

Most important aspects of the work environment A comparison between two countries

Peggie M. Rothe
Built Environment Services Research Group, Aalto University, Finland
peggie.rothe@tkk.fi
tel. +358 50 543 4673

Marion Beijer
Center for People and Buildings, the Netherlands
M.Beijer@tudelft.nl

Theo J.M. van der Voordt,
Delft University of Technology, Faculty of Architecture;
Center for People and Buildings, the Netherlands
D.J.M.vanderVoordt@tudelft.nl

ABSTRACT

The purpose of this paper is to explore similarities and dissimilarities in work environment priorities of Finnish and Dutch office users. It also explores if people from different age groups have different priorities. As such this study contributes to a better understanding of user needs and preferences with regard to their physical work environment and how to steer on employee satisfaction and labour productivity in workplace change processes. As globalization increases, the workplaces today host employees with different nationalities and cultures. So it is important to understand and take into consideration cultural differences and their impact on user needs in decision making on accommodating people and the design, implementation and management of new work environments. Knowledge of age related differences may help to link accommodation choices to the needs of old and new generations.

Internet questionnaires were used to collect data on which three work environment attributes employees find to be the most important out of a set of 19 attributes.

The results show both similarities and differences in prioritized aspects in Finland and the Netherlands. Functionality and comfort of the workspace, opportunities to concentrate, and accessibility of the building are rated highest in both countries. However, with 55% of the Finnish people marking opportunities to concentrate as one of three most important aspects versus 37% of the Dutch respondents, the Finnish show to be more distinct about this issue. Privacy is a little higher on the list of Finnish users, whereas adjacency and locality of spaces and openness and transparency of the work environment show to be more important for the Dutch office users.

Limitations of the study include the lack of data about organizational characteristics and other factors that may explain differences in prioritized aspects as well. More in depth research should be conducted in order to explain differences in prioritized aspects of the work environment.

The originality of the paper is in its search for cultural differences. Its main value is the exploration of elements that are important to consider when developing and standardizing workplace concepts that aim to support employee satisfaction and productivity.

Keywords: work environment, comparative research, Finland, the Netherlands, priorities

1 INTRODUCTION

As knowledge work increases, employees are confirming their position as the most important asset of organizations. In today's competitive and rapidly changing markets, it is crucial for all organizations to ensure that their employees are satisfied and productive.

Employee satisfaction and productivity has been found to be influenced by the work environment (Leaman 1995; Batenburg & Van der Voordt 2008; Windlinger 2008). The physical workplace should provide the employees a pleasant, comfortable and healthy work environment that supports their activities. Not understanding employees' expectations toward their workplace might lead to incomplete workplace practice (Lee 2006). In order to achieve optimal support for work performance, office design should be aligned with user needs and requirements (Windlinger 2008). When aiming for user satisfaction, it is important to understand and meet not only the users' needs but also their wishes (Van der Voordt 2004).

One challenge is to understand the variety of users. User preferences have been found to be affected by both demographic issues such as age and gender and by how the work is done (Rothe *et al.* 2010b). As globalization increases, the workplaces today host employees of different age, gender and ways of working but also with different cultures.

This study is a first exploration of differences and similarities between aspects that users from different European countries find most important in their work environments. The paper focuses on Finnish and Dutch office users.

This introduction is followed by an exploration of cultural differences. Then the research methodology and the research settings in both countries are being explained. The findings are first presented separately for both countries after which a comparison of the Finnish and Dutch data is made. Finally, the findings are reflected upon in search for explanations and cultural differences.

2 EXPLORING CULTURAL DIFFERENCES

According to Hofstede (1997), culture is the collective mental programming, distinguishing one group of people from people in other groups. According to Schein (1992) the essence of culture is to be found in the basic assumptions and the norms and values shared by a group of people. Most people are quite conscious of their values about issues such as interaction ('informal communications are regarded as very important in our company') or hierarchy ('formalities are highly valued in our organisation'). In order to understand similarities and dissimilarities between data from different countries, the five key dimensions of national culture that have been discussed by Hofstede (1997) might be helpful:

- Large versus small power distance i.e. the extent to which differences in power are accepted and expected by people. Large power distances are for example associated with hierarchic organisational structures, large income differences, formal contacts, status symbols etc.
- Collectivism versus individualism. In a collectivist society people are involved in strong groups, giving them protection in exchange for loyalty. In contrast, members of an

individualist society are supposed to look after their own interests and that of their immediate family while other relationships are quite loose.

