the basic concept of zero harm, the setting of KPIs and monitoring of 'zero harm safety targets' at a site level.

The Zero Harm Concept

Byard (2009) describes the application of zero harm concepts as a widespread adoption of a zero goal, zero incidents, zero accidents and zero tolerance. A zero goal that is ultimately unsustainable and unachievable. Despite the complex organisational structure a simplistic safety programme is present; the organisation promotes a Stay Safe message aligned to a Zero Harm safety programme.

The safety message forms part of the organisation's branding; externally Zero Harm is branded as a holistic approach underpinned by daily life and established and certified to Health and Safety Management Systems (AS/NZS 4801, ISO 18001). A view illustrated by the IMS manager (interviewee 2):

"…the organisation committing to the motto and the ongoing reporting and auditing of the systems…and is represented through overarching work health and safety policies…"

As well as the WHSEQ group manager (interviewee 4):

"…individuals are more likely to report and utilise a system which is easily accessible and designed around the lowest common denominator..."

The two managers of the system place the achievability of Zero Harm at the core of the organisation, achieved not only through the active participation of employees and their use of the system but also via certified compliance to overarching Health and Safety Management Systems. Central to the concept within the organisation is the transferring of responsibilities from management to the individual worker a view that is representative in recent changes to Workplace Health and Safety legalisation in Australia. Although underlining message within the organisation is safety is about protecting yourself and your mates.

The tangibility of achievement for the organisation is managed through specific site reporting capabilities set by the WHSEQ function. The organisation utilities a number of key performance indicator reporting platforms such as toolbox talks, safety alerts and bulletins and monthly reporting as well as senior and frontline leadership metrics to monitor performance. Focusing on statistical data to monitor and manage compliance to a zero harm workplace creates a significant internal disconnection as sites are assessed by 'hard' data targets. The challenge with 'hard' data reporting is a lack of awareness and assessment of the qualitative data that exists in the practice and process of reporting. The quantification of zero harm although providing an indicator of performance contradicts the simplicity of the Stay Safe message results in the corporate voice promoting an intangible philosophy. Within the WHSEQ function it is a sentiment that in the words of interviewee 2 that zero harm is not so much about *"reporting performance but rather an overarching ideal of a safety culture and its symbolic yet simplistic message"*.

This is particularly evident in the push from the WHSEQ function for sites to utilise the specific reporting platforms, interviewee 8 is a WHSEQ advisor looking after 8 different sites across 3 states; and is the face of the WHSEQ function on sites, when discussing this the interviewee highlighted:

"…corporate leaders within the division do not understand that people at site are busy and do not have the time to comply not only to the notion of a zero harm work environment but to all systems used within the organisation to support a zero harm workplace. Added to this is the time required to ensure ongoing technical support and management of use". Interviewee 8's point of view reflects the inability of the overarching WHSEQ function to understand the specific cultural, operational and performance needs of each individual site; this view is further supported by all senior and site management interviewees.

This basic disconnection between the organisational WHSEQ function and sites suggests a culture discourse is present; representative of the understanding and awareness of the zero harm safety programme. Understanding the safety culture is central to unlocking the achievability of the programme.

Zero Harm Culture

The safety culture of the organisation is positioned around the achievement of targeted reporting and metric KPI's. Overarching KPI's are set by the corporate team and are representative of individual and with divisional KPI's set by senior management to align to business goals. Despite having a set KPI's, there is limited transparency of monitoring or communication across the site; with reporting only present in monthly reporting and senior leadership meeting. When discussing the matter with site management the lack of transparency is due in part to sensitivity of information sharing, interviewee 7 (a senior project manager) explained:

"…we have more than enough to already report on, let alone provide employees with KPI transparency. If they really wanted to know more then they know where to find all our reporting. Anyway, here employees simply want to come to work and, you know, work…"

The notion of accountability becomes an apparent trend in the above statement; particularly in the interviewee's opinion that employees come to work just to work. Many of the employees within the organisation want to know how the site is performing overall and how they as a team can assist in continually to improve. The

overarching disconnection between site management and employees is quite apparent here and suggests a larger underlining problem not linked to safety but communication lines in general. To have such a pre-existing ideal in place within the organisational environment can promote a safety culture that is simply complying to the Health and Safety Management System because they have not, not because they want too.

