

Leadership initiatives for health and safety risk management systems in a small construction company – A case study

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Abstract:

In a globalised world the need for leadership in the construction industry has been greater due to the fact that health and safety has become an important business tool to reduce accidents to save lives and minimise injuries. The aim of this chapter is to demonstrate the importance and role of leadership for managing risks associated with health and safety aspects in small construction companies. Therefore, a case study of an Italian family run small construction company is investigated and reported. The chapter dwells in depth with regards to health and safety (H&S) risk management issues such as: commitment, workers engagement, prioritisation of H&S, compliance, measurement and organisational learning from a leadership perspective. As a diagnostic tool Leadership and Worker Involvement toolkit was administered in the company. The toolkit had assessment levels (walking, running and sprinting). Analysis of the case study company showed they were at walking and running stages in various aspects. But the leadership aspiration of the company was to reach the 'sprinting' stage as a long-term target and sustain it to minimise health and safety risk. A holistic approach was developed to achieve the leadership aspirations of the company. An Enterprise Risk Management (ERM) Framework (strategy, process and performance) with a health and safety strand was developed and evaluated. This strand had health and safety at the heart of the organisational vision and objectives which had processes to identify the health and safety risk factors which then lead to health and safety performance measurement. This measurement is based on the Balance Score Card concept which includes H&S risk from aspects such as: financial, clients, business process and learning and growth. Evaluation of framework revealed that violation of H&S laws and regulations have an impact on all the four aspects of Balance Score Card (financial, clients, business process and learning and growth). This then has an overall effect on the ERM which has an impact on leadership decisions on H&S aspects. Therefore, in conclusion, the role of leadership in small companies is to

understand the importance of H&S aspects and develop strategies which are then embedded in the processes of the companies to minimise H&S risks for their sustainability and competitiveness. This chapter is beneficial for professional at site (operatives/site trainees), project and programme level (site/project/programme managers) and for leadership team (Directors/board members).

Keywords: Enterprise Risk Management, leadership, health and safety, risk management, small companies,

1. Introduction

With the construction industry being notorious for safety, this condition has compelled companies to improve their safety performance. There are at least five reasons which demonstrate the importance of safety for construction companies (Reese and Eidson, 2006): lack of safety; increase probability of accidents; increase human suffering through injuries; accidents leading to disabilities; and fatalities. Governments around the world have laws that require construction organisations to provide safe work conditions and adequate supervision. Lack of safety, therefore, may lead to prosecution or claims, which will become the source of extra costs and adverse publicity. When an accident happens, the morale of workers is weakened. On the contrary, accident prevention programs strengthen morale and improve on-site productivity. A good safety record and proven safety management system is a valuable marketing tool to attract new clients and support business expansion. A safe operation of workplace is considered as a moral obligation imposed by the current society, thus good safety practices are essential to improve and maintain reputation; and safety management program contributes to the financial health of construction companies by helping them avoid costs associated with accidents. An accident incurs both direct and indirect costs as well as insured and uninsured costs. Sun and Zou (2010) found that an accident can cost up to a \$1.6 million. The hidden costs could be 36 times greater than the direct costs of the accident (Hughes and Ferrett, 2016).

In most countries, the rates of accident and injury prevailing in the construction industry are higher than what prevails in other industries. For developed countries, Idora (2011) found that the United States construction industry currently accounts for over 22% of all occupational fatalities in the

entire United States even though it employs less than 7% of the country's workforce. However, according to the UK Health and Safety Executive Warren (2017), each year in the construction sector alone, 4% of workers suffer from an illness they believe to be work-related and 3% of people suffer from a work-related injury. That is 79,000 people have musculoskeletal disorders.

The situation in developing countries is worst because research studies discovered that accident and injury rates in many of the developing countries such as Kingdom of Saudi Arabia (Suresh et al 2016); Nigeria (Idoro, 2004; 2007), Thailand (International Labour organization, 2005), and Tanzania are considerably higher than in European countries (Idoro, 2011). Mbuya and Lema (2002), are of the opinion that in most developing countries, safety consideration in construction projects delivery is not given a priority and the employment of safety measures during construction is considered a burden Enhassi et al., (2008). Also discover that in many developing countries, the legislation governing Health and Safety is significantly limited when compared with UK. They report further that there are rarely any special provisions for construction on workers' safety and the general conditions for workers are often not addressed.

Lee and Halpin (2003) discovered that in many of the countries where safety legislation exists, the regulatory authority is weak and non-existent and employers 'pay lip service' to regulations. Koehn et al., (2003) further discover that in developing countries, injuries are often not reported and the employer only provides some form of cash compensation for an injury to the employee. Suresh et al (2016), study concluded that it is possible to improve construction Health and Safety through effective enforcement of existing Health and Safety laws.

This phenomenon has several implications on the construction industries of developing countries. Rowlinson (2003) observes that the cost of accidents accounts for 8.5% of the total tender price in the Chinese construction industry. The Nigerian construction industry shows almost all the features discovered about developing countries. The industry has no legislation governing OHS, on regulatory authority on OHS, accident and injuries are not reported and clients, consultants and contractors give little or no attention OHS. The resulting implication is high incidences of accidents and injuries (Idoro 2011). Zurmi et al (2017) reveals that non-compliance to the use of Personal Protective Equipment (PPE), negligence of workers to safety rules,

and poor supervision and training are the major causes of accidents in the Nigeria construction industry. This clearly indicated a poor safety culture followed in the construction project sites.

In developed countries, recent advancement in technology, on one hand, has contributed positively to industry productivity, but on the other hand, has created a more challenging and unsafe work environment (Farooqui, 2008). According to research findings, those who spend their working lives on construction sites have 1 in 300 chance of being killed at work. The chance of being disabled by injury or serious illness is much greater than in most other industrial fields. Every construction worker is likely to be temporarily unfit for work at some time as a result of a minor injury or a health problem after working on a construction site. A study by Suresh (2015) explored hard-hat detection technology, health monitoring booth, smart vests, smart hard hats detection, drones, Unmanned Aerial Vehicles, and Google glass that can be used for H&S on construction sites. Construction industry is considered as the industry that is relatively slow in adopting emerging technologies especially to enhance health and safety of its workers.

