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## **Costs and Benefits of Flexible Workspaces**

### ***Work in progress in the Netherlands***

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### **Purpose**

During the last decade, we have witnessed the introduction of non-territorial offices with desk sharing and desk rotation linked to different job functions and working processes. This paper discusses the motives behind the application of these new concepts, potential costs and benefits and data on accommodation costs.

### **Design/methodology/approach**

A literature review, interviews with experts, and case studies of new offices.

### **Findings**

A framework of potential costs and benefits is presented and illustrated by data from cost analyses and Post-Occupancy Evaluations of new offices.

### **Practical implications**

The author advocates the creation of an integral framework of (potential) costs and benefits, structured according to the principles of the Balanced Score Card. This may help decision makers to set priorities in objectives and to anticipate on effects of interventions in office accommodation.

### **Research limitations**

Empirical data on costs and benefits of innovative workplace design are scarce. The framework according to the Balanced Score Card should be explored further by interviewing experts from different organisations.

### **Originality/value**

The integral framework is new. The conceptual framework and data from empirical research may support decision-making.

**Keywords** workplace innovation, facilities, costs, benefits  
Research paper

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## Introduction

Expectations about workplace innovation are high. By sharing different types of workspace for different kinds of office activities, organisations seek to gain:

- 1) a more efficient use of space and other facilities (input);
- 2) a better performance i.e. a higher productivity (output);
- 3) the same or preferably higher user satisfaction;
- 4) a positive image in the eyes of their clients
- 5) increased flexibility, and as a consequence a reduction in disruption time and reduced annoyance arising from changes in an organisation (e.g. growth, downsizing, changes in personnel)
- 6) better use of resources in the form of space savings, reduced energy consumption, less use of building materials, and lower accommodation costs

Working remotely from the main office may reduce the travel requirements of the working population, thereby reducing traffic congestion and energy use. But there may be risks, too. Having to give up one's personal desk contradicts universal psychological needs such as expression of status, personalization of the workspace, privacy and territoriality. This may lead to resistance among the users. It is not clear in advance how the various stakeholders will balance the costs and benefits of new ways of working and alternative offices. Shareholders may give priority to cost reduction and higher profits. For managers, efficiency and flexibility may be the most important factors. Users not only attach value to whether their efforts are realised efficiently and effectively. They also want to gain pleasure from their work as well. From a review of literature and Post-Occupancy Evaluations of various innovative offices in the Netherlands, it has become clear that organisations seldom discuss the various costs and benefits, either *ex ante* or *ex post* (Van der Voordt, 2003). An integral consideration of advantages and disadvantages, needed to steer sound decision-making on investments into new office concepts, is lacking. In this paper, we will try to give an overview of potential costs and benefits, based on a review of literature, discussions with participants in workshops and conferences on workplace innovations, and strong involvement in different POE's. Then, we will discuss some cost analyses of shared offices and effects on productivity and user satisfaction. Finally, we will make some concluding remarks.

### Costs and benefits

Costs may be interpreted as ‘sacrifices’. In a narrow sense, this means money, but in a wider sense, it means all sacrifices that are necessary to introduce, use, and maintain flexible workspaces. From an economic point of view, the concept encompasses the input factors *capital* (investing in money and in physical means, such as accommodation and ICT) and *labour* (investing in people and time). In everyday language, the term ‘costs’ can also be used for non-monetary *negative effects*, e.g., resistance to a new office concept or loss in productivity. *Benefits* are seen as yields, in one sense focused on *cost savings*, but in a broader sense include all *positive effects*, such as higher productivity or greater visual appreciation. Economists mainly concern themselves with *output factors* such as productivity and the financial results of the enterprise. In the context of this paper the term ‘benefits’ is used only for non-financial yields (for example personnel become more motivated). Instead of talking about costs and benefits, the words profit and risk are used in practice, too, ‘profit’ being the general name given to all positive effects, and ‘risk’ to the chance of a negative effect and the resulting impact.