This is a concept that has been explored and explained in the DuPont Bradley Curve (DuPont, 1995), which places organisations within a set cultural framework in which to benchmark overall safety performance and compliance. The Bradley Curve explains as an organisation become transparent in it reporting, the culture similarly changes becoming less compliant and more proactive (committing to reporting because they want too). It is interesting to note that there are elements of the DuPont Bradley Curve present; talks with the focus groups discussed the reasoning behind the lack of incident reporting. The problem within the organisation lies with the site incident target of 0 LTIs and 0 MTIs within a financial year. A KPI target that has been in place for the last 5 years and as such no LTI or MTI has been recorded on site; despite the site operating within a high risk work environment. The general consensus amongst the workers was that the reporting of incidents inline to organisational requirements resulted in a culture that fears retribution. Retribution was characterised by employees describing those who reported incidents would be more likely to be targeted by their employers, FG 1 described this as:

"…if you report incidents on site you are more likely to have a target painted on your back…the way you are treated makes you feel like you are in prison…".

The alignment of specifically zero KPI targets contradicts the organisation's overall Stay Safe message which promotes the reporting of all related Health and Safety Management System objectives. The clear disconnection and lack of awareness between the function which sets targets and the application of targets at the site level, is a fundamental issue of practice that is not readily remedy and challenges the ultimate achievability of zero harm.

CONCLUSION

The concept of zero harm ultimately provides an organisation with a goal in which to strive toward which is more of an ideal than a concept. Within Australia the push for the zero harm organisational environment, can be linked to the harmonisation of workplace health and safety legislation, contractual relationships, industry competitiveness and industry compliance. Harmonisation and streamlining performance guidelines and expectations can further provide a framework in which to apply and make zero harm achievable; although the final outcome would be ultimately zero.

The dependence on external factors to set safety performance is cause for concern as it creates a dystopian work environment that does not challenge or change practice, rather seeking workforce engagement without empowerment to address existing problems (Sherratt, 2014). This is representative of an organisation simply being compliant to the needs and desires of the WHSEQ function. Being told how to conform without understanding the larger problems at hand within the organisation and will lead to an operating environment that characteristically will withhold information that is deemed too sensitive or breaks the zero harm boundaries.

Zero harm however can change how we view construction best practice and the larger industry, through the empowerment of the workforce to become more actively

involved in developing best practice. Changing zero harm will ultimately be achieved by establishing more realistic reporting boundaries that reflect a change in focus and provide the supporting framework for the organisation.

REFERENCES

Agnew, J. L and Snyder, G. (2002). *"Removing Obstacles to Safety A Behavior-based Approach"*. Business and Economics.

Boyatzis, R. E. (1998). *"Transforming qualitative data: Thematic analysis and code development"*. Sage, Thousand Oaks, CA.

Bryman, N. M. (2008). *"Advances in mixed methods research: Theories and applications"*. Sage, Thousand Oaks, CA.

Byard, P. (2009). *"Could Zero Harm be killing our people?. Logistics and Materials Handling"*. www.logisticsmagazine.com.au/could-zero-harm-be-killing-our-people. November 2009.

Clarke, S. (2006). *"The relationship between safety climate and safety performance: a meta-analytic review"*. Journal of occupational health psychology, **11**(4), 315.

Cooper, D. (2002). *"Improving Safety Culture A Practical Guide"*. Business and Economics.

Denzin, N. K and Lincoln, Y. S. (2009). *"Qualitative Research"*. Sage, Thousand Oaks, CA.

DuPont. (1995). *"The DuPont Bradley Curve"*. http://www.dupont.com/products-and-services/consulting-services-process-technologies/brands/sustainable-solutions/sub-brands/operational-risk-management/uses-and-applications/bradley-curve.html. April 2015.

Ekevall, E., Gillespie, B. and Riege, B. (2008). *"Improving safety performance in the Australian mining industry through reporting"*. Price Waterhouse and Coopers. http://www.pwc.com.au/industry/energy-utilities-mining/assets/Improving-Safety-Paper-Aug08.pdf.

Flyvbjerg, B. (2006). *"Five misunderstandings about case-study research"*. Qualitative inquiry, **12**(2), 219-245.