Health and safety globally is enacted by varying regulations, standards, model and acts. The International Labour Organization (ILO) publish a database of current occupational health and safety legislation globally, described in Table 1 are countries who apply occupational health and safety law, who is responsible for ensuring regulation, standards are being enacted and the occupational health and safety laws they are compliant with regards to training and development of their given work forces. In spite of this every 15 seconds, a worker dies from a work-related accident or disease. 317 million accidents occur on the job annually; many of these resulting in extended absences from work. The human cost of this daily adversity is vast and the economic burden of poor occupational safety and health practices is estimated at 4 per cent of global Gross Domestic Product each year (ILO 2017). Therefore, investment in health and safety initiatives is critical to a company's sustainability and future competitiveness.

Table 1: Health and Safety in 12 different countries

Country	H&S Regulation	H&S Compliance
United Kingdom	Health and Safety Executive	Health and Safety at Work Act 1974

United States of America	Occupational Safety and Health Administration (OSHA)	Occupational and Safety Health Act 1970
Canada	Canadian centre for Occupational safety and Health (CCOHS)	Canada Labour Code (Labour Code), Part II and the Canada Occupational Health and Safety Regulations (OSH Regulations)
Australia	Safe work Australia	Work Health and Safety Act 2011
Russia	Russian National Centre of Occupational Health	The Labour Code 2001
Portugal	National Council for Health and Safety at Work	Occupational Safety and Health Law (L102/2009, amended and consolidated by L 3/2014)
China	State Administration of Work Safety (SAWS)	Major OSH laws are Law on Work Safety, Law on Prevention and Control of Occupational Diseases, Law on Safety in Mines
Sweden	Work Environment Authority	Work Environment Act (1977:1160).
Switzerland	Secretariat for Economic Affairs (SECO)	Labour Law, the Order No. 3 on Hygiene and the Order on the Prevention of accidents
Peru	National Council on Occupational Health and Safety	Safety and Health at work 2012
Oman	Ministry of Manpower, Occupational Health and Safety Department	Omani Labour Code 2003
New Zealand	Ministry of Business, Innovation and Employment	Health and Safety and Employment Act 1992,

2. The role of Leadership for Health and Safety

Health and Safety is always considered as a management issue in which the top management team, who has the authority to allocate resources and enforce organisation's policies, plays a key role in successful health and safety management. The top management team must be willing to accept responsibility for the safety of their employees and must consider safety as an

integral part in conducting business. They need to announce and demonstrate their safety commitment as well as stimulate safety awareness from the rest of their employees. Therefore, a safety program or any other implementation of a safety management system must start from or be supported by top management (Anton, 1989). Without management support, safety is degraded into behavioural issues, such as asking workers to work with care and to wear protective equipment. Proper behaviours are, of course, necessary, but it is important to remember that humans are prone to error. Changing people's mindset and implementing a safety management system are more important and effective to counter safety issues (Lingard and Rowlinson, 2005).

On the other hand, safety should not only be the responsibility of top management. Due to the complexity of the nature of safety, concerted efforts by all stakeholders, directed at all levels in the influence hierarchy are required to achieve a sustained safety improvement (Gibb et al., 2006). Everyone in the organisation must be involved and accountable. Sunindijo and Zou, (2011) stated that misalignment of management commitment and subordinates' actions lead to continuous unsafe conditions of work. More so the concepts of safety by the managers are not fully disseminated to their subordinated to take measures on the construction site. These attribute to lack of safety leadership (Martin and Lewis, 2014).

Tyssen et al., (2014) noted that effective leadership plays an important role in ensuring the success of construction project facing a high degree of uncertainty. A project team will either succeed or fail largely by the quality of the leadership skills of project managers. Therefore, strong safety leadership should be the key for improvement.

The roles of leadership are distinct from those of managers. Health and safety managers hold employees accountable to health and safety and typically held accountable for outcome numbers. Thus, they use outcome numbers to direct the behaviour of those who report to them. While health and safety leaders motivate others to be self-motivated and self-accountable for health and safety go beyond the call of duty on behalf of their co-workers' safety, health and well-being (Daniels and Daniels, 2005). Health and safety leaders also hold people accountable for accomplishing proactive process activities that can prevent harm and lower injury rates.

Most of the leadership research has focused on outcomes such as productivity, profit, and worker satisfaction as their criteria, and very few

research studies have looked at health and safety as a criterion for measuring leadership effectiveness. This is surprising, given that creating a safe workplace and promoting effective leadership are key goals of most modern organisations. Yet it cannot be assumed that similar leadership behaviours will be associated with effectiveness in health and safety as with other outcomes because safety, unlike other organisational outcomes is intangible. Good safety performance culminates in non-events which are not self-reinforcing. Thus, in order to develop and sustain employee motivation for safety it is likely that leadership in construction projects will require certain communication and motivational skills, which may differ from those required to fulfil task orientated goals.

Catell et al. (2003) noted that productivity is about getting the best value from all inputs across the whole value chain and for this, there needs to be sustained improvement in leadership, culture and processes. Furthermore, Ribiere and Sitar (2003) referred leadership behaviour as 'leading through a knowledge lens'. Leading through a knowledge lens gives some special characteristics since it is dealing with knowledge workers having specialised expertise, leading them can be done only by intellectual power, conviction, persuasion and interactive dialog, it requires skills that build confidence and engagement. Therefore, leaders should establish trust and commitment that will help the knowledge organisation to achieve its business goal. Leadership initiatives for health and safety risk management systems in a small construction company is paramount as construction workers are already at a higher risk of accidents in construction than in any other industry. Construction related accidents, illnesses and injuries have a negative effect on the construction industry and its stakeholders in a number of ways. These include the de-motivation of workers, delays in projects and the ever increasing cost of rehabilitating injured workers.