- Masculinity versus femininity. A masculine ('patriarchal') culture puts emphasis on the differences between sexes and is primarily focused on material success. Men are expected to be ambitious, assertive, concerned with money, and to admire what is big and strong. In feminine cultures, men and women are expected to be non-competitive, modest, concerned with relationships, and merely interested in the quality of life.
- Strong versus weak uncertainty avoidance i.e. the extent to which people become nervous in unstructured, ambiguous situations and try to avoid such situations by strict rules of behaviour, intolerance of deviants, and a belief in absolute truths.
- Long-term versus short-term orientation; long-term orientation stands for a society that fosters virtues oriented towards future rewards, in contrast to short-term orientation that stands for a society that fosters virtues related to the past and present, in particular respect for tradition, preservation of "face", and fulfilling social obligations.

3 PRIORITIZED ASPECTS IN FINLAND AND THE NETHERLANDS

In 2005 The Dutch Center for People and Buildings developed the Work Environment Diagnosis Instrument, in short: WODI (Volker & Van der Voordt 2005). WODI is a standardized scientific evaluation tool that can be used for an indicative evaluation of people's use and experience of office buildings. In 2007 a so called WODI Light version was developed in order to reduce the time people need to fill out the questionnaire (Maarleveld *et al.* 2009). By standardizing the questions, a benchmark has been created to compare the percentage of satisfied and dissatisfied employees per case with the average of all research projects. The questionnaire also includes questions about the perceived support of the work environment with regard to their productivity. All questions have been measured on a 5-point Likert scale, ranking from very dissatisfied to very satisfied and from completely unsupportive to fully supportive. Finally people are asked to mark the three most important aspects of their work environment in a list of 19 aspects. The list includes aspects such as architectural design, spatial lay-out, functionality and comfort, psychological aspects such as privacy, technical aspects such as indoor climate and acoustics, and facilities such as storage space and ICT.

In 2009 a wide user preference survey was conducted in Finland (Rothe *et al.* 2010 a/b). The survey assessed the perceived importance of various work environment attributes, including location of the workplace, services, characteristics of the building and the work space. The survey was complemented by the WODI Light question, asking people to indicate the three most important aspects of their work environment, in order to be able to compare the results and to identify differences and similarities in prioritized aspects in Finland and the Netherlands. This makes it possible to find out if a standardized workplace concept could work in both European countries. Because also questions have been raised about personal characteristics such as age, it is possible to explore personal differences as well.

3.1 The Finnish survey

In Finland the data was gathered through an internet survey during spring 2009. The survey was sent to 4.275 employees in 21 organisations in the Helsinki Metropolitan Area (HMA). A total of 1.116 answers were received of which 1.113 were taken into further analysis. The return rate was 26,1 percent. The respondents represent users with different demographic background and working in different kinds of office concepts (Table 1). Over half of the respondents indicate working in a cellular office, either in their own private room or sharing it with others, approximately a third have a fixed workspace in a multispace office, while ten percent work from a non-dedicated desk.

3.2 The Dutch survey

In the Netherlands employees' answers about the most important attributes of Dutch office buildings were obtained from 9 organisations in 29 buildings, in the period of January 2009 until September 2010. In total 7.403 employees were asked to participate in the survey; 3.393 respondents filled out the questionnaire, i.e. a response rate of 45,7%. 3.192 of them answered the question about the most important attributes of the work environment.

The Dutch respondents are working in different workplace settings. A little more than half of all respondents work in traditional cellular offices, whereas the other half works in multispace offices with a variety of task-related workspaces and other spaces. Usually workplaces in open settings are combined with additional areas or 'cockpits' for individual, concentrated work and spaces for formal and informal meetings (De Been & Beijer, 2011). Part of the respondents working in multispace offices have their own, personal assigned desk, and part of them work in non-territorial offices with so-called hotdesking.

