

## DIFFERENCES IN EMPLOYEE SATISFACTION IN NEW VERSUS TRADITIONAL WORK ENVIRONMENTS

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### ABSTRACT

New Ways of Working (NewWoW) are popular for increasing employee and organisational effectiveness. Facility management (FM) aligns by aiming for higher levels of employee satisfaction and cost savings with introducing the shared features and facilities of activity based working (ABW). However, lack of proof of desired advantages of NewWoW is feeding a more reserved attitude towards NewWoW. Previous studies on employee satisfaction have used either single case studies or focus on one country. Also, many studies do not distinguish clearly between features and facilities. This study aims to identify differences between traditional and ABW environments in supporting workplace satisfaction.

Questionnaires amongst 47,913 office employees, mainly in Western European organizations, provided answers on 31 workplace features, fifteen facilities and employee satisfaction in the period 2010-2014. Respondents were split in two groups: ABW environments versus traditional work environments. Factor analyses identified ten components of the work environment that influence satisfaction. Independent samples t-tests were used to identify significant differences between both groups on their satisfaction with the work environment factors.

Besides 'ICT & equipment', all factors showed significant differences in satisfaction between both groups. NewWoW employees are more satisfied with seclusion rooms, climate, décor, cleanliness and leisure. The traditional work environments show higher levels of satisfaction with desk/chair, privacy, storage and general facilities. These results provide FM with insight how to increase satisfaction in both types of offices.

### Keywords

Employee satisfaction, work environment, facility management, activity based working

## 1 INTRODUCTION

According to Inalhan (2009) "*a growing number of companies are introducing new ways of working practices (from here on called NewWoW) in their physical work environment.*" Also, many others are on the verge of doing so (Blok et al, 2011). Blok et al (2012) stated that the physical workplace measures are focused on creating more flexible workplaces. The Activity Based Working (ABW) approach is regarded as one of the most advanced concepts (Ross, n.d.). The term ABW has become a widely used expression for different office concepts that support NewWoW. These concepts have in common that all users, from employee till general management, can choose to work at all available workplaces and collective facilities and where

nobody is allowed to claim their own workplace. They offer a variety of different types of workplaces aimed at supporting different activities.

Important goals of implementing ABW as part of a FM strategy are employee satisfaction and productivity (Van der Voordt, 2004; Baalen et al., 2011). However, various studies (Pullen, 2011; Maarleveld, Volker, & Van der Voordt, 2009; Laihonen, et al., 2012) have commented that there is a general lack of objective (measured) data to show the advantages or disadvantages of NewWoW. Particularly, little is known about how it affects work behavior (Blok et al, 2012) and the consequences for employee attitudes and well-being (Ten Brummelhuis et al, 2012; Peters et al, 2014). Most studies on NewWoW focus on measuring effects of teleworking on performance, without studying the effect of the design of the NewWoW offices itself (e.g. De Leede & Kraijenbrink, 2014; Ten Brummelhuis et al, 2012; Martínez Sánchez et al, 2007). Existing studies on NewWoW office design often are case studies and therefore difficult to be translated and used in a larger scope (e.g. Blok et al, 2012; Van Akkeren et al., 2010). The few extensive studies looking at ABW versus traditional office concepts so far only focussed on one country (De Been & Beijer, 2014; Bodin-Danielson & Bodin 2008 + 2009).

The aim of this study is to describe and test the influence of the physical work environment, by comparing traditional work environments with ABW environments in different (mostly European) countries and identifying which aspects of both environments are the main cause of workplace (dis)satisfaction. Section 2 reviews current literature on respectively both work environments and workplace satisfaction aspects. In section 3 the research approach is described, followed by a discussion of the results (section 4) and conclusions and recommendations (section 5).

