Technical note prepared by SAFEWORK concerning open-plan offices

This technical note has been prepared based on a request by H. Hofmeijer, FACILITIES to M. Tomei, PROTRAV. We were asked if, over the past years, the ILO had conducted any studies assessing the pros and cons of open spaces vs individual offices or whether we could recommend good-quality studies on this subject carried out by any other credible institution. In recent years, the ILO has not conducted studies on the matter. Safework considered that it was necessary not only to share relevant technical literature but also to assess it and provide technical guidance.

This note was prepared on the basis of a limited search and assessment of scientific literature from 1966 to 2012; forty-two (42) scientific articles. The databases used were: ILO CISDOC, ILO LabourDoc, Google Scholar Scopus, Medline and Psychinfo. The Keywords used were: open plan offices and open space offices. A detailed assessment of the articles, the abstracts and the links to the relevant articles are attached in Annex 2. A table with the main findings is attached as Annex 1.

Background: Open space offices (open plan offices), were introduced first in the 1950s. Since then, there has been debate on the pros and cons. Open plan office settings were considered initially to offer cost savings through a reduction in space required while enabling increased productivity through open access. They were originally designed for people to move around and interact freely to promote creative thinking and better problem solving. It was also thought that internal communication would improve. There is no strong evidence on these benefits; adequate empirical investigation is still lacking1.

A global pool of research assess the effects of this office design, concluding that the switch to open-space offices has led to lower productivity and higher stress on workers. Most of the studies found refer to their adverse effects in staff performance and well-being. In 90 per cent of the research assessed, the outcome of working in an open-space office was seen as negative, causing high levels of stress, mental workload, poor performance, conflict, high blood pressure, lower job satisfaction and internal motivation and a high staff turnover.

Some researchers claim that changes to open space will continue for those businesses that have a strong component of team work and look into saving costs and implementing scale economies into their companies. Most of the studies carried out concern business and private enterprises providing services; a few have been undertaken in public settings.

Job satisfaction: Professionals who specialize in creative work tend to adapt better to an open space environment, whereas those who need to do a more intellectual type of work which require concentration would perform better in a more closed setting.

In certain studies, clerical staff saw their work as undemanding and reacted less negatively to these arrangements than managerial and technical staff; however, when there are problems of communication between clerical staff, it could become a source of conflict.

In open offices where workers were banned from personalizing their desks, this also reduced productivity by 15 per cent, because staff felt less comfortable in their surroundings. Workers responded better if they have been allowed to enrich their space with their own belongings; this increased their well-being by 32 per cent and their productivity by 15 per cent. Workers in open-space offices who were more satisfied with their environments were also more satisfied with their jobs, suggesting a role for the organizational culture in well-being.

Noise, thermal comfort and air quality: Some researchers found that the constant noise and lack of privacy disrupted brain activity and impaired concentration. Even though a person may not be aware at the time, the brain responds to distractions. A number of studies showed that mutual disturbance easily occurs in open space offices with many people working in the same area. The high level of noise caused workers to lose concentration, also leading to low productivity. The open area may encourage conversation at a distance; people may move around the whole area at random creating visual and audible distractions. Telephones

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1 See reviewed technical literature in Annex 2
ringing (mobile or land line) and sitting too close to someone, each time their phone rings are also a distraction and a source of irritation. There can be low frequency disturbance from ventilation systems and external noise as with road traffic. Thermal discomfort and poor air quality are also frequent; and there is an increased risk of illnesses, such as influenza which can be passed around more rapidly.

Privacy: Within an open plan space, the type of workspace partition used may have an effect on communication and privacy. Everyone can see what you are doing on the computer or hear what you are saying on the phone, and there is a feeling of insecurity. There is also an impact in emotions and identity, a loss of individual privacy and personal space demarcation, and of control of the person on their work. The age, sociability and seniority of the staff also play a role in how well they adapt to change. Research also showed that most workers moving from a private office to an open plan workstation perceive a loss of status and benefits.

Forcing people to work in open spaces all day, regardless of their task profile and the effect of noise on them, is costing businesses billions in lost productivity, health and well-being to employers, workers and society through stress, fatigue, restricted and impaired sociability.

Evidence shows that the modification of the physical environment, allowing for the proximity between people does not necessarily contributes to promote interaction, creativity or productivity. The loss in productivity is a hidden cost with a high impact and is directly linked to the organization of work, the redesigning of work processes, job content and tasks; the individual differences and the personality profiles of people also need to be taken into account. The main point is that open-plan spaces are not suitable for all types of jobs within all the different areas of an organization.

Constraints for the renovation of the ILO building:

According to the team of Architects responsible for the renovation:

- The structure of the building cannot be changed (support structures, windows, toilets, etc.);
- The original design was made on the basis of # of people and individual modules;
- The heating and cooling system and the lighting in relation to open space would need to be assessed;
- They still do not know if open space is more expensive than the present setting;
- Modern/new furniture may be necessary to adapt to open space design;
- Glass walls have security constraints (fire/break resistance);
- Special measures for concentration of printers and photocopy machines for collective use would be necessary (noise/indoor chemical pollutants/allergenic agents VS ventilation/air quality).

Recommendations

A global picture of the situation would allow for an informed decision concerning the choices to be made for the renovation of the Office. It should include the consideration of the circumstances under which the renovation takes place:

a) transition to a new Director-General and changes in work organization and labour relations (changes in the organizational structure, working methods, relations with the field structure, etc.);

b) the stress survey undertaken by the Staff Union that provided an assessment of the current emotional and mental situation of the staff showing high levels of stress, burnout and demotivation which may translate into conflict and violence, if change is not managed adequately;

c) the physical space cannot be the only aspect to be taken into consideration. Any modification of space should include an adequate management of change.

As team work is currently not part of the organizational culture of the ILO, simply placing workers in an open space designed for collaboration, will not produce the best performance and productivity expected by the new DG. Therefore, any planning of the physical/environmental space should go hand in hand with a reorganization of the way we work and consultation with the staff on their views on the matter.

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2 This context may have an impact on perceived uncertainty by the staff.
The following three steps are recommended: A survey to evaluate staff views previous to the change, a needs assessment based on the operational aspects of ILO’s mandate/work, and a strategy to manage change. For this purpose the following aspects need to be taken into account:

1. The response of people to the proposed survey, the identification of needs and perceptions would help to better manage change in the implementation of the measures; it would also make the staff feel their views have been taken in to account, (see Director-General’s transition team positive experience); it would avoid uncertainty, stress, conflict, and perceived lack of consideration by management. The results of staff union’s survey on stress should be also considered in this context and shared with the Steering Committee.

