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AN ACTIVITY BASED FLEX OFFICE – PLANNING PROCESSES AND OUTCOMES

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KEYWORDS
Activity-based office, design, employee involvement, satisfaction, perceived performance.

SUMMATIVE STATEMENT
This longitudinal case study addresses activities used in the planning process of a new activity-based flex office (A-FO), and addresses results after the relocation. The results show that several activities were used to involve employees in the planning process. Employee satisfaction and perceived performance were rated in more positive terms after the relocation than before. The company’s process can be considered as a good example of planning and design processes.

PROBLEM STATEMENT
There is a trend to implement activity-based flex offices (Appel-Meulenbroek et al., 2011; Seddigh et al., 2014; Vos & van der Voordt, 2002). The idea of the activity-based flex office (A-FO) is not only to change the physical office design but also to change workstyle. Thus, the concept challenges daily norms and routines on how to perform work (van Koetsveld & Kamperman, 2011). However, few studies declare the benefits and drawbacks following relocation and the results are inconsistent (de Been & Beijer, 2014; van der Voordt, 2004). A reasonable assumption is that the planning process and implementation strategy affects employee satisfaction with the A-FO, as well as of individual and group performance (Meijer et al., 2009). To our knowledge there is a lack of longitudinal studies that address the planning process, especially the early stages, of A-FOs.

RESEARCH OBJECTIVE
The aim of this study is twofold: (i) to describe activities and procedures used in the planning of an activity-based flex office (A-FO), and (ii) to explore how satisfaction and performance are perceived before and after relocation from a mixed office to an A-FO.

METHODOLOGY
Setting
The study was conducted at an IT service company, located in the outskirts of Näsjö, a small-sized Swedish town, whose goal was to become the best workplace in Sweden. In 2013 the company discussed new office premises and choice of office type. At that time the workforce consisted of employees, managers and owners, with a total of 4 females and 31 males. Units consisted of consultant support, in-house IT support, IT-development, hardware sales, stock, and support functions such as administration and management. A majority of the workforce served as consultants in other organizations and was present in the office one or two days/week. The company anticipated growth and consequently an insufficiency in office space. The premises consisted of mixed offices; cell offices (7 employees), shared offices (12 employees), and small office landscapes (13 employees). Four consultants did not have their own workstation. Reconstruction of the existing premises was examined but excluded as an alternative due to a high cost-benefit ratio.
Research approach

A mixed method strategy with data triangulation was applied for this longitudinal interactive case study. The researchers took an initiative to a first meeting and thereafter the company initiated collaboration in this interactive study. An overview of research methods and company activities is shown in table 2. The research was conducted through work analysis, questionnaires, interviews and documentation. The interactive work analysis inspired by De Keyser (1991) was facilitated by the researchers and conducted by the workforce. The work analysis was performed in the initial stage of the company’s planning process (thus described in section “planning processes and activities”) and included beehive workshops, focus groups interviews, diaries, and questionnaires. The rest of the process was monitored by questionnaires every 6 months (Figure 1). Questionnaire results were fed back, interpreted and discussed with the company. The planning process was further monitored through documentation, observations and individual interviews with the project leader, owner and CEO. Digital communication such as the company’s web page and blog was documented as well as their internal project site for the new office. Blueprints and other written documents concerning the planning process and design were studied. Project manager and owner were interviewed at the company’s office and telephone meetings and e-mail correspondence kept the researchers updated. Moreover observations of the premises and workshops, and photographs were taken at the premises.

The researchers were also involved in a post-relocation evaluation with observations and 45 individual interviews with the workforce (90% participated) nine months after relocation. Questionnaire 4 and 5 were distributed three and nine months after relocation. An oral presentation for the workforce of the evaluation, initiated a post-relocation follow-up group. This paper presents questionnaire results for the evaluation of perceived change in satisfaction and performance.