## **2 LITERATURE STUDY**

### **2.1 Effects of traditional versus activity based work environments**

CB Richard Ellis (2011) constructed an overview of the transition from the traditional work environment to NewWoW environments. With regard to the office concept they stated a change from closed, allocated and standardised workplaces towards the ABW concept with mainly open plan, flexible and diverse spaces and meeting points. Van der Meer & Scholtens (2012) also point out the development from standard allocated workplaces to a variety of non-allocated workplaces as the main difference between traditional (TradWoW) and NewWoW offices.

The effects of NewWoW on accommodation costs are (evidently) very attractive, as sharing workplaces usually means a decrease of m<sup>2</sup>'s compared with TradWoW. Sometimes cost savings are a specific target of an organization, but in other cases it is regarded as a welcome spin off effect when trying to boost employee satisfaction and productivity with ABW (Van der Meer & Van 't Spijker, 2010). Previous studies have also summed up a positive image and as a consequence attraction and retention of scarce personnel and clients, more flexibility and environmental impacts (CO<sub>2</sub>) as additional aims of the ABW environment (Ruostela et al, 2014; Blok et al, 2011; Van der Voordt (2004).

But expectations and realizations of NewWoW do not always match. In a study of Baalen et al (2011) among more than 250 organisations, all expectations of implementing ABW, except more flexibility, showed a lower achieved effect than the original expectation. While the effects on the organisational process (flexibility, costs) largely matched expectations, effects on employee

output (productivity) and organisational image (employee wellbeing, satisfaction, image) lagged behind. Blok et al (2012) offer a possible explanation for this distinction, as their work showed that after six months only 54% of the employees were entirely habituated in the new environment. Peters et al (2014) mentioned the distinction between intended practices and how these are perceived by the employees as an important limitation of previous research, as their attributions have been associated to employee outcomes such as satisfaction. As De Leede & Kraijenbrink (2014) stated *“The effects of NWW on employee attitudes might serve as a pillar of the economic and organizational benefits.”*

So, implementing innovative workplace design does not automatically work wonders. De Been & Beijer (2014) showed (with a survey of 11,799 respondents) that amongst three office types, the ABW office was evaluated less positive regarding productivity support and satisfaction with concentration and privacy compared with traditional offices, where Blok et al (2009) found the exact opposite results. Top-down implementing new working conditions does not suffice to achieve positive work outcomes, as it might not change the actual behaviour at the office and could even be a source of stress (Peters et al, 2014). So it seems important to know in more detail, which aspects of the (physical) ABW environment cause employee (dis)satisfaction.

## 2.2 Work environment aspects that might increase satisfaction

Various studies have mentioned the influence of features and facilities of the work environment on employee satisfaction (Brill & Weideman, 2001; Batenburg & Van der Voordt, 2008; De Been & Beijer, 2014; Bodin-Danielson & Bodin, 2009; Roelofsen, 2002; Barber, 2001), but not always with a clear distinction between both. For this research, features are regarded to be part of the workspace (e.g. desk, chair, but also greenery, art and air quality control). Facilities on the other hand, are more focussed on a certain service for the office as a whole (e.g. parking facilities, restaurants and cleanliness).

Brill and Weideman (2001) provided ten general conditions of the workplace that influence satisfaction. The most detailed overview is from Batenburg and Van der Voordt (2008) who illustrate many specific features that create the conditions of Brill and Weideman. More recent studies focusing on importance of work environment aspects (without relating them specifically to satisfaction) find similar features (e.g. Appel-Meulenbroek, Groenen en Janssen, 2011; Rothe, Beijer and Van der Voordt, 2011) to confirm that the list of Batenburg and Van der Voordt (2008) is completed. They have also provided a clear list of facilities that can cause (dis)satisfaction

But these studies on features and facilities do have some shortcomings. Some used either case studies, or relatively small amounts of respondents. These respondents are often from one and the same office environment and/or company (e.g. Roelofsen, 2002). In case of large datasets with many companies, all companies were based in the same country, making results harder to generalise to other cultures (e.g. De Been & Beijer, 2014; Bodin-Danielson & Bodin 2008 + 2009). Also, not all studies distinguish between traditional and ABW environments and those that did mostly compared office concepts in total.

