

Beyond trade-offs: towards a theory of the linkages between OHS and productivity

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ABSTRACT: This paper reviews the literature describing the linkages between Occupational Health and Safety (OHS) and productivity. The linkages proposed in the literature have been classified as practices with a combined effect, learning economies, and return on investments. In the case of practices with a combined effect, the literature suggests that in some cases the combined effect leads to the creation of synergies, while in other cases there is a trade-off between OHS and productivity outcomes. As for learning economies, the literature suggests the opportunity of integrated management practices, but the corresponding costs are not clear. As for return on investments, several studies demonstrated that OHS investments pay off, but the availability of these monetary data has been contested and the fact that OHS investment would pay off does not seem to be enough to lead an employer to invest on OHS.

1 INTRODUCTION

This paper looks into the linkages between productivity and occupational health and safety (OHS). The literature linking the two topics is not easy to locate and is difficult to draw upon; indeed, it is dispersed among multiple disciplines, such as ergonomics, health economics, environmental medicine, sociology, law and economics. In addition, a predilection for a particular discipline often biases the empirical research. There is little interface between these disciplines, and differences exist between methods and endpoints of research that draws upon a singular rather than a multi-disciplinary approach (Lamm et al., 2007). Several authors acknowledge not only the complexities of trying to establish a connection between OHS and productivity but also stress 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). In the light of this situation, this paper reviews the literature linking OHS and productivity, thus making a first step in the creation of a comprehensive theory linking the two topics.

For the purpose of the paper, it is necessary to provide definitions of OHS and of productivity. According to the International Labour Organization (ILO) and the World Health Organization (WHO), OHS is “aimed at the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention among workers of leaving work due to health problems

caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his or her physiological and psychological capabilities and, to summarise, the adaptation of work to the person and of each person to their job”. We make a distinction between OHS practices and OHS outcomes. According to Brun and Loisel (2002), OHS practices can be classified according to three dimensions of work, namely organizational, technical, and human, and two activity levels, namely technical and organizational. The human dimension refers to the activities involving people within an organization; the technical dimension comprises those activities involving technical aspects, such as machines, equipment, raw and process materials; the organizational dimension consist of those activities which are characterized by the development of rules, policies and programs. These activities can have an impact at a strategic or at an operational level. OSH practitioners’ activities are strategic when they include OSH policies, work organization, allocation of resources and so forth. In contrast, operational activities include preventive maintenance, assessing risk, providing training, and so on.

OHS outcomes are the number of injuries and illnesses that occur in the plant as well as the costs and lost time associated with these incidents.

The definition of productivity is more difficult. The European Association for National Productivity Centres defined productivity in a broad sense:

“Productivity is an expression of how efficiently and effectively goods and services (i.e. goods and services which are demanded by users) are being produced. Thus, its key characteristics are that it is expressed in physical or economic units - in quantities or values (money) - based on measurements which are made at different levels: on the level of the economy overall, that of a sector or branch of the economy, that of the enterprise and its individual plants/units and that of individuals” (EANPC, 2005). Generally speaking, productivity could be considered as a comprehensive measure of how organizations satisfy the following criteria (Prokopenko, 1987): Objectives: The degree to which they are achieved; Efficiency: How effectively the resources are used. (Doing things right); Effectiveness: What is achieved compared with what is possible. (Doing the right things); Comparability: How productivity performance is recorded over time. Many OHS researchers use the term productivity as a generic descriptor of an organization’s desired operational outcomes, thus facilitating discussions of operational performance without needing to discuss which operational outcomes were prioritized at each facility (Pagell et al., 2013); this rhetorical device will be employed in this study with the same purpose. Productivity practices include practices such as six sigma and kaizen events to improve quality and reduce costs. Productivity outcomes are the plant’s performance on metrics such as cost of production, quality, flexibility and delivery, not company financial metrics such as profitability or market share (Pagell et al., 2013).

The literature dealing with productivity traditionally explored the relationship between productivity practices and productivity outcomes. In the same way, the literature dealing with Occupational Health and Safety (OHS) traditionally explored the relationship between OHS practices and OHS outcomes.

Apart from these horizontal relationships, linking OHS/productivity practices with OHS/productivity outcomes, in the current competitive context it is necessary to better understand the vertical relationships existing between OHS and productivity.