3. Does Size matter for Health and Safety?

The employees of small companies have less experience, less education and are younger than employees of large companies. Moreover, they are not conscious of the risk they confront because of their lack of knowledge and information about H&S. Lin and Mills (2001) research in Australia showed that small companies did not consider they have to pay attention to H&S administratively. On the other hand, large companies consider that the H&S needs to be included in the administrative system and in all the projects

developed by the company. H&S is not a priority in small companies for several reasons. First, they are economically vulnerable, which make them consider that investing in H&S is not profitable as the benefits are perceived in long term. Furthermore, owners and managers tend to take responsibility of all managerial aspects of the company, without having any management knowledge and training. Also, as the frequency of accidents in these types of companies is low, owners tend to misinterpret these facts (Champoux and Brun 2003). In order to have a more specific analysis of the size of the companies these workers belong to, the range of the number of employees followed the definition of SME from the European Union, which is used also by the UK government. In terms of quantity of employees, a SME is described as follows:

- Micro business: compound of less than 10 employees.
- Small business: compound of less than 50 employees.
- Medium business: compound of less than 250 employees (European commission, 2017)

Small businesses in the UK account for 99.3% of all private sector businesses at the start of 2016 and 99.9% were small or medium-sized (SMEs). The combined annual turnover of SMEs was £1.8 trillion. Just under a fifth of all SMEs operate in the construction industry (BIS 2017). These numbers show that there is a significant presence of SMEs in the industry, thus it is important for the construction sector that these types of companies implement H&S practices in the workplace in order to diminish accidents and any other risks that affect their workforce and people around the construction site. Small and medium enterprises are being increasingly recognised as “the life blood of modern economies” (Ghobadian and Gallear, 1996). Even though this was stated more than a decade ago it still stands true reflecting on the statistics. Therefore it would be interesting to explore the role of leadership for H&S in a construction SME.

4. Leadership toolkit for Health and Safety

The Leadership and Worker Involvement toolkit was developed by the construction industry's Leadership and Worker Engagement Forum in UK to help contractors and managers learn how to make health and safety improvements in their businesses. This contains of assessment sheet and then knowing the status and way forward (Figure 1 and 2). The assessment is in the areas of: commitment, workers engagement, prioritisation of H&S, compliance, measurement and organisational learning. There are five options

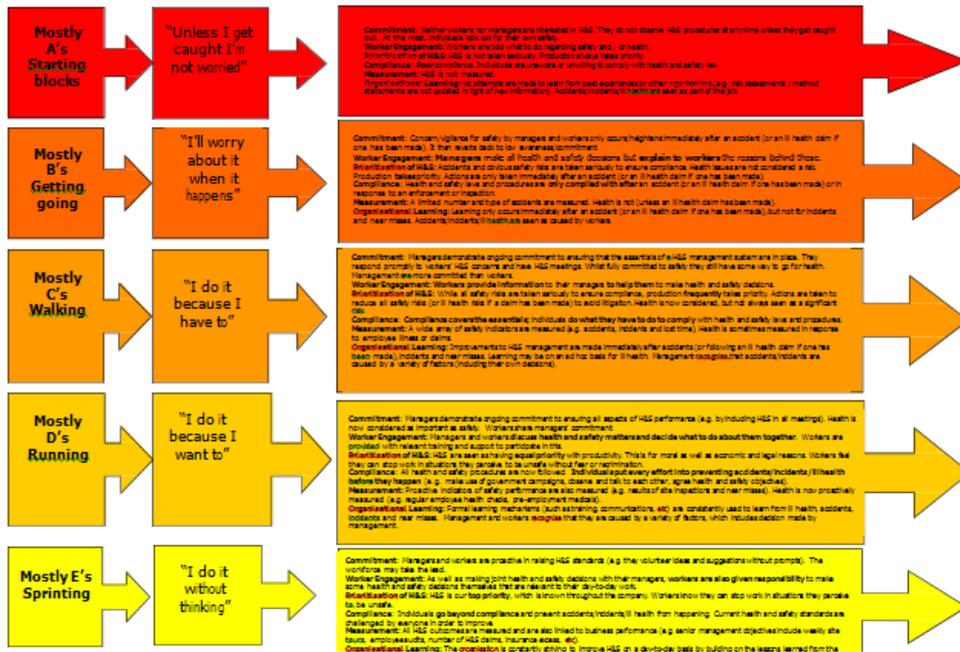
for each of the areas and the participant should choose one statement which applies to their company/organisation.