<table>
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<th>Table 2. Overview of the planning process, with methods facilitated by researchers (R) and activities conducted by the company (C).</th>
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Questionnaire study

The purpose of the questionnaire study was twofold: (i) to follow-up on perceptions of the current and future office during the change journey (ii) to compare satisfaction, health and perceived productivity pre- and post-relocation. All questionnaires regarded satisfaction with office characteristics, office type preference, distractions, overall performance, and health and well-being. Questionnaire 5 also included perceived change of different parameters from their previous office to the present office. In this paper 14 questions have been selected from the full questionnaire. The longitudinal questionnaire study consisted of 5 web-based questionnaires; 3 pre-relocation and 2 post-relocation (Figure 1). Every May in 3 consecutive years, starting in 2014, large questionnaires (96-138 questions) were distributed. Between these 2 smaller (38-41 questions) questionnaires were distributed in early December.

Figure 1. Time of distribution of the longitudinal questionnaire study
All employees, managers and owners at the company were included in the questionnaire sample. The number of employees in the workforce at the company increased from 37 in May 2014 to 50 in May 2016 (Table 1). The response rate was on average 84 % (Figure 1 for details). During the three year study period 23 people were employed and 11 seized their employment. Of the 28 people that were employed during the entire period, 16 (57 %) responded to all five questionnaires. A descriptive statistics analysis was conducted in SPSS for each measurement on the whole population as well as on the 16 respondents that responded to all questionnaires. Moreover a one-sample t-test and multivariate regression analysis was conducted on the final questionnaire (n=45).

RESULTS

Planning processes and activities

The planning activities (Table 3) can be divided into three general aims; 1) deciding office concept, including work analysis 2) designing the physical environment, and 3) designing the organizational and social environment. Vision of the future office, analyses, problem solving and reviewing were iterated while the concept evolved from idea to detailed physical, organizational and social work environment. Interviewees reported that all employees were encouraged to participate in all activities and be involved in the planning process in at least one way. Groups were formed with different responsibilities to make the planning process manageable; a reference group with an internal employee as project leader, an IT group, and an interior design group, consisting of employees from the company, local interior designers and ergonomists.

<table>
<thead>
<tr>
<th>Work analysis (base for deciding office concept)</th>
<th>Designing the physical environment</th>
<th>Designing the organizational and social environment</th>
</tr>
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<tr>
<td>Beehive workshops, Focus groups interviews, diaries, Questionnaires</td>
<td>Reviewing documents (employees and external experts) Reference site visits Wall of inspiration Model Workshops</td>
<td>Workshops - codes of conduct - concerns and problem solving Focus group interviews Ground-breaking ceremony Lecture on giving feedback</td>
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</table>

Deciding office concept and work analysis activities

According to online documents the owners were inspired by a visit to reference A-FO site in May 2013 and initiated a change process with discussions on relocation objectives. Interviewees report that the decision to implement an A-FO depended on the match between work activities undertaken at the company and the design of such A-FO, as well as employee support to the concept.

In September 2013 the work analysis was conducted in order to understand the needs of the employees regarding the layout and desirable design of the new office. Four groups were formed by the company, each responsible for separate functions in the organization with their unique wishes and needs for a satisfactory work environment. The four groups were administrative personnel, IT-support personnel, management and IT-technician personnel. Methods in the work analysis included beehive workshops, focus groups interviews, diaries,
and questionnaires. The beehive workshop gathered all activities performed at the company. The focus group interviews regarded needs, stressful situations and quality defects. The diaries mapped the occurrence of the activities. Based on focus group results with the respective group and individual diaries regarding work activities, needs were compiled by the researchers. In order to validate the needs a questionnaire was used to follow up by assessing extent of the needs. To further validate the work analysis the results were presented and discussed with the personnel at a work meeting. Thereafter the work analysis was presented and handed over to the architects in a collaborative meeting with project managers, researchers and architects. In November 2013, the architects delivered a flowchart (Figure 2) based on the work analysis. Interviewees report that the design seemed to match the work activities and employees seemed to support the concept. Thus, in the spring of 2014, the decision was taken to implement the A-FO concept.

Activities for designing the physical environment
The physical design process involved reviewing documents, reference site visits and a wall of inspiration, according to observations and digital communication. In a workshop the employees reviewed the match between flowchart and work processes and questioned “is this design what we want?”. Workforce thoughts and desired adjustments of the flowchart were fed back to the architects. Next, a blueprint (Figure 2) was received and reviewed by the workforce, the researchers and other experts within different fields (e.g. acoustician, lightning expert, safety engineer, and ergonomists). A physical model (Figure 2) was placed at the entrance of the premises in order to remind the workforce and create a desire for their future work environment.