In order to understand these linkages, this paper reviews the related literature. Coherently with the approach used in recent reviews (see e.g. Walters and James, 2011), three methods were utilised to identify relevant literature. Firstly, searches of appropriate databases. Secondly, follow-up of potentially relevant references derived from these sources. Thirdly, the identification and inspection of relevant “grey” sources of literature.

For database searches, a number of different databases from the larger electronic systems were searched. They included Emerald on the Web, ISI Web of Science. In addition, the EU Health and Safety Agency, ILO, HSE and NIOSH websites were also searched, especially to identify ‘grey’ literature. Websites of international organisations involved in promoting fair labour standards were a further source

of ‘grey literature’ including case studies, monitoring reports, opinion leaders’ commentary and company policies.

The literature addresses three different kinds of link between OHS and productivity: 1) Linkages between OHS practices and productivity outcome, or respectively, link between productivity practices and OHS outcome; in the paper, we will refer to these linkages as “Practices with a combined effect”. 2) Linkages between OHS outcomes and productivity outcomes; in the paper, we will refer to these linkages as “Return on investments”. 3) Linkages between OHS practices and productivity practices in the paper, we will refer to these linkages as “Learning economies”.

2 PRACTICES WITH A COMBINED EFFECT

2.1 Definition

The studies of the first group aim at describing the way in which OHS practices affect productivity outcomes or the way in which productivity practices affect OHS outcomes. The combined effect of OHS practices on productivity outcomes or the effect of productivity practices on OHS outcome can be either positive or negative. In case in which this effect is positive, we have synergies or economies of scope. In case in which this effect is negative, we have a trade-off between OHS and productivity outcomes. In this case, OHS practices have in themselves the causal power for the improvement of OHS outcomes and, at the same time, the causal power for the improvement of productivity outcomes. In the same way, productivity practices have in themselves the causal power for the improvement of productivity outcomes and, at the same time, the causal power for the improvement of OHS outcomes. These practices realize economies of scope, since they improve two different kinds of outcomes with an unique practice. The studies dealing with the described combined effect focus on the link between OHS/productivity practices and productivity/OHS outcomes. The link between OHS practices and productivity outcomes is particularly relevant, since it represents a strong motivation for the introduction of OHS practices, which are not among the core objectives of employers.

The studies included in the first group can be firstly divided in two main subgroups: the studies adopting a plant perspective and the studies adopting a supply chain perspective. The studies will be presented taking into account these different perspectives.

2.2 Plant perspective

A first group of authors argue that OHS practices have negative implications for productivity out-

comes, and productivity practices have negative implications for OHS outcomes. For instance, Zohar (2000) posits that there is a trade-off between organizational goals such as quality improvement and cost reductions and safety goals such as accident reduction. Similarly Das et al., (2008) suggest that a worker with mental misgivings about safety may not have focus, time, or motivation enough to concentrate on product or process quality—hence, worker safety should precede quality under typical plant conditions. Ford and Tetrick (2008) hypothesize that workers either avoid accidents or maximize production but they cannot do both. Short cuts will be taken to work around the safety system to allow production goals to be met. According to this point of view, the safety “short cuts” should maximize production without other business outcome consequences. At organizational level, several authors underlined how lean practices, traditionally related to an improvement of productivity outcomes, have instead negative consequences for OHS outcomes. Hasle et al. (2012) reviewed the scientific literature on the effects of lean on the working environment and employee health and well-being, concluding that there is strong evidence for the negative impact of lean on both the working environment and employee health and well-being in cases of manual work with low complexity.

A second group of authors argues that the combined effect of productivity and OHS practices can generate synergies or economies of scope. The practices generating synergies between OHS and productivity involve both the strategic level and the operational level.

At a strategic level, various aspects have been considered, such as the business strategy, the culture of the enterprise, the management system, and the organizational configuration of the enterprise. As for the business strategy, De Greef et al. (2004) argue that OHS programmes form part of the business strategy and also of the continuous improvement circle that drives a company towards excellence. OHS measures can generate effects and outcomes that influence company performance positively and that contribute to the company goal since they create better working conditions and improve the social climate and the organisational process. The results are positive organisational outcomes such as less cost, improved company image, less staff turnover and higher productivity. On an individual level, an OHS program leads to greater health awareness and an improved motivation and commitment. These changes result in several outcomes such as more job satisfaction. Moreover the framework shows that important additional effects and outcomes can be obtained since there is a clear link between the various outcomes and between the organisational and individual level.