**Table 1: Associations with costs and benefits**

<b>Costs</b>	<b>Benefits</b>
Sacrifices	Yields
Investments in employment and capital	Better company results
Negative effects	Positive effects
Risks	Profit
Additional costs	Lower costs, negative costs, cost savings

Another important difference is the two-part division into *monetary* costs and benefits, expressed in money, and in *non-monetary*, non-material, costs and benefits. We can also talk of monetary costs, in so far as non-monetary costs and benefits (e.g. dissatisfaction translated into the costs of absenteeism, advertising costs to attract new employees) can be converted into money. It is not possible, however, to convert all costs and benefits into money, as is the case, for example, with the effects on the natural environment.

**Table 2: Examples of monetary and non-monetary costs and benefits**

	<i>Costs</i>	<i>Benefits</i>
<i>Monetary</i>	Costs of advisors; costs of office management; investments in accommodation and ICT; advertising costs to attract new personnel, costs of training personnel	Lower rent due to fewer workspaces and a smaller overall working area (m <sup>2</sup> ); lower energy costs due to energy-saving systems; positive company results (e.g. higher turnover, lower market price)
<i>Non-monetary</i>	Resistance to losing one's own workspace; negative image; loss of status; a clean, impersonal environment	Positive image created by a modern, professional appearance; becoming more well-known; greater dynamics

Finally, a differentiation can be made between the *direct* and *indirect* costs and benefits of workplace innovation. For instance, when employees have to reserve their flexible workspace in advance, these extra transaction costs for office management represent direct costs. Examples of indirect costs are the potential risk of teleworking that employees are becoming less informed, or the impact of poor training that causes employees to take longer, thus undermining productivity. The effect of workplace innovation would thus follow the sequence:

working at a distance from the base office -> less information -> delays in the work process -> lower productivity.

A survey of the literature on workplace innovation reveals that a lot has been written, mainly about the alleged benefits. Much less has been written about the costs and risks (e.g. Balkin et al, 2001; Beard et al, 2000; Becker and Steele, 1994; Duffy, 1996; Worthington et al, 1997). There is no comprehensive overview of potential costs and benefits, although various initiatives have been made in this direction (Van der Voordt and Negen, 2001; Hagarty and Wilson, 2002; Kaczmarczyk and Morris, 2002). Based on a study of the literature, we arrive at the following overview of the costs and benefits of the primary process,

additional and reduced facilitation costs and company results. Teleworking is excluded from the analysis.

### **a. The primary process**

#### *Potential costs*

- Loss in productivity due to distractions and problems in supporting working environments for concentrated working.
- Loss in productivity because of excessive noise.
- Loss of productivity due to loss of productive time through repeated log-ins and search for a free place.
- Loss of productivity because of employee resistance and reduced morale.
- Reduced work satisfaction because of loss of status, privacy, territory and identity.
- Difficulty in replacing personnel who may leave because of loss of status, privacy, territory and identity.

#### *Potential benefits*

- Should act as a catalyst for renewal (more flexible, more creative, more dynamic).
- Should generate greater work satisfaction due to freedom of choice and autonomy, a high-quality layout and a higher level of health and well-being.
- Should result in higher productivity (working more effectively and efficiently) because of better communication and transfer of information, improved availability by telephone and electronically, a higher capacity to solve problems both for the organisation as a whole and the individual employees, a more flexible use of employees and less absenteeism.
- Should be easier to attract and retain highly qualified, and difficult-to-find personnel.
- Should be easier to attract and retain clients (positive image, greater client satisfaction by working more on the client's premises, improved accessibility, better service, less time between product/service conception and its introduction on the market).

## **b. Costs of facilities (accommodation, IT, services)**

### *Potential additional costs*

- Renovation costs
- Finishing and design (ergonomically sound furniture; face lifted dividing walls, floors and ceilings; coffee corners, clubs, and seating)
- Advanced ICT (mobile telephones, laptops, internet, digital filing systems)
- Adaptation of existing installations
- The costs of renting and furnishing external working areas (e.g. teleworking areas, homeworking areas, and flex areas in a hotel or satellite office)
- Implementation costs of advisors, holding meetings and workshops, setting up pilot projects with provisional layouts, product development, training.
- Additional office management e.g. for reserving working areas or the maintenance of central and digital archives
- Additional cleaning (large areas of glass, intensive use of flexible areas)

### *Potential reduced costs*

- Fewer working-area bases
- Fewer square meters of floor space
- Less building material
- Lower energy and maintenance costs
- Lower rent or lower depreciation costs
- Lower internal removal costs because of the more flexible office design
- Lower travel costs because of teleworking.

