



# Holistic sustainable development: Floor-layers and micro-enterprises



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## ARTICLE INFO

### Article history:

Received 3 March 2015

Received in revised form

11 December 2015

Accepted 25 January 2016

Available online 6 February 2016

### Keywords:

Sustainable development

Occupational health and safety

Design

## ABSTRACT

Attracting and retaining workers is important to ensuring the sustainability of floor laying businesses, which are for the most part micro-enterprises (MiE). The aim of this paper is to shed light on the challenges MiE face in OHS implementation in the context of sustainable development. Participative ergonomics and user-centred design approaches were used. The material collected was reviewed to better understand the floor layers' viewpoints on sustainability. The solutions that were retained and the challenges encountered to make material handling and physical work easier and to develop training and a website are presented. The importance of OHS as a sustainability factor, its structuring effect, what distinguishes MiE from small businesses and possible strategies for working with them are also discussed.

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## 1. Introduction

The aims exposed in the Brundtland report (1987) commissioned by the United Nations in 1983 and advised by the Rio conference of 1992 to achieve sustainable development (SD) are based on three pillars: environmental, social and economic. Mainstream thought associates the concept of protection of the environment with the protection of natural resources and spaces, but it could also be considered in terms of industrial risk, including human health. To meet these aims, enterprises must develop competencies and tools to do things differently. An abundance of solutions are proposed in the literature, however, they are mostly aimed at large enterprises. Little has been done for small and medium sized enterprises (Heidrich and Tiwary, 2013) even though they account for a significant portion of employment in several countries (Micheli and Cagno, 2010; Kearins et al., 2010). Also, numerous studies in various fields have shown that the size of an enterprise is a major determinant and that models or tools proposed for large enterprises may not be suitable for smaller sized enterprises (Parker et al., 2009; Bos-Brouwers, 2010; Eakin et al., 2010; Klewitz et al., 2012; Trianni et al., 2012, 2013).

The definition of what constitutes a very small, small, mid-size or large business varies from one country to another. In research,

the commonly accepted classification criterion is the number of employees. The European Commission (2005) set the delimitation between large and mid-sized enterprises at 250, but 500 is also used as a criterion in the literature. In Canada, an enterprise with less than 100 employees is considered as small (Government of Canada (2015)), while in Europe, the number retained is 50 employees (European Commission, 2005); some authors propose 20 employees (McVittie et al., 1997). In the USA, this number varies extensively, depending on the industrial sector (US Small business Administration, 2015). Thus, SME (small and medium-sized enterprises) cover a broad spectrum of enterprises and the boundaries that distinguish them are sometimes blurred. In the same way, MiE are beginning to be distinguished not only from SME, but from small-sized enterprises as well. The number retained in studies is below 5 or 10 employees. Interest to study and understand the dynamics of MiE is on the rise, because of their weight in the economy of many countries and their impact in certain sectors (e.g., retail).

For a few years now, we have been working with entrepreneurs from the flooring sector. This sector is essentially made up of micro-sized enterprises. The entrepreneurs were very concerned with the issue of sustainability, with their own sustainability in fact, in regards to maintaining and renewing human capital, both of which entrepreneurs perceived as dependant on the capacity to find and implement solutions to improve their workers' situation in matters of occupational health and safety (OHS). Indeed, the possible transformations identified and recommended in previous

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ergonomic studies (Gonella et al., 2007; Michaud and Lortie, 2003) did not lead to the implementation of active solutions. Therefore, the basic purpose of the current project was twofold: (i) to identify active solutions having a good probability of success, meaning they would improve OHS without compromising work efficiency, and at a reasonable cost, and (ii) to develop a methodological reflection on how to work with micro-sized enterprises to achieve a long-lasting impact.

Through this case study, the aims of this paper are: (i) to shed light on the challenges these micro-enterprises face as to the implementation of OHS measures in the context of sustainable development, (ii) to expose their point of view as to sustainably issues and, (iii) to clarify if and how micro-sized enterprises may be differentiated from small enterprises or SME.

### 1.1. SME and sustainable development

Mainstream literature is centred on pro-environmental performance and its related tools (ecodesign, eco-innovation, sustainable production systems, product life cycle management, eco-efficiency, green supply chain management, eco labels, etc.), and a good amount of consensus has been reached as to the main factors that prevent the implementation of SD in SME, that is to say, their lack of resources be it financial (they are vulnerable to market fluctuations, have limited access to investments and funds, and limited training budgets), human (in terms of variability, competency and awareness about SD stakes and tools), technological (in particular, information and communication technologies, as well as SD technologies), and networking with other actors in SD or their supply chain (Bos-Brouwers, 2010; Prendeville et al., 2011; Klewitz et al., 2012; Oduoza and Smith, 2012; Frey et al., 2013; Heidrich and Tiwary, 2013; Hernandez-Pardo et al., 2013; Trianni et al., 2012, 2013).