2. A needs assessment should be carried out taking into account: Work organization (how we produce); work content (what we produce, type of products/outputs); task design (complexity of tasks); individual differences (ergonomic design of the work post); tasks profiles in each unit, based on needs for delivery); working relations (how we relate to produce a service or a product); real available space by unit in the building, (including the hidden space “behind the scene” not used such as areas for storage and circulation of technical services); real space needed in relation to the number of people working in the building and ILO constituents visits/meetings; adaptation of space for persons with disabilities; physical/environmental constraints due to the structure of the facilities. A framework for discussion within units could be provided to assess specific needs to perform their work, (needs and expectations are different things; provide accurate information about the current situation and the constraints).

3. Request the team of architects to develop a series of possible scenarios for the redesign of the Office’s space taking into account costs, constraints, staff views and actual needs of each unit to perform their duties. This may include a combination of open space/close space depending on the units’ work organization, work content and outputs/products or services, and defining the number of persons per area of open spaces accurately.

Only after this assessment, a clear picture of the real costs involved in choosing one or the other solution will be realistic. The “hidden” costs in terms of productivity, efficiency and well-being may be quite high, when they will become evident in the delivery of our work in the future. Therefore, the information provided to the Director-General and the Governing Body should be balanced and take all of these elements into consideration to avoid that the decisions concentrate only on the costs.

4. If open-plan setting becomes the option, see this as a transition process of restructuring and change. Manage of change and progressive introduction of open space (information, communication and training, balancing communication with privacy, by combining closed and open areas, and redesign of work towards team work, (including the promotion of spontaneous interactions, support learning and mentoring). Take into consideration the need to change the organization’s culture and working practices in relation to the new working settings, (promote team work, improve communication and sharing of tasks, etc.)

5. Involve the Committee on Occupational Safety and Health (COSH)\(^3\) and Dr. Hardiman, the ILO’s Medical Adviser, in future developments concerning the renovation of the building.

Finally, keep in mind that it should not only be a matter of physical space or “image” of the Office. It is about **people working here for a common purpose**. It concerns the well-being of ILO staff in order to be more productive and more efficient as requested by the new Director-General. If done effectively, it would have positive results, will contribute to the image of the Office, to the technical excellence expected by the Director-General and to the well-being of the staff. It would be a win/win situation.

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SAFEWORK

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\(^3\) see IGDS 286
Annex 1

Technical literature assessment of open –plan offices: Main findings

Open space workplaces are closely related to:

- team work
- need of collective contact
- provision of services and
- to private sector enterprises (design, advertisement, marketing, software development, journalists) and certain public services (post)

The selection of the working space is related to:

- Work organization (how we produce)
- Work content (what we produce, type of products/outputs)
- Task design, (complexity of tasks, individual differences (ergonomic design of the work post), tasks profiles in a unit)
- Working relations (how we relate to produce a service or a product)
- Real available space
- When space is the only variable considered, it tends to fail. Some enterprises have gone back to the traditional offices after a period of adjustment due to high dissatisfaction of staff and incapacity to adapt.

Positive assumptions, not enough scientific evidence:

- Improved communication
- Collaboration community creativity
- Innovation
- Space saving (only physical aspects and ambient factors such as lighting, ventilation and temperature are taken into account)

Most research discourages it because:

- Increased disturbances of acoustic conditions (equipment noise and people’s noise, conversations, movement/traffic of people)
- Thermal discomfort (ventilation/temperature)
- Lighting
- Poor air quality
- Crowding (number of people in a certain space)

Health problem:

- Stress, fatigue, burnout
- Headaches and eye strain
- Upper respiratory tract disorders
- Psychosocial factors
  - Impaired concentration
  - Increased mental workload
  - Communication problems
  - Poor performance
  - Less productivity perceived and real
  - Decrease in job satisfaction
  - Decrease in internal motivation
  - Constraint for social relations/restricted and impaired sociability
  - Perceived personal and communication privacy
  - Personal conflict
  - Decreased confidentiality
  - Loss of personal space demarcation
  - Less control over tasks for the individual
  - Perceived loss of status and benefits
  - Less comfort
  - Depersonalization of individual space
Annex 2

Assessment of technical literature

Please find herewith a search and assessment of scientific literature from the 1966 to 2012, on the basis of which this note was prepared.

Recent studies about open-plan offices have shown a deeply criticism about this idea. Peitersen, Allerman, Kristensen and Poulsen (2006), members of the National Institute of Occupational Health of Denmark, with one of the most comprehensive studies, (compiling 2031 questionnaires), could be quite representative. They concluded that “occupants in open-plan offices are more likely to perceive thermal discomfort, poor air quality and noise, they complained more about Central Nervous System and respiratory symptoms than people in multi-person and cellular offices” (p. 392), so open-plan offices were not suited for all job types. Bodin Danielsson and Bodin (2008) found the lowest health status in medium-sized and small open plan offices, while best health records was found in cell offices and flex offices. Lowest job satisfaction was found in combi offices, followed by medium-sized open plan offices. Bridger and Brasher (2011) also suggest that open-plan offices could have a detrimental effect on mental well-being, due to a higher link between cognitive task demands and self-control demands. Other high-survey study (Veitch, Charles, Farley and Newsham, 2007), after studying 779 open-plan office occupants, concluded that “privacy/acoustics, lighting, and ventilation/temperature” were the aspects influencing job satisfaction for them, while finding an influence of environmental satisfaction in overall job satisfaction and well-being. Finally, in a highly concluding study, Peitersen, Feveile, Christensen, and Burr (2011) –from the National Research Centre for the Working Environment in Denmark-, after a 2403 employee survey, found that compared to cellular offices, occupants in 2-person offices had 50 per cent more days of sickness absence, occupants in 3-6-person offices had 36 per cent more days of sickness absence, and occupants in open-plan offices (>6 persons) had 62 per cent more days of sickness absence. However, this topic had received historically mixing findings.

Early research and mixing results

Initially, following the Kamarulzaman, Saleh, Hashim, Hashim, and Abdul-Ghani’s review (2011), authors as Brennan, Chugh, & Kline (2002) and Zeitlin, (1969) suggested that the open plan creates flexible space, allowing for a reduction in set-up and renovation times. Besides, in theory, supervision and monitoring would become easier as well as communication systems (Vischer & Jacqueline, 1989). It was also claimed that it would improve interaction between employees and morale and productivity (Bach, 1965), communication among co-workers and group sociability (Allen and Gerstberger, 1973; Hundert and Greenfield, 1969; Brookes and Kaplan, 1972).