Table 1 Comparison of both research settings

		Finnish respondents (N = 1.109)	Dutch respondents (N = 3.192)
Gender	Male	42,1%	63,2%
	Female	57,9%	36,8%
Age	<31 years	14,6%	12,4%
	31-40 years	23,5%	21,5%
	41-50 years	30,6%	29,6%
	51-60 years	25,5%	32,4%
	> 60 years	5,6%	4,1%
Office type	Cellular office, fixed use of workspaces	57,4%	47,6%
	Multispace offices, fixed use of workspaces	32,2%	28,4%
	Multispace offices, flexible use of workspaces	10,4%	24,0%

3.3 Data-analysis

Statistical analysis has been conducted to explore the differences between prioritized aspects of the work environment in both countries. First, the percentage of respondent choosing different attributes as one of the three most important attributes were calculated for both countries, and for age groups within both countries. Then findings of both countries were compared. In order to test differences on statistical significance i.e. to explore if the two countries have the same distribution in work environment attributes a chi square test has been used ($p < 0.05$). A chi square test was also used to test the differences in age groups within both countries.

4 RESULTS OF THE FINNISH SURVEY

Two out of 19 attributes in the survey were marked by a majority of the respondents (>50%) as one of the three most important attributes of the workplace: functionality and comfort of the workspace (marked by 57%), and opportunities to concentrate (marked by 55%), see Table 2.

Accessibility of the building was the third most commonly chosen attribute with 40% of the Finns choosing this as one of the three most important attributes. When asked how much time they would be prepared to spend on commuting 40% of the respondents were prepared to spend 30 minutes or less (one way) while 52% were prepared to spend 30-60 minutes, and 7% even up to 90 minutes. This can perhaps be explained by job description and motivation: if people are strongly motivated and enjoy their work and work environment, they will be prepared to spend a bit longer on commuting. Approximately half of the respondents indicated that they go to work by car; the other half use public transport or walk.

More than 1 of every 4 respondents indicated the indoor climate as one of their top three of most important attributes. This result is in line with the finding of the Finnish preference survey, where adjustability of both air conditioning and room temperature were ranked in the ten most important attributes out of the total 81 attributes (Rothe *et al.* 2010a). On the other hand, in the preference survey adjustability of lighting was ranked 5 out of 81 (Rothe *et al.* 2010a), but when put against the attributes in the WODI Light it seems that lighting as such (without the indication of adjustability) is not as important. Privacy and opportunities to communicate were chosen by almost an equal percentage of respondents: respectively 21% and 22% of the respondents mentioned these issues as one of the three most important aspects. This is something that needs to be taken into consideration in workplace planning: the environments have to provide possibilities for the conflicting elements communication and privacy. The remaining 13 attributes were mentioned by less than 20% of the respondents; 10 of these were indicated as one of the top three important aspects by even less than 10% of the respondents.

When dividing the Finnish respondent in clusters based on age, some differences between the age groups can be identified (Figure 1). The biggest significant difference is found concerning accessibility of the building: while only 25% of the over 60 year-olds chose this aspect, almost double the amount of the 31-40 and under 31 year-old respondents (46% and 47%) chose it to be one of the three most important attributes. An interesting finding is that while opportunities to concentrate is valued equally high by all age groups, privacy is valued significantly higher by the older respondents than the younger ones. The attribute is chosen by 15% of the under 31 year-olds versus 26% of the 50-60 year-olds.

Other attributes in which significant differences were found are indoor climate and ICT and ICT supporting services - which are both more important to the older respondents - and possibilities of working outside ones own office and number, diversity and functionality of spaces - which are more important to the younger respondents.

