

Is there a link between Workplace Health and Safety and Firm Performance and Productivity?

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Abstract

Research on the connection between occupational health and safety (OHS) and increasing employee productivity and performance has become topical as a result of increased interest in ways to improve 'performance' in the workplace. Occupational health and safety academics have also recognised the social benefits of introducing improved health and safety standards. However, there is debate as to whether or not introducing improvements can actually increase measurable economic benefits. While most of the research has been located overseas, there is, unfortunately, little empirical New Zealand-based research in this area. Recently efforts have been made by the New Zealand Government and in particular the Department of Labour to remedy this situation and to fund research that examines the possible links between OHS interventions and firm performance and productivity as well as understand why firms implemented OHS practices within the New Zealand context. As part of this research, a comprehensive literature review on the topic was undertaken and it is this review that is the focus of the article.

Introduction

There is increasing and compelling overseas evidence that providing a healthy and safe working environment has the potential to increase labour productivity and in turn increase company profits. However, the New Zealand research on the links between OHS interventions and firm performance and productivity (and the subsequent tangible gains) is still largely undeveloped. In an attempt to redress this situation, the Department of Labour sponsored a study in which the aims were to: a) investigate the possible links between OHS interventions and firm performance and productivity; and b) understand why firms implemented OHS practices within the New Zealand context. The starting point for the project was a literature search to identify the most relevant material on the links between workplace health and safety and firm performance and productivity. It is the highlights of this extensive literature review that will be the focus of the article.

The literature specific to the topic, however, is not easy to locate and is difficult to draw upon. Instead, it is dispersed among multiple disciplines, such as ergonomics (e.g.

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Oxenburgh, 1991; MacLeod, 1995), health economics (e.g. Grozdanovic, 2001; Lofland, Pizzi & Frick, 2004), environmental medicine (e.g. Burton, et al, 1999; Goetzel, et al, 2001), sociology (e.g. Green, 1994; Hopkins, 1994) and law and economics (e.g. Hawkins, 1989; Gunningham & Johnstone, 1999; Dorman, 2000; Viscusi, 2004). In addition, the empirical research is often restricted by a predilection for a particular discipline. There is little interface between these disciplines, and differences also exist between methods and endpoints of research that draws upon a singular (rather than a multi-disciplinary) approach. The more advanced literature, however, acknowledges not only the complexities of trying to establish a connection between OHS and increasing productivity and performance but also stresses the point that it is more useful to adopt a multidisciplinary approach to the topic (e.g. Bohle & Quinlan, 2000; Shearn, 2003; De Greef & Van den Broek, 2004; Frick, et al, 2000, 2004).

Investigating this area is also not a straightforward task as the relationship between business performance and productivity and OHS interventions aimed at reducing illness and injury is strongly contested. On one side, there is the view that good health and safety practices are good for business and productivity, while on the other side, there is the view that OHS interventions are costly and interrupt the flow of work activity, and that regulations impose a non-productive investment (Shearn, 2003; De Greef & Van den Broek, 2004).

The central purpose of the literature review is to critique the extant overseas and New Zealand research on the links between workplace health and safety and business performance and productivity. Key themes that underpin the literature review are:

1. What does the current literature say about the links between workplace health and safety and company performance and productivity?
2. What are the key issues surrounding implementing OHS measures to increase productivity? In particular, who benefits from increases in productivity; how to evaluate OHS measures and economic benefits; and increased productivity?

The Literature on Links between Workplace OHS and Company Performance and Productivity

Attempts to link improved OHS practices and policies with improved firm productivity and performance have been driven not only by state agencies,¹ but also trade unions and the more enlightened employers. Increasingly enlightened employers, together with trade unions, are striving to provide safer and healthier workplaces which can translate into increased productivity, more job satisfaction, and stronger bottom-line results (Brandt-Rauf, 2001; Occupational & Environmental Health Foundation (OEHF), 2004; Boles, et al., 2004; De Greef & Van den Broek, 2004²).