However, early research about open-plan offices conducted in the late 1970s and 1980s also discouraged the use of this kind of office. Several studies provided support for the hypothesis that these offices were related with more adverse environmental circumstances (Hedge, 1982; Mital, Mclothlin and Faard, 1992) and increased disturbances (higher equipment noise -computers, printers, ventilation equipment-, or people’s noise -movement of people, conversation-) which lead to mental workload, poor performance, stress or fatigue (Smith-Jackson, Klein, 2009), less or equal perceived productivity (Hedge, 1982; Brennan, Chugh and Kline, 2002), communication problems, health problems (higher headaches reported, eye problems and upper respiratory-tract complaints; Hedge, 1984), decreases in job satisfaction and internal motivation (Oldham and Brass, 1979), and more constraining in creating social relationships (Van de Leemput, 1999). One of the effects more commonly pointed out were the satisfaction with privacy in former managers who occupied previously walled offices (Sundstrom, Kring and Brown, 1982; Hedge, 1982), which was based on the decrease in their confidentiality of conversation. In this line, Hedge (1982) warned that “employees who enjoyed performing managerial and technical tasks reacted more unfavourably to open-plan offices than did clerical staff, which suggest that higher level employees would react worse to open offices. Meanwhile, professionals would be affected least, according to Zalesnys and Farace (1987). According to Kamarulzaman, Saleh, Hashim, Hashim, and Abdul-Ghani (2011) open-plan offices, from the perspective of occupants, would cause noise, lack of privacy and other distractions (Evans and Johnson, 2000; Sundstrom, Town, Rice, Osborn, and Brill, 1994). Chan (1999, in Kamarulzaman, Saleh, Hashim, Hashim, and Abdul-Ghani, 2011) stated that two common factors affecting privacy are limited personal space and excessive unwanted interaction.
Brennan, Chugh and Kline (2002), in their low sample study, indicated that employee dissatisfaction of those change from traditional offices to open offices did not abate, even after an adjustment period. These findings suggested to abandon the concept of open-plan offices (Dick, Kompart, Reinartz, Schnadt, and Tossing, 1981) and advises for managing acoustic conditions were given (Smith, 1975, Staubli, 2005), even in job-settings as call centres (Chatillon, Trompette, Ottaviani and Pelletier, 2009). Privacy needs have also been related just to several facets of job satisfaction (Duval-Early and Benedict, 1992). Moreover, employees who left an open-plan office in order to go either to a low-density open-plan office or to a partitioned office experienced significant improvement in “ask privacy, communication privacy, crowding, and office satisfaction” (Oldham, 1988, p. 253). Indeed, positive consequences of this change were more effective for employees with low levels of stimulus screening or high privacy needs (Oldham, 1988).

However, when it seemed as ‘the-end-of-story’ in this area, some authors claimed that open-plan spaces would increase in the near future, as a way to save cost and to implement scale-economies within the companies (Becker, 1981), what have actually happened. In this sense, Becker (2002, 2004, 2005) states that “more open team-oriented environments support work effectiveness of individuals and teams better than do more closed environments such as cubicles”, (p. 129). Besides, the change (Rashid, Wineman and Zimrig, 2008) from an open-plan office with enclosed workspaces to other with open workspaces has been shown positive (better visibility and accessibility, increased face-to-face interaction, and improved perceived privacy, and implications in job satisfaction, commitment). Differences across positions in such aspects as perceived personal privacy, amount of work-related communication, job characteristics, and job satisfaction could be related with “symbolic meaning” that these changes have for each group of workers (Zalesny and Farace, 1987). Besides, expectations to aspects as perceived privacy interacted to produce employees’ negative reactions (Maher and von Hippel, 2005). For instance (Block and Stokes, 1989) reminded that greater satisfaction was reached in private offices, although male introverts may have performed better in non-private offices when they were conducting simple task (but not when the task was complex). Maher and von Hippel (2005) confirmed that satisfaction and performance were only reduced for “employees with poor stimulus screening or poor inhibitory ability, low perceived privacy, or complex tasks” (p. 219). Positive effects seem to be also mediated by age generation (McElroy and Morrow, 2010), and can increase the culture and work-related attitudes. Recently, some links with organizational flexibility have been done (Värlander, 2012).

Some recommendations for implementation


Arnerlöw (2007) proposes to introduce an employees’ survey previously to the change of office and monitoring it several times a year, and only after that environmental work-design changes should be altered. Finally, Brand (2008) in his review about office workspace design reminded that “any individual, group, or organizational advantages of moving from closed to open offices depend on a conceptual framework that links a number of merely interesting assumptions still lacking adequate empirical investigation (...) compelling claims of improved communication, collaboration, community, creativity, and innovation among employees in open offices have received only mixed support at best” (p. 269). In any case, he believes that “with adequate space planning, at least for one vertical market (i.e., business type: marketing), open-plan offices may harbor some organizational advantages” (p. 269). For instance, the open-plan offices design should address individual differences and task design, because he does not consider convenient to take into account only the physical components. These differences have been pointed out either for different industry sectors (in which it would be better or worse the open-plan offices) and within different areas in an organization.


Openspaces are recommended in creative jobs with need of collective contact, but it is dependent on employees’ profile (advertising agencies, graphic design companies, many professional service firms, journalism newsrooms, marketing agencies, web designers, project managers, software developers...) while they discourage this change for other positions. Modifications as an increase in the ceiling’s sound absorption
have been proposed (Marcon-Passero and Trombetta-Zannin, 2012) improved the acoustic conditions in the office under study.

However, strong criticism also was kept in academic literature to open-plan offices. In his “Open-plan Offices: Kill or Cure?” article, Leaman (1992) reminds that “economies-of-scale advantages of open-plan offices are lost when working groups have to endure uncomfortable and uncontrollable environments resulting from lack of consideration of their needs at the planning stage and from management and maintenance deficiencies thereafter” (p. 10). He just recommends to use these offices as ‘a cure’ when “there is full understanding of, and resources to provide for, all the elements of its management” (p. 10). In the International Labour Review (ILO, 1997), Baldry recognizes that in this area “soon became clear that managers’ and employees’ experience and perception of an open-plan differed markedly” (an enthusiastic support from supervisors, a rejection from employees) Morrow, McElroy, Scheibe (2012), for instance, make the following relationship: Employee perceptions of the broader work environment (perceptions of innovation and collaboration) before a physical environment change → Organizational Commitment → Reactions to office redesign. Then, depending on perceptions, each worker will have different results. In their theoretical model, Lee and Brand (2005) found that more personal control over the physical workspace (e.g., adjustment) and easy access to meeting places led to higher perceived group cohesiveness and job satisfaction when employees are working in an open-plan office.