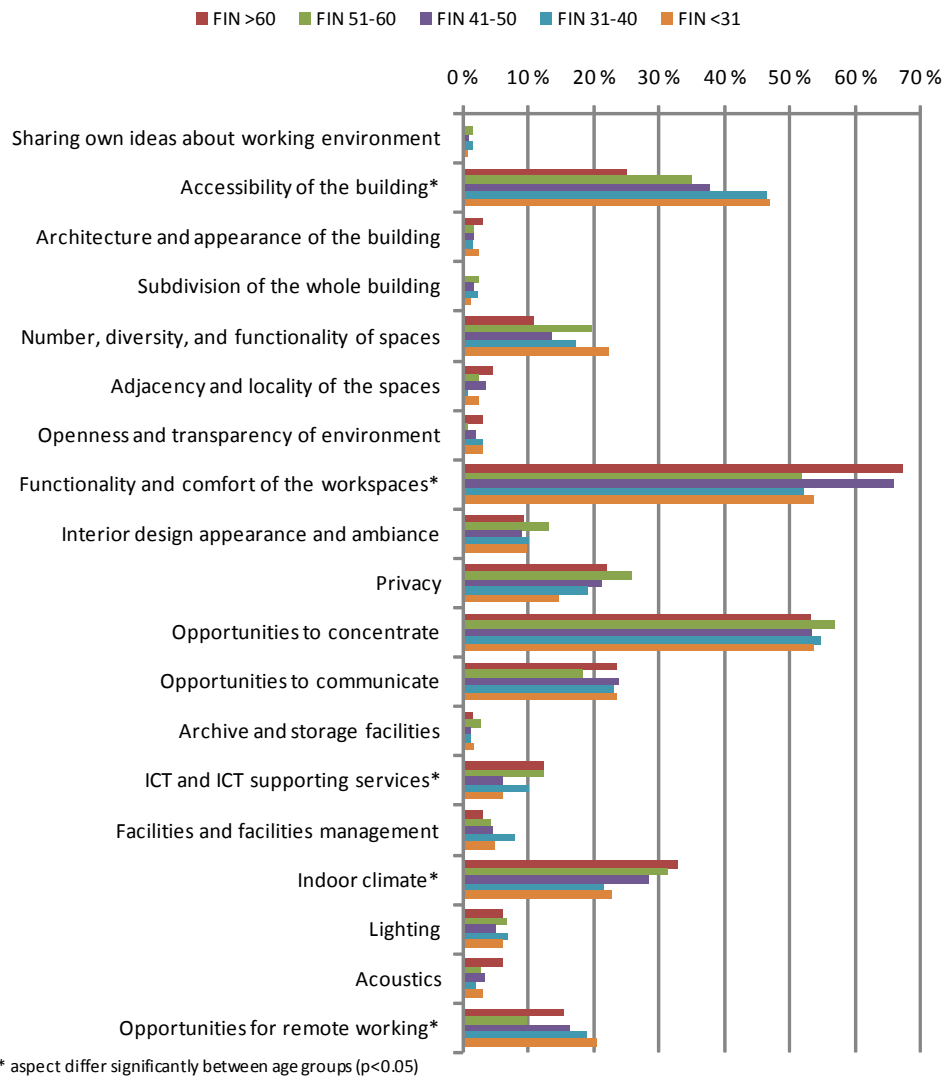


Figure 1 Percentage of Finnish age groups marking these attributes in their top 3 of most important attributes

5 RESULTS OF THE DUTCH SURVEY

The aspect that most employees in the Netherlands (52%) marked as one of the three most important ones is functionality and comfort of the workspace (Table 2). Apparently employees find it most important that they can do their jobs at their desks adequately and in a comfortable way. This requires a workplace that is being well facilitated with all necessary means. Opportunities to concentrate is the second mostly marked top three aspect in Dutch office environments: 37% of the Dutch respondents marked this as one of three most important factors of the work environment. A possible explanation for this high demand for concentrated working

might be the type of organizations that responded to the WODI Light questionnaire, their employees are mainly knowledge workers. Another 37% of Dutch employees marked accessibility of the office building as an important attribute of the work environment. More than half of the office buildings where the questionnaire was sent out were located near railway stations. A large number of the employees of these office buildings go to work by train and for them accessibility by public transport is an important matter. Almost 1 of every 3 respondents mentioned indoor climate in their top 3 of most important attributes. In almost all Dutch cases a high percentage of employees were dissatisfied with the indoor climate. In the Dutch surveys we found that aspects with a high percentage of dissatisfied employees are often marked as one of the most important aspects as well. Indoor climate is one of these factors.