## **c. The company's financial result**

### *Indicators of potential higher and lower profits*

- Shareholder Value (SV), Economic Value Added (EVA), Cash Value Added (CVA), Market Value (MV)
- Liquidity, solvability and rentability
- 'Return on investments' and 'return on net assets'.

- The market value of owned property (if included on the balance sheet).
- Market share
- Turnover, speed of turnover and net profit.

### **Taking a closer look at facilitation costs**

There are three possible ways of measuring the effects of workplace innovation on facilitation costs (Van der Voordt and Negen, 2001):

- *Project analyses.* An analysis in retrospect of the costs of innovative and traditional office layouts gives an insight into the possible additional and reduced costs of each innovation.
- *Design studies.* By calculating alternative layouts - traditional and innovative - for a fictitious organisation, the cost consequences of each choice are envisaged at the programming and design phases.
- *Sensitivity analyses.* By re-calculating with other assumptions about the organisation, and data about costs, insight can be gained into the effect of a range of variables on possible additional and reduced costs.

From the few investigations in the Netherlands into the effect of office innovation on facilitation costs, a conflicting picture emerges. On the basis of case studies carried out at Interpolis in Tilburg, and Andersen Consulting, in Amsterdam, Croon (1998) comes to the conclusion that the reduction in costs per employee by introducing shared workspaces can rise to 60 %, depending on the rental payments for the office premises. Based on a case study at the Cascade building in Groningen, Troost (2000) maintains that gains from saving space are often lost due to higher investments in IT, more expensive furniture, renovation costs, and fees for advisors and process guidance. The turning point at which the benefits outweigh the costs is dependent upon the periods of depreciation and the level of the rent. The turning point is achieved earlier if the rents are high. It was found that, for rentals of €110 per m<sup>2</sup> of the floor area let excluding VAT, and a period of depreciation of 10 years for fixed furniture and 5 years for moveable furniture, to achieve a positive result, at least a 24 % reduction in space was necessary. If the rental was €330 per m<sup>2</sup>, only a 9 % reduction in space would be necessary to compensate for the additional costs.



Flexible working is often introduced to assimilate growth in an organisation, within existing accommodation. Project analyses expose large differences in the costs of introducing flexible layouts and the hiring of extra square meters of space or moving to larger premises (Van der Voordt and Negen, 2001; Van der Voordt and Diemel, 2001). As an illustration, here are two examples.

*Example 1* is a software company that is considering moving to another building. The present 'turn-key' type of completion includes wall-to-wall carpeting, system dividing walls, system ceilings, hollow skirting boards, pantry and sun blinds. The project developer himself is investing in cable work. The space is sufficient to accommodate 25 employees in office units. The company may grow to 50 employees. An investigation has been carried out into what the consequences for costs would be if this growth is assimilated within the 704 m<sup>2</sup> available, by introducing flexible working, as opposed to assimilating the growth by retaining fixed working spaces. In that case, 646 extra square meters of space would have to be rented. Investment costs are calculated on the basis of actual costs and cost estimates. The periods of depreciation are derived from a reference project. The rental costs are derived from the letting contract. From cost analyses, it can be seen that the *innovative* investment costs per employee work out at 12 % lower than *traditional* investment costs. The costs per workspace are 38 % higher than in the traditional variant. The difference is as much as 70 % per square meter of the gross floor area. The most important explanation is that, for the innovative variant, additional costs have to be made for moving interior dividing walls, for ICT, and for fees in payment for process guidance. These costs are spread over fewer workplaces and fewer square meters of space. The exploitation costs per employee work out 32 % lower for the innovative variant than for the traditional variant, where additional square meters of space need to be rented.