Arnerlöw (2007) describes the problem “great number of managements may not be aware of the risks of working in an open-plan office where the ambient conditions are not satisfying the employees” (p. 1), and the risks of arise of ergonomics and health problems. Vischer (1999) analysing a fictional case shows the difficulties that can appear during the process of implementation of an open-space office:

Northern Oil is moving offices, and CEO Fritz Schumacher wants to make the most of the move in this fictional case study. He believes that adopting an open-plan work space will reinvent how the company works, not to mention cut costs. Facilities manager Sasha Pasternak also supports the open plan. Her job would be easier, and her budget would stretch further, if Northern had standardized workstations and used partitions, not walls. And she likes the way the new design flattens the organization: everyone has the same amount of space and the same ergonomically sound furniture. The new building would have more conference rooms and just-in-time work spaces for employees who worked mostly off-site. And although she knew that initial meetings between the architects and Northern employees hadn't yielded much support for open space--people were attached to their private offices--she expected that people would warm to the idea. But when the new design was unveiled, employees were less than enthusiastic. They hurled questions like, How will workers concentrate if they can't shut their office doors? How will people have confidential meetings with their boss? And why would people stay at Northern when the competition offers them private offices? There was even talk of circulating a petition refusing to move to the new space. A week later, the architect presented revised plans to the project group. The new options would add costs and reduce the amount of space savings, but offering a choice to employees might make them feel less threatened. What should the project team do?

Databases used: ILO CISDOC, ILO LabourDoc, Google Scholar Scopus, Medline y Psychinfo

Keywords: open-plan offices, open space offices


CIS 76-84 Noise control in open-plan offices. Smith T.J.B. Noise Control and Vibration Reduction, Apr. 1975, Vol.6, No.4, p.112-117. Illus. Abstract: The author offers general guidance as to the basic acoustic requirements of open-plan offices and discusses briefly the factors which affect speech intelligibility and acoustic privacy. It has been found that most people in these offices are unaware of broad-band steady-state sound at levels below 35dBA and will accept background noise levels up to approximately 45dBA. Advice is
given inter alia on the zoning and grouping of office activities and the acoustic attenuation achieved by screens.


**Workspace, Creating Environments In Organizations,** By Franklin D. Becker. Praeger, 521 Fifth Ave., New York Ny 10175; 225 Pp, 1981. Abstract: Though too academic for the taste of an ordinary reader (e.g., there are more than 214 references in its bibliography), Workspace makes an important contribution to our growing concern over productivity. Human engineering -- the working environment itself -- has rarely been so carefully weighed as a factor in raising efficiency. Becker examines spatial planning in its broader, socio-political aspect. He suggests that large-scale work-environment changes will be taking place in the near future, somewhat along the lines of Japanese considerations of democratized worker "families." If physical job settings subtly affect performance, as the author contends, then any manager whose work force is inexplicably restive or poorly integrated might nonetheless benefit from the struggle that getting through this labyrinthine essay entails.

**CIS 82-854 Health effects of work in open-plan offices.** Dick C., Kompart J., Reinartz G., Schnadt H., Tossing N. Auswirkungen der Tätigkeit in Grossraumbüros auf die Gesundheit der Beschäftigten [in German] Bundesministerium für Arbeit und Sozialordnung, Referat Presse und Information, Postfach 140280, 5300 Bonn 1, Federal Republic of Germany, 1981. 2 vols., 195 and 202p. Illus. 447 ref. Abstract: The 1st volume of this report presents the results of a literature survey and research on psychophysical effects: levelling-out of human behaviour, anonymity, restrictions on the individual's ability to modify the physical environment, profusion of sensorial impressions and hypersensitivity, imposed selection of verbal communications, discrimination related to differences in the importance attributed to different types of work, reduction in individual responsibility. From the point of view of work humanisation, the concept of open-plan offices should be abandoned. Virtually all the workers questioned (95%) rejected this system. The 2nd volume deals with the necessary physical conditions, factors affecting thermal comfort, and acoustic and lighting factors.

**Privacy and Communication in an Open-Plan Office A Case Study.** Sundstrom, Kring Herbert, y BrownEnvironment and Behavior May 1982 vol. 14 no. 3 379-392. Conclusion: Seventy employees at four job levels in a large corporation completed a questionnaire on their office environments six months before and six weeks after moving from a conventional office to an "open-plan" office. Secretarial employees and their supervisors (job level 1) moved from freestanding desks to partly enclosed workspaces. Staff specialists (job level 11) left double offices for individual, doorless enclosures. Managerial employees (job levels III and IV) left walled offices for large, doorless enclosures. Neither satisfaction with communications nor perceptions of noise changed after relocation, but satisfaction with privacy declined among former occupants of walled offices. The decrease in privacy reflected a decrease in confidentiality of conversation, as shown by the questionnaire and acoustical measurements. Implications for office design are discussed.

**The Open-Plan Office A Systematic Investigation of Employee Reactions to Their Work Environment.** Alan Hedge. Environment and Behavior September 1982 vol. 14 no. 5 519-542 Conclusion: A total of 649 employees at all job levels working in open-plan offices on each of the five floors of an office building completed an extensive questionnaire on their work and the office environment. The results showed that a variety of ambient environmental problems were present in these offices. Also, a clear relationship between job characteristics and attitudes toward the office was demonstrated. Employees who enjoyed performing managerial and technical tasks reacted more unfavourably to office conditions than did clerical staff, who generally viewed their work as undemanding. Loss of privacy and increased disturbances were consistently at the source of these negative reactions, and the interrelationship of these problems also emerged from factor analysis of the data. Although the office did create a favourable social climate, this did not offset employees' negative reactions to work conditions but rather appeared to exacerbate the problems. Consequently, no evidence was found to support the claim for improved productivity in open-plan. Finally, various areas for future research are briefly discussed.
Evidence of a relationship between office design and self-reports of ill health among office workers in the United Kingdom. Hedge, Alan, Journal of Architectural and Planning Research, Vol 1(3), Oct 1984, 163-174. Conclusion: Selected data on 1,332 employees' self-reported health problems are reported from 4 user surveys conducted in conventional, enclosed offices; non-air-conditioned open-plan offices; and air-conditioned open-plan offices. Results show a significantly higher incidence of reported headaches among staff working in open-plan offices compared with those in conventional offices. In the 2 air-conditioned open-plan offices studied, more women than men suffered from frequent headaches, eye problems, and upper respiratory-tract complaints.


