

Development of a Web-Based System for Assessing and Prioritizing the Critical Ergonomics Risk Factors: A Case Study in a Local Automotive Vehicle Manufacturer

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ABSTRACT

Despite the productive use of the Web as a communication medium, recent research suggests that very few work has been done to leverage this new technology for enabling changes in the work environment ergonomics risk assessment process. This paper, motivated by a situation at a vehicle component manufacturer that lack of expertise, describes the integration of Knowledge-based system (KBS), analytic hierarchy process (AHP), and Web-based system for the management of workplace ergonomics, which are being increasingly applied in the industry. Lack of awareness and lack of expertise were barriers to workplace ergonomics improvements. Moreover, the need for industrial know-how experts and ergonomists to recognize the ergonomics risks in the workplace is high. In this study, twenty-six risk sub-factors have been identified for workplace ergonomics assessment and divided into four main factors individual, organizational, physical, and psychosocial ergonomics. A systematic approach to evaluating workplace ergonomics risk has been developed using the analytical hierarchy process, which enables the combination of tangible and intangible criteria and checking the consistency of decision-making. In this paper, we describe how a Web-based ergonomics assessment system (W-BEAS) can enable the standardization of the process of assessing and prioritizing the critical risk factors. Besides, W-BEAS supports participatory ergonomics intervention and functionally dispersed decision-making roles, thereby displaying characteristics of a collective decision support system. The approach has been implemented in the actual web-based system in a local vehicle manufacturer.

KEYWORDS: Ergonomics risk; WMSD; Knowledge-based system (KBS); Analytical hierarchy process (AHP); Web-based system

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