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Ergonomics contributions to company strategies

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ABSTRACT

Managers usually associate ergonomics with occupational health and safety and related legislation, not with business performance. In many companies, these decision makers seem not to be positively motivated to apply ergonomics for reasons of improving health and safety. In order to strengthen the position of ergonomics and ergonomists in the business and management world, we discuss company strategies and business goals to which ergonomics could contribute. Conceptual models are presented and examples are given to illustrate: (1) the present situation in which ergonomics is not part of regular planning and control cycles in organizations to ensure business performance; and (2) the desired situation in which ergonomics is an integrated part of strategy formulation and implementation. In order to realize the desired situation, considerable changes must take place within the ergonomics research, education and practice community by moving from a health ergonomics paradigm to a business ergonomics paradigm, without losing the health and safety goals.

1. Introduction

The value of ergonomics extends beyond health and safety. This discussion paper emphasizes how – while maintaining health and safety of consumers and workers – ergonomics can support a company's business strategy to stay competitive. For this discussion we employ the broad definition of ergonomics, proposed by the International Ergonomics Association (IEA):

> "Ergonomics (or human factors) is … concerned with the understanding of interactions among humans and other elements of a system, … in order to optimize human well-being and overall system performance." (IEA Council, 2000).

The definition implies that ergonomics has both a social goal (well-being) and an economic goal (total system performance); that ergonomics considers both physical and psychological human aspects; and that ergonomics is looking for solutions in both technical and organizational domains. Performance aspects could include output volume, lead time, production flexibility, quality levels and operating cost among others.

1.1. The problem of ergonomics

During the past 25 years, several authors have emphasized that ergonomics has had a problem being accepted by business managers. In an essay in the Administrative Science Quarterly, Perrow (1983) argued that the problem of ergonomics is that too few ergonomists work in companies; that they have no control over budgets and people; and that they are seen solely as protectors of workers, rather than builders of systems – for example by not blaming human errors on workers but on designers and managers. Hal Hendrick, the former president of the International Ergonomics Association (IEA), wondered *"Why it is … that more organizations, with their strong need to obtain employee commitment, reduce expenses, and increase productivity, are not banging down our doors for help …"* (Hendrick, 1996, p. 2). He suggested that there are too many examples of bad ergonomics, that ergonomists -wrongly- presume that others are convinced of the importance of ergonomics, and that the benefits of ergonomics are not well documented.

Another major concern among ergonomists is that ergonomics is considered too late in the design process (Breedveld and Dul, 2005; Helander, 1999; Imbeau et al., 2001; Jensen, 2002). Once strategic design decisions about products or processes have been made, the majority of resources are already committed so that the cost for any change increases dramatically (Miles and Swift, 1998). Under these circumstances, only minor 'ergonomic' adaptations and corrections can be made and ergonomics is experienced as a time-consuming and costly activity. In such situations, the potential of ergonomics to contribute positively to the design is limited.

Managers generally do not associate ergonomics with organizational effectiveness, but rather with health issues (Jenkins and

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Rickards, 2001) and related costs of sickness absence and disorders, although even the contribution of ergonomics to health and safety is not always recognized. Managers are not to be blamed for that. It appears that ergonomists hardly ever write articles on ergonomics in business and management journals (Dul, 2003a), limiting the possibilities to expand the management community's perception of the many benefits available via ergonomics. The few articles that refer to ergonomics confirmed to readers that ergonomics has a limited scope (physical ergonomics). Furthermore, in many countries, ergonomics is closely linked to occupational health and safety legislation. Discussions in the USA on OSHA's 'ergonomics rule' gave the general public and managers the impression that ergonomics is about work-related musculoskeletal disorders; and that prevention of these disorders is a heavy financial burden for companies, resulting in debates on the costs of ergonomics and the validity of ergonomics knowledge, and in explicit negative publications denouncing ergonomics (e.g. Scalia, 2001). Applying ergonomics solely to fulfill health and safety or legislative objectives may be only a 'negative' motivator for managers: that is, fear of negative consequences such as sick leave, accidents and associated costs. Then, managers often outsource the responsibility for healthy employees and safe work to a health and safety consultant or department. Indeed, most often ergonomists themselves work on the basis of a health and safety paradigm and focus on workplace hazards (Whysall et al., 2004).

1.2. Direction for a solution

We argue that the present situation, where ergonomics is linked to health and safety should not be the only basis for applying ergonomics in organizations. We suggest that if ergonomics contributes directly to the company's strategy, and in the language of the company, it will be more accepted by business managers; it will be better embedded (internalized) in the organization; and its full potential as described in the IEA definition will be better actualized (Dul and Neumann, 2005). Also it will be easier to obtain health and safety improvements, if managers understand that the ergonomic improvements will *simultaneously* help them realize their primary strategic business goals.