Those concerned with workplace illness and injury are also endeavouring to *quantify* how the overall health and safety of an employee affects their ability to work productively (Goetzel & Ozminkowski, 2000; Bunn, et. al. 2001; OEHF, 2004). More precisely, the drive to link productivity with OHS outcomes is underpinned by four core reasons:

1. The need to find more innovative ways to reduce the high rates of workplace injury and illness than has previously been the case.
2. The pressure to reduce the social and economic costs of injury and illness, particularly compensation costs.
3. The need to improve labour productivity which does not result in employees working longer hours and taking on more work.
4. The need to provide good working conditions as a way of recruiting and retaining skilled workers in a tight labour market.

This drive to link OHS and company productivity has in the past decade stimulated academic research where rigorous, empirical evidence had previously been slow to materialise. The most sustained and notable examples in this area have taken place within the discipline of *ergonomics* (e.g. Sanders & McCormick; 1987; Simpson, 1990; Oxenburgh, 1991; MacLeod 1995; Frick, 1997; Shikdar & Sawaqed, 2003; Lahiri, et al 2005). MacLeod (1995:19) provides some insight into the reasons why ergonomists have been more active in this area and why they have been more successful in engaging with the business community over the links between OHS and productivity than professionals in other fields of OHS:

‘Improving the fit between humans and tools inherently means a more effective match. Good ergonomic improvements often result in better ways of performing a task. An ergonomically designed workplace (or product) is a more productive workplace (or product). Not exceeding human capabilities does not mean reducing output or doing less. On the contrary, good design permits more output with less human effort.’

The other discipline that dominates the research on the links between OHS and workplace productivity is *occupational medicine/health promotion*³. In particular, many of the studies on OHS and productivity have been generated by the following organisations within this discipline:

- *The Occupational & Environmental Health Foundation (OEHF)*, which was established in 2002 by members of the American College of Occupational and Environmental Medicine as an independent entity to promote and protect the health of workers through preventive services, clinical care, research and educational programs (<http://www.oehf.org>).
- *The Institute for Health and Productivity Management*, which is an American-based Institute created in 1997 with the sole purpose of investigating the link between employee health and enhanced business performance (<http://www.ihpm.org>)
- *Health Enhancement Research Organisation (HERO)*, which is a national, research oriented, not-for-profit, coalition of organisations with common interests in health promotion, disease management, and health-related productivity research. Established in 1996, its primary concern is on

prevention and a more healthy and productive population (<http://www.the-hero.org>).

- *Cochrane Collaboration*⁴ is an international organisation of academics that provide current reviews on OHS research as well as fostering investigations into prevention and intervention programmes that will enhance the well-being of workers and assist employers to provide good working environments (Verbeek, Hale & Ker, 2006).

The central tenet that runs through almost all of the occupational medicine/health promotion literature is that:

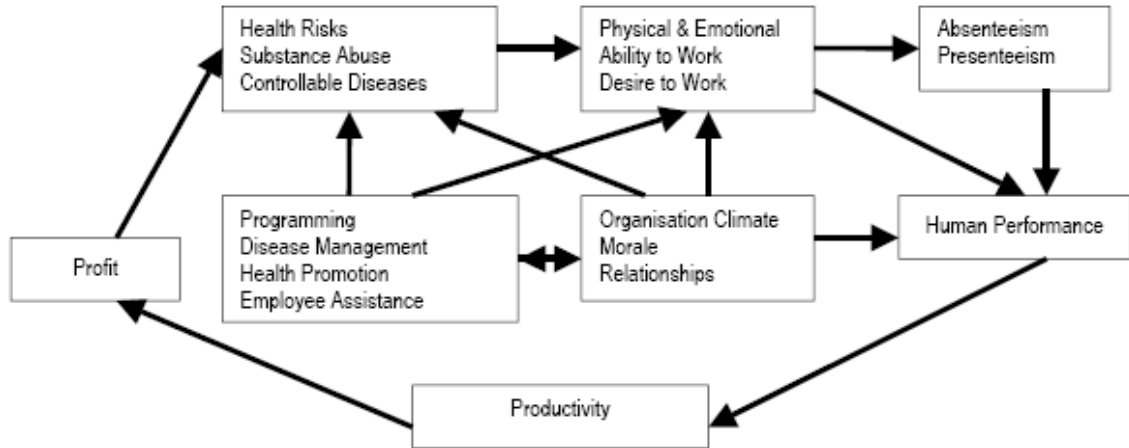
‘...human performance is higher when people are physically and emotionally able to work and have a desire to work. Higher levels of human performance lead to higher levels of productivity, which in turn can lead to higher profits.’
(O’Donnell, 2000: 215)