Building Block	Description	Statements: Which of the following applies to your organisation?
Commitment	The importance you and your workers attach to H&S.	<p><input type="checkbox"/> A. Neither managers nor workers are interested in health and safety at any time unless they get caught out. At the most, individuals look out for their own safety.</p> <p><input type="checkbox"/> B. Concern/vigilance for safety by managers and workers only occurs/incidents immediately after an accident (or an ill health claim if one has been made), it then reverts back to low awareness/commitment.</p> <p><input type="checkbox"/> C. Managers demonstrate ongoing commitment to ensuring that the essentials of a health and safety management system are in place. They respond to workers' health and safety concerns and use various means to consult with workers. Whilst fully committed to safety they still have some way to go for health. Management are more committed than workers.</p> <p><input type="checkbox"/> D. Managers demonstrate ongoing commitment to ensuring that all aspects of health and safety performance are met (e.g. by excluding health and safety in all meetings). Health is not considered as important as safety. Workers show managerial commitment.</p> <p><input type="checkbox"/> E. Both management and the workforce operate on health and safety matters and are proactive in raising health and safety standards, (e.g. they volunteer ideas and suggestions without prompts). The workforce are the sole focus.</p>
Worker Engagement	The involvement your workers have in H&S decisions.	<p><input type="checkbox"/> A. Individuals are simply told what to do regarding safety and/or health.</p> <p><input type="checkbox"/> B. Managers make all health and safety decisions but explain to workers the reasons behind these.</p> <p><input type="checkbox"/> C. Workers provide information to their managers to help them to make health and safety decisions.</p> <p><input type="checkbox"/> D. Managers and workers discuss health and safety matters and decide what to do about them together. Workers are provided with relevant training and support to participate in this.</p> <p><input type="checkbox"/> E. As well as making joint health and safety decisions with their managers, workers are also given responsibility to make some health and safety decisions themselves that are relevant to their day-to-day work.</p>
Prioritisation of Health and Safety	The attention given to H&S compared to 'getting the job done'.	<p><input type="checkbox"/> A. Health and safety is not taken seriously. Production always takes priority.</p> <p><input type="checkbox"/> B. Accidents and obvious safety risks are taken seriously to ensure compliance. Health issues are not considered a risk (unless an ill health claim has been made). Production frequently takes priority.</p> <p><input type="checkbox"/> C. While safety risks are taken seriously (or ill health risks if a claim has been made) to ensure compliance production sometimes takes priority. Health is now considered but not always seen as a significant risk.</p> <p><input type="checkbox"/> D. Health and safety are seen as having equal priority with productivity. This is for moral as well as economic and legal reasons. Workers feel they can stop work if situations they perceive to be unsafe.</p> <p><input type="checkbox"/> E. Health and safety is a top priority, which is known throughout the company. Workers know they can stop work in situations they perceive to be unsafe.</p>
Compliance	How the organisation is complying with its H&S responsibilities.	<p><input type="checkbox"/> A. No/less compliance. Individuals are unaware or unwilling to comply with health and safety law.</p> <p><input type="checkbox"/> B. Health and safety laws and procedures are only complied with after an accident (or an ill health claim if one has been made) or in response to an enforcement or inspection.</p> <p><input type="checkbox"/> C. Compliance covers the essentials; individuals do what they have to do to comply with health and safety laws and procedures.</p> <p><input type="checkbox"/> D. All health and safety procedures are now followed. Individuals put every effort into preventing accidents/incidents/ill health before they happen (e.g. make use of government campaigns, discuss and talk to each other, agree health and safety objectives).</p> <p><input type="checkbox"/> E. Individuals go beyond compliance to prevent accidents/incidents/ill health from happening. Current health and safety standards are challenged by everyone in order to improve.</p>
Measurement	The way H&S is measured.	<p><input type="checkbox"/> A. No measurement of health and safety is in place (e.g. accident rates are not monitored).</p> <p><input type="checkbox"/> B. Measurement of safety is limited to the number and type of accidents only. Health is not measured.</p> <p><input type="checkbox"/> C. Measurements broaden to a wider range of safety indicators including accidents, incidents and lost time. Health is sometimes measured in response to employee illness or claims.</p> <p><input type="checkbox"/> D. Measurement also includes proactive measures of safety performance (e.g. results of site inspections and near misses). Health is now practically measured (e.g. regular employee health checks, pre-employment screening).</p> <p><input type="checkbox"/> E. All health and safety outcomes are measured and are also linked to business performance (e.g. senior management objectives include healthy the team, employee safety, number of health and safety claims, insurance costs, etc).</p>
Organisational Learning	Learning from experience on H&S. Lessons learned are communicated to workers.	<p><input type="checkbox"/> A. No attempts are made to learn from past experiences or other organisations (e.g. risk assessments). Method statements are not updated in light of new information. Accidents/incidents/ill health are seen as part of the job.</p> <p><input type="checkbox"/> B. Learning only occurs immediately after an accident (or an ill health claim if one has been made), but not for incidents and near misses. Accidents/incidents/ill health are seen as caused by workers.</p> <p><input type="checkbox"/> C. Learning only formally occurs immediately after accidents, incidents and near misses (or following an ill health claim if one has been made). Learning may be on an ad hoc basis for ill health. Management assumes the accidents/incidents are caused by a variety of factors (including their own actions).</p> <p><input type="checkbox"/> D. Formal learning mechanisms such as training, communications, etc are always used to learn from ill health, accidents, incidents and near misses. Management and workers recognise that they are caused by a variety of factors, which includes decisions made by management.</p> <p><input type="checkbox"/> E. The organisation is always striving to improve health and safety by building on the lessons learned from the past and sharing helpful information with, and learning from, other organisations and industries.</p>

[Placeholder for fig. 1 Please, do not alter]

Figure 1. "[Leadership toolkit]"

Once the options are chosen in Figure 1 the next step is to analyse the data to identify which state the company is i.e. starting block, getting going, walking, running and sprinting (Figure 2). Thereafter suggestions are provided how to proceed to the next level.



Building Blocks	Starting blocks (A)	Getting going (B)	Walking (C)	Running (D)	Sprinting (E)
Commitment	1	2	3	4	Continue to ensure that managers and workers are proactive in raising H&S standards by volunteering their ideas.
Worker Engagement	5	6	7	8	Continue to ensure that workers take the lead on H&S matters and are involved in making H&S decisions
Prioritisation of health and safety	9	10	11	12	Continue to emphasise H&S as a core company value.
Compliance	13	14	15	16	Continue to seek out proactive and innovative ways of preventing accidents and ill health.
Measurement	17	18	19	20	Continue to measure H&S outcomes and link these to business performance.
Organisational learning	21	22	23	24	Continue to make efforts to improve H&S on a day-to-day basis. Share and seek ideas from industry peers and colleagues.

Figure 2. "[Current H&S system]"

As part of a European Commission (EC) project this tool was administered in an Italian company which is reported in the following section.

5. Case study of a small Italian construction company

This is a company that started 60 years ago which is a family lead small construction company. There are 15 employees working and specialise in commercial, residential, school and refurbishment projects. The project cost varies from 30,000 to 2 million Euros. They undertake three types of work i.e. Skeleton 15% (foundation, column, beams and brickwork); skeleton with plaster and screed (75%) and complete building (10%). The CEO and the project manager filled the leadership and workers involvement questions of

the toolkit. The mean scores were calculated for the options selected which resulted in 4C's and 2D's (Figure 3). This indicated that the company was in "walking mode" and in some instances in the "running mode".

