7 Performance Measurement from a Macroergonomics Perspective

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For industrial organizations, as well as others, the general pursuit of optimized performance is nothing new. Changed frame conditions, for example globalization, increased transparency caused by information technology and the world wide web as well as increasing customer demands result in a performance pressure – not only for companies but also for the shop floor level. But other developments like the discussion about corporate social responsibility (ZINK 2003) – or more generally about sustainability in its triple bottom line understanding e.g. in the context of global supply chains – are new demands for companies as well.

Besides companies and their people, society in general is challenged by a globalized economy, but also by companies being unaware of their societal responsibility. In particular, unemployment as well as the increasing healthcare costs of a growing part of older citizens are a huge financial burden.

When considering these changes and challenges, one has to ask whether ergonomics or human factors can contribute to solving these problems. Therefore, the understanding of ergonomics or human factors has to initially be clarified – especially through a historical perspective and by looking at its “performance dimensions”.

1 Focus and Target Groups of Ergonomics and Human Factors in a Historical Perspective

Jastrzebowski’s outline of ergonomics in 1857 described the science of work as follows: “The Science of Work, understood in the widest possible sense of the term “work”, may be divided into two main disciplines, the science of useful work, which brings improvements or is commendable, by which we mean the good use of Man’s forces and faculties with which he has been endowed by his Maker, or the use for the common good; and the science of harmful work, work
that brings deterioration, and discreditable work, by which is meant the contrary use and intention to use the said forces and faculties.” (JASTRZEBSOWSKI 1857, p. 15) Without focusing too much on his interpretation of work, there is a distinction between “useful” and “harmful” work and there is a very broad understanding of what “work” means.

Looking more than a century later (1973) at a mission statement of the German Human Factors and Ergonomics Society (Gesellschaft für Arbeitswissenschaft) one can find the following definition: “The content of Ergonomics is the analysis and design of work systems and equipment, whereas the working man in his individual and social relations to the other elements of the working system is the starting point and objective of consideration.” (GESELLSCHAFT FÜR ARBEITSWISSENSCHAFT 1973, p. 3) “The measures of work design focus on occupational health and safety, social suitability and technical and economical rationality.” (GESELLSCHAFT FÜR ARBEITSWISSENSCHAFT 1973, p. 4)

In 1987 Luczak et al. tried to get a consensus between most of the active scientists in this field and as a result published a “core definition” of work science (LUCZAK et al. 1987, p. 59): Ergonomics or human factors is the system of analysis, organization and design of technical, organizational and social conditions of work processes. The objective is that working people in productive and efficient working processes

- have working conditions that are harmless, accomplishable, endurable and without impairment,
- see standards of social adequacy fulfilled according to work content, task, work environment as well as remuneration and cooperation,
- are able to develop freedom of action, gain the abilities, preserve and develop their personality in cooperation with others.

Luczak summarized this definition in two main objectives: “to design work humane and effective” – including also efficiency (LUCZAK 1998, p. 6). Therefore, it has always been an objective of ergonomics to support economic- as well as people-oriented improvements within organizations. This duality of productivity (efficiency) and people orientation might no longer be enough, when considering the challenges for companies roughly described above.

Therefore, from an ergonomics point of view, this duality has to be given up or enlarged in introducing a stakeholder perspective with at least integrating the customers and society as additional stakeholders more explicitly. This has been done within GfA in 1999, when during 1997 and 1998 a new mission statement was developed, reacting to the above described changed basic conditions. Among others “work” was no longer “only” related to work systems (e.g. within a company), but included also to unpaid work (like voluntary work, housework, community work etc.). Regarding the target groups, a stakeholder approach has been realized and the societal responsibility (e.g. to maintain, create and (appropriately) distribute humane, economically and environmentally compatible work) became more important (GESELLSCHAFT FÜR ARBEITSWISSENSCHAFT 1999). In this