Located within the occupational medicine/health promotion discipline, O’Donnell’s (2000) conceptual model of human performance exemplifies this belief in which he attempts to illustrate the linkages between health and safety, productivity and profits, as outlined in Figure 1. Health and safety prevention and intervention programmes play a critical role in his model as these types of programmes can improve the physical and psychological well-being of the workforce which in turn reduces absenteeism and presenteeism. He also argues that such programmes improve the organisational climate, which enhances employees’ desire to work and directly raises human performance. He asserts that improved organisational climate, morale, and employment relationships as well as higher profits have the potential to reduce the health and safety risks – in essence it is a ‘*catch-22*’ situation. However, as laudable as O’Donnell’s (2000) sentiments are, others argue that the research on the relationship between safety climate and organisational climate is still in its infancy and will require a thorough investigation of the relationship between safety climate and safety culture (Guldenmund, 2000; Glendon & Stanton, 2000; Neal, et al, 2000; Smallman & John, 2001; Silva, 2004⁵).

Taking O’Donnell’s (2000) premise one step further, Riedel et al (2001), argue that reducing health and safety compensation costs has traditionally been the sole focus of employers. Riedel et al (2001), however, note that employers are beginning to recognise that employee wellbeing and corporate high performance ‘...emphatically go together’. They continue:

‘Greater gains may be experienced through the direct influence of positive worker health on individual or group productivity, improved quality of goods and services, greater creativity and innovation, enhanced resilience and increased intelligent capacity.’ Riedel et al (2001:167)

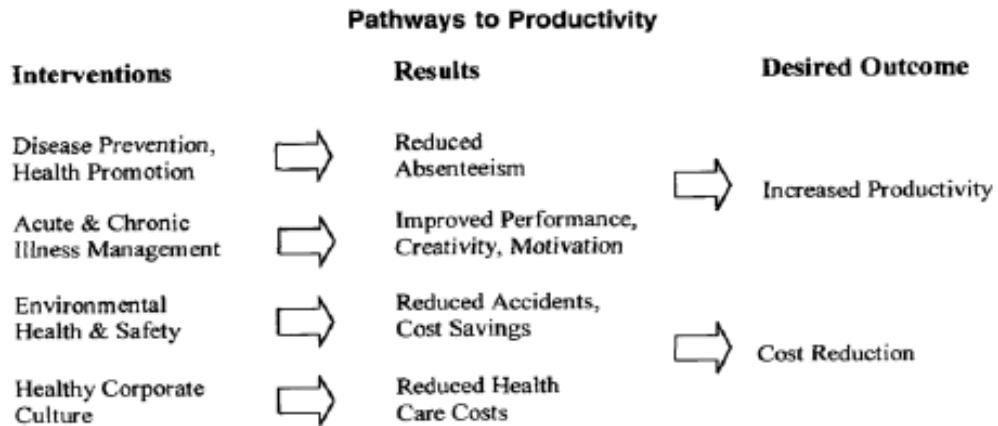
FIGURE 1: Linking Health, Productivity & Profit



Source: O'Donnell, (2000)

The model developed by Riedel et al (2001:168) outlined in Figure 2, illustrates how improved worker health and safety has the potential to increased performance with resulting effects on short-term and long-term productivity for the company, although they also acknowledge that there is a need for more empirical evidence.

FIGURE 2: Pathways to productivity



Source: Riedel, et al. (2001)

Issues Surrounding Implementing OHS Measures to Increase Productivity

As stated earlier, the topic on OHS relationship between business performance and productivity and OHS interventions aimed at reducing illness and injury is strongly contested. At the heart of this debate are three main issues, namely:

1. Who benefits from increases in productivity?
2. How to evaluate OHS measures and increased productivity?
3. How to evaluate the economic benefits?

Who benefits from productivity gains?