Building Blocks	Walking (C)	Running (D)
Commitment	✓	
Worker Engagement	✓	
Prioritisation of health and safety	✓	
Compliance	✓	
Measurement		✓
Organisational learning		✓

Figure 3. "[H&S system]"

The Figure 4 shows the way forward for the company for leadership initiatives in: Commitment; Worker Engagement; Prioritisation of health and safety; Compliance; Measurement and Organisational learning. The next stage, the leadership of the company should aim is to reach the 'sprinting' stage as a long-term strategy.

Building Block	Walking → Running	Running → Sprinting
Commitment	You should now be focused on gaining the commitment of your workers to H&S. Get your workers to think how their behaviour not only affects them, but also their work mates/colleagues and their family if they were to fall ill or become injured as a result of working unsafely. To encourage workforce commitment, continue to make H&S top of the agenda in all meetings, giving it due thought and attention.	Consistently demonstrate an 'open door' approach to any H&S suggestions put forward by your workers and involve them in implementing their own solutions (where feasible).
Worker Engagement	Regularly include your workers in your decisions on which solutions you choose for improving H&S. Ensure workers are trained to participate in decision making. Discuss the pros and cons of different options with them. Encourage them to come to you with their ideas. You should now be jointly making H&S decisions with your workers.	Give your workers appropriate responsibility for making decisions on H&S matters that are directly relevant to them (e.g. PPE selection; tool choices; when they have breaks, hygiene etc). Give your workers every opportunity to generate ideas on improving H&S on an ongoing basis.
Prioritisation of Health and Safety	Ensure your workers are familiar procedures. Through appropriate communication and your own actions ensure that they feel able to stop work in situations they perceive to be unsafe. Make sure you include in your communications that health matters are as important as safety matters. H&S together should be regarded as important as productivity. Develop a strong business case (i.e. cost benefits of H&S) to persuade leaders that H&S is a top priority.	As far as possible, make sure that H&S have a visible presence in all your dealings with your workers (e.g. as the first agenda item on any meeting, in all your documentation, and all your decision-making). Continue to ensure that H&S is a top priority for all leaders by progressing your business case, (i.e. cost benefits of H&S taking priority over production). H&S should now be a core company value.

Compliance	In consultation with workers, and considering previous risk assessments, start to think about what might go wrong in the future. Put preventative measures in place (e.g. signage/prompts, training, etc) following task specific risk assessments carried out with workers.	Use worker engagement and your learning from experience on H&S to identify new ways of improving the company's overall H&S. Generic and task specific risk assessments should be used on a regular basis to inform your H&S decision-making.
Measurement	Broaden what you measure to include proactive indicators of both H&S (e.g. amount of training provided, amount of discussions you have with your staff on H&S). What do these additional measures tell you about your overall productivity in relation to H&S? Consult your workers to help you decide what action to take.	Together with your workforce, continue to monitor the link between what you are collectively measuring, your company's productivity and everyone's attitudes and approach to work, (e.g. morale, job satisfaction). Continue to take appropriate action based on your findings. Set yourself and your leaders objectives to improve H&S on site.
Organisational Learning	Formal learning mechanisms should be in place (e.g. training, communication systems). Formal measures should be in place that uses worker engagement to identify and understand why ill health/accidents/incidents and near misses happen. Modify your safety management system accordingly. Leaders openly admit to workers that their decisions play a part in H&S outcomes.	Look at what other companies of your size and type of work are doing to improve their H&S. Identify what you can learn from them and what they can learn from you.

Figure 4. "[Way forward H&S system]"

For short term (within 6 months) the company should reach the 'running' stage. To enable achieve this ERM framework was proposed as part of the EC project.

6. Incorporating The Enterprise Risk Management Framework To Health And Safety

Analysis of the documents and focus group discussions with project team revealed that there should be a health and safety strand in the Enterprise risk management framework and hence it was developed (Figure 5). This aspect was further taken forward and details of strategy, process and performance are looked into greater depth. This chapter discusses only the health and safety strand.