The fifth factor that ranks high in percentage of respondents (24%) that mention it as one of the most important factors is opportunities to communicate. Improving communication is one of the drivers behind implementation of new office concepts. Managers mention communication as an important goal of the work environment.

Eight attributes were mentioned by only 10% or less of the Dutch employees.

Although most organization where a WODI Light questionnaire was filled out had the same five aspects on top of the list of mostly marked aspects, some differences turned out as well. It seems that the more dissatisfied employees are with particular aspects of their work environment, the more these factors are mentioned as highly important. For example when the ICT services and devices are not working properly, ICT will probably rank high on the list of mostly marked issues. Another factor that will affect the ranking of most important aspects is the type of work. Most Dutch surveys were conducted among knowledge workers. Opportunities to concentrate are highly prioritized in organizations such as universities and research centres. In organizations where project management is more present, opportunities for communication and social interaction rank higher.

Looking at respondents' age, functionality and comfort of the workplace showed to be marked most in all age groups as one of the three most important attributes of the work environment (Figure 2). But there are also some dissimilarities between different age groups. The biggest significant differences are found in opportunities to concentrate and in accessibility of the building. Opportunities to concentrate ranks lower when employees get older: 39% of the office workers under 31 mark this aspect in their top three of most important aspects, versus only 27% of the respondents over 60. The opposite is true for accessibility of the buildings; this becomes more important for employees of the higher age groups. 33% of the respondents under 31 mark this issue in their top three, versus 47% of the people over 61. Other attributes with significantly different rankings are opportunities to communicate (chosen by 29% of the <31 year-olds versus 20 % of >60 year-olds) and indoor climate (marked by 24% of the <31 year-olds and by 34% of the 31-40 year olds).

