Human factors in business: creating people-centric systems

by Jan Dul

Understanding how workplaces can be designed with people in mind should be of great interest to organisations. Certainly the benefits are clear as an ergonomic approach can improve overall performance and enhance the climate of creativity and innovation for knowledge workers.

From a European perspective, ergonomics is about designing physical products around the human form in order to enhance comfort and alleviate or reduce health and safety concerns. However, to those studying ergonomics (or 'human factors', an interchangeable term used increasingly to avoid confusion with the American understanding of ergonomics, which for them relates to musculoskeletal disorders) the physical interaction between people and products is but one of three essential elements that provide a much broader definition. Designing the environment with people in mind represents the second aspect and here we include social and organisational considerations.

Ergonomics has two main goals, and these are reflected in the third aspect: whilst human wellbeing is a prime concern, ergonomics is also very much about improving systems performance.

The science of ergonomics (human factors) can be divided into two streams and a brief explanation of each is always useful: *product ergonomics* - here designers consider human factors and issues of functionality when developing new products or services for end users; *production ergonomics* focuses on people and their work environments and offers enhancements for both that in turn can improve business performance.

Managers usually associate production ergonomics with occupational health and safety and related legislation, not with improving the company bottom line – a common mistake. Although occupational health and safety issues are a part of it, production ergonomics is very much centred on the performance of workers.

Tradition dictates that humans are recruited, trained and shaped to fit into work systems. Production ergonomics seeks to turn this antiquated approach around and put people first. Instead of

asking whether recruits will fit the system, companies should prioritise what sort of people they want in the first place and develop work systems around them.

As with product ergonomics, this is a design approach, but in management terms it sits right in the middle of Human Resources and Operations Management, a divide that research seeks to bridge. Ultimately it is about looking after human capital whilst redesigning systems in engineering and organisational terms so as to ensure people fit as comfortably as possible and therefore are able to function as efficiently as possible.

Square pegs-round holes

In workplaces, from the production lines of old to the call centres of today, where square pegs are forced into round holes, it doesn't take long for problems to manifest themselves: workers become easily bored and demotivated by the dullness of the routine; injuries brought on by the repetitive nature of the work take their toll.

But it need not be so. Research clearly shows that if the people employed in the battery farms of call centres, for example, are given working environments that increase their levels of satisfaction, so the satisfaction of the customers they deal with also rises. This clearly highlights the value of ergonomics to the service industry.

From a service economy we move slowly towards a knowledge economy where the assets of an organisation are to be found as the grey matter of its employees. To get the best from knowledge workers, through problem solving, idea generation and the development of new process, product and service innovations, creative environments should be designed with organisational, social and creative goals in mind. The principle is quite simple: employees function best in environments that suit them best.

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Organisations, through the managers that run them, need to understand this. Unfortunately, it is still true that many managers see efforts to enhance workplace conditions as being a cost rather than a benefit to the organisation.

For so many years, companies have been spouting the same cliché in their annual reports that "our people are our most important asset" yet continually fail to treat them as such at all. This should not be the hollow phrase that it has become. If you really believe that collectively your people are your greatest asset, then treat them as such. As well as handing out perks and incentives, financial or otherwise, managers should look to restructure the organisation operationally so that it benefits the people who make it productive and profitable.

Such an approach, the human factors approach, can increase the commitment, motivation and wellbeing of your people when implemented within the organisation operationally. It should be seen as a strategic approach. To achieve this however, requires a belief that the radical shift to make systems fit people is a good investment for the organisation and its goals.

In some respects these ideas are not entirely new. In fact, there are hundreds of ISO standards available for organisations to use in designing systems with humans specifically in mind. Managers, it seems, are not aware of this. This means the problem isn't that the knowledge is not available or even that there is a lack of it, but that the knowledge is not already embedded within organisations, possibly because there is not yet widespread belief in or understanding of the philosophy, principles and clear benefits of human factors, or ergonomics, as a science.

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In seeking to redress this situation, it is important for us as ergonomists and researchers to show how the incorporation of human factors offers value to the corporate world and that ergonomic systems can be implemented relatively easily if the correct mindset is in place. Of course, at RSM we are eager to help organisations develop that mindset. To do so knowledge, tools and guidelines have been developed to link ergonomics to business goals, which means the information is readily available and accessible.

Human factors in action

In considering the practical benefits to organisations, an example of how ergonomics improves operations management within a supply chain environment is appropriate. To help optimise the efficiency of a number of warehousing facilities, we used ergonomic principles to determine where stock needed to be optimally positioned. From the outset two clear goals were set: our assessments should result in 1) an increase of order-picking efficiency, and 2) the reduction of discomfort for order pickers, thus improving their wellbeing in the workplace.