*Example 2* is the regional office of the ABN AMRO bank in Breda. It was found that the investment costs per employee for the innovative variant would be 9 % higher than for a (not carried out) traditional variant. The additional costs can mostly be accounted for in high implementation and layout costs. A lot of money

has been invested in ICT. Part of the furniture was specially designed for this project. Flexible dividing walls and expensive ceilings (because of the high acoustic requirements, integrated with air conditioning) were also important cost posts here. Additional costs exceed cost reductions for the body of the building and for installations. Because, in the innovative variant, no extra square meters need to be rented, the exploitation expenses per employee work out, on balance, to be 17 % lower.

### **A wide range of cost ratios**

The enormous range of cost differences between innovative and traditional office layouts brings into question the reliability of the cost figures. Collecting data on costs requires considerable effort. Because of the care with which the data from analysed projects are collected, we are confident in suggesting that at least the *comparison* between the costs of innovative offices and those of traditional ones are reliable. A plausible explanation for the different outcomes is the effect of the various choices and the assumptions that have been made. In one of the projects, it was discovered that the difference in investment costs between traditional and innovative office layouts decreased from +72 % to +32 % due to a cleverer choice of installations. Other variables that appear to have a great influence on the cost comparison of an innovative and a traditional office concept for the same organisation are namely:

- *Space reduction*. The possibility of sharing workspaces and as a consequence the 'sharing ratio' (the ratio between the number of people and the number of desks) is strongly dependent on the percentage of part-timers and the internal and external mobility of personnel.
- *Rent level*. If the level of the rent is higher, the advantages of reducing space will increase.
- *Quality level*. Attractive furniture, beautiful carpeting, etc frequently compensate the loss of one's own workspace. Other companies decide against these facilities, whereby the cost/benefit ratio between the innovative and traditional systems becomes more favourable.
- The *periods of depreciation* used. If the additional costs of, for example, more expensive furniture are written-off quickly, this will be reflected in extra high exploitation costs.

- *Development and implementation costs.* Because little is known about flexible workspaces and the resistance to giving up one's own space, it is necessary to give more time and attention to these factors. Often, new procedures and instruments have to be developed. However, as more experience is built up with innovative projects, the expectation is that development costs will decrease substantially.
- *Service costs.* In a few project analyses, where there is lack of information, it is assumed that there is no difference in the service costs of the innovative and traditional variants. Other assumptions (e.g. that there will be additional costs because of all the glass used and the extra maintenance of expensive floor coverings) sketch a different picture of the costs involved.
- *Mutation costs.* The supposition in flexible working is that there will be savings on internal removal costs, because this concept is more easily able to assimilate organisational changes without renovations being necessary. However, the investigated projects had no available information on this.

### **Non-monetary costs and benefits**

A one-sided focus on reduction of facilitation costs is risky. If flexible workspaces induce to a lower user satisfaction, a worsened organisational performance, or a negative image among clients, the total effect on the company's financial result may be negative. In the ABN AMRO building that we discussed before, this was not the case (Van der Voordt and Diemel, 2001). In the *ex ante* measurement (temporary accommodation in an open-plan office) only 14 percent of the employees thought that the working environment had a positive influence on productivity. After flexible working had been introduced, this percentage rose to 51 percent. The percentage who viewed it negatively dropped from 21 to 8 percent. The positive points were seen to be the possibility to move to a place reserved for concentrated work, where there were fewer distractions than before. Another positive aspect was seen to be the more efficient creation of archives. User satisfaction increased, too. In the old situation only 37% of the users were satisfied about the functionality of the work environment, whereas in the new situation this percentage rose to 69%; 83% of all users would not like to go back to the old situation. Communication did not change very much, according to the users.