As for the culture of the enterprise, Veltri et al. (2013) argue that it is possible to create safe and productive workplaces, but that many facilities fail at this

task because of problems associated with the culture management creates and the practices management adopts. They argue that discussions of a safety culture absent a discussion of the wider operational culture can be misleading, since it is the integration of the two that creates the overall culture used to manage the production system. They argue that the culture of the organization is a key determinant of the relationship between operational and safety practice, because facilities with a supportive culture for safety and operations will manage safety and operations using a joint management system, which allows for the simultaneous measurement, monitoring, and continuous improvement of operations and safety. In these plants there is a positive relationship between operational practices and safety practices. On the other hand, facilities with a day-to-day outcome-oriented culture will prioritize production over safety and be focused on getting work done regardless of the official processes or rules. In these plants operational practice takes precedence over ineffective safety practice.

As for the management system, Veltri et al. (2013) found evidence of the fact that organizations with a joint management system will have a positive relationship between safety and operational outcomes, while organizations that lack a joint management system will meet daily production targets at the expense of safety and operational outcomes. They finally notice how organizational context (e.g., dangerous work, industry competitiveness, and pressure to reduce costs) in and of itself does not predict operations or safety practices or the relationship between safety and operational outcomes; as a consequence their conclusions could be generalized to a wide number of industrial sectors and macro-economic conditions. Similarly, Kirsten (2010) suggests that in order to achieve good health for the employees and increased productivity the intervention programs should include two main features: an integrated health management approach breaking down existing silos and a holistic approach addressing psychosocial factors as well as individual health issues. De Oliveira Matias et al. (2002) consider the systems of Quality, Environmental and Occupational Health and Safety management, and they prospectively analyse the advantages and disadvantages of integrating these systems, as opposed to the systems having independent management in a manufacturing company. Foreseen advantages for companies pertain to economies of scale in the certification processes and a joint approach to the provision of quality, environmental responsibility and workforce protection. As a conclusion, the need to pursue standards integration is emphasized.

As for the organizational configuration of the enterprise, some authors report positive effects of lean on the working environment and employee health and well-being. For instance, Vieira et al. (2013) analyse ergonomics and kaizen as strategies for competitiveness. In particular, the study presents a reflection on

the application of ergonomics in a lean production system of an automotive industry, and an analysis of positive and negative points in using the Kaizen methodology in relation to ergonomics. The authors firstly review some studies showing that in companies that are lean system and using the methodology of Kaizen, the results of product quality, levels of absenteeism and accidents are better than those obtained in companies that do not apply the same concept. After a survey in an automotive industry, they confirm the assumptions of these studies. Indeed, the same Hasle et al. (2012), which concluded that lean has a negative impact of on both the working environment and employee health and well-being, acknowledge that since examples of positive effects were also found in the literature, "it is important to move from a simple cause-and-effect model to a more comprehensive model that understands lean as an open and ambiguous concept, which can have both positive and negative effects depending on the actual lean practice used on the shop floor".

At an operational level, the synergies between OHS and productivity deal with the working environment, with the way of realizing the product and with the way of managing the work of the employees.

ILO (2010) proposed a set of practical and easy to implement solutions for improving safety, health and working conditions. Some of these solutions improve at the same time the productivity of the enterprise.

Adaramola (2012) examines mental and physical pressures that workers bear at work. The authors discuss how on-the-job stress affects a person's capabilities and productivity, and how such pressures lead to higher incidences of accidents at work. The author argues that the relationship between pressure and performance is explained by the "Inverted-U" relationship between pressure and performance.

In order to properly control the outcome of stress and to boost productivity, the author proposes three kinds of techniques: the action-oriented techniques, which help to manage the demands upon us and increase the resources that can be mobilized; the emotionally oriented techniques, which help to adjust the perceptions of the situation; and the acceptance-oriented techniques, which help survive the situations that genuinely cannot be changed.

