

OPEN AND FLEXIBLE WORK ENVIRONMENTS: DO THEY ENHANCE PRODUCTIVITY?

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ABSTRACT

The user assessment of an open and flexible work environment presented in this paper shows that even though open and flexible work environments according to users support objectives like communication, collaboration, knowledge sharing and work contentment, such environments according to the users do not support individual productivity, creativity and quality of the work. The paper presents possible explanations for these findings related to both work pattern, space related deficiencies, and cultural factors. The paper also presents ways to improve space related, as well as human and organisational performance.

KEYWORDS workplace management, workplace performance assessment, productivity

INTRODUCTION

In September 2002 Telenor, Norway's largest telecom company, opened their new headquarter at Fornebu, the site of Oslo's earlier airport. The new buildings contain 130.000 m² of floor-space, of which 100.000 m² is office space. Telenor co-located approximately 6000 employees from 40 different locations in the Oslo region to Fornebu.

The headquarter is designed by three coadjutant architectural firms – NBBJ Architects, HUS Architects and PK Architects - who won the initial design competition. The architecture of the place is modern and high-tech, and modern art by international well known artist are enhancing this image.

Telenor's vision for Fornebu was to create Scandinavia's most innovative work environment for the future. The building itself is Scandinavia's most adaptable and flexible office buildings. Telenor is changing frequently, and needed an agile physical and technological environment.

Two years after they moved to Fornebu, Telenor's top management wanted to know how well the new work environment contributed to the employees' well-being and productivity, and what could be done in order to improve it if necessary, and contracted SINTEF-Byggforsk (at the time of the evaluation, Byggforsk) to do the post-occupancy evaluation in the autumn of 2004.

The evaluation included an electronic survey sent to all Telenor employees at Fornebu (4700 persons), qualitative interviews with employees representatives, top and middle managers as well as HR managers, and observation. Space analysis was replaced by observation because organisational and physical change processes at Fornebu happened so frequently that updated drawings and employee numbers were not available.

The user assessments of the work environment at Fornebu are based on the survey. Among other questions, the 4700 employees were asked whether their individual experience was that

the new work environment enhanced or restrained the following organisational objectives (the response rate was 52%, which is customary for this kind of survey):

- Productivity
- Work contentment
- Work quality
- Work creativity
- Communication and collaboration within own business unit
- Communication and collaboration across business units
- Knowledge sharing

This paper presents the results of the user assessment, that is, whether the new work environment at Fornebu enhances or restrains the objectives listed above.

Whether work environments like Telenor's are contributing to organisational productivity are one of the most asked questions in organisations introducing such work environments. In this paper we will therefore focus on this question.

WORKPLACE PERFORMANCE ASSESSMENT

The starting point for any workspace performance assessment according to Becker (2004), is differentiating among three kinds of organisational performance:

- *facility performance*; that is efficiency measures involving cost, speed, utilisation
- *human performance*; that is behaviours and attitudes believed or demonstrated to contribute to key organisational goals such as speed of delivery or quality of service
- *corporate performance*; that is outcomes such as number of media mentions in national press or potential client visits that enhance the firm's brand and strengthen its client relationships

As Becker says, in the best organisations all these forms of organisational performance overlap and reinforce each other.

What Telenor aspires for is exactly this: that the three main elements constituting their new work environment - space, technology and work patterns – shall enhance both facility, human and corporate performance and contribute in a positive way to organisational value creation in a broad sense.

The demand for performance metrics is shaped by four purposes according to Becker:

- justifying a new 'innovative' program
- preventing a new program from being developed and implemented
- protecting individual and corporate reputations
- continuous improvement

For Telenor, two of the purposes seemed equally important: continuous improvement and justifying their new innovative work environment.

The assessment was a summative and not a formative assessment. A formative assessment would have been closer to Telenor's purpose of continuous improvement, but a formative

assessment was not what they wanted. However, Telenor did use the performance assessment results to improve the space and the technology platform.

THE WORK ENVIRONMENT

The new work environment consists of three main elements, as is illustrated in Figure 1.