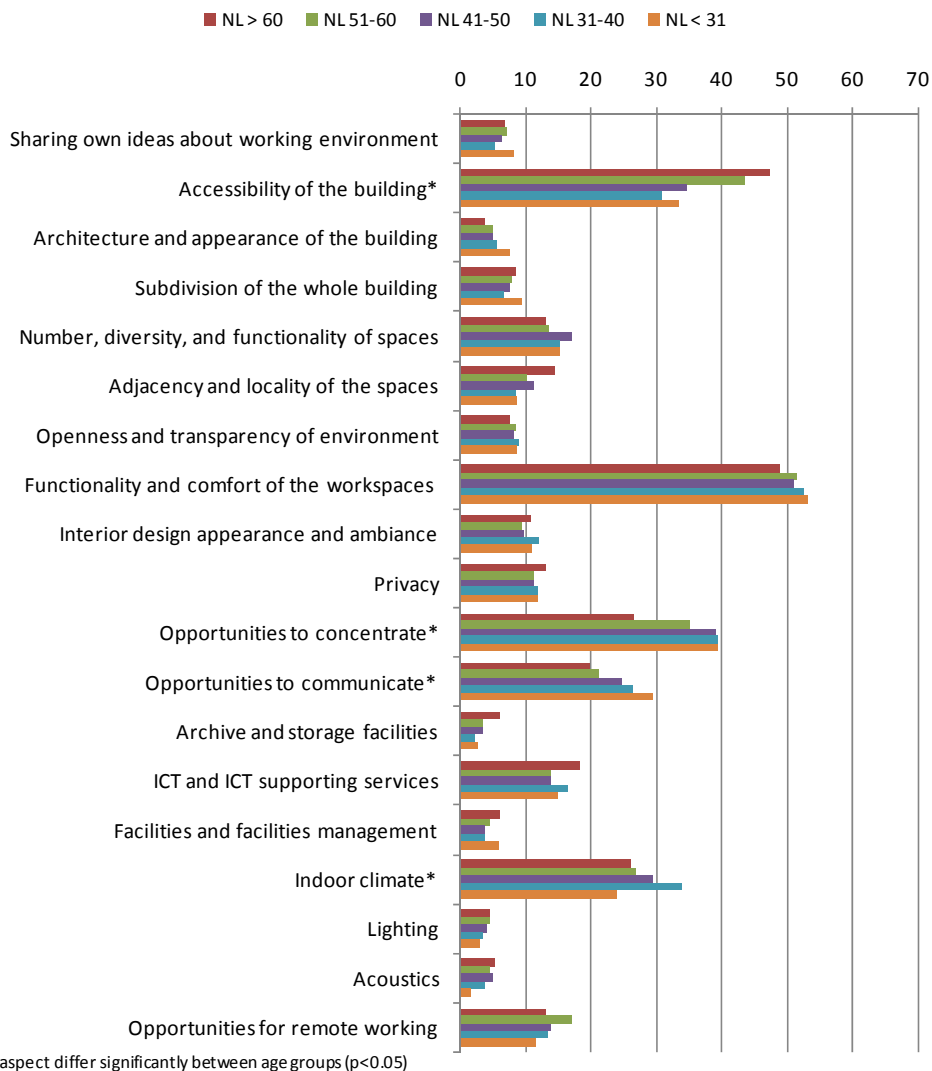


Figure 2 Percentage of Dutch age groups marking these attributes in their top 3 of most important attributes

6 COMPARISON BETWEEN THE FINNISH AND THE DUTCH FINDINGS

When comparing the ratings of the Finnish and Dutch respondents, both similarities and differences can be found (Figure 3). Both groups share the same five most frequently chosen attributes: functionality and comfort of the workplace, opportunities to concentrate, accessibility of the building, indoor climate and opportunities to communicate.

Several attributes gain an almost equal percentage of votes from the Finns and the Dutch: number, diversity and functionality of spaces (Finns 17%/Dutch 17%), possibilities to work outside the office (16%/14%) and interior design appearance and ambiance (10%/10%).

Table 2 Percentage of Dutch and Finnish respondents mentioning different aspects as one of three most important aspects of the work environment

	Percentage of Finnish respondents N = 1113	Percentage of Dutch respondents N = 3192	Difference Finland versus Netherlands
Sharing own ideas about working environment *	1	6	- 5
Accessibility of the building	40	37	+ 3
Architecture and appearance of the building *	2	6	- 4
Subdivision of the whole building *	2	8	- 6
Number, diversity, and functionality of spaces	17	15	+ 2
Adjacency and locality of the spaces *	3	10	- 7
Openness and transparency of environment *	2	8	- 6
Functionality and comfort of the workspaces *	57	52	+ 5
Interior design appearance and ambiance	10	10	-
Privacy *	21	12	+ 9
Opportunities to concentrate *	55	37	+ 18
Opportunities to communicate	22	24	- 2
Archive and storage facilities *	2	3	- 1
ICT and ICT supporting services *	9	15	- 6
Facilities and facilities management	5	4	+ 1
Indoor climate	27	29	- 2
Lighting *	6	4	+ 2
Acoustics *	3	4	- 1
Opportunities for remote working	16	14	+ 2

* aspect differ significantly in both countries ($p < 0.05$).

Twelve attributes show a significant difference in user preferences. The biggest difference is found in opportunities to concentrate: 55% of the Finnish respondents chose this as one of the three most important attributes versus only 37% of the Dutch respondents. A similar finding regards privacy: this was chosen by 21% of the Finns compared to only 12% of the Dutch respondents. Openness and transparency of the work environment is found to be more important among the Dutch respondents compared to the Finnish ones. The absolute percentages are small (2% of the Finns chose this option while 8% of the Dutch indicated this as being in the top three) but the relative difference is significant as the option was chosen four times more often by the Dutch than the Finns. A similar difference is found in ICT and ICT supporting services, where 15% of the Dutch respondents ranked this in the top three while only 9% of the Finns did so. The Finnish and Dutch respondents seem to have a slightly different opinion regarding the least important attributes.