Falck et al. (2010) analyses the relationship between assembly ergonomics, assemblability, and product quality and quantified these relationships in economic terms in car manufacturing industry. The results show increased risks for quality errors of 3.0 and 3.7 times and total action costs that were 8.7 times and 8.2 times higher for high and medium physical load assemblies compared to low physical load assemblies for 55 tasks assessed.

Ramdass (2013) proposes the implementation of ergonomics as a sustainable competitive advantage in the clothing industry. He focuses on the clothing industry because the manufacture of clothing, along

with the closely associated activities of fibre and textile production, continues to be one of the driving forces of industrialisation throughout the developing world. He suggests that the implementation of ergonomics can become one of the sustainable competitive advantages in the clothing industry, because integrating ergonomics into a plant's culture can cut worker's compensation costs, reduce lost time, improve productivity and quality and strengthen labour-management relations.

Shikdar and Sawaged (2003) analysed the factors that affected worker productivity, occupational health and safety in selected industries in a developing country. Fifty production managers participated in the study, and a significant correlation was found among productivity indicators and health and organizational attributes. Lack of skills in ergonomics and training, communication and resources are believed to be some of the factors contributing to the poor ergonomic conditions and consequent loss of worker productivity and reduced health and safety in these industries.

2.3 Supply chain perspective

From a supply chain perspective, the literature suggests that there is a trade-off between OHS and productivity practices, and that synergies or economies of scope are weak.

Walters and James (2009) reviewed the international literature shedding light on the influence of supply chains on health and safety. The reviewed studies provided considerable support for the suggestion that supply chain dynamics often have adverse health and safety effects. These adverse effects are closely connected to the downward cost pressures on suppliers caused by these dynamics – as a result, the suppliers have more fragmented health and safety management arrangements. They also found that adverse indirect effects can occur alongside initiatives by organisations at the top of the supply chain to directly influence and improve how their suppliers manage health and safety. From the literature reviewed, it emerged that attempts to influence health and safety within supply chains took three main forms. First, the utilisation by 'purchasers' of procurement strategies under which health and safety standards are used as a basis for selecting contractors and the extension of these in some cases to the imposition on those selected of requirements relating to the general management of health and safety, including in relation to the carrying out of risk assessments and communication within multi-contractor/subcontractor work sites. Secondly, industry level certification schemes aimed at ensuring the competencies of contracting organisations and those working for them. Thirdly, 'product-related initiatives' undertaken by trade/industry bodies, as well as individual supplier organisations.

This can be due to the fact that the linkages between OHS and productivity have been explored solely on the OHS side, while the productivity side neglected these linkages: Seuring (2013) reviewed the approaches for sustainable supply chain management, concluding that the social side of sustainability is not taken into account. The same Walters and James (2009), from their searches of databases in the social and public health sciences between 1980 and 2007, found that overall there was a notable lack of rigorous evidence on how supply chains affect health and safety management and performance.

2.4 Discussion

The reviewed studies do not allow to conclude neither that there are solely synergies nor that there is a trade-off between OHS and productivity practices but, as underlined by Veltri et al. (2013) the literature comes to multiple conclusions as to the relationship between being safe and being productive. There are empirically grounded studies and convincing theoretical arguments both in favour of the existence of trade-offs and in favour of the existence of synergies. Moreover, the same practice can give origin to synergies or trade-offs, as seen for the lean practices. This situation suggests that the OHS and productivity practices having a combined effect can potentially give origin to synergies, but it is necessary to carefully design these practices, having in mind the joint optimization of the two dimensions.

Giving this theoretical situation, future researches could investigate the features of OHS and of productivity practices allowing for the creation of synergies. For instance, in the case of the lean practices, possible research questions will be “which are the features of the lean practices allowing for the realization of synergies between OHS and productivity practices?”.

Another shortcoming of the existing studies is related to the fact that these studies focus on specific aspects, while a comprehensive theory of the linkages between OHS and productivity is missing. The present review of the literature represents a first step in the creation of a theory of the linkages between OHS and productivity; however, in this sense the review is limited by the fact that the classification scheme originates from the existing study, and potentially relevant practices could be neglected. A comprehensive theory should comprehensively assess the practices and from these it should analyze the existing synergies.