- *Open and flexible work spaces* – spaces with 32-36 workstations, a formal meeting room, cells for telephone calls, conversations or small meetings, a kitchen, informal space and clean desk policy
- *A new communication and information technology platform* – lap-top and mobile phones for all employees, identical soft ware for all, wireless network
- *New and flexible work patterns* - team- and project work, flexible work-hours and – places

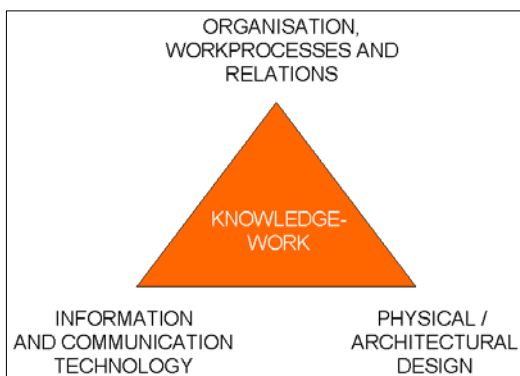


Figure 1. Work environment model (KUNNEarbeidsplassen/KNOWLEDGEworkplace 2003)

In the beginning, Telenor planned to have 30% cellular offices and 70% open and flexible areas. During the planning process they decided on 100% open and flexible areas. Telenor's CEO was a major driving force behind this decision. His objective was to create Scandinavia's most innovative and modern workplace. He also understood that Telenor needed functional flexibility and created Scandinavia's most adaptable and flexible office building.

The Telenor headquarter contains 130.000 m² of which 100.000 m² are office space and 30.000 m² are common space like restaurants, information and exhibition space, auditoriums and seminar spaces, a gym etc. The office space is subdivided into 200 workspace units which can accommodate 32 -36 workstations as well as support facilities.

Before moving to their new headquarter Telenor prepared the organisation for the new workplace environment. The user participation process was extensive, as was training and piloting. However, after they moved, Telenor dissolved the 'change and management support organisation' that had been responsible for the user participation and change processes.

After Telenor moved into their new headquarter, several major organisational changes have been implemented. Approximately ¼ of the employees that moved into the new headquarter have been given notice, and more is to come. Telenor has reduced their work space with ¼

and leased the redundant space to other companies. Several reorganisations each year mean that people and units have been moved from their original areas in the buildings to other areas. The adaptability and flexibility of the buildings therefore have proved to be a wise investment for Telenor, because it makes physical changes due to reorganisation possible and fairly easy to do.

THE USER ASSESSMENT RESULTS

The employees were asked to assess whether their new work environment enhanced or restrained the following objectives that Telenor had wanted to achieve at Fornebu:

- Productivity
- Work contentment
- Work quality
- Work creativity
- Communication and collaboration within own business unit
- Communication and collaboration across business units
- Knowledge sharing

The answers were given separately related to the new work space, the technology platform and the new work patterns. The respondents could choose between answering the work space (or the technology platform or the new work patterns) enhances each objective or that it restrains each objective. They could also answer I don't know. The results are visualised in Figures 2, 3 and 4.

What the columns show is the 'positive obliquity' in the users' assessments. The % answers 'I don't know' are extracted from the total. Then the % negative answers (f.ex. the work space restrains productivity) are subtracted from the % positive answers (f.ex. the work space enhances productivity) and the resulting % shown as the column.