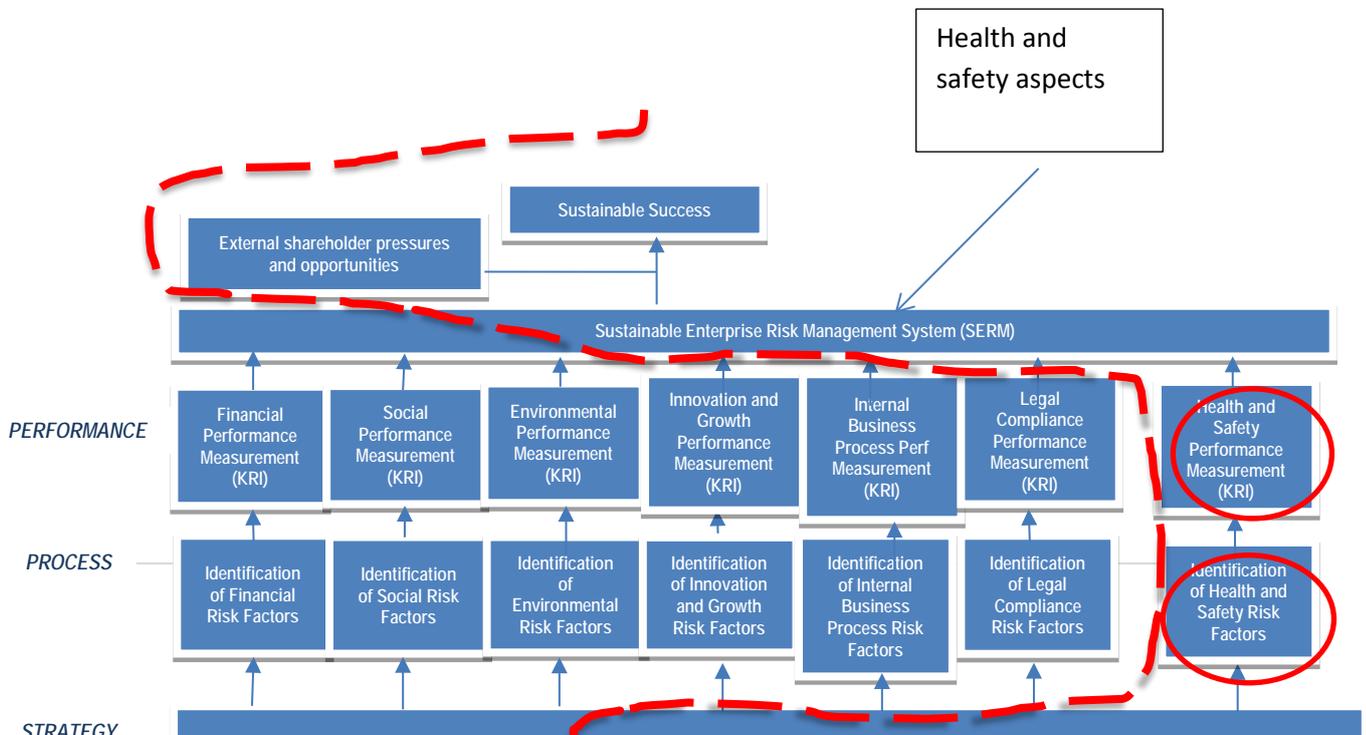


Figure 5. "[Enterprise risk management with Health and Safety]"

Strategy - Organisational Visions and objectives: As part of the strategy in any organisations H&S is paramount and must be considered. The starting point is to have a vision and objectives from the leadership team. Discussions reveal that there was no H&S policy document as part of the company strategy but they were following aspects on H&S within the company and in its projects. Henceforth a health and safety policy was developed and provided to the company. The policy had general and specific aspects. The nine general aspects included:

1. to provide adequate control of the health and safety risks arising from our work activities
2. to consult with our employees on matters affecting their health and safety
3. to provide and maintain safe plant and equipment
4. to ensure safe handling and use of substances
5. to provide information, instruction and supervision for employees
6. to ensure all employees are competent to do their tasks, and to give them adequate training
7. to prevent accidents and cases of work-related ill health
8. to maintain safe and healthy working conditions
9. to review and revise this policy as necessary at regular intervals

Specific aspects must relate to who takes the responsibilities (a named person within the organisation); Arrangements for Health and Safety Risks Arising from Work Activities; Consultation with Employees; Safe Plant and Equipment; Safe Handling and Use of Substances; Information, Instruction and Training; Competency for Tasks and Training; Accidents, First Aid and Work Related Ill-Health; Emergency Procedures, Fire and Evacuation; Monitoring (ensure safe working practices are followed). This partially agrees

with Warren (2017) who states 8 ways in which safety in the construction sector can be improved:

1. Ensure equipment has been correctly assembled and installed
2. Make sure that all equipment is properly maintained and regularly checked
3. Avoid working at height where possible and find ways of decreasing it
4. Keep all walkways, stairs, and work areas clear of debris and obstructions
5. Make sure that all materials are stored away safely
6. Provide staff with protective equipment and make sure they can use it correctly
7. Ensure all employees are appropriately trained
8. Ensure all workplace tasks are risk assessed

The H&S policy provided to the small company is comprehensive as it takes into account Safe Handling and Use of Substances; Information, Accident reporting, First Aid and Work Related Ill-Health; Emergency Procedures, Fire and Evacuation; Monitoring. The next step within the ERM is to look into the process of health and safety which is discussed in the following sections.

7. Health and Safety practices UK and Italy

Health and Safety legislation within the UK is established by statute law, the Health and Safety at Work Act 1974 although not a detailed act, it enables further legislation (regulations) to be passed without going back through parliament and under guidance from the European Union guidance in the form of directives. There are similarities of UK and Italian regulations. For example: PPE is called DPI. The Health and Safety Executive (HSE) implemented the Construction Design and Management Regulations (CDM 2015) with the intention to encourage the integration of health and safety into project management. A Principal designer/ principal contractor is appointed by the client to control the pre-construction/construction phase on projects with more than one contractor. The main duty is to plan, manage, monitor and coordinate health and safety during this phase which they are involved in.

Similarly Italians have Coordinamento per IA Sicurezza. D.Lgs nr. 81/08, “a model of organisation and management” satisfies the requirement on health and safety, if it is constructed in accordance with OHSAS 18001 or with the UNI-INAI guidelines. The regulations include construction activities in Italy are defined by state law. A company after a firm enrolled in an institution dedicated to work should follow the provisions of the Law D.lga. nr. 81/2008. This law identifies the liable subject around the activity of work and then gives each of the roles. It also lists the minimum requirements necessary to be able to exercise (technical and professional qualification).

8. Process within the ERM system – Identification of Health and Safety risk factors

In Italy it is based on the type of client. If it is a public sector client then Health and Safety is considered separately and the cost of the project for construction is separate. Therefore there is no negotiation on the H&S aspects whereas the cost on the construction activities could be negotiated. For example if the total cost of the project is one million Euros the cost allocated for H&S is 50,000 Euros and 950,000 Euro for the construction phase. 50,000 Euro is fixed and must be used for H&S aspects whereas there is room for negotiations in 950,000 Euro say 10% to 20%. In the case of private client it is a lump sum contract and the cost of health and safety is included in the total cost of project at the tender stage.

When the contract is awarded and the site is to set up there is a checklist that could be used in the construction phase to make sure aspects of health and safety are considered. This can be a document which is based on knowledge gained from previous projects. In the case study company each project has a risk assessment H&S file which identifies project specific risks and also suggests methods to mitigate risk. The issue lies whether the labours on site are able to read and write to understand the risk assessment document.

The project level has to be linked to the company level. Therefore, based on the literature review and focus group with three members (CEO, Senior project manager, project manager) in the case study company 38 risk factors were identified (Table 2).