It is necessary to observe that the literature considering linkages from a supply chain perspective is scarce, since existing studies focus on the higher or lower effectiveness of the practices used by the focal companies for the promotion of the OHS conditions of their suppliers. OHS as a factor contributing to the improvement of the performance of the supply chain has not been adequately explored. Further researches

could explore this aspect; for instance, researches could investigate OHS as a supplier selection criterion, considering that the existence of an adequate OHS policy is a guarantee of an adequate general policy of the company (Veltri et al., 2013), and thus of an adequate reliability of the supplier.

3 RETURN ON INVESTMENTS

3.1 Definition

The studies of the second group aim at describing the way in which OHS outcomes improve productivity outcomes.

In this case, the proposed OHS practices have in themselves the causal power for the improvement of OHS outcomes but they do not have the causal power for the improvement of productivity outcomes (or this power is ignored). Rather, OHS outcomes have in themselves the causal power for the improvement of productivity; there is so an indirect synergy between OHS and productivity.

Typically, these studies evaluate the return on the OHS investments, thus trying to justify OHS investments from an economic perspective. Variables typically considered are the reduced costs that follow a reduced absenteeism. We will refer to this kind of link with the term “return on investments”.

3.2 Existing studies

One of the primary drivers for introducing OHS interventions is the resultant economic benefit. As a consequence, since the 1930s, the “Safety First” movement in the USA had made calculations which show that investments in safety pay off (Hasle et al., 2011 referring to Heinrich, 1959). Numerous examples since then indicate that health and safety investments lead to economic benefits. (see e.g. Kankaanpää et al., 2008; Tompa et al., 2009) recently, Lowe (2003) cites several cases and research studies that prove a positive return on investment. He concludes that the cost-benefit ratios of workplace health promotion programmes vary between USD \$3 and \$8 for every \$1 invested. However, the cost-benefit ratio is often difficult to calculate in real money. A review of the studies dealing with the economic evaluation of Occupational Safety and Health (OSH) has been proposed by Cagno et al. (2013). From the scrutiny of the literature, the authors conclude that no matter the complexity and the degree of convergence and divergence between the various approaches currently in use, it is nonetheless consensual that economic evaluation of OSH needs more multidisciplinary research. Moreover, the review shows that large corporate groups are already persuaded that “safety pays and rewards” and are engaging in systematic evaluation attempts; by contrast, much more needs to be done to

make the case with the smaller enterprises. The main difficulties and methodological limitations of currently available evaluation approaches are highlighted and discussed; among others, the authors underline the insufficient or inexistent account for intangible benefits, such as improved reputation or increased worker satisfaction, and the accountable benefits often limited to “avoided” sick leave or injury absence. Because of these limitations, the authors suggest a novel approach for the promotion of OHS within the enterprises. If positive economic value of OSH is not intrinsic to the intervention, it can be “pushed” from external sources in the form of incentives.

Apart from economic variables, in other cases the return on OHS investments has been evaluated in terms of other variables such as productivity. For instance, Montorselli et al., (2010) compared the performance of four different logging crews with respect to productivity, organization and safety; the results seem to show that productivity is increased after OHS results.

3.3 Discussion

From the reviewed studies, it is possible to conclude that several authors tried to demonstrate that safety pays, however, a look at the methods used for the economic analysis of OHS shows that it is extremely difficult to quantify the benefits of OHS.

Moreover, if one wants to promote OHS interventions within the enterprise, the economic benefits of OHS outcomes could be a misleading argument. Indeed, as observed by Hasle et al. (2011), at any given time, an organisation always has a large number of potential investments that would benefit the organisation, but management has limited resources, both in terms of money and attention. Consequently, management tends to focus on investments with a higher return, namely on investments more related to core objectives or on politically important issues. Suggestions for OHS interventions are thus frequently ignored by management, even when the investment would pay off

However, the demonstration of the economic benefit of OHS outcomes is important if these benefits are considered in conjunction with the economies of scope or the synergies described in the previous paragraph. Indeed, if it is possible to demonstrate that OHS investments would pay off, the benefit of the synergies is twofold: apart from the direct benefit that a synergic OHS practice has on productivity, there is another indirect benefit related to the fact that the synergic OHS practice improves OHS outcomes and thus productivity outcomes.