Traditional versus Open Offices: A Comparison of Sociotechnical, Social Relations, and Symbolic Meaning Perspectives. Mary D Zalesny and Richard V. Farace, The Academy of Management Journal Vol. 30, No. 2 (Jun., 1987), pp. 240-259, Published by: Academy of Management Article Stable URL: http://www.jstor.org/stable/256272. Conclusions: The effects of a change in an office environment from a traditional to an open-plan design were examined for government employees occupying three types of organizational positions. Differential effects across positions for perceived personal privacy, amount of work-related communication, job characteristics, and job satisfaction supported a hypothesis based on a symbolic meaning approach to explaining employees' reactions to changes in their physical work environment. Overall, the change affected professionals least and clerical and managerial staff most.

CIS 87-1265 Open-plan offices. Multidisciplinary study Les bureaux paysagers - Etude pluridisciplinaire [in French] André G., Rousseau R., Krawsky G., Lenay M., Daviller C. 1987. Cahiers de notes documentaires - Sécurité et hygiène du travail, 3rd quarter 1987, No.128, Note No. 1639-128-87, p.385-406. Illus. 24 ref. Abstract: The study of open-plan offices was approached from two different angles: measurement of the physical environment (noise, lighting, micro-climate) and a psycho-ergonomic questionnaire survey of users. Tables are used to describe the offices studied, and to give the results of the measurements and of the questionnaire survey. The relationship between the two sets of results is assessed.

Effects of changes in workspace partitions and spatial density on employee reactions: A quasi-experiment. Oldham, Greg R. Journal of Applied Psychology, Vol 73(2), May 1988, 253-258. Conclusions: This study examined the effects of moving from an open-plan office to one of two alternative office designs: (a) an office with partitions surrounding employee work areas or (b) a low-density open-plan office with more usable space per employee. A total of 65 claims adjusters from three offices of a large insurance organization provided data at two points in time: 3 months before the office changes and 3 months after the changes. Hierarchical regression analyses and paired t tests showed that, relative to employees in a control office, employees who moved from an open-plan office to either a low-density open-plan office or to a partitioned office experienced significant improvements (p < .01) in task privacy, communication privacy, crowding, and office satisfaction. Moreover, two individual difference measures influenced significantly (p < .05) the effects of the office changes on the crowding responses. Employees who had low levels of stimulus screening or high privacy needs reported the largest decreases in perceived crowding after the office changes.

Performance and satisfaction in private versus nonprivate work settings. Block, L., and Stokes, G. Environment and Behavior 21, 3, pp. 277-297, 1989 Conclusions: Research participants were 169 introductory psychology students who were randomly placed in either private or nonprivate offices. Results indicated that greater satisfaction was expressed by those working in the private offices. In addition, people working on the complex task were more satisfied in the private setting than the nonprivate one. The social facilitation hypothesis was supported, and male introverts performed best in the nonprivate office on the simple task. Implications for organizations and for future research are discussed.

CIS 93-1691 Noise in multiple-workstation open-plan computer rooms - Measurements and annoyance. Mital A., McGlothlin J.D., Faard H.F. 1992 Journal of Human Ergology, June 1992, Vol.21, No.1, p.69-82. Illus. 25 ref. Abstract. Results of a study of noise levels in two offices with a large number of computer workstations and associated equipment (printers etc.) in both. The 10sec noise levels for all frequencies were between 53 and 62dB(A). The highest noise energy levels were at the frequency of 8,000Hz (64-73dB(A)). The nature of the work required high levels of concentration, and 50% of the workers reported in a questionnaire that the noise level was intolerable or extremely annoying. The noise annoyance was, however, not entirely due to computer equipment: movement of people, conversation and the noise of ventilation equipment were also contributing factors.

The Relationships between Privacy and Different Components of Job Satisfaction. Kimberly Duvall-Early, Department of Psychology, James Madison University, James O. Benedict, James Madison University; Environment and Behavior September 1992 vol. 24 no. 5 670-679. Abstract: The level of workspace architectural privacy has previously been found to relate to overall job satisfaction. It was hypothesized that because privacy may serve particular functions, only particular facets of job satisfaction will be related to it, both in the short term (less than 1 year) and in the long term (more than 1 year). One hundred thirty professional secretaries assessed their level of privacy and their level of job satisfaction as measured by the Minnesota Satisfaction Questionnaire. The results supported the hypotheses and showed that the environment in which one works affects some but not all facets of job satisfaction.

"Open-plan Offices: Kill or Cure?", Adrian Leaman, (1992) Facilities, Vol. 10 Iss: 6, pp.10 – 14. Abstract: The article describes how the communicational and economies-of-scale advantages of open-plan offices are lost when working groups have to endure uncomfortable and uncontrollable environments resulting from lack of consideration of their needs at the planning stage and from management and maintenance deficiencies thereafter. Concludes that facilities managers who lack the resources to run the open-plan system properly should kill it and go for shallow-depth cellular offices with simpler services; cure it only if there is full understanding of, and resources to provide for, all the elements of its management.

CIS 02-490 Workspace layout design: Physical comfort, appropriation and social interactions. L'aménagement des espaces de travail: confort physique, appropriation et interactions sociales [in French] Van de Leemput C. 1999 Médecine du travail & Ergonomie / Arbeidsgezondheidszorg & Ergonomie, 1999, Vol.XXXXVI, No.4, p.169-175. Illus. 5 ref. 02-0490.pdf [in French]. Abstract: The psychology of workspace allows the examination of the interactions between human behaviour and the structures in which people work from a new perspective. Through a historical analysis of the organization of the workspace in the technical and administrative sectors, this article reviews the interaction between changes in working organization and office layout. Workspace functionality is analysed along three dimensions: spatial layout, physical comfort and social relationships. Results show that open-space offices, with or without separations, are less functional and more constraining with respect to the establishment of social relationships. Not having a private workspace is also viewed as a negative element.

Abstract: Organisations face unprecedented pressures to do more, and better, with less. To prosper, organisations must reduce capital and operating costs and increase flexibility and adaptability, while creating a workplace that helps attract and retain the highest quality of staff and enable them to work to their fullest potential. This paper reports on a recent study of how different types of office solutions, from closed offices and cubicles to team-oriented bullpens, influence communication patterns, and how these, in turn, affect work effectiveness factors such as decision speed, organisational learning and the building of trust. The findings suggest that, contrary to conventional wisdom, more open team-oriented environments support work effectiveness of individuals and teams better than do more closed environments such as cubicles. They do this while reducing cost and increasing flexibility. Implications for office planning and design are discussed.