Table 2: Risk factors

1. Cost allocated to H&S aspects in the clients brief (CDM co-ordinator/co-ordinator)	20. Extreme task demands - example: high workloads, boring and repetitive jobs, jobs that require a lot of concentration, too many distractions
2. H&S aspects during tight project schedule	21. Social issues – example: peer pressure, conflicting attitudes to health and safety, conflicting attitudes of workers on how to complete work, too few workers.
3. Checklist provided by the co-ordinator for risk assessment thorough out the project life cycle	22. Individual stressors – example: drugs and alcohol, lack of sleep, family problems, ill health
4. Checklist followed by the company for risk assessment	23. Violation of health and safety laws and regulations
5. Lack of method statement	24. Risks associated with project transport
6. Lack of DPE/PPE	25. Premises
7. Measure to prevent falling from heights	26. Defined roadways/one way system.
8. Excavation activities	27. Need for reversing eliminated/minimised.
9. Rebars/steel rods edge exposed	28. Roadways in good condition.
10. Defective Scaffolding	29. Speed bumps.
11. Welfare aspects	30. Plant
12. Access to utilities (water, electricity)	31. Vehicle selection eg good driver access/visibility.
13. Equipment condition aspects	32. Vehicles maintained in good condition - tyres/brakes.
14. Equipment usage aspects - example: inaccurate or confusing instructions and procedures.	33. Seat restraints fitted.
15. First aid aspects	34. Reversing aids provided.
16. Fire prevention measures	35. Procedures
17. Accident reporting procedures including near misses	36. Speed limits set for vehicles.
18. Human error which involves mistakes	37. Vehicles chocked appropriately.
19. The work environment - example: too hot, too cold, poor lighting, restricted workspace, noise	38. Reversing controlled.

This list was given to the senior project manager who had experience as developer, planner, contractor and working for a company populated the matrix. Prior to that, they have to understand the risk scale. In a scale of five the risk factors are to be identified where 1- being the least risk and 5- being catastrophic (See Table 3). The probability factor is not considered as it depends on the projects they are involved. Also the relationship of the risk

factors for project and the company was asked. Table 5 is a snapshot of 13 factors of the 38 risk factors. Y means it is a risk factor. Prior to discussing the risk factors it is important to look into the role of effective leaders in this context.

Table 3: Risk Scale

Scale	Classification	Explanation
1	Insignificant	Insignificant infringement of operating procedure with immediate correction, none loss.
2	Minor	Low loss, <10% cost increase, <5% time increase, Only very demanding applications are affected
3	Moderate	Substantial loss, 10-20% cost increase, 5-10% time increase, Quality reduction requires sponsor approval
4	Major	Major loss, 20-40% cost increase, 10-25% time increase, quality reduction unacceptable to sponsor
5	Catastrophic	Enormous loss, permanent damage, >40% cost increase, >25% time increase, Project end item is effectively useless

Edgeman, et. al., (1999) noted that leaders are the raw material of business excellence as well as organisational failure. Some of the causes of failure are: lack of long- term management commitment; wrong people on the team; teams do not understand their work completely; team take too much; focus on metrics rather than processes; not positioning projects within a larger strategy; misunderstanding the organisation’s mission, goals and objectives. Welch and Welch (2005) and McEwan (2003) listed seven rules for effective leaders (See Table 4).

Table 4: Seven rules for effective leaders

Sl. No	Welch and Welch (2005)	McEwan (2003)
1	Leaders relentlessly upgrade their team, using every encounter as an opportunity to evaluate, coach, and build self-confidence.	Leaders should establish, implement and achieve great standards.

2	Leaders make sure people not only see the vision, they live and breathe it.	Leaders should be an instructional resource for your staff
3	Leaders get into everyone's skin, exuding positive energy and optimism.	Leaders should create a school culture and climate conducive to learning (for everyone)
4	Leaders establish trust with candor, transparency, and credit.	Leaders should communicate the vision and mission of the organisation.
5	Leaders have the courage to make unpopular decisions and gut calls.	Leaders should set high expectations for staff and themselves.
6	Leaders probe and push with a curiosity that borders on scepticism, making sure their questions are answered with action.	Leaders should develop leaders.
7	Leaders inspire risk taking and learning by setting the example.	Leaders should establish and maintain positive relationship with other staff members.

Leaders can be effective in helping those involved to think creatively and discover the possibility of achieving a win-win situation only when they incorporate the interests, pronounced or latent, from the different participating groups (Huxham and Vangen, 2000). Thus, vision formation should result from mutual influences in the collaboration. In studying leader effectiveness, Denison, et. al., (1995) found that the most effective leaders have styles that reflect greater complexity in their thinking and variety in their behaviours. They are able to recognise paradox, contradiction, and complexity in their environment, and simultaneously attend to seemingly opposing and competing requirements, such as the need for integration and differentiation, and the demand for accountability and creativity at the same time. Alternatively, Pitcher and Smith (2001) examined the possibility of sharing strategic decision-making processes in teams of leaders with different leadership strengths. They concluded that top management teams that exhibit strong cognitive diversity – a balanced combination of different types of leaders – are more successful in producing long-term results, because they include diverse ideas stemming from different cognitive perspectives and permit a more comprehensive and creative analysis of strategic alternatives. Therefore it is necessary to have H&S measurement performance matrix.

9. Performance – Health and Safety measurement performance:

Thiveos (2009) noted that leaders with responsibilities for health and safety concerns in their organizations rely on technology solutions to manage training, certification, incidents, observations, records, documents, risk assessment, corrective actions, inspection, monitoring, auditing, and to

provide results-oriented performance metrics to stakeholders. Furthermore, Kelloway et al. (2006) identified the 10 different health and safety leadership actions including: expressing satisfaction when jobs are performed safely; rewarding achievement of safety targets; continuous encouragement for safe working; maintaining a safe working environment; suggesting new ways of working more safely; encouraging employees to openly discuss safety at work; talking about personal value and beliefs in the importance of safety; behaving in a way that demonstrates commitment to safety; spending time to demonstrate how to work safely; and, listening to safety concerns.

In the EC project a Balance score card (BSC) concept developed by Kaplan suggests that we view the organization from four perspectives, and to develop metrics, collect data and analyze it relative to each of these perspectives were adapted. Therefore the identified health and safety risk factors were mapped with the four perspectives i.e. Financial, clients, business process and learning and growth. These are further classified as: Financial (cash flow, profit, stock turnover, turnover claim); clients (client satisfaction, new client, client loyalty); business process (quality of services, number of errors; percentage of delivered project; average hourly cost of labour); learning and growth (resources spent in training; workers satisfaction; number of prestigious project; resources spent in research).