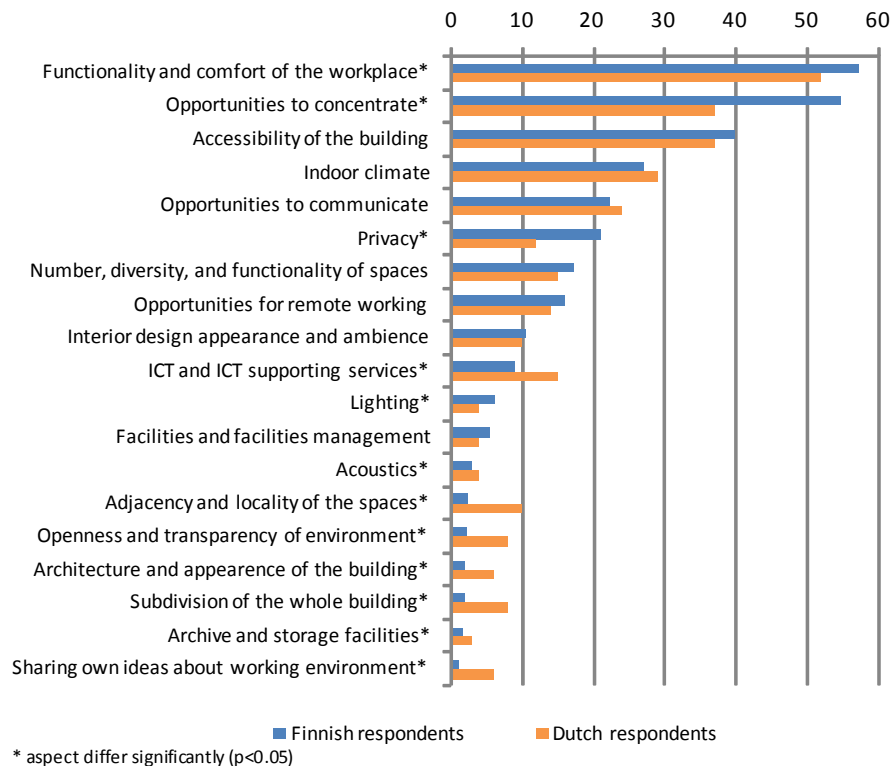


Figure 3 Similarities and dissimilarities in prioritized aspects

In addition to a general comparison, we can also compare the rankings by different age groups. All age groups from both countries mention functionality and comfort of the workspaces most frequently as one of the most important factors. Employees < 31 have great similarities in their priorities. The biggest differences came up in the age group > 60. While Dutch > 60 year olds mark functionality and comfort of the workplace and accessibility most frequently, the Finnish > 60 mark functionality and comfort of the workspace and opportunities to concentrate most frequently.

Accessibility of the building becomes more important for Dutch workers when they get older, whereas in Finland this becomes less important when people get older. Concentrated working in the Netherlands is less important for older employees than it is for the younger ones, while in Finland this remains a constant factor. All age groups mention this in the same amount.

7 DISCUSSION

In many ways office workers from the Netherlands and Finland share the same priorities. In both countries the top five of most important aspects showed to be similar. However, with 55% of the Finnish people marking opportunities to concentrate as one of three most important aspects versus 37% of the Dutch respondents, the Finnish show to be more distinct about this issue. Privacy is a little higher on the list of Finnish users, whereas adjacency and locality of spaces and openness and transparency of the work environment show to be more important for the Dutch

office users. Statistical analyses showed that the mostly marked items as being one of the three most important aspects also highly correlate with perceived support of labour productivity through the work environment. So these issues should get high attention in design and management of new working environments.

It is quite hard to explain the similarities and dissimilarities between Finland and the Netherlands, because a number of different factors might have an impact on which aspects employees find most important, e.g. type of work, age, gender, education, issues people got accustomed with in former situations or other work environments, satisfiers and dissatisfiers i.e. issues that mainly contribute to satisfaction versus issues that have a strong impact on dissatisfaction, and culture. According to Hofstede (1997) both countries do not show large differences on the five key dimensions of national culture (Table 3).