![Figure 2. Flowchart, blueprint and model of the A-FO.](image)

To further inspire and spur innovative problem solving employees from each unit visited an A-FO reference site. Thoughts were shared with the rest of the company. A wall of inspiration was used to initiate discussions on different concepts and ideas. All employees were encouraged to add items.

Activities for designing the organizational and social environment
Workshops were held to deal with concerns of the employees, anticipated problems, problem solving and new ways of working. Concerns included filing, office use, privacy, control and IT problems. Innovative solutions and feedback were encouraged by management throughout the project. Employee concerns were also discussed in focus groups conducted by the researchers in the spring 2014. Possibility to anonymously express concerns was given in questionnaire 1, 2 and 3.

In early autumn 2014 all employees dug in a ground-breaking ceremony, to collectively feel anticipation of the new office, and participated in a kickoff workshop where discussions on codes of conduct were introduced. Several workshops (facilitated by employees) continued discussions on codes of conduct in smaller groups. For example it was discussed where interaction was allowed and encouraged, where interruptions and telephone conversations were forbidden, whether or not it was allowed to occupy the same desks in consecutive days. Decided codes of conduct were presented orally at a weekly meeting and uploaded to the intranet. In addition a lecture and workshop on giving feedback was given.
Employee performance and satisfaction after the relocation

Perceived performance

The descriptive analysis of questionnaire results showed a higher mean perceived productvity rating after the relocation to the A-FO than in the mixed office, for both the whole (n=28-46) and matched populations (n=16). Also, the mean distraction was rated lower after the relocation (Figure 3).

![Figure 3. Mean perceived productivity ratings before and after relocation (blue), measured in commonness of being able to be productive at the workplace. Mean distraction before and after relocation (orange), measured in commonness of not being able to fully concentrate on the task at hand. The scale ranges from 1=Never/almost never to 5=Always.]

At the last measurement (questionnaire 5), one sample t-test showed that employees perceived their ability to work in the A-FO as good, rather than neutral or bad (p<0.001). T-test also showed a significant perceived increase in efficiency of cooperation (p<0.001) but no significant perceived change in individual efficiency of work (p=0.17). Moreover, t-test showed that the majority of the employees agreed that the post-relocation office design matched their work tasks (p<0.001).

Satisfaction

The descriptive statistics analysis of the questionnaire results showed higher mean overall satisfaction ratings with the physical environment after the relocation from the mixed office to the A-FO, for both the whole and matched populations (Figure 4). T-test of the final questionnaire confirms that the majority of the employees were satisfied with the physical work environment, rather than neutral or dissatisfied (p<0.001). Three employees were dissatisfied with the physical work environment.
Predictors of perceived performance and satisfaction

In the final follow-up questionnaire (questionnaire 5) t-test showed that the A-FO layout and design was perceived as inspiring \((p<0.001)\), pleasant \((p<0.001)\) and well-ordered \((p<0.001)\) rather than boring, repulsive and messy by an absolute majority of the 45 respondents (Figure 5). Moreover, employees perceived the A-FO as calm rather than stressful \((p=0.02)\), pulsating rather than calm \((p<0.001)\) and exposed rather than private \((p=0.01)\). Responses regarding the office’s sound level (noisy/quiet) were equally distributed \((p=0.59)\).

The multivariate regression analysis showed that satisfaction with the physical work environment could be predicted by how inspiring/boring \((b= 0.43, p<0.001)\) and well-ordered/messy \((b= 0.30, p<0.001)\) the office was perceived \((R^2=0.72)\).

**DISCUSSION**

This case study describes a planning process of activity-based flex offices with positive outcomes regarding employee satisfaction and perceived performance ratings. Perceived performance and satisfaction with the physical work environment increased while distraction decreased. Decreased distraction is consistent with the findings of Seddigh et al. (2014). Research has shown no or limited effects of A-FO on perceived productivity (Meijer et al., 2009; Wolfeld, 2010), thus further studies are needed. Increased satisfaction with the office is consistent with previous research findings (C. B. Danielsson & Bodin, 2008; Vos & van der Voordt, 2002).