There is an inherent tension within this literature that cannot easily be resolved. Some commentators argue that productivity gains are often at the expense of workers' health and safety. Businesses typically strive to become more productive whereby workers are often driven to work longer, harder and more efficiently, and in some cases are required to work in extremely hazardous conditions, (Mayhew & Quinlan, 1999; Dorman, 2000; Quinlan, 2001). In many instances, OHS measures are implemented only to keep compensation costs down. Working longer and harder has become a growing phenomenon and over the past decade, New Zealanders are spending more time at work than many other industrialised countries (Callister, 2005; Rasmussen and Burgess; Stock, 2007). As a result, work-related stress and fatigue have become major issues. In short, implementing measures, including OHS, to increase productivity may create the opposite affect, as Goetzel, et al (2001:211) notes:

‘Instead of feeling empowered, [workers] may feel ... uncomfortable about their new job demands...They may experience increased stress, more worry about their job tenure, heightened feelings of detachment, and diminishing motivation to perform at peak performance...Low morale and poor attitudes about work can become contagious and infect fellow workers, further exacerbating individual productivity and bring about increased turnover and general organisational malaise.’

Based on his recent study James (2006) also observes that while exposure to hazards associated with machinery and manual handling are being reduced, other risks associated with increases in labour productivity are on the rise. He continues:

‘The fact that over half of these new cases of work-related ill-health stem from ... stress, depression and anxiety, and musculoskeletal disorders, also raises an important issue of policy, particularly when account is taken of the further fact that, against a background of increasing work intensity and declining worker discretion, the prevalence rate for stress and related conditions has recently grown substantially... It also further suggests, given the way in which these conditions

are intimately connected to workload levels and the nature of work tasks, that the achievement of reductions of this type will require employers to be placed under much greater pressure to design work tasks and establish workloads that are not detrimental to worker health.’ (James, 2006:11)

Thus, it would appear that efforts to increase productivity through OHS can have contradictory results.

How to evaluate OHS measures to increase productivity?

There is a plethora of OHS articles (both popular and scientific) spanning decades which are almost entirely concerned with inventing and promulgating OHS prevention and intervention programmes, *with little scrutiny of the efficacy of such programmes* (Smallman and John, 2001). As Shannon, et al. (1999:161) rightly notes: ‘...many interventions in occupational safety are implemented with the sincere hope that they will work, but with a lack of solid evidence of their effectiveness [and] can sometimes make the situation worse’. They argue that before we can properly assess the impact of health and safety preventions/interventions on workplace productivity, it is necessary to first judge each prevention or intervention programme against a set of criteria (Shannon, et al. 1999: 163).

Further, as more attention is given to scrutinising the efficacy of health and safety programmes, more substantial links are being made between the implementation of health and safety programmes and their beneficial impact on a firm’s productivity. To date the research leans towards the acceptance that introducing health and safety measures will have both direct (e.g. reduced insurance and workers’ compensation premiums) and indirect benefits (e.g., reduced staff turnover) including raising the level of productivity (Oxenburgh, 1991; Bottomley, 1994; Archer, 1994; Frick et al, 2000; Goetzel, 2001; Shearn, 2003; De Greef & Van den Broek 2004).

However, it is important to understand the various means in which data can be collected – namely: self-reporting, archival sources, or mixed methods. Evans (2004) warns that measuring increases in productivity is demanding and fraught with difficulties. In particular, while self-reporting may be valuable when there is no other suitable source of data or when the data is too costly to obtain, it is nonetheless based on the subjective reporting of the employer or employee. In terms of validity, archival data is the preferred source, however, not all employers collect archival data and frequently the data is limited to a sample (Evans, 2004).

There is also a need to clarify the various measurement tools available to assess the impact of health and safety on productivity, including absenteeism, presenteeism, short- or long-term disability, as well as defining the increments and gains in health and safety related productivity interventions (OEHF, 2004). As Goetzel, et al (2001:15) states:

‘A first step in establishing the link between health [and safety] and productivity is determining which baseline measures are central, germane, and likely to be broadly accepted by the employer community.’

At the heart of this discourse is the identification of basic metrics that can be used as national and international benchmarks for assessing health and safety related productivity (HSRP) and for the quantification of the fiscal impact of health and safety on the firms bottom line (OEHF, 2004; Ozminkowski, et al, 2004; Lofland, et al, 2004). One of the beneficial outcomes of this research is to provide senior managers with measurement tools to better understand the full costs of illness and injury within their own firms and to better understand the value of health and safety prevention/intervention strategies.