There is also a good consensus on what differentiates SME from large-sized enterprises, in the way they conduct business. At the operational level, SME focus more on short-term objectives and daily activities to achieve rapid production/service. Their communication channels are more informal, less structured and deployed throughout the organization, which gives them at some level a competitive advantage. SMEs are seen as more flexible: the proximity with upper management and the horizontal organizational structure would allow them to quickly adapt to changes and innovate (Bos-Brouwers, 2010; Kearins et al., 2010; Klewitz et al., 2012; Hernandez-Pardo et al., 2013). They are closer to their customers and they focus more on niche markets or local or regional needs (Bos-Brouwers, 2010; Kearins et al., 2010; Battaglia et al., 2010). Their perception and attitudes toward their environmental responsibility - an issue that has been less explored though - also appears to be different: They believe, most notably, that they have little impact on the environment and that such concerns are of little interest for their strategies and planning (Cassells and Lewis, 2011). Most authors propose to set incentives, and sometimes deterrents, to favour SD and OHS practices (Goetz, 2010; Frey et al., 2013).

Innovation processes towards SD have also received some attention in the literature. When SME innovate, it is mostly incrementally rather than radically (e.g., improved technological processes; Bos-Brouwers, 2010; Klewitz et al., 2012; Frey et al., 2013). Innovations as well as the adoption of SD tools are initiated by upper management - as long as the individuals are dynamic, visionaries and emphasize on long term objectives - (Bos-Brouwers, 2010; Kearins et al., 2010).

Studies isolating small-sized enterprises are still rare. They accentuate some of the previous characteristics listed, rather than basic differences. For example, SE appear again more constrained by the time factor, and more focused on their customers and

economic survival (Samujh, 2011); they essentially think in terms of responsibility towards their employees, customers and local community rather than in terms of corporate social responsibility (Battisti and Perry, 2011). They appear singular essentially in regards to the source of information privileged, that is to say, their accountant, the members of their families, their professional associations and their supply chain (Samujh, 2011).

### 1.2. SME, sustainable development and occupational health and safety (OHS)

To the best of our knowledge, the literature on SD in the context of SME has shown little concern for OHS performance, aside from being briefly mentioned. Yet, OHS in the context of SME has retained some attention. One can say that the factors or attitudes evidenced through the studies are quite the same as those exposed in the previous section, namely the lack of resources whether economic, technological, human or organizational (Gahan et al., 2014).

Overall, in OHS literature, what authors insist on may still pertain more to the issue of information and the lack of expertise to tackle OHS challenges (Waddoups, 2011), especially in small-sized enterprises: risks are underestimated, accidents are under-reported, employees have little training in OHS and OHS is perceived as either a personal concern or as difficult to prevent (Hasle et al., 2009). They appear reluctant to consult experts in OHS for information and the current structures in OHS are not suited to their needs (Eakin et al., 2010; MacEachen et al., 2010). As observed previously with the issue of SD, close informal social relationships dominate (MacEachen et al., 2010) and the most effective way to reach them would be through personal contact (Gahan et al., 2014).

### 1.3. Flexible floor layers as sector of intervention

Floor layers (FL) can be divided into three independent sectors: wood floors, tiles (e.g., ceramic, terrazzo) and flexible (e.g., carpet, linoleum). The project targeted specifically the flexible floor layer sector, which can be sub-divided into two areas - institutional/commercial vs. residential - with two main classes of material, provided in rolls or tiles: carpets and resilient (e.g., vinyl, linoleum, sport surfaces). The sector is made up essentially of MiE. For example, in 2013, 1 198 FL were officially registered in the construction industry and 564 businesses were registered at the Quebec building authority (CCQ, 2015). FL may work for different enterprises. According to the actors of the milieu, these numbers are conservative. Roughly, that amounts to 1 600 FL. They estimate that a dozen businesses employ 10 persons and more, the largest one employing 30 persons (in this paper, we will refer to the sector only by the acronym MiE).

The building sector is regulated by a specific law and unionized (five unions). The vast majority of FL come under a single union. A worker needs a competency card to work on a construction site (commercial or institutional). Two other actors oversee the FL sector: a federation grouping the retailers, manufacturers and floor layers (FQRS), and the OHS prevention mutual (chosen by the federation). A last actor is the Construction OHS Joint Association, a union-employer joint parity organization.

The work is difficult and demanding and has been the object of attention since almost 40 years. The prevalence of musculoskeletal disorders is still high (Dale et al., 2015). The most documented problems are knee disorders, namely chronic conditions such as hygroma and arthrosis (Jensen et al., 2000; IIAC, 2010), associated with two main risk factors: force of impact when using the knee kicker carpet stretcher and knee compression stress associated with the kneeling position (Battacharya et al., 1985; Jensen and

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