### 3. RESEARCH APPROACH

For this study a large, multinational dataset collected by Leesman Ltd. was used. Data was collected in the period from 2010 up to February 24, 2014 by means of a convenient sample and includes 47,913 employees from 115 different organizations divided over more than 370 locations (average 369 employees/location). Average response rate to the survey is 64%. Respondents mostly work at organizations in Western Europe that approached Leesman to survey their employees. Although the database contains respondents from 22 countries spread over all continents except Asia, 59% of the respondents work in the UK and 22% in Sweden. The other 19% has a very diverse origin. The organisations belong to many different sectors, both profit and non-profit. Because of the non random sampling method used the results need to be interpreted with care. However, the large number of organizations and employees included supports generalizability to Western European Offices.

Data was collected by online surveys amongst employees that questioned various workplace aspects. The survey was set up by Leesman through consulting both industry and academic experts and consists of several sections. First, general data on the respondent is asked (e.g. what types of workplaces do they use, age, gender, position etc.). Another relevant segment of questions asks the respondent about 31 features and fifteen facilities (covering all the features and facilities mentioned before, as shown by Appel-Meulenbroek et al, 2014, see fig. i + ii for an overview). For each feature and facility the respondent is asked to state whether it is important (yes/no).

If a feature is considered important, the respondent is asked to rate satisfaction for his or her current workspace (on a 5 point scale of -2 to 2). A respondent indicating to find a certain feature/facility not important was not asked about satisfaction with this aspect. This is considered to be neutral satisfaction (=0) in the further analyses. From the complete set of 47,193 respondents, those who pointed out to spend <50% of their time at the primary office are not taken up in the sample (= 4,122 respondents or 8.6%). This guarantees that respondents who only visit the office for short periods of time do not influence results. The rest is split in two groups (ABW versus traditional environments) based on the work setting they indicated to work in most of the time. TradWoW employees work most at a private office, cubicle, technical area (e.g. drafting table), shared office, own workstation in open plan area or other. ABW employees checked one of the following: pre-booked hoteling or hot-desk, shared team table, informal work-setting, flexi/shared workstation or touch down area. The NewWoW group obtained 6,243 (14.2%) respondents and the traditional 37,557 (85.8%) respondents.

The ABW and traditional group do not show significant differences with regard to gender (58% male, 42% female), age (normal distribution), part time employees (6%) or time working at this organisation. Only on the country of residence, the groups show significant differences ( $\chi^2(23, N=43791) = 2817.6, p = .000$ ). The NewWoW group consists of 75% UK employees (vs. 47% in TradWoW) and employees from the Netherlands, Germany, France and Sweden, so only European countries. In the TradWoW group the Swedish account for 24% of the group (vs. 8% in NewWoW) and many other nationalities are present. The first step was to conduct factor analyses to see if it was possible to reduce the long list of features and facilities. Subsequently, t-test were used to test for differences in factors scores between the respondents of the two groups: NewWoW or TradWoW.