This type of research is normally conducted on the horizontal plane, ie, identifying in which aisles stock should be housed for maximum efficiency. Our approach however, was to also include the vertical plane. This gives a 3-dimensional picture of where stock should be situated, thus allowing it to be positioned where it is most efficient for order pickers. After all, they are the ones who do the physical work and if their job entails repetitive activity that is physically uncomfortable, then the inevitable outcome can only be unhappy employees and downturns in efficiency. However, our studies verify that performance will increase as worker comfort levels rise, in both cases by around 10 per cent, after the introduction of our recommendations on human factors.

As a second example, a research tool we have developed – the Creativity Development Quick Scan (CDQS) – has helped in creative environments. The CDQS, a checklist for knowledge workers, rates 21 factors that contribute to the work environment and its climate for supporting the creativity and innovativeness of employees.

When analysed, the results of the CDQS highlights human factor recommendations that organisations can implement to improve creative performance. But that is not all. The results can be benchmarked against a database of other knowledge companies around the world, and this allows us to identify where organisational improvements – typically in the areas of job design, building design, and leadership styles – are most needed.

Our research shows quite clearly that creative and knowledge workers operating in ergonomically enhanced environments do indeed offer greater potential for problem-solving and innovative thinking. What this tells us is that where creativity is concerned, environment matters. But what environment – the physical, the social-organisational, or that created by the combination of individual personality traits? (see Fig 1)

Understanding the impact of each dimension on creative performance is important for Human Resource and Operations Managers as it gives insights into: a) whether organisations should focus on specific types of individuals for specific work environments, b) if priority should be

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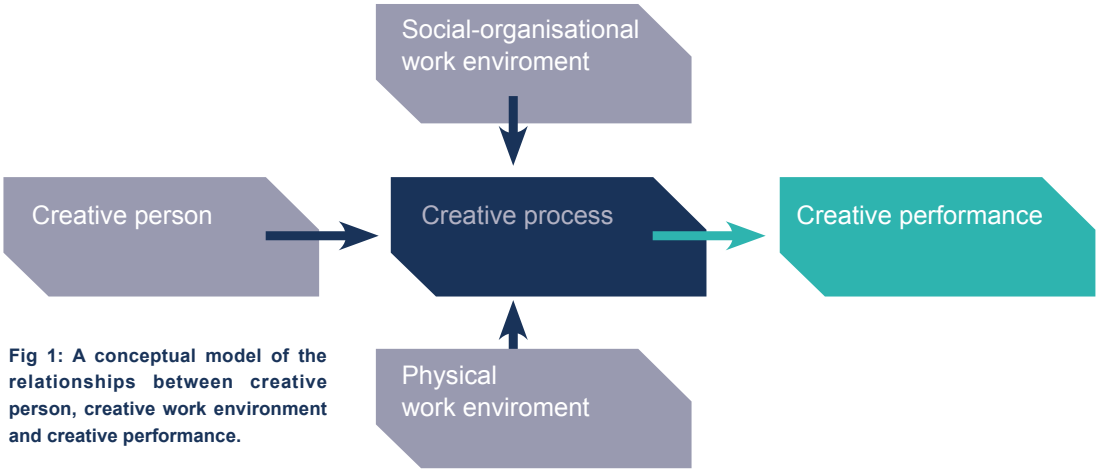

Fig 1: A conceptual model of the relationships between creative person, creative work environment and creative performance.

given to social-organisational and leadership aspects, for example, how work and teams are structured, or c) the physical dimensions and if they should be adapted to stimulate a more creative environment.

It is very popular today to talk in management circles of open innovation and crowd sourcing: that people outside of the organisation have the fresh ideas that will bring new innovations in processes, products or services. This tends to lead to individuals and in-house teams being overlooked, as their creativity is not seen as being at one with the thinking of the organisation. On the contrary, outside ideas need the creative understanding of those inside to make them work. Anyway, in such situations it is more likely that there is not enough stimulation within the organisation for creativity to contribute to innovation.

Managers beware: in many cases the greatest factor in the impediment of creativity and innovation is leadership. We find this often when completing our CDQS analysis and providing feedback to organisations. This stifling of creativity and innovation always initially shocks managers, who in reality have developed an environment that is quite the opposite of what they think it is. Rather than consider leadership as the root of their organisation's creativity and innovation problems, they first look to employees and ask why they no longer function as they should.

Addressing the problem and allowing innovation to flourish only requires organisations to develop the right conditions for it to do so. Human factors are at the very heart of creating those conditions and improving creative performance for the benefit of both the workforce and the bottom line. ■

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