Currently many managers and ergonomists may not be used to thinking in terms of the strategic objectives within the firm and the strategic opportunities provided by ergonomics to help reach core business goals. In this paper, we will explore new opportunities and challenges for ergonomics by describing possible relationships between ergonomics and company strategies. Our goal is to present a broad overview of possible business strategies to which ergonomics research, education and practice could be linked, rather than describing the links in detail. This paper also should support ergonomists in their efforts to develop their 'business' language so as to improve their ability to communicate with the business and management world.

2. Strategy and ergonomics

'Strategy' may be a useful connection point through which organizations might begin to internalize ergonomics because strategy: (a) has top management priority; and (b) is normally broadly communicated and implemented in the organization. Connecting ergonomics to the company's strategy may provide managers with a more 'positive' motivation to apply ergonomics: not only can ergonomics create opportunities for safe and healthy work, but it can also improve system performance.

We consider strategy as the combination of 'strategy concept' (the formulation of a course of action for reaching business goals) and 'strategy implementation' (realization of this concept).The upper part of Fig. 1 shows a simplified relationship between the

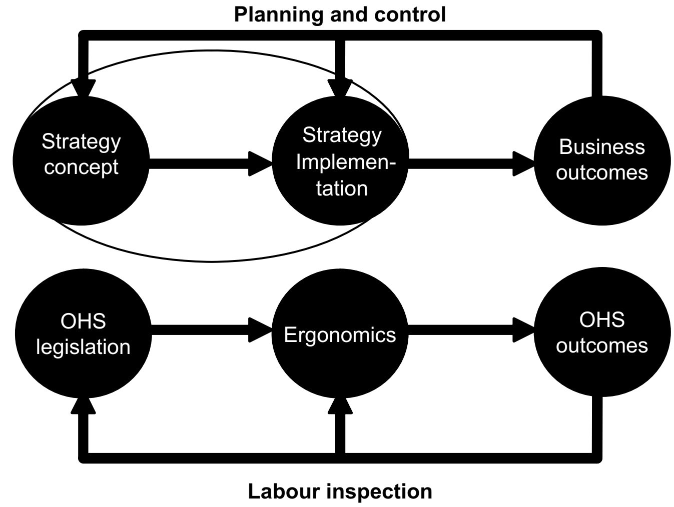

Fig. 1. Upper part: The relationship between strategy, strategy concept and strategy implementation and business outcomes. Lower part: The present isolated position of ergonomics. OHS = occupational health and safety.

formulated strategy concept ("theory"), its implementation ("practice"), and the business outcomes. Several types of desired business outcomes can be distinguished. For this discussion, we consider three groups of business outcomes: ultimate financial business goals (e.g. turnover, profit); and two groups of intermediate business goals, effectiveness (e.g. quality) and efficiency (e.g. productivity). Firms typically use feed forward and feedback systems of dynamic planning and control cycles, including business plans, targets, evaluations, rewards, etc., to guarantee that ultimate and intermediate business outcomes will be realized.

2.1. Setting the stage for strategic ergonomics

Ergonomics is usually not part of the primary strategy to reach desired business outcomes and their related planning and control cycles. As argued above, ergonomics is often considered as separate from the main strategic objectives of the company and forced by legislation, which is a view that may be shared by both managers and health and safety professionals. This is shown in the lower part of Fig. 1. In companies, ergonomics is typically linked to occupational health and safety (OHS) outcomes and to a company's obligation to fulfill OHS legislation, and therefore may be delegated to health and safety departments who are not connected to strategic decision making processes. Feedback to managers may eventually come in the form of injuries, absenteeism, and labor turn-over, or ultimately from labor inspection. This feedback typically comes with a delay, long after the design is implemented, so it may never reach design teams (Perrow, 1983). Feedback delay inhibits effective management and organizational learning (Senge, 1990).

In order to stimulate the uptake of ergonomics, without relying on OHS legislation, it seems necessary to explicitly relate ergonomics to business strategy. This is shown in Fig. 2 by the arrows from 'ergonomics' to 'strategy concept' and 'strategy implementation', and business outcomes. If it can be shown that ergonomics is related to strategy, ergonomics will be considered as a tool to realize desired business outcomes as shown by the arrows from 'strategy concept' and 'strategy implementation' to 'ergonomics' and from 'ergonomics' to 'business outcomes'. In order to further explore how ergonomics can be linked to strategy we first divide the general concept of strategy into strategic 'arenas' within the firm.