Table 1 Results of factor analysis on satisfaction with features and facilities

| Satisfaction with:<br>(Extraction Method: Principal Component Analysis.<br>Rotation Method: Varimax with Kaiser Normalization.<br>a. Rotation converged in 11 iterations.) | General facilities | Seclusion rooms | Privacy      | Office climate | Office decor | ICT & equipment | Office leisure | Desk and chair | Cleanliness  | Storage      |
|--|--------------------|-----------------|--------------|----------------|--------------|-----------------|----------------|----------------|--------------|--------------|
| Access (e.g. lifts, stairways, ramps etc.)   | .606               | .162            | .020         | .187           | .020         | .077            | .146           | .128           | -.071        | .067         |
| Health and safety provisions   | .592               | .056            | .129         | .113           | .083         | .097            | .053           | .051           | .331         | .099         |
| Mail & post-room services  | .591               | .033            | .089         | -.028          | .010         | .081            | .123           | .035           | .193         | .037         |
| Security   | .582               | .017            | .092         | .054           | -.003        | .100            | .117           | .076           | .259         | .068         |
| Internal signage   | .566               | .159            | .041         | .084           | .235         | .092            | .047           | -.001          | -.047        | .035         |
| Reception areas  | .456               | .059            | .091         | -.021          | .149         | .108            | .393           | -.010          | .148         | .001         |
| Hospitality services   | .323               | .057            | .106         | .017           | .185         | .196            | .311           | -.138          | .119         | .085         |
| Parking (car, motorbike or bicycle)  | .281               | .143            | -.016        | .292           | -.065        | .042            | .233           | .171           | -.188        | .086         |
| Meeting rooms (small)  | .143               | .791            | .066         | .096           | .048         | .094            | .068           | .164           | .128         | .073         |
| Meeting rooms (large)  | .144               | .760            | .017         | .102           | .029         | .112            | .060           | .141           | .094         | .076         |
| Accessibility of colleagues  | .322               | .257            | .157         | .085           | .113         | .154            | .035           | .170           | -.093        | .123         |
| Quiet rooms for working alone or in pairs  | -.008              | .617            | .239         | .076           | .179         | .070            | .146           | .003           | .072         | .104         |
| Desk / room booking systems  | .192               | .537            | .078         | .070           | .012         | .187            | .036           | .097           | -.061        | .057         |
| Informal work areas / break-out zones  | -.009              | .420            | .207         | .016           | .354         | .130            | .341           | -.108          | .197         | .065         |
| People walking past your desk  | .143               | .102            | .677         | .275           | .020         | .077            | .028           | -.015          | .027         | -.001        |
| Noise levels   | .093               | .153            | .631         | .407           | .014         | .090            | .082           | .020           | .092         | .001         |
| Dividers (between desks / areas)   | .074               | .093            | .616         | -.025          | .128         | .031            | .070           | .266           | .031         | .106         |
| Space between work-settings  | .103               | .124            | .596         | .034           | .085         | .058            | .055           | .212           | .079         | .265         |
| Ability to personalise my workstation  | .121               | .033            | .459         | -.022          | .095         | .089            | .042           | .321           | -.064        | .279         |
| Temperature control  | .007               | .068            | .106         | .729           | .052         | .133            | .148           | .024           | .101         | .096         |
| Air quality  | .060               | .063            | .163         | .716           | .124         | .130            | .143           | -.010          | .213         | .057         |
| Office lighting  | .211               | .114            | .114         | .558           | .270         | .087            | .042           | .211           | .111         | .059         |
| Natural light  | .153               | .113            | .114         | .509           | .337         | .034            | .060           | .196           | .088         | .018         |
| Parking (car, motorbike or bicycle)  | .281               | .143            | -.016        | .292           | -.065        | .042            | .233           | .171           | -.188        | .086         |
| Art or photography   | .085               | .034            | .038         | .116           | .749         | .081            | .103           | .090           | .020         | .069         |
| Plants & Greenery  | .127               | .044            | .029         | .178           | .714         | .065            | .151           | .139           | .009         | .081         |
| General décor  | .162               | .173            | .145         | .182           | .594         | .071            | .150           | .139           | .286         | .002         |
| Variety of different types of workspace  | -.015              | .347            | .264         | -.005          | .417         | .181            | .251           | -.177          | .107         | .101         |
| Remote access to work files or network   | .086               | .047            | .027         | .098           | -.002        | .678            | .058           | .118           | .002         | .050         |
| In-office network connectivity   | .095               | .069            | .027         | .157           | -.016        | .651            | .084           | .278           | .032         | .048         |
| Guest / visitor network access   | .117               | .104            | .081         | .043           | .095         | .605            | .052           | -.149          | .042         | .093         |
| Audio-Visual equipment   | .128               | .195            | .086         | -.012          | .176         | .506            | .050           | .029           | .075         | .053         |
| Printing / copying / scanning equipment  | .124               | .170            | .004         | .187           | .051         | .343            | .130           | .286           | .178         | .175         |
| Restaurant / canteen   | .110               | .039            | .043         | .122           | -.006        | .075            | .684           | .157           | .044         | .007         |
| Atriums and communal areas   | .208               | .158            | .137         | .009           | .322         | .067            | .567           | -.047          | .168         | .039         |
| Tea, coffee and other refreshment facilities   | .123               | .133            | .052         | .130           | .098         | .143            | .544           | .182           | .257         | .002         |
| Leisure facilities onsite or nearby  | .142               | .021            | .004         | .131           | .163         | .030            | .507           | .103           | -.155        | .145         |
| Washroom facilities / showers  | .141               | .170            | .019         | .198           | .110         | .058            | .450           | .152           | .380         | .039         |
| Chair  | .053               | .101            | .161         | .106           | .120         | .041            | .111           | .637           | .095         | .067         |
| Desk   | .043               | .113            | .337         | .101           | .071         | .066            | .100           | .613           | .101         | .189         |
| Computing equipment  | .034               | .104            | .083         | .093           | .065         | .470            | .153           | .481           | .057         | .066         |
| Telephone equipment  | .145               | .122            | .081         | .042           | .076         | .381            | .095           | .478           | .065         | .019         |
| General cleanliness  | .237               | .096            | .037         | .231           | .085         | .095            | .158           | .132           | .735         | .033         |
| General tidiness   | .294               | .115            | .085         | .187           | .154         | .090            | .111           | .103           | .704         | .083         |
| Shared storage   | .097               | .115            | .118         | .057           | .082         | .087            | .059           | .055           | .070         | .786         |
| Archive storage  | .105               | .105            | .084         | .083           | .064         | .120            | .052           | .036           | .009         | .761         |
| Personal storage   | .069               | .090            | .277         | .081           | .029         | .091            | .077           | .349           | .052         | .570         |
| <b>Eigenvalues</b>   | <b>2.850</b>       | <b>2.707</b>    | <b>2.446</b> | <b>2.416</b>   | <b>2.399</b> | <b>2.389</b>    | <b>2.374</b>   | <b>2.236</b>   | <b>1.938</b> | <b>1.924</b> |
| <b>Rotation Sums of Squared Loadings -% of Variance</b>  | <b>6.196</b>       | <b>5.884</b>    | <b>5.318</b> | <b>5.252</b>   | <b>5.216</b> | <b>5.193</b>    | <b>5.161</b>   | <b>4.861</b>   | <b>4.212</b> | <b>4.183</b> |