Conclusions: Research in open office design has shown that it is negatively related to workers’ satisfaction with their physical environment and perceived productivity. A longitudinal study was conducted within a large private organization to investigate the effects of relocating employees from traditional offices to open offices.
A measure was constructed that assessed employees’ satisfaction with the physical environment, physical stress, co-worker relations, perceived job performance, and the use of open office protocols. The sample consisted of 21 employees who completed the surveys at all three measurement intervals: prior to the move, 4 weeks after the move, and 6 months after the move. Results indicated decreased employee satisfaction with all of the dependent measures following the relocation. Moreover, the employees’ dissatisfaction did not abate, even after an adjustment period. Reasons for these findings are discussed and recommendations are presented.


Conclusions: This study examined the independent and joint influences of stimulus screening, inhibitory ability, perceived privacy and task complexity on the satisfaction and performance of employees working in open-plan offices. One hundred and nine participants from two organizations completed questionnaires and inhibitory ability measures. Performance was assessed through manager ratings. Results partially confirmed hypotheses that satisfaction and performance would be reduced for employees with poor stimulus screening or poor inhibitory ability, low perceived privacy, or complex tasks. Expectations that these factors would interact to produce employees’ negative reactions were also partially confirmed. Importantly, results verify stimulus screening as a significant determinant of employees’ reactions to the open-plan workplace. Implications for understanding employees’ attitudinal and behavioral responses to the workplace, limitations of the study, and implications for future research are discussed.


Indoor climate, psychosocial work environment and symptoms in open-plan offices. Indoor Air Volume 16, Issue 5, pages 392–401, October 2006I. Pejtersen, (National Institute of Occupational Health, Denmark), L. Allermann, T. S. Kristensen, O. M. Poulsen. Conclusions: 2031 questionnaires. Occupants in open-plan offices are more likely to perceive thermal discomfort, poor air quality and noise, they complained more about CNS and mucous membrane symptoms that people in multi-person and cellular offices. Open-plan offices may not be suited for all job types. Office size was not relevant.
A model of satisfaction with open-plan office conditions: COPE field findings. Jennifer A. Veitch, Kate E. Charles, Kelly M.J. Farley, Guy R. Newsham. *Journal of Environmental Psychology* Volume 27, Issue 3, September 2007, Pages 177–189. Conclusion: This paper describes the factor structure of an office environmental satisfaction measure and develops a model linking environmental and job satisfaction. The data was collected as part of the Cost-effective Open-Plan Environments (COPE) project, in a field study that also included local physical measurements of each participant’s workstation. The questionnaire was administered to 779 open-plan office occupants from nine government and private sector office buildings in five large Canadian and US cities. Exploratory and confirmatory factor analyses revealed that the 18-item environmental satisfaction measure formed a three-factor structure reflecting satisfaction with: privacy/acoustics, lighting, and ventilation, temperature. Structural equation modelling indicated that open-plan office occupants who were more satisfied with their environments were also more satisfied with their jobs, suggesting a role for the physical environment in organisational well-being and effectiveness.

**Open-Plan Offices the Importance of the Ambient Conditions.** Characteristics for Employee Satisfaction. Bachelor thesis. Supervisor: Margareta Paulsson, Author: Karin Arnerlöv, Cecilia Bengtsson, 2007. Abstract: The ambient conditions such as air quality, noise, music, temperature, lighting and colour, in open-plan offices and their impact on employees are important for managements to recognize because open-plan offices are becoming more and more common in Swedish companies’ office design today (Aronsson, 2005). For students, who will soon be entering the work force, it is important to understand how the characteristics of the ambient conditions can influence employee behaviour/satisfaction. To have a working knowledge of what kinds of effects the ambient conditions can have is likely to increase one’s chances of becoming a satisfied employee. An employee that is aware of the importance of creating a servicescape (the attributes of the physical surrounding) that meets its needs and desires is likely to enhance its satisfaction in the ambient conditions. A great number of managements may not be aware of the risks of working in an open-plan office where the ambient conditions are not satisfying the employees; ergonomic issues as well as heart diseases are the most serious results (Evans and Johnson, 2000, pp. 780-782). This leads to the problem formulation of this thesis: “How can management improve employee satisfaction in an open-plan office through the characteristics of a servicescape’s ambient conditions?” Four main theories are included in the Theoretical Framework to provide a deep understanding for the reader about the complexity of problems that comes with working in an open-plan office. The Bitner theory and the research compiled by Sundstrom discuss ambient conditions and their impacts on employees’ behaviour/satisfaction. Evans and Johnson’s theory discusses how stress is related to low intensity noise. The final main theory, Person-Environment Fit, upholds the importance of a servicescape that fits employees’ needs and desires. The ambient conditions influence employee behaviours in numerous ways (Davis, 1984, pp. 271) and at Sogeti’s open-plan office several ambient conditions are studied through an observation conducted during April 17th 2007 and a questionnaire with 15 closed questions. The outcomes of the observation and the questionnaire are analysed and concrete proposals are created for the Sogeti management to act upon in order to improve the characteristics of their open-plan office’s ambient conditions and thereby improve employee satisfaction. One of the concrete proposals to how Sogeti may improve the ambient conditions in their open-plan office is to introduce a survey that should be handed out to the employees three or four times a year. The purpose of the survey is to define employees’ perceptions of the different ambient conditions. Based on the outcomes from the survey, employees’ needs and desires of the servicescape, the ambient conditions’ characteristics, can be improved. Also, some examples of actions geared towards reducing the level of noise in the Sogeti open-plan office are to use ear phones when listening to music and to leave the open-plan office when conducting phone calls. The concrete proposals developed based on the Sogeti employees’ perceptions of the ambient conditions in the open-plan office are outcomes of this thesis that may serve as a tool for the Sogeti management to improve the ambient conditions of their servicescape and thereby increase employee satisfaction.

**Office Type in Relation to Health, Well-Being, and Job Satisfaction Among Employees.** Christina Bodin Danielsson, Royal Institute of Technology, christina.bodin.danielsson@bredband.net, Lennart Bodin, Environment and Behavior September 2008 vol. 40 no. 5 636-668

Conclusions: This article investigates the hypothesis that office type has an influence on workers’ health status and job satisfaction and 469 employees in seven different types, defined by their unique setup of architectural and functional features, have rated their health status and job satisfaction. Multivariate regression models were used for analysis of these outcomes, with adjustment for age, gender, job rank, and line of business. Both health status and job satisfaction differed between the seven office types. Lowest health status was found in medium-sized and small open plan offices. Best health was among employees in cell offices and flex offices. Workers in these types of offices and in shared room offices also rated the highest job satisfaction. Lowest job
satisfaction was in combi offices, followed by medium-sized open plan offices. The differences between employees could possibly be ascribed to variations in architectural and functional features of the office types.