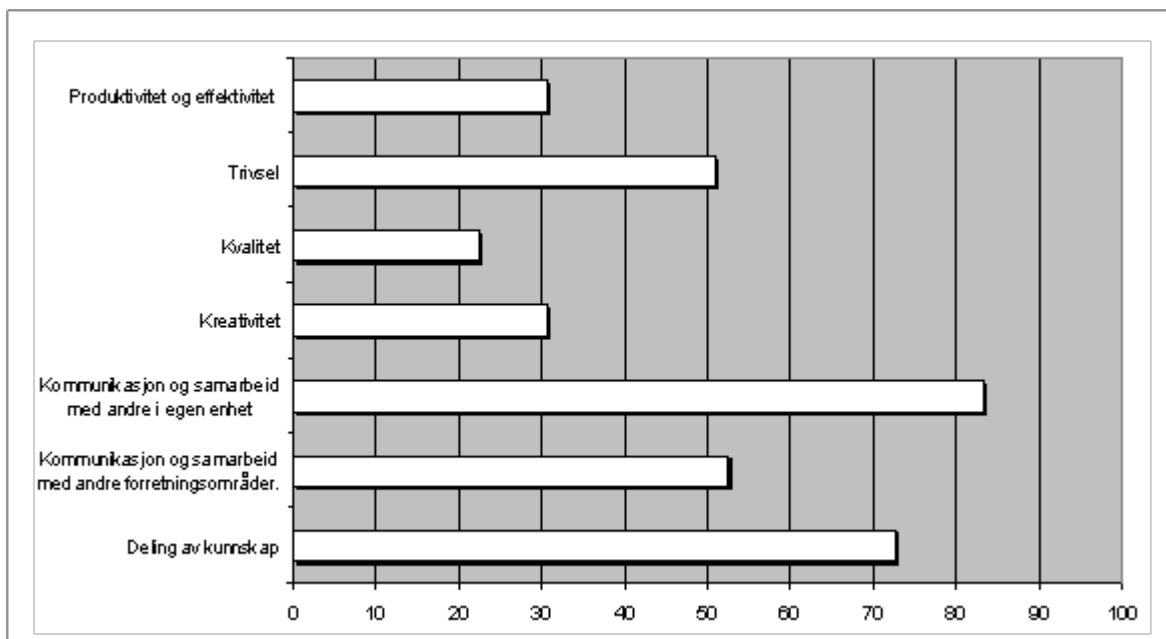


Figure 2. Aggregate majority assessment of the new and flexible *work space* in relation to objectives (in Norwegian, but same sequence as in English text above)

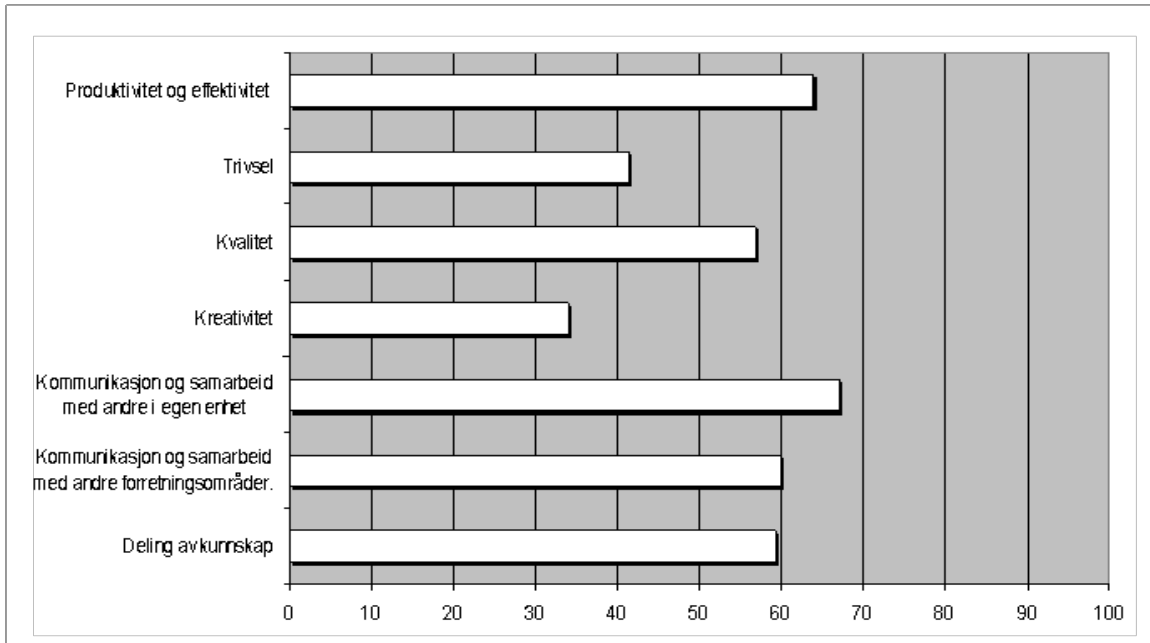


Figure 3. Aggregate majority assessment of the new *information and communication technology platform* in relation to objectives (in Norwegian, but same sequence as in English text above)