#### 4 RESULTS AND DISCUSSION

Factor analysis was conducted on the satisfaction scores for the 31 features and facilities to identify underlying constructs or factors that explain the correlations among this set of items. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) is 0.939 indicating a very good sample size to reliably extract factors. Bartlett's test indicates whether the items do not correlate too lowly with several other items. A significant result was found ( $X=1035$ ,  $p=.000$ ) therefore we can assume that the items correlate. Specifically, principal component analysis with varimax rotation was used and components were extracted until eigenvalues were less than or equal to 1.0. Table 1 shows the ten factors that were generated by the factor analysis. The facilities largely formed separate factors from the features, which confirms our thought that these are separate matters with regard to satisfaction and should not be mixed. Only parking loaded just a little higher on the office climate factor filled with features, then on the general facilities factor. Accessibility of colleagues as a feature ended up in this general facilities factor, although it also loaded high on the factor seclusion rooms filled with features. Besides the general facilities factor, two other factors with facilities were constructed, named 'office leisure' (refreshment of all sorts) and 'cleanliness'. The features formed 7 separate factors: Seclusion rooms (e.g. meeting rooms, quiet rooms), Privacy (e.g. noise, dividers), Office climate (e.g. temperature, lighting), Office décor (e.g. art, plants), ICT & equipment (e.g. access, AV Equipment), Desk and chair, Storage.