**Office Ergonomics: A Review of Pertinent Research and Recent Developments**

**Reviews of Human Factors and Ergonomics**

October 1, 2008 4: 245-282

Abstract: Based on the available literature, it must be concluded that any individual, group, or organizational advantages of moving from closed to open offices depend on a conceptual framework that links a number of merely interesting assumptions still lacking adequate empirical investigation. What appear on the surface to be compelling claims of improved communication, collaboration, community, creativity, and innovation among employees in open offices have received only mixed support at best. Whether these potential advantages of more public work environments at group and organizational levels outweigh the documented disadvantages for individuals engaged in complex tasks largely remains to be determined. However, the results from a recent case study (Peponis et al., 2007) suggest that with adequate space planning, at least for one vertical market (i.e., business type: marketing), open-plan offices may harbor some organizational advantages. Nonetheless, the viewpoint of corporate real estate and facilities planning professionals usually guides praise for open offices (e.g., Hassanain, 2006) rather than an occupant-centered (i.e., user-centered) perspective (cf. Imrie, 2003). Based on recent evidence, it would seem that in order to mitigate their disadvantages for individual work, the design of open-plan offices should address individual differences and task design in addition to workspace considerations. Using a laboratory experiment, Forster and Lavie (2007) found that high perceptual load resulting from a person’s primary task decreased the deleterious effect of distractions on task performance—even for individuals classified as highly distractible by the Cognitive Failures Questionnaire (Broadbent, Cooper, Fitzgerald, & Parkes, 1982). Once again, a systems perspective for workplace design should be adopted that considers not only physical components of workspace design but also the individuals and groups present as well as the nature of their tasks and work processes (i.e., people, process, and place—see below under Summary and Conclusions).

**Open-plan offices: Task performance and mental workload.**

Tonya L. Smith-Jackson, Katherine W. Klein

*Journal of Environmental Psychology, Volume 29, Issue 2, June 2009, Pages 279–289*

Conclusions: Open-plan offices are equipped with barriers such as panels and bookshelves to induce the perception of a private workspace. Despite perceived privacy, irrelevant speech contributes to mental workload, poor performance, stress, and fatigue. Certain dispositional variables related to sustained attention might exacerbate the effects of speech-related noise. This study used a $3 \times 3 \times 2$ mixed factor design to determine the effects of two forms of irrelevant speech and individual differences on performance of a real-world verbal task and mental workload. The Expanded Tellegen Absorption Scale (ETAS) based upon Tellegen and Atkinson’s scale was used to assess individual differences in focused attention. The NASA Task Load Index was administered to assess mental workload. Main effects of noise were found on performance and mental workload. Irrelevant speech appeared to increase false alarms and completion rates. Workload ratings were higher in the irrelevant speech conditions. Other differences found were among High and Low Task and Imaginative Absorbers, as measured by the ETAS. Recommendations to reduce the impact of irrelevant speech and future research suggestions are provided.


Call centre operators are exposed to noise from conversations received in the headset, for which the risk should be evaluated. French regulations stipulate that these exposure levels be evaluated in the diffuse sound field (external to the ear). For this purpose, INRS uses a standardized measurement method based on an artificial head and an ear simulator. This evaluation also requires defining the duration of conversations over the course of the working day, a very variable duration depending on the functions occupied by the employees in call centres. A study by a major French telecom company has shown that these durations vary between two and three hours per day. The maximum sound exposure level in the telephone headsets of the operators was deduced from these observations to ensure conformity with the regulations. Nowadays, these levels are often set by level limiters installed at the telephone workstations. Limitation of the emission level of the headsets must be accompanied by an ambient noise check in order to guarantee the intelligibility of the conversations. This check can be done through an approach intended to improve the acoustics of the open-plan offices in which they are located. These prevention measures have demonstrated their effectiveness and are worthy of
being generalized in order to guarantee the absence of risk of hearing impairment of call centre employees. This article highlights the issues related to exposure measurement.

**Space, behavior, and environmental perception in open-plan offices: a prospective study 2009** volume 36(3) pages 432–449 doi:10.1068/b33034 Cite as: Rashid M, Wineman J, Zimring C, 2009, “Space, behavior, and environmental perception in open-plan offices: a prospective study” Environment and Planning B: Planning and Design 36(3) 432–449 Download citation data in RIS format. Mahbub Rashid, Jean Wineman, Craig Zimring. Received 9 March 2006; in revised form 20 November 2007; published online 15 December 2008. Abstract. This prospective research study was conducted at a government office which moved from an open-plan office with somewhat enclosed workspaces to another open-plan office with open workspaces. The study at the old office was conducted almost one year before the move, and the study at the new office was conducted more than one year after the move. The purpose of this study was threefold: (1) to measure and evaluate changes in patterns of accessibility and visibility due to changes in office layout, (2) to understand the effects of layout changes on observed behaviours, and (3) to determine the effects of layout changes on environmental perception. The study included the analysis of visibility and accessibility of each layout using space syntax techniques, field observations of behaviours, and questionnaire surveys of employees’ perceptions of privacy, job satisfaction, and commitment to the organization. During field observations, movement, visible co-presence (ie the number of people visible from a space), and face-to-face interaction were observed along a predefined route in each office. Thirty-five people responded to the questionnaire survey at the old office. Out of the thirty-five, only twenty-nine were available for survey at the new office. On the basis of the questionnaire survey data, three multi-item scales were constructed in order to measure perceived privacy, job satisfaction, and commitment to organization. Results indicate better visibility and accessibility, increased face-to-face interaction, and improved perceived privacy at the new office. Results also show consistent effects of space on movement, and significant positive correlations between perceived privacy, job satisfaction, and commitment to the organization. Conclusions: Outcomes associated with an office redesign aimed at decreasing workspace while enhancing perceptions of organizational culture and work-related attitudes are examined within a financial services organization. Findings show that employees assigned to the redesigned office environment report less workspace and more distractions than those who remained in a cubicle environment, but that this finding was moderated by age generation. Employees moved to the newly redesigned space reported more favourable perceptions of culture and work-related attitudes, with no age moderating effects. Taken together, results provide support for the theory that office redesign is an effective strategy for implementing organizational change.