From the analysis of Table 6 it clearly indicates that Health and Safety risks factors fall into learning and growth of the company within which works satisfaction is ranked as high and medium risk (8major + 6medium + 1minor = 15 risk factors) followed by business process related to quality of services (5 major + 3 medium=8) and clients related to client satisfaction (4major + 3 medium + 1 minor = 8). Thereafter is the financial aspect (4 major + 1 medium + 1 minor = 6) related to profit followed by business process related to number of errors (2 major + 3 medium + 1 minor = 6).

It is interesting to note that financial aspects comes third whereas the learning and growth comes first therefore it does not surprise why small and medium enterprises pay less attention to health and safety aspects. Especially activities on a project or in a company are going well i.e. no accidents or fatality and/or no inspections on site. However, it is revealing that violation of Health and Safety law and regulations have an impact on all the four aspects of BSC (Financial, clients, business process and learning and growth).

Table 5: Health and Safety risk factors

Health & Safety risk factors : There are 20 key risk factors identified for Health and Safety aspects for construction SMEs. Please put "y" in the appropriate places for the table below. KRF mean key risk factor and MRF means minimum risk factor. The risk factors for project and company could be marked as "x". Please see three examples provided at the bottom of the sheet. Also for influence of KRI (key risk indicators) instructions are provided at the bottom of the table.

Risk factor	Construction company		Developer		Planner		Contractor		Connection with	
	KRF	MRF	KRF	MRF	KRF	MRF	KRF	MRF	Project	Company
Health & Safety risk factors										
1. Cost allocated to H&S aspects in the clients brief (CDM co-ordinator/co-ordinator)		Y	Y			Y		Y	Y	
2. H&S aspects during tight project schedule	Y		Y			Y	Y		Y	
3. Checklist provided by the co-ordinator for risk assessment thorough out the project life cycle		Y		Y		Y		Y	Y	
4. Checklist followed by the company for risk assessment	Y			Y		Y	Y		Y	Y
5. Lack of method statement		Y		Y		Y		Y		Y
6. Lack of DPE/PPE	Y			Y		Y	Y			Y
7. Measure to prevent falling from heights	Y			Y		Y	Y		Y	Y
8. Excavation activities	Y		Y		Y		Y		Y	
9. Rebars/steel rods edge exposed		Y		Y		Y		Y		Y
10. Defective Scaffolding	Y			Y		Y	Y		Y	
11. Welfare aspects		Y		Y		Y		Y		Y
12. Access to utilities (water, electricity)	Y		Y			Y	Y		Y	
13. Equipment condition aspects		Y		Y		Y		Y	Y	Y

High risk: 8 factors

Risk factor	Influence of KRI	Financial	Clients		Business process			Learning and growth
		Profit	Client satisfaction	Client loyalty	quality of service	n. of errors	% of delivered project	Workers satisfaction
2. H&S aspects during tight project schedule	4	Y			Y			Y
6. Lack of DPE/PPE	4		Y		Y			Y
7. Measure to prevent falling from heights	4	Y	Y		Y	Y		Y
8. Excavation activities	4	Y						Y
10. Defective Scaffolding	4							Y
16. Fire prevention measures	4				Y			Y
• Individual stressors – example: drugs and alcohol, lack of sleep, family problems, ill health	4		Y			Y		Y
19. Violation of health and safety laws and regulations	4	Y	Y	Y	Y		Y	Y

Medium risk: 10 factors

Risk factor	Influence of KRI	Financial	Clients		Business process		Learning and growth
		Cash Flow	Client satisfaction	New client	quality of service	n. of errors	Workers satisfaction
1. Cost allocated to H&S aspects in the clients brief (CDM co-ordinator/co-	3		Y		Y	Y	Y
4. Checklist followed by the company for risk assessment	3		Y		Y		Y
9. Rebars/steel rods edge exposed	3						
12. Access to utilities (water, electricity)	3						
13. Equipment condition aspects	3	Y	Y		Y	Y	Y
15. First aid aspects	3						
17. Accident reporting procedures including near misses	3			Y			
• The work environment - example: too hot, too cold, poor lighting, restricted workspace, noise	3					Y	Y
• Extreme task demands - example: high workloads, boring and repetitive jobs, jobs that require a lot of concentration, too many distractions	3					Y	Y
• Social issues - example: peer pressure, conflicting attitudes to health and safety, conflicting attitudes of workers on how to complete work, too few workers.	3					Y	Y

Minor risk – 2 risk factors

Risk factor	Influence of KRI	Financial	Clients	Business process	Learning and growth	
		Profit	Client satisfaction	n. of errors	Resources spent in training	Workers satisfaction
11. Welfare aspects	2	Y	Y	Y		Y
14. Equipment usage aspects - example: inaccurate or confusing instructions and procedures.	2				Y	

Table 6: Balance Score Card with high, medium and minor risk factors

10. Conclusion

The construction sector is characterised for having the largest numbers of accidents and health deterioration among all the working sectors. Companies must also have a health and safety system which has the strategy, process and performance aspects. Irrespective of the size of the company there should be a health and safety policy. This leads to providing health and safety manual at the construction site which has the risk assessments. The companies should make sure the employees on the site are able to read and understand the associated risks which will enable them to implement it. In addition, it is important for construction stakeholders to invest in health and safety strategies.

The first step is to assess at what level the company is i.e. starting, get going, walking, running and sprinting from six building blocks. They are: commitment, workers engagement, prioritisation of H&S, compliance, measurement and organisational learning. Thereafter apply the ERM which includes strategy, process and performance to enable to achieve sustainable company success. In the case study company eight risk factors stood out of the 38 identified which had influence on financial, client, business process and learning and growth. All the eight risk factors contributed to workers satisfaction. In small companies leadership must clearly publicise the values behind health and safety standards and procedures through simple ways such as posters and the repetition of goals such as everyone going home safely at night. Therefore, in conclusion leadership for H&S risk management is paramount for a survival and sustainability of small companies.

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