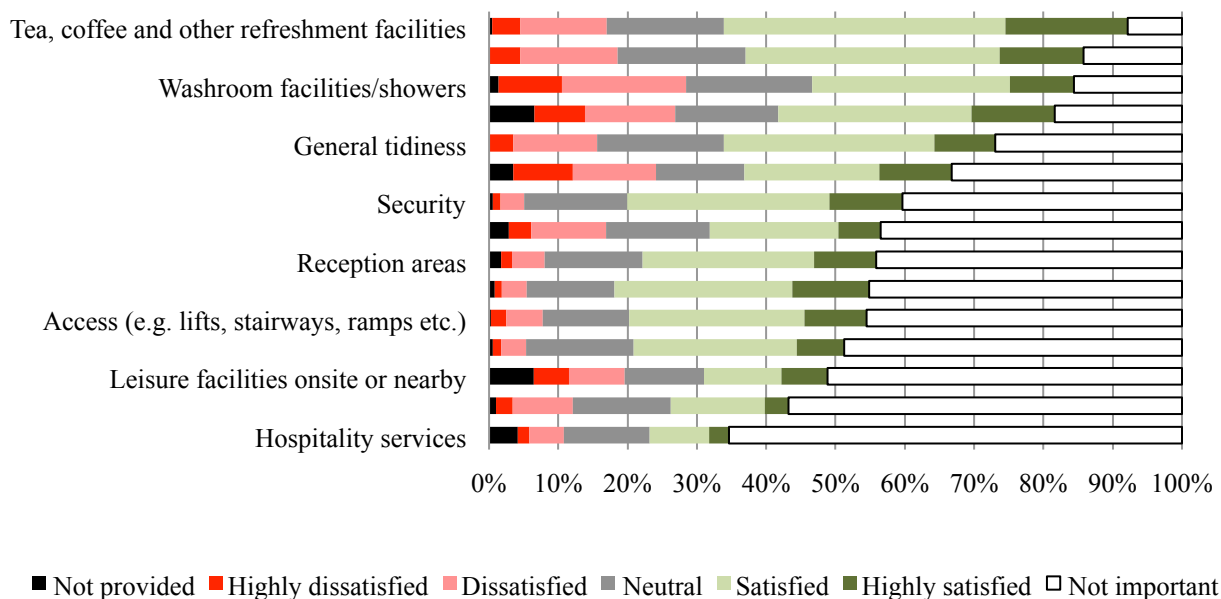
Table 2 shows the results of the t-tests on differences between the mean satisfaction with each factor of NewWoW and TradWoW employees. Only the factor 'ICT & equipment' did not show a significant difference. Overall, the NewWoW group is more satisfied with six out of ten factors. But looking at the importance of the features and facilities in these factors (see figures i and ii) creates a better understanding of differences.

Table 2 Differences in satisfaction between groups

|                           | Work environment factor | Group      | Mean factor scores | t-value | Sig (2 sided) |
|---------------------------|-------------------------|------------|--------------------|---------|---------------|
| NewWoW more satisfied     | Office climate          | TradWoW    | -0.0094400         | -4.975  | 0.000         |
|                           |                         | NewWoW     | 0.0572772          |         |               |
|                           | Office decor            | TradWoW    | -0.0573696         | -28.698 | 0.000         |
|                           |                         | NewWoW     | 0.3480903          |         |               |
|                           | Office leisure          | TradWoW    | -0.0450184         | -22.836 | 0.000         |
|                           |                         | NewWoW     | 0.2731488          |         |               |
|                           | Cleanliness             | TradWoW    | -0.0650632         | -33.612 | 0.000         |
|                           |                         | NewWoW     | 0.3947710          |         |               |
| Seclusion rooms           | TradWoW                 | -0.0195164 | -10.045            | 0.000   |               |
|                           | NewWoW                  | 0.1184160  |                    |         |               |
| No significant difference | ICT & equipment         | TradWoW    | -0.0022962         | -1.230  | 0.219         |
|                           |                         | NewWoW     | 0.0139320          |         |               |
| TradWoW more satisfied    | General facilities      | TradWoW    | 0.0098735          | 4.938   | 0.000         |
|                           |                         | NewWoW     | -0.0599077         |         |               |
|                           | Desk and chair          | TradWoW    | 0.0535279          | 27.760  | 0.000         |
|                           |                         | NewWoW     | -0.3247808         |         |               |
|                           | Privacy                 | TradWoW    | 0.0134066          | 7.363   | 0.000         |
|                           |                         | NewWoW     | -0.0813443         |         |               |
|                           | Storage                 | TradWoW    | 0.0178580          | 9.643   | 0.000         |
|                           |                         | NewWoW     | -0.1083532         |         |               |