Herbertson, W. (2008). *"The Practical Safety Guide to Zero Harm: How to Effectively Manage Safety in the Workplace"*. Value Organisation Pty Ltd.

Howarth, T., and Watson, D. P. (2009). *"Construction safety management"*. Wiley-Blackwell

Jackoby, R (2005). *"Picture Imperfect: Utopian Thought for an Anti-Utopian Age"*. New York: Columbia University Press.

Jones, K. (2012). *"Zero Harm persists in confusing companies on safety"*. www.safetyatworkblog.com/zero-harm-persists-in-confusing-companies-on-safety. November 2012.

Lardner, R. (2000). *"Towards a mature safety culture"*. In Institution of Chemical Engineers Symposium Series. **148**, 635-642.

Lincoln Y. S. and Guba, E.G. (1985). *"Naturalistic inquiry"*. Vol. 75. Egon G. Guba (Ed.). Sage, Thousand Oaks, CA.

Mayze, Brett R. and Bradley, Lisa M. (2008). *"Safety culture : a multilevel assessment tool for the construction industry"*. In: Third International Conference of the Cooperative Research Centre (CRC) for Construction Innovation – Clients Driving Innovation: Benefiting from Innovation, 12-14 March 2008, Gold Coast, Queensland.

Ormond, M. (2014). *"Five reasons why you'll never achieve zero harm"*. www.shponline.co.uk/five-reasons-why-youll-never-achieve-zero-harm/.

Reason, J. T. (1990). *"Human error"*. Cambridge University Press: Cambridge, NY.

Reason, J. T. (1998). *"Managing the risks of organizational accidents"*. Ashgate: Aldershot, Hampshire, UK.

Reichers, A., and Schneider, B. (1990). *"Climate and Culture: An evolution of constructs"*. In B. Schneider (Ed.), Organizational climate and culture. Jossey-Bass: San Francisco.

Reynoldson, R. N. (2008). *"Kissing Safety Management Plans towards Zero Harm"*. Reyno-Vations Consulting Pty Ltd.

Potter J and Wetherell M. (1992). *"Discourse and Social Psychology - Beyond Attitudes and Behaviour"*. Sage Publications: London.

Sherratt, F, Farrell, P and Noble, R (2011). *"A constructionist examination of construction site culture: Review of a pilot study"*. In: Egbu, C and Lou, E C W (Eds.), Proceedings 27th Annual ARCOM Conference, 5-7 September 2011, Bristol, UK.

Sherratt, F, Farrell, P and Noble, R (2012). *"Inconsistent, incomplete and incidental: site safety culture from a constructionist perspective"*. In: Smith, S.D (Ed.), Proceedings 28th Annual ARCOM Conference, 3-5 September 2012, Edinburgh, UK.

Sherratt, F. (2013) *"Et in Arcadia ego? 'zero target' safety programmes in the UK construction industry"*. In: Smith, S.D and Ahiaga-Dagbui, D.D (Eds) Procs 29th Annual ARCOM Conference, 2-4 September 2013, Reading, UK.

Sherratt, F. (2014). *"Exploring 'Zero Target' safety programmes in the UK construction industry"*. Construction Management and Economics. **32**(7-8).

Silverman, D. (2006). Interpreting qualitative data: Methods for analyzing talk, tect and interaction. Sage, Thousand Oaks, CA.

Spigener, J. (2009). *"The zero-harm organization: Leader behavior is the catalyst of culture"*. Industrial Safety and Hygiene News. **43**(9): 53-54

Taylor, J. B. (2002). *"Safety Culture: Assessing and Changing the Behaviour of Organisations"*. Gower Publishing.

Workplace Relations Minister's Council. (2014). *"Comparative Performance Monitoring Report Comparison of work health and safety and workers' compensation schemes in Australia and New Zealand"*. 15th Edition. Australian Govenrment.

Yin, R. (1994). *"Case study research: Design and methods"*. Sage, Beverly Hills.

Yin, R. K. (2013). *"Case study research: Design and methods"*. Sage publications, Thousand Oaks, CA.

Zou, P. X. W and Sunindijo, R. Y. (2015). *"Safety Climate and Culture, in Strategic Safety Management in Construction and Engineering"*.John Wiley and Sons, Ltd, Chichester, UK.