4 LEARNING ECONOMIES

4.1 Definition

The third group of studies aims at describing the way in which OHS practices improve productivity practices. In this case, the proposed OHS practices have in themselves the causal power for the improvement of OHS outcomes but they do not have the causal power for the improvement of productivity outcomes (or this power is ignored). Rather, OHS practices can improve productivity practices. In this case, there is an indirect synergy between OHS and productivity. These practices realize learning economies thanks to the share of relevant experiences and the mutual use of lessons learned. We will refer to this kind of link with the term “learning economies”.

4.2 Existing studies

The linkages between OHS and productivity practices are mainly described in the literature dealing with management systems. There are currently numerous standards for the implementation of management systems: For instance, Organizations can adopt ISO 14001 or EMAS and ISO 50001 to address environmental issues, ISO 9001 to enhance customer satisfaction and OHSAS to address social issues (Boiral and Gendron, 2011). There are many interdependences between the different management systems and, as a consequence, integrated management systems are currently being discussed as a promising approach for coping with these interdependences. A systematic literature search reveals many definitions, specifically of and relating to integrated management systems (López-Fresno, 2010). In particular, it is possible to distinguish between three dimensions of integration (Ahsen et al., 2013). A temporal integration of quality, environmental and social processes prevails when they are coordinated in such a way that all impacts occur at pre-determined and well-defined points in time. A substantial integration extends beyond temporal integration, and focuses on the substantial link between the interdependent quality, environmental and socially related planning and control processes. This also implies the use of multidimensional planning and control instruments. Examples include multidimensional failure modes and effects analysis (FMEA) (see Duckworth and Moore, 2010) and multidimensional audit questionnaires. An organizational integration means that multidimensional decisions are made in a permanent or temporary organizational unit. For example, quality and environmental departments can be merged and project teams implemented.

Using integrated management systems, various different objectives can be pursued. The literature suggests that integrated management systems are more effective and more efficient than separate and

distinct management systems (Karapetrovic and Casadesús, 2009).

There are different mechanisms determining an increase of efficacy and effectiveness. The mechanisms determining an increase of effectiveness are mainly related to learning economies. Zwetsloot (1995) argues that lessons learned from quality management and the management of working conditions can be valuable for environmental management and vice versa. These lessons are related to different decision making areas: the author identifies three types of synergies that have to do, respectively, with common aspects, similar organizational principles (both at the system and the element level) and the relationship with general management. On the other hand, the mechanisms related to an increase of efficiency are related to economies of scope, and these studies have been discussed in the previous section dedicated to practices with a combined effect.

Other authors, however, argue that the integration of the practices can imply disadvantages. For instance, Hamidi et al. (2012) examine the influence of integrated management system on safety and productivity indices. The study was conducted in Cement Factories in which three systems are used: quality, environment and safety systems. The results showed a significant difference between various safety indices before and after the implementation. The examination of production indices such as increasing rate of productivity and production indicates the influence of these systems on production and productivity indices. The results have showed that the safety system existence cannot ensure productivity increase. Ahsen (2013) recognizes that much of the literature and the results from empirical studies suggest that the spatial application of integrated management systems is state of the art, and that integrated management systems in particular are regarded as more effective and more efficient than separate and distinct management systems. However, he proposes a long-term study demonstrates that for car manufacturers in Germany these integration efforts are implemented in very different ways, and that some integration approaches are partially abandoned after a period of unsatisfactory implementation.

4.3 Discussion

On the one hand, the described learning economies suggest the introduction of an integrated management system. However, on the other hand, the costs implied by an integrated management system are not clear. Further researchers could better quantify the costs implied by the integrated management system.

5 CONCLUSIONS

This study reviewed the linkages between OHS and productivity practices. The reviewed studies show that there are different kinds of linkages: practices with a combined effect, learning economies and return on investments. In the case of practices with a combined effect, the results show that in some cases the combined effect leads to the creation of synergies, while in other cases there is a trade-off between OHS and productivity outcomes. As for learning economies, the literature suggests the opportunity of an integrated management system, but the costs are not clear. As for return on investments, several studies demonstrated that OHS investments pay off, but the availability of these monetary data has been contested and, moreover, the fact that OHS investment would pay off does not seem to be enough to lead employer to invest on OHS.

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