Table 3 National culture index of Finland and the Netherlands

Index	Finland	Netherlands	Finland versus Netherlands
1. Power Distance Index (PDI)	33	38	- 5
2. Individualism Index (IDV)	63	80	- 17
3. Masculinity Index (MAS)	26	14	+ 12
4. Uncertainty Avoidance Index	59	53	+ 6
5. Long-term Orientation Index	41	44	- 3

The dimensions are based on survey data about the values of people in over 50 countries around the world. The value of each index is usually between 0 and 100, but values below 0 and above 100 are technically possible as well. In Finland the masculinity index is higher than in the Netherlands. Masculinity is focussed on material success. A private office may be a way to show the material success of an employee. Individualism is lower in Finland than in the Netherlands. This might result in a lower priority of privacy, but the findings show a reverse, with 21% of the Finnish respondents ranking privacy as one of three most important aspects (number 6 of most frequently marked issues) versus only 12% of the Dutch respondents (number 9 of most frequently marked issues). Therefore national culture does not seem to be the explaining factor here. Maybe different organisational cultures play a role, but this variable has not been measured in the Finnish and Dutch surveys. Another aspect that has not been measured is people's personality. A possible explanation for the preference of privacy might be that people from the Nordic countries seem to be a little more introvert than people from the Netherlands.

8 CONCLUSIONS

In the end more similarities than dissimilarities showed up in comparing prioritized aspects in Finland and the Netherlands. In both countries opportunities to concentrate rated significantly higher than privacy. In Finland 55% of the respondents marked opportunities to concentrate as one of three most important aspects versus 22% that marked opportunities to communicate as one of the most important issues; In the Netherlands we found percentages of 37% versus 24%. In Finland, privacy is ranked higher on the list of most important aspects than in the Netherlands, but in both countries much less respondents marked privacy in their top three of most important

aspects (Finland 21%, the Netherlands 12%). Though open plan offices are often criticised because of lack of privacy, privacy is not really the issue. What employees find very important is being able to concentrate. The currently widely applied multispace offices seem to be a nice compromise in order to cope with both the need for concentration and the need for communication, whereas both concepts can enable the highest ranked issue i.e. functional and comfortable workplaces.

Furthermore this comparison shows that more in-depth studies are needed in order to be able to explain similarities and dissimilarities in prioritized aspects in different context, including measuring a number of organisation and employee characteristics as well.

9 REFERENCES

- Batenburg, R.S. and Van der Voordt, T. (2008), "Do facilities matter?", paper presented at the European Facility Management Conference 2008, June 10-11 2008, Manchester, UK.
- De Been, I. and Beijer, M. (2011). "The effect of office type on employee satisfaction and perceived productivity". Forthcoming.
- Hofstede, G. (1997), *Cultures and organizations: software of the mind*, McGraw-Hill, New York, NY.
- Leaman, A. (1995), "Dissatisfaction and office productivity". *Facilities*, 13(2), 13-19.
- Lee, S.Y. (2006), "Expectations of employees toward the workplace and environmental satisfaction". *Facilities*, 24(9/10), 343-353.
- Maarleveld, M., Volker, L. and Van der Voordt, T.J. (2009), "Measuring employee satisfaction in new offices – the WODI toolkit". *Journal of Facilities Management*, 7(3), 181-197.
- Rothe, P., Lindholm, A-L., Hyvönen, A., and Nenonen, S. (2010a), "Profiling office end-users based on work environment preferences". Paper presented at European Facility Management Conference 2010, June 1-2 2010, Madrid, Spain.
- Rothe, P., Lindholm, A-L., Hyvönen, A., and Nenonen, S. (2010b), "User preferences of office occupiers – driver for work environment decisions in organizations". Paper presented at European Real Estate Society Conference, June 23-26 2010, Milan, Italy.
- Schein, E.H. (1992), *Organizational Culture and Leadership* 2nd ed., Jossey Bass Publishers, San Francisco.
- Van der Voordt, T. (2004), "Productivity and employee satisfaction in flexible workplaces". *Journal of Corporate Real Estate*, 6(2), 133-148.
- Windlinger, L. (2008), "Direct and mediated effects of office design on performance", paper presented at the European Facility Management Conference 2008, June 10-11 2008, Manchester, UK.
- Volker, L., and Van der Voordt, D.J.M. (2005), "An Integral Tool for the Diagnostic Evaluation of Non-Territorial Offices". In: Martens, B. and Keul, A.G. (eds), *Designing Social Innovation. Planning, Building, Evaluating*. Göttingen: Hogrefe & Huber Publishers, 241-250.