But compared to the former open plan, perceived concentration and privacy increased to an average of 3.9 on a 5-point scale. People are also satisfied about the interior design and ergonomic furniture. However, other innovative projects are less successful (Vos and Van der Voordt, 2001). In an office of the Dutch Government Building Agency, the perceived productivity dropped from 7,5 to 6,5 on a ten-point scale. Older employees reacted slightly more negatively than the younger ones (6,3 compared to 6,9). The percentage of people that thought, that the working environment had a positive influence on productivity, dropped from 60% to 25%. Although 49% of the users is positive about the new flexible concept, more users than not prefer the old situation (43% versus 35%). The main complaints are: too much distraction by noise annoyance, a lack of privacy caused by the transparent environment (glass partitions or no partitions at all), a poor working IT-helpdesk, and lack of space. Teleworking was overestimated. As a consequence, the office is quite crowded, and often people have to work at a desk that was meant for short term work, such as reading or sending Emails. Most people are positive about the improved communication.

### **Towards an integral framework of costs and benefits**

The conceptual framework and data from empirical research show that decisions on workplace innovation may have a number of effects on organisations, employee satisfaction, labour productivity and facility costs, positive or negative, anticipated or unforeseen, aimed at or unexpected. In order to take optimal decisions, we would therefore recommend developing a consistent, complete, clearly classified and unambiguously formulated framework for *possible* objectives. Unambiguous terminology will make it easier to compare projects, and thereby also the results of the measurements of effects. The Balanced Score Card could perhaps be put to good use here (see Table 3, an adaptation and completion of Kaczmarczyk and Morris, 2002; Hagerty and Wilson, 2002).

Table 3: Costs and benefits allocated according to the Balanced Score Card

<p><b>Client Perspective</b></p> <p>Customer Satisfaction  Customer commitment  Rate of customer retention  Performance against customer standards  Positive market profile  Contribution to public policy  Contribution to societal priorities</p> <p><i>Tools e.g. satisfaction survey, best practices, benchmarking</i></p>	<p><b>Financial Perspective</b></p> <p>Accommodation Usage / Vacancy Rates  Costs of implementation  Investment costs  Energy costs  Maintenance costs  Overhead costs  Total operating costs  Travelling costs  Cost of leased vs. owned inventory  Return on Investment  Sustainable Development Objectives  Partnerships</p> <p><i>Tools e.g. project analyses, design analyses, sensitivity analyses, benchmarking, Cost per Person Model, Energy management program, maintenance program</i></p>
<p><b>Internal Business Process Perspective</b></p> <p>Staff Satisfaction, health and safety  Improved communication  Improved concentration  Higher productivity  Cycle time for core processes  Performance against corporate standards  Styles of management and leadership  Age distribution  Staff turnover  Absenteeism</p> <p><i>Tools e.g. pilots, satisfaction survey, observations, time measurement, analysis of staff characteristics, productivity payback model</i></p>	<p><b>Learning and Growth Perspective</b></p> <p>Employee motivation  Improved flexibility of staff  Knowledge and skills of employees  Training investment  Application of advanced technology</p> <p><i>Tools e.g. knowledge management, training, skills forecast plan, employee development plan</i></p>

## **Concluding remarks**

Our research has shown that the objectives of workplace innovation are expressed in very diverse ways and on different levels of abstraction. Where one person talks about improving the performance of an organisation, another focuses on improving effectiveness, increasing productivity, or providing optimal support for new ways of working. The term 'cost reduction' in some contexts is assumed to mean 'working more efficiently' and elsewhere as using fewer square meters or reducing the exploitation costs, often paying insufficient attention to the investments required. It does not matter too much that organisations formulate their aims in different ways. The question that emerges is whether organisations are always *aware* of the implications of their choices and whether they have a clear picture of *all* potential costs and benefits. The proposed framework can help those involved to set priorities in objectives, to anticipate on potential effects, and to make rational choices when discussing their own objectives. Furthermore, we may conclude that there is a strong need for more empirical data and theoretical reflection on costs and benefits. Up until now only a few scientific POE's have been executed in the area of non-territorial offices. Integral evaluations including all kind of objectives and actual costs and benefits are lacking at all. Recently the Center for People and Buildings in Delft started a project in order to develop an evaluation toolkit, supported by a series of case studies (Volker and Van der Voordt, 2004). As such we hope to continue in contributing to a better and more complete understanding of optimal physical conditions for new ways of working.

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