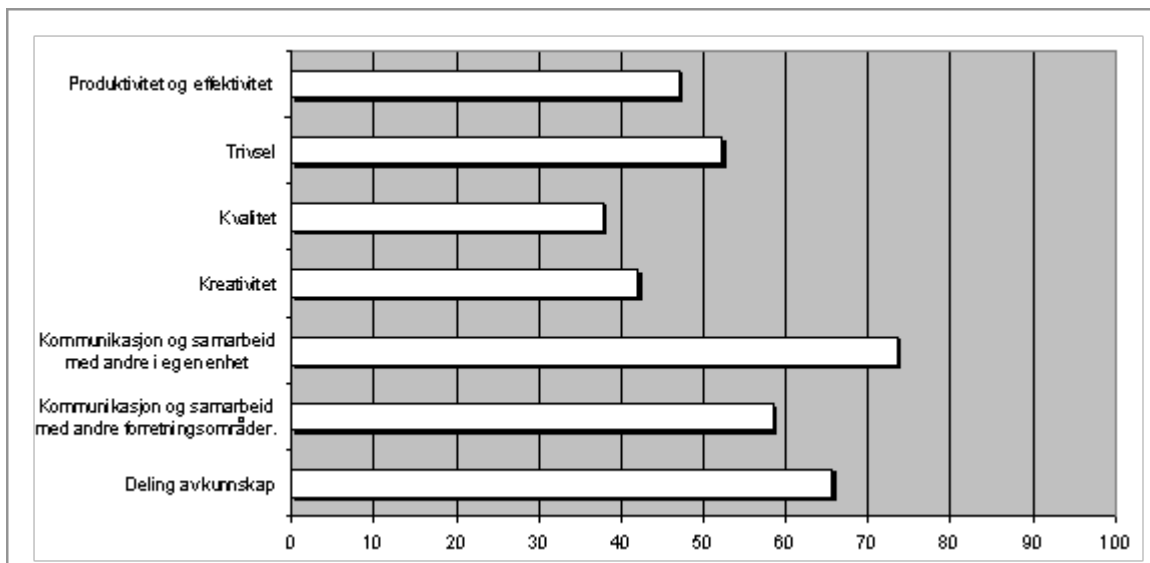


Figure 4. Aggregate majority assessment of the new and flexible *work patterns* in relation to objectives (in Norwegian, but same sequence as in English text above)

The employees' assessments of the new and flexible *work space* are quite clear:

A large positive majority agree that the new and flexible *work space* enhances *communication and collaboration within their own business unit*. 89, 5% of the respondents say the work space enhances communication and co-operation, while only 6, 3% say it restrains communication and co-operation. 4, 1% answer don't know.

Almost as many agree that the new and flexible *work space* enhances *knowledge sharing*. Third come *communication and collaboration across business units*. Employee *work contentment* follows close thereafter.

The positive majority related to whether the new and flexible *work space* enhances *productivity*; *work creativity*; and *work quality* are not as large as related to the other objectives however. For example, 58, 7% perceive that the work space enhances *productivity*, while 27, 7% say that the work space restrains productivity. 13, 8% don't know.

The same pattern as observed for the work space can be observed in the users' assessments of the new and flexible *work patterns* in relation to the objectives, but the differences in the positive majority related to the objectives are less than on work space.

The users' assessments of the *technology platform* show a different picture however. Here the positive majority on *productivity* are almost as high as the largest, which is *communication and collaboration within their own business unit*. 74, 1% perceives that the technology platform enhances *productivity*, while 13, 2% perceive that it restrains productivity. 12, 8% don't know.

The positive majority related to objectives like *communication and collaboration across business units*; *knowledge sharing*; and even *work quality* is also high.

Figure 5 a and b illustrate the differences in the users' assessments of the new and flexible work space, the new technology platform and the new and flexible work patterns in relation to two of the objectives, *communication and collaboration within their own business unit* and *productivity*.