In addition, each method of measurement has its strengths and its limitations and there have been a number of useful critiques in this area undertaken by Riedel, et al. (2001); Lofland, et al. (2004), Ozminkowski, et al. (2004) and Evans, (2004). The criteria used by these authors to critique the various methods were: their reliability, validity, productivity metrics, instrument scoring technique, suitability for direct translation into a monetary figure, number of items, modes of administration and the disease states in which it had been tested. Also Riedel, et al.’s (2001) study organised and synthesised the literature on disease prevention and health promotion with reference to increasing business productivity into three categories:

- early detection of a condition;
- behaviour change programmes to reduce the risk; and
- care-seeking support to reduce the unnecessary use of care.

Although these attempts to scrutinize how best to evaluate OHS measures to increase productivity are useful, this inquiry is still evolving and requires more attention.

How to evaluate the economic benefits?

One of the primary drivers for introducing OHS interventions is the resultant economic benefits. More specifically, there is recognition that *productivity drives economic growth and profits*. Better management of worker health and safety and related productivity outcomes may create a competitive business advantage (Sullivan 2004:S56). The literature also suggests that managers are more likely to make a decision to implement health and safety measures in order to increase productivity based on the knowledge that there are economic benefits (Dorman, 2000; Grozdanović, 2001; Koningsveld, 2005).

However, Amador-Rodezno (2005) cautions, that it is not easy to convince employers of the economic benefits of OHS as typically they will underestimate the cost of the OHS problem while overestimating the costs associated with its remedy. Also establishing the cause-effect relation is not straightforward (William, et. al., 1997; Amador-Rodezno, 2005). This difficulty is complicated by the fact that in many instances several initiatives will be implemented at the same time (not only health and safety actions but also human

resource actions), which makes it difficult to link a specific initiative to a specific outcome(s) (i.e. increased productivity = profits) (Bergström, 2005).

Nonetheless, there are a number of ways to estimate the cost of an OHS intervention⁶. The two most prominent ones are: the insurance model and the cost benefit analysis model.

The insurance model uses workers' compensation insurance information to provide an estimate of the costs of OHS interventions. Although this approach has the advantage of simplicity in that it is reliant on only one source of information, it is also limited (Cutler & James, 1994). As Oxenburgh and Marlow (2005:210) note:

'It does not measure, for example, productivity losses and employee turnover and thus may seriously underestimate the total costs of injury absence. As it may underestimate the total injury costs it will likewise underestimate the potential savings from investment in avoidance of these costs...[It] will not provide an incentive for small organisations with no history of injuries to implement occupational health and safety improvements.'

The cost benefit analysis model requires more data than the insurance model in that it measures all significant employment and production factors and therefore, it provides a more comprehensive picture. That is, it assesses the *total costs* of employment and the losses due to workplace injury or illness (Oxenburgh & Marlow, 2005). Because it is specific to the organisation, it is a better reflection of the actual economic benefits. According to Lahiri, et. al. (2005: 242) there are four elements within the framework:

1. The cost of the equipment and labour of the intervention enters the cost equation as a positive component;
2. The degree of effectiveness of the interventions essentially determines the value of the avoidable costs of injuries and illnesses;
3. The increase in productivity results principally from the technological design of the equipment; and
4. The displacement of workers that might result from an increase in productivity of the intervention.

Lahiri, et al. (2005: 242) continue:

'While both the second and third component enter the accounting equation as negative expressions and help to reduce the real cost of the intervention, the cost of retraining for displaced workers enters the equation as a positive cost from the societal point of view'.

Oxenburgh & Marlow (2005:211)⁷ add that in order to determine whether or not there have been economic benefits as a result of an OHS intervention, it is necessary to gather data on the direct and indirect costs from a range of sources – namely:

- *Employee Data*: this includes the number of employees, their working time and wages, overtime, training and production costs;
- *Workplace Data*: this includes supervisory costs, recruitment, insurance, and other general overheads, maintenance, waste, and energy use; and
- *Intervention Data*: this relates to the costs associated with the intervention, for example, consultants' fees, disruptions, errors, etc.

