Increasing Corporate and Government Spending: Can Ergonomics Help?

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Research Note

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Health costs represent one part of corporate and government spending and are constantly increasing. Many reasons for increasing health costs can be defined. In the 1990s, authors started to examine the relationship between the work environment and employee health. They named an unsuitable work environment as a cause of employee health problems. They view a suitable work environment as a tool towards fulfilling corporate needs: maximum output at minimum cost. Rising costs associated with work-related injuries or occupational diseases are the most significant effects of an inappropriate working environment. The consequences of inappropriate working conditions are easily defined as worsening of the worker's health and the economic impact on both microeconomic and macroeconomic levels. However, the work environment is also viewed as one determinant of the quality of work, performance, satisfaction, work efficiency, and work-related stress.

Ergonomics as a science optimizes working conditions. It plays a main role in the reduction of health costs and also in the elimination of negative influences of the work environment. The results are also obvious in maximizing human health, comfort and well-being while working. Ergonomics espouses that the human body is limited by range of motion, speed, endurance and strength. Therefore the goal of ergonomics is to evaluate the person, work environment and working task and then to adjust to meet worker's needs.

A study at a selected company in the Czech automobile industry was performed with the goal of answering the following research questions: Can ergonomics help to fight rising health care costs? Can work environments be improved, and thus costs for companies and the state reduced, with the help of ergonomic tools?

As a part of this research, an analysis was performed of the health-risk level at one workplace selected by the company. This was a model workplace, which was evaluated using the official ergonomics checklists issued by the National Institute of Public Health (http://www.szu.cz/uploads/documents/cpl/pracovni_prostredi/Ergonomicke_checklisty_unor2008.pdf (http://www.szu.cz/uploads/documents/cpl/pracovni_prostredi/Ergonomicke_checklisty_unor2008.pdf), 2007). The analyses were intended to determine how ergonomic the workplace already was and define the main areas that were sources of health risks and their associated costs. Among the most important problem areas revealed by the analysis were elevated noise level, unsuitable working positions, a too-low manipulation plane, poor economy of movement, and excessive muscle power exerted in both upper limbs. The company in question employs 200 persons (half of whom work in three-shift manufacturing). The company's most recent known yearly revenue (2014) was €11,340,000.

In the next phase, ergonomics measures for risk reduction were proposed. These were primarily measures for reducing high noise levels by selecting more appropriate work equipment with a declared lower noise level. Through this measure the risk category was successfully reduced from 3 to 2 (out of a total of 4 categories, where 4 is the highest-risk category). This reduced demands for protecting employee health at work. Specifically, it eliminated the requirement for a bi-annual specialist inspection at a cost of €17 per inspection per employee.

The next important measure was to introduce job rotation, i.e. rotating employees among individual work sites at predefined intervals and orders, reducing their work risk in terms of the time spent in individual unacceptable positions and exerted upper-limb muscle power. This caused a reduction from category 3 down to 2 in the factor for local muscle stress (the stress on individual muscle groups in the upper limbs). This eliminated the requirement for a mandatory bi-annual specialist inspection at a cost of €56 per inspection per employee.

It also saved employee time spent at these inspections and enabled elimination of "safety breaks." These breaks are paid for by the employer. This saved the employer €35,714/year.

Other benefits, calculable over the long term, include reductions to employee turnover caused by poor working conditions; recruitment costs; the risk of work-related illnesses and thus potential worker compensation costs; and health-problem treatment costs both for the company (the legally required compensations for pain, disability, lost wages, and 12 months' wages) and the state (costs for treatment, insurance contribution, unemployment support). According to a study by the Ministry of Health of the Czech Republic, the average cost for a 14-day sick leave are €2,107 per employee. The state pays the largest part of these costs; the employer pays a third; the sick employee and the insurance companies pay the rest.

Applying ergonomics principles resulted in a provable reduction in health care costs. Ergonomics can thus be considered as one tool for reducing costs. However, its primary goal is to protect the health of company employees.

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