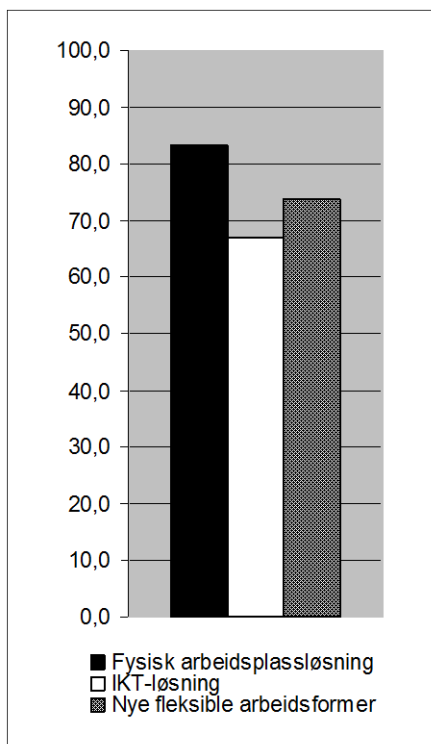


Figure 5a.

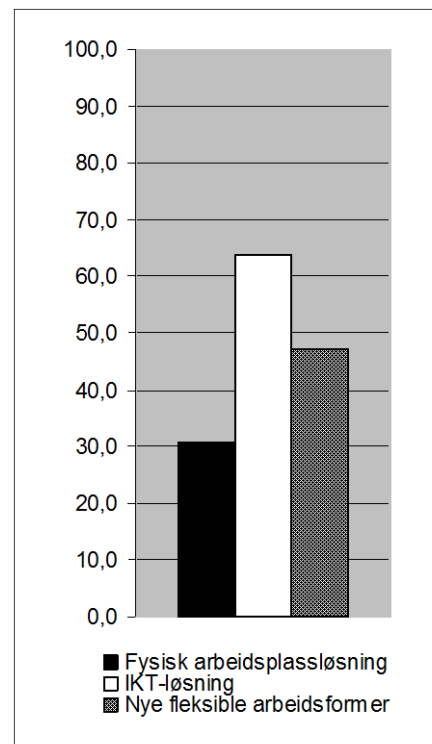


Figure 5b.

Aggregate majority assessment of physical work space (left column), technology platform (middle column) and work pattern (right column) in relation to the objectives *communication and collaboration in own business unit* (5a) and *productivity* (5b).

REGRESSION ANALYSIS

A statistical analysis of the data showed that what seemed to influence the individual respondents' assessment of the work environment most, was their own perceived share of individual concentration work versus individual work or team work that profited from or required communication or collaboration with colleagues.

Approximately 30% of the work hours were perceived by the survey respondents to belong to the category '*individual concentration work that requires a quiet environment*'. The remaining 70% of the work hours were either perceived as belonging to the category '*individual work that does not require a quiet environment*' (26%) or to the category '*work that requires communication and collaboration with colleagues*' (44%).

This composition between the three types of work did not vary much across the different business units. On a lower organisational level however, the variation was bigger. In the R&D unit in Telenor for example, the time share belonging to '*work that requires communication and collaboration with colleagues*' was 36% while the same category in some of the departments belonging to Telenor Mobile was 52-54%.

The respondents who estimated their share of concentration work to be more than 50% of their total working hours were significantly more negative than others to their new work environment. This group amounted to 13, 5% of the respondents in the survey.

Table 1 illustrates this relation. But it is obvious that there must also be other factors that influence department A's very negative assessment of whether the new and flexible work space enhances or restrains productivity.

Table 1.

	Business unit X department a	Business unit Y department b
% who perceive that the work space enhance productivity	24,1	80,0
% who perceive that the work space restrain productivity	51,9	15,0
% concentration work	39,7	27,9
% work demanding communication or collaboration with others	36,2	47,5

The analysis showed that the respondents' age, seniority, former work space solution (cellular or open team space) portion of project work was not significantly influencing the employees' assessment of the work environment.

The analysis showed that women tended to be more positive than men, but the difference was little. Managers tended to be more positive than their subjects. Employees who had assigned workstations tended to be more critical than those who had not.