The data categories are intended to answer the question: 'has optimal productivity been achieved?' If the answer is 'no', then the next questions are asked: 'why' and 'what can be done?' Oxenburgh and Marlow (2005) suggest that there may be a number of reasons for a lower than optimum productivity, for example, an ill-conceived timeframe. Oxenburgh & Marlow (2005:3) also argue that it is important to ensure that productivity data is relevant to the OHS intervention and include both quantitative and qualitative data. They warn, however, that ascertaining the economic and productivity gains as a result of an OHS intervention can be difficult and necessitates resources being allocated. For small businesses, in particular, undertaking this exercise could be problematic as there may be a lack of resources and expertise as well as poor record keeping.

Conclusions

There is increasing and compelling evidence that providing a healthy and safe working environment has the potential to increase labour productivity and in turn increase business profits. There are, however, a number of issues that cannot be overlooked, for example, what are the negative outcomes, how best to evaluate OHS measures in terms of increased productivity and are there economic benefits? It is also evident that there are certain necessary ingredients required, such as a good level of cooperation between the management and employees, to ensure the success of an OHS intervention and the subsequent increases in productivity.

However, the review of the literature has revealed a number of key gaps:

1. First, while there are a growing number of studies indicating the benefits of providing a healthy and safe working environment, the evidence is still tenuous and difficult to quantify. In particular, it is not known if the benefits are short-term or long-term. Also, while there is evidence that occupational injuries and illnesses impact on *productivity losses*, it is not clear whether or not reducing injuries and illnesses will automatically influence *productivity gains*. Therefore, as the literature suggests, getting employers, particularly those operating in the small business sector, to link health and safety measures with tangible increases in productivity and profits could be difficult.
2. Second, the extant research is biased towards *large organisations*, frequently situated in *North America*. This does not reflect the New Zealand business demographics (refer to Lamm & Walters, 2004). However, there is scant New Zealand research on the topic to rectify this imbalance.

3. Third, the literature on linking OHS with productivity is predominately concentrated in *two disciplines* – namely ergonomics and occupational medicine/health promotion. Indeed there is a danger that the topic will be entirely captured by the health promoters with little or no acknowledgement of how *safety* fits into the equation. Moreover, many of the OHS productivity methods and measurements are almost entirely *health-based*. Linking safety improvements (unless ergonomic) has been largely omitted from the discourse. Thus, given the complex nature of OHS and productivity, it is more useful to adopt a multidisciplinary approach (refer to Bohle and Quinlan, 2001).
4. Finally, there are also few references that make the connection between OHS and the sociology and organisation of work and productivity. It is imperative that OHS policy and practice and productivity gains are placed within the context of changes in the business environment – the changes to the way we work, changes to the legal framework, demographic changes; the impact of globalisation, etc. *That is, what is occurring in the business community is inextricably linked to productivity and the status of occupational health and safety.*

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Notes

¹ Recently the Department of Labour, for example, has been actively supporting collaborative research to improving New Zealand's productivity (www.dol.govt.nz).

² As part of the European Agency for Safety and Health at Work, (2004) mandate, Marc De Greef and Karla Van den Broek (2004) were engaged to undertake a comprehensive investigation into the link between a good working environment and productivity across the European States. The aim of the study was to gain a better understanding of positive effects of a good working environment that would support the implementation of effective health and safety policy at company level.

³ The level of attention in this area by medicine/health promotion researchers can be seen in the January, 2001, 43(1) special issue of the *Journal of Environmental Medicine*.

⁴ The Cochrane Collaboration project also investigates the prevention and treatment of occupational injuries (see www.cochrane-injuries.ishtm.ac.uk).

⁵ Refer to Silva, et al, (2004) for an extensive comparative discussion on the differences and similarities between the concepts of organisational climate and safety climate.

⁶ For a comprehensive overview of six different tools to evaluate the economic benefits of OHS interventions refer to Biddle, et. al. (2005) 'Synthesis and Recommendations of the Economic Evaluation of OHS Interventions at the Company Level Conference'. *Journal of Safety Research* 36: 261-267.

⁷ Oxenburgh (1991) and Oxenburgh & Marlow (2005) elaborate further on assessing the productivity increases as a result of OHS interventions in their software *Increasing Productivity & Profit through Health & Safety* (Product Ability, 2004).