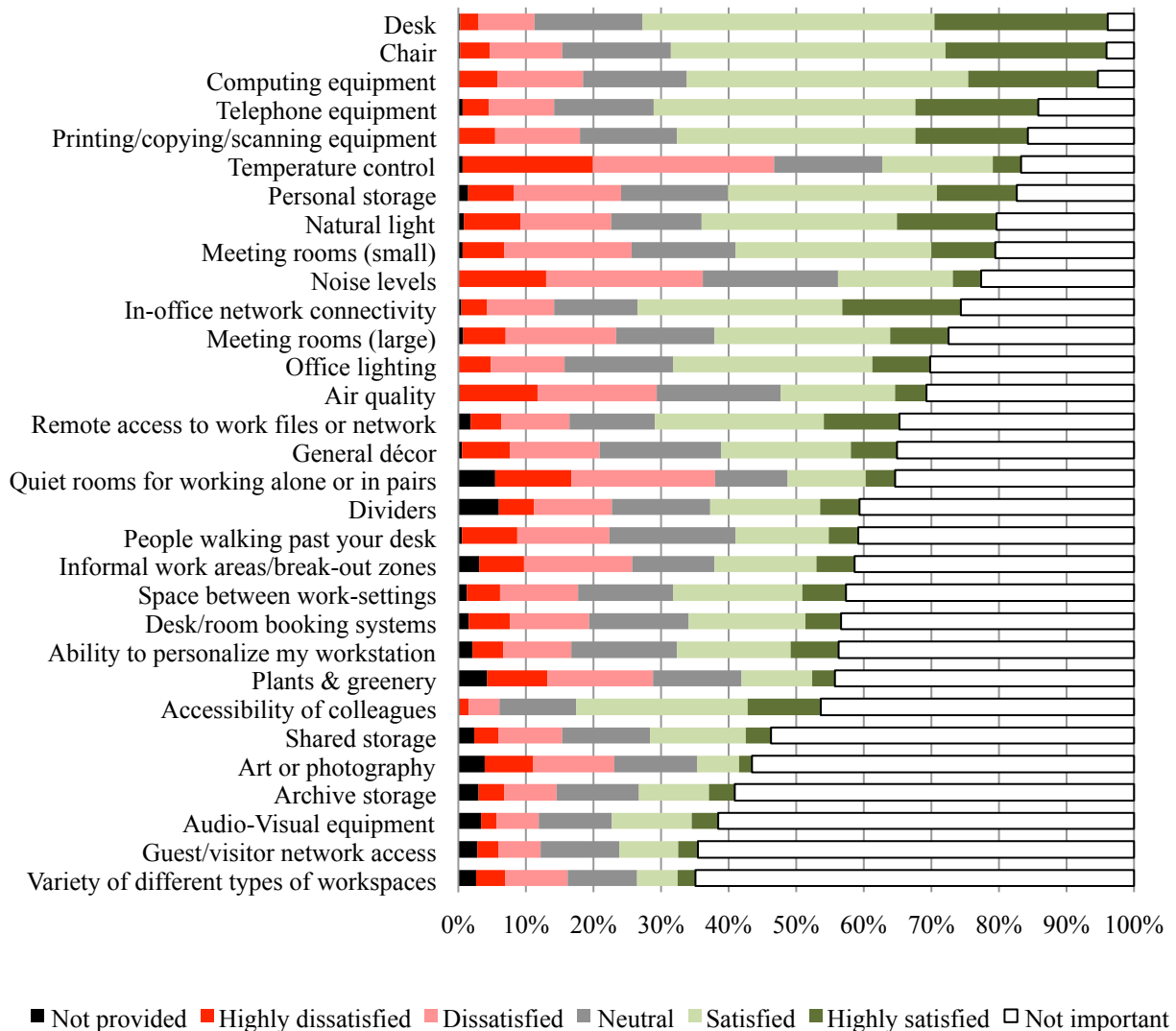
Office climate contains important features and provides more satisfaction in a NewWoW environment. As these features caused the highest number of dissatisfied employees in the database, this provides important evidence for FM to consider the implementation of ABW. The ability to sit where one wants might be used to sit in places with a preferred office climate. Also, ABW offices are likely to be either renovated or new builds which makes it likely that there is a more modern climate system. Office décor is also a win for the NewWoW group, which again is to be expected. However, these features are at the bottom of the importance list of employees and only about 50% thought this to be important at all. Office leisure facilities and the features related to cleanliness are very important factors for employees and both caused more satisfied employees in the ABW environment. It could well be that this has to do with the overall design of the office and non-allocated desks which enables maintenance personnel to clean more easily and better or that NewWoW offices contain more modern (and easy to clean) furniture. Last, NewWoW scores more positive on satisfaction with seclusion rooms, which is an aspect of ABW environments that apparently has been implemented well.