The statistical analysis also showed that respondents from certain business areas and departments were considerably more negative towards the work environment than others, which can explain for example the variation shown in Table 1.

IMPROVING FACILITY PERFORMANCE

One evident finding in the users' assessments of the different elements in Telenor's work environment model is that a great majority agree that all the elements, the open and flexible work space; the technology platform; and the new and flexible work pattern all enhances communication and collaboration, both within and across business units in Telenor as well as enhancing knowledge sharing. A large majority also perceive the work environment to enhance work contentment.

Another evident finding is that the work space element in the model is assessed by considerably less than above to enhance productivity, as well as quality and creativity. The most possible explanation for this is the significance related to the amount of concentration work. Both answers to open questions in the survey, interviews and observation clearly stated that the work spaces at Fornebu are mainly designed to enhance communication, co-operation and knowledge sharing, and that people missed spaces where they could concentrate. Most of the 'quiet' cells in the work areas were ill equipped for working, with bad lighting and ventilation, and not sound proof at all.

Places for concentration work

This relates to an unsolved dilemma concerning the use of open and flexible work space. The 'quiet' cells are usually reserved for communication in order not to disturb those who work in the open work area. The open work area however is supposed to enhance communication and collaboration, which it does, according to the respondents. No wonder there's no place to concentrate! Home work may help provided employees have this opportunity. The survey shows that this is not always the case.

Our recommendation to Telenor was to establish more quiet places (quiet cells or areas) where employees could do concentration work when they needed to. Based on earlier post-occupancy evaluations we find that this is a universal issue, which can easily undermine the popularity among employees related to open and flexible work environments, if not solved in a satisfactory way.

Places for project work

Both answers to open questions in the survey, interviews and observation pointed to the fact that people participated in several projects at a time and that assigned places for project groups therefore were unnecessary to establish. A special 'project area' for example was not used much. The project participants used to meet in the formal meeting rooms to work together. In that way they avoided disturbing colleagues as well.

The formal meetings rooms were not equipped for project work however – no white boards, only smart boards (not very useful, according to the users), wireless net did not function well, too few outlets for laptops, uncomfortable and formal table and chairs etc.

We find that this also is a universal issue, very often related to interior architects' and top management's conception of what meeting rooms are meant for.

IMPROVING HUMAN AND ORGANISATIONAL PERFORMANCE

Establishing places for concentration work and equipping meeting rooms for project work is one obvious thing to do for Telenor (and others) in order to improve facility performance, and hopefully employees' assessment of the physical work space related to objectives like productivity, quality and creativity.

But human and organisational issues are likewise important if organisations want to improve their efficiency and effectiveness in new work environments like the one addressed in this paper

In his paper *Organisational dilemmas and workplace solutions* Franklin Becker (2001) refers to research by Kellner (1991) who argues that the reasons why people feel more effective in a private, closed office than in an open work space reflect deeply held values as much as simple utility. His respondents were software workers that one would think do not differ much from other knowledge workers.

'Several forces conspire to keep software work an individual activity, including: desire for autonomy; a culture that rewards individual efforts far more than team efforts; concentration of crucial application knowledge by a few individuals; desire for privacy regarding individual development efforts; the 'not invented here syndrome' and its more personal form (not invented by me); large productivity differences between individuals; political considerations of powerful individuals and of managers' says Kellner.

The question is whether these forces also are at work within the Telenor organisation. The survey results and the qualitative data indicate that this may be the case, and that it may provide an additional explanation to the low majority assessment of productivity enhancement related to the open work space at Fornebu. Our recommendation for Telenor was that in order to maximise their value creation, they should focus not only on improving facility performance but focus on human and organisational issues, such as value systems, reward systems, managerial style and work patterns.

Earlier research supports this recommendation. Research by Arge & De Paoli (2000), and Post - Occupancy Evaluations by Arge & Landstad (1999); Arge (2000); Arge & Landstad (2002), show that organisations very often move into open and flexible work environments with 'old heads and habits'. What top managers seem to not understand fully is that is without carrying out the necessary human and organisational change processes before making the move they will not succeed in getting the maximum effectiveness and efficiency from the new work environment.

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