

What is a building's usability?

By Nora Johanne Klungseth & Geir K. Hansen

How can a building contribute to a business' value creation? What user qualities contribute to advancing the business' goals and what factors contribute to preventing a business from working efficiently? And not least, how should we evaluate a building's usability, or lack of usability?

Building's usability or performance level will often be related to technical, functional or operational circumstances. There has been an increasing focus in recent years on factors such as usability, adaptability and accessibility, to name some of the central elements.

A building's suitability in use, i.e. a building's usability, concerns how buildings can help organisations achieve their goals and ensure the satisfaction of their users. In other words, how can buildings contribute to efficient operations for the core business and for the support services (FM).

A building that hampers or prevents users from conducting their business in a good and effective manner can inflict greater costs than necessary on the user organisation for personnel and operations. Buildings that are not functional can restrict a business' opportunities for development and adaptation and can therefore negatively impact their competitiveness.

Usability is defined by NS-EN ISO

9241/1998 as: *"the extent, to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use..."* In simple terms, usability concerns how you and I can perform our work better by having a building that supports the work we do. A building that supports the work, rather than obstructing it.

The ability to evaluate the usability is therefore of major importance for both the owners and the contractors. It can lead to better quality for the delivered product and better administration of the buildings.

Why evaluate usability?

Traditionally, the building sector and construction research have focused on the planning and construction phases, but regarded from the perspective of the building's life, it is the usage phase that dominates, both in its duration and in the significance for the building's life cycle value and usability. How the building actually functions when it is used is therefore critical for whether or not the building is regarded as a success and whether it constitutes an asset for its owners and users. For an FM organisation, the concept of usability is relevant in relation to how one support a business. In this connection, the primary goal is to focus on the effect of what is delivered rather than what or how it is

delivered.

Buildings' usability is central in relation to how users' needs are fulfilled. The degree to which the users' needs and requirements are successfully formulated during the planning phase will influence the outcome. It is also important that this is performed and translated to physical and technological structures. The connection between requirement specifications and the result (the completed building) says something about the degree to which the goal is achieved in a building project seen from the perspective of the designers and the contractors. However, the builder and the users will primarily be concerned with the utility of the building constructed, i.e. the effect the building has in relation to the business' goals. In this connection, the building will be one of several instruments or input factors along with the personnel, organisation or technology. From this perspective, it is important to gain knowledge of the concepts, systems and solutions that are selected for a building and which produce the desired effects.

Another important reason for evaluation of usability is the major and rapid changes with regard to business and market development, the use of technology, competency and organisation that result in the constant creation of new and other requirements to the physical surroundings. Other important reasons for the evaluation of buildings are;

- Better understanding for the connection between organisation, the use of technology and physical surroundings
- A continuous adaptation and development of the building based on the business' needs and requirements
- Development of relevant support services for the business
- Experience gives feed forward when planning and constructing new buildings

A systematic evaluation of buildings in use will be an effective way to produce this knowledge, both in relation to the planning of the new building and not least for the development and change of existing buildings.

What is usability?

There are already many concepts, definitions and methods that are relevant to a building's quality, standard and condition. Most of these are associated primarily with the building as a physical object and not with its usability.

In this respect, the concept of usability is based on the ISO standard

9241-11. Here the concept of Usability is usually associated with product design and the suitability of the product from a user's perspective. In accordance with the ISO standard, a building's or a product's usability is defined on the basis of the following three factors;

- Effectiveness describes whether the user can achieve what they require with the product. Effect concerns value creation and doing the right things and must be related to a strategic level in the organisation.
- Efficiency is an expression of how long it takes to achieve the results required by the user. Efficiency is about doing things correctly, being productive, and having sufficient space, equipment and support systems.
- Satisfaction is about the user's experiences, feelings and attitude towards the product or the building.

The concept of usability relates to all aspects of the users' or company's experiences using a building and focuses on the building's suitability in relation to a given use or purpose. This means that the usability concept relates to a building's ability to support a company's commercial and professional goals, i.e. the company's value creation in a broader sense.

Both quantitative (time and money) and qualitative (quality experienced) measurements are used when companies wish to measure efficiency and effectiveness. The concept of usability is not unambiguous. It is important to point out that a building's usability will depend on one's perspective. In other words, usability will depend on quality "for whom" and "for what" and must be regarded in relation to the company's requirements. Furthermore, needs and requirements often change over time, and usability will therefore depend on the context. What is good for one user or company in a given situation may not necessarily be good for a different user or company or in a different situation.

References

- Baird et al. (1996) **Building Evaluation Techniques**. McGraw-Hill.
- Blakstad S, Hansen G. K, Knudsen W (2008). **Methods and tools for evaluation of usability in buildings**, Paper, THE European Facility Management Conference 2008 I Manchester 10th - 11th June 2008
- Hansen, G., Haugen, T. et. al.(2005) **Usability of workplaces, Nord-Trøndelag University College Nylåna, Røstad**. Trondheim, Norway. SINTEF Teknologi og samfunn and NTNU.
- Hansen and Knudsen (2006) **Usability - a matter of perspective?** The case of Nord Trøndelag University Collage. CIB W70 Trondheim International Symposium, Changing user demands on buildings. Trondheim, 12-14 June 2006.
- Klungseth, N. (2008), **Brukskvalitet: Metoder for evaluering av bygninger**, master thesis NTNU.
- Leaman, A, & Bordass, B. (2001) Assessing building performance in use: the Probe occupant surveys and their implications. In **Building Research & Information**, Volume 29, Issue 2 March 2001, pages 129 - 143.
- NS-EN ISO 9241-11 Ergonomic requirements for working with visual display terminals, VDT's, in office environments. Part 11: veiledning om brukskvalitet. 1. utgave, november 1998. Oslo, Standard Norge.
- Preiser, W. F. E., Rabinowitz, H. Z. & White, E. T. (1987) **Post Occupancy Evaluation**, Van Nostrand Reinhold company.

Nora Johanne Klungseth, MSc
Facility Management. PHD
student NTNU

Geir K. Hansen, associate
professor and head of department
at the Department of
Architectural Design and
Management, Faculty of
Architecture and Fine Art
Norwegian University of Science
and Technology (NTNU). Head
of programme for the master
programme in building
development and administration,
NTNU.