Figure i Percentage of employees satisfied with each facility, ranked according to importance.



A bit surprising was the fact that the general facilities factor scores better in traditional environments, although this is often an area where NewWoW concepts go through much trouble to support the employee. One could wonder though if this is a reason not to implement ABW, as these facilities were important for only about 50% of the employees. When it comes to the factor with the features that are important to most employees (desk and chair) the NewWoW group is also more negative compared to the TradWoW group. This might have to do with the fact that ABW does not allow employees to have their own desk and chair or a matter of ergonomics. The traditional group is also more satisfied with privacy features (which are in the mid-section qua importance) and with storage facilities.

Figure ii Percentage of employees satisfied with each feature, ranked according to importance



## 5 CONCLUSIONS AND RECOMMENDATIONS

NewWoW in the form of ABW is still developing and therefore prone to both arguments from critics and super enthusiasts. This research indicated that NewWoW might still be the way forward to increase workplace satisfaction, although some aspects need improvement. Now that designers, architects and FM learn more about specific shortcomings of NewWoW, they are able to try and find solutions to increase satisfaction on these factors too. In this study the factors general facilities, privacy, desk/chair (incl. equipment) and storage came forward as causing less satisfaction in ABW environments. Especially a factor such as privacy, which is considered to be very important in both literature and among the respondents, provides opportunities to improve the satisfaction levels of NewWoW office environments, if problems can be solved adequately. Personal storage and the desks/chairs still seem to get under estimated in NewWoW implementations and could possibly be solved more easily than the privacy matter.



The traditional work environment will probably not disappear either and can also be improved to create more employee satisfaction. Possibly in many cases, the budget for a (long overdue) renovation can increase satisfaction with climate, décor and cleanliness. To increase satisfaction with rooms for seclusion and office leisure might ask some more radical changes in the concept.

Many recommendations for further research can be made. Future studies should try to include respondents from more different countries in more evenly spread groups. Also, the NewWoW group was a lot smaller than the TradWoW group, which can hopefully be solved in time as more organisations change their offices and have them tested on satisfaction levels. As satisfaction and productivity depend on many other things than the work environment features and facilities, it would be good if future studies can be more holistic and include those aspects too. For example the influence of age differences on satisfaction is still not clear entirely, nor is the effect of culture. Also, it is important for future studies to not only include physical features and facilities, but also look at behavioural aspects like habituation and social aspects.

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