**Employee reactions to office redesign: A naturally occurring quasi-field experiment in a multi-generational setting.** James C McElroy, Iowa State University, USA, jmcelroy@iastate.edu, Paula C Morrow, Iowa State University, USA, pmorrow@iastate.edu Human Relations May 2010 vol. 63 no. 5 609-636

Conclusions: Outcomes associated with an office redesign aimed at decreasing workspace while enhancing perceptions of organizational culture and work-related attitudes are examined within a financial services organization. Findings show that employees assigned to the redesigned office environment report less workspace and more distractions than those who remained in a cubicle environment, but that this finding was moderated by age generation. Employees moved to the newly redesigned space reported more favourable perceptions of culture and work-related attitudes, with no age moderating effects. Taken together, results provide support for the theory that office redesign is an effective strategy for implementing organizational change.

**Individual Flexibility in the Workplace. A Spatial Perspective.** Sara Värlander1. 1Stanford University, Stanford, CA, USA. Journal of Applied Behavioral Science March 2012 vol. 48 no. 1 33-61

Conclusions: During the past few decades, scholars have undertaken numerous studies to map various determinants of flexibility at various levels: organizational, group, and individual. However, limited attention has been paid to the role of context and spatiality in realizing individual flexibility. This article aims to fill this gap and seeks to inquire into links between flexibility and spatiality. More specifically, this article will explore how organizational spatial layouts affect individual flexibility as everyday work activities are undertaken in the production of services in two settings, namely, health care and financial services. The findings show that spatial layout is important to better understand and conceptualize individual and organizational flexibility. The
findings also show how spatial layout affords various and unexpected outcomes and that, layouts that unilaterally foster flexibility are difficult to achieve due to the polymorphous nature of flexibility.

**Acoustic evaluation and adjustment of an open-plan office through architectural design and noise control**


**Influencing organizational commitment through office redesign.**


**Cognitive task demands, self-control demands and the mental well-being of office workers.**


**An Overview of the Influence of Physical Office Environments towards Employees.**


**Sickness absence associated with shared and open-plan offices--a national cross sectional questionnaire survey.**


**Effects of control over office workspace on perceptions of the work environment and work outcomes.**


**Will this open space work?**


**The social construction of office space.**

Baldry (ILO, 1997) international labour reviews, 136(3).

**Web articles:**

From one side it refreshes the office and from the other side it impedes the work process. The open space office is currently the most popular form of modern office design though it is not the most ideal office solution. Before you decide to introduce this design to your office better balance the pros and cons. When beginning to plan it is important that you cluster correctly already in the first construction phases.

The positive side: An open space office brings more motivation and leads to better results in the team thanks to eye contact and communication. The units are mostly divided with movable elements and in this way are quite customizable. Nevertheless a certain private sphere can be retained. It is a fact that in open space offices people talk more frequently and through information exchange is better as in normal offices divided by walls. Open space offices seem to be more animated and well arranged.

The negative side: It is possible that in a large office such design may lead to visual monotony. This problem is easily solved by using individual colours. A certain sense of belonging is additionally cultivated when different departments are brought in one office. Further problems may occur in the seating hierarchy because of the certain amount of coveted window seats. The nearer the workplace is to the building centre, the more unpopular is it.

Important to note:

- PC peripheral devices cause heat increase in the work environment and a higher noise level which is often found as disturbing. A possible solution for the problem: bringing all printers, scanners and photocopiers in one room.
Lighting conditions should be designed neutrally so that every employer works in equal conditions. Direct lightning and reflecting surfaces should be avoided. Displays should be anyway individually adjusted.

Tip: When planning an office reconstruction it is highly recommended to query the employees and find out which main factors will be rated as positive or negative. This decision guidance will help finding an optimal concept for the organization.

Open Space Office Design: Where Does It Work Best? by Jarie Bolander


Although the concept isn’t new, the impetus towards implementing open office design has definitely been gaining traction within the last few years as firms look to reduce costs through more efficient space utilization while at the same time increasing productivity through more employee collaboration and teamwork. In theory, that sounds great. However, the trend has fostered a lively debate about the pros and cons of open space design.

Detractors cite factors such as loss of employee privacy, a greater risk of health problems, and excess noise. On the flip side, supporters tout the enhanced opportunities for collaboration and teamwork, greater sharing of information, increased production, and lower corporate costs.

So who is right? Well, both sides have valid points. The general answer probably lies somewhere in the middle. But it’s not hard to see that a lot depends on the nature of the business. For some types of companies, open work spacing can be like trying to fit a square peg in a round hole. For others, open office design fits the business profile like a glove. Let’s take a closer look at where the concept might work well and where it may not.

Some general observations: Companies that are defined by an ongoing need for creative environments are ideal candidates for open office design. Some of these might be the following:

- Advertising agencies
- Graphic design companies
- Many professional service firms
- Journalism newsrooms
- Marketing agencies

On the other hand, companies whose workers require heavy periods of concentration or whose clients require large doses of confidentiality are less apt to embrace an open atmosphere. Some examples:

- Accounting firms
- Financial planning agencies
- Recruitment firms
- Some law firms

You probably notice that the list of businesses mentioned in the above paragraph is far from exhaustive. This is because in the vast majority of industries, open design is very much a mixed bag. It works very well in certain departments and for certain business functions—but not so well in other segments of the corporation. Take for example, the IT world.

A January 2011 article in Computerworld gives an insightful rundown of the considerations facing planners trying to forge the best design solution for an IT firm. The article points out that certain segments of the IT workforce can be very productive in an open office climate and in actual practice “are embracing office layouts that encourage interaction.” These include:

- Web designers
- Software developers
- Project managers
- System architects
The article goes on to describe other business functions that are more resistant to an open workplace because such an environment can be one “where noise, distractions and interruptions can be akin ... to departmental decimation.” Examples include:

- programmers
- network administrators

The general point is that IT professionals who specialize in creative coding tend to thrive in an open space environment, whereas those who need to do a more cerebral type of coding would exist better in a more closed setting.

Another “mixed bag” industry grappling with the open space office dilemma is cited in this article, which describes how oil and gas companies are trying to ascertain what kind of office space works best for their employees.

As examples of how different work functions react differently to open space design, the article shows how geologists (need to concentrate and require wall space to hang oversized maps) are best suited to closed spaces; whereas sales and marketing employees appear to thrive in an open space setting.

The answer for most firms lies in some form of hybrid system—but it needs to be one that is well thought out and tailored to not only the business itself but also to the various departments within its walls. Here is an article that shows how one large company met this challenge. Many others are now doing the same. As time goes on, it is becoming more apparent that the open office train is picking up speed and an increasing number of companies are learning to jump on board and ride it smartly. And just like popular music, open office design is sounding better to firms that are learning how to adapt to the beat.

http://www.computerworld.com/s/article/9203159/Cubicle_wars_Best_and_worst_office_setups_for_tech_workers