The new A-FO was perceived as inspiring, pleasant, calm, pulsating, exposed and well-ordered. Ratings on perceived noise/quiet were equally distributed. The regression analysis showed that employee perception of inspiration/boredom and well-ordered/messy in the office environment substantially predicted the variation of satisfaction with the physical work environment in the A-FO. In this case study the aesthetics (inspirational, pleasant, well-ordered) of the office were better predictors of satisfaction with the physical work environment.
environment than noise level found in other studies (C. Danielsson, 2005; Rolfö & Eklund, 2015).

The planning process and activities performed during the process may contribute to the successful ratings. Rather than copying and mimicking other organizations, the work analysis activities (beehive workshop, focus groups interviews, diaries and questionnaire) created a thorough and validated list of needs and activities, originating from the company’s own foundations, which was used as a requirement specification for the new office concept. The work analysis seemed to be adequate and well communicated, as the office design matched the work tasks, according to the questionnaire responses. Moreover, the work analysis made the employees think about their way of working and improvement opportunities. The importance of having a thorough analysis of the existing office is emphasized by van Meel et al. (2010).

The activities also involved and engaged the employees throughout the planning process. The work analysis enabled early employee involvement, even before the decision of office type was decided. That the employees could, during the activities, express their office type preference and objections, rather than the decision being forced on them may be a strong satisfaction contributor. User participation in the design process, enabling psychosocial control, has been shown to contribute to satisfaction of the workplace (Veitch & Newsham, 2000; Vink et al., 2006), and feelings of belonging and ownership (Vischer, 2008).

Activities, such as workshops, beehives, focus groups, forming of work groups stimulated interaction within the company. Van Koetsveld & Kamperman (2011) stress the importance of interaction for changing workstyle in A-FOs. Moreover, according to Broberg et al. (2011) visualization methods and mediating objects (such as blueprints, models and a wall of inspiration used in this case) facilitate and encourage employees to get involved, ideate, consider different solutions, share thoughts and spur spontaneous initiatives. The facilitated interaction, through the activities and mediating objects may be contributors to the positive outcomes.

Other contributing factors to the high satisfaction and perceived performance ratings in the planning process could be the high ambition with clear goals and the planning duration. The company aimed at becoming the best workplace in Sweden, an ambition indicating that the company valued its workforce. Van Meel et al. (2010) and van Koetsveld & Kamperman (2011) stress the importance of having clear goals for successful outcomes. The planning duration, a 2.5 years long planning process, was likely enough time for the workforce to accept the idea and recognize advantages that contributed to the high satisfaction ratings. Further investigation is needed to examine the various factors’ contribution to the successful outcomes.

The mixed methods approach attempted at reaching a detailed comprehension of the planning process. The interactive study was useful as the researchers could learn about the organization and the planning process during the facilitation of workshops and by reactions to feedback that the researchers provided. The longitudinal study enabled comparison over time, and the possibility to study the whole process, from knowledge base for decision making, to a post-relocation evaluation, with sufficient time for the workstyle to settle in the new office environments. For the evaluation t-tests were performed only on symmetrical Likert scales as these have been shown to generate similar results as interval scales (Traylor, 1983). The evaluation also included a regression analysis. The results points in the same direction giving the results robustness. However, three employees were dissatisfied with the physical work environment. All results are significant on a 0.01 level (or smaller) implying low risk for incorrect conclusions.
CONCLUSIONS
In conclusion this longitudinal case study describes a thorough planning process of an activity-based flex office with high employee participation, and explores outcomes after the implementation. Activities performed in the planning process supported analysis of the existing work processes, involved employees at the initiation of the planning process and throughout the process, and facilitated interaction within the company.

Employees’ perceived performance and satisfaction with the physical work environment were higher while distraction was lower after the relocation compared to before. The new activity-based flex office was perceived as inspiring, pleasant, calm, pulsating, exposed and well-ordered. Employee perception of inspiration in the office environment and how well-ordered it is, substantially predicted the variation of satisfaction with the physical work environment in the activity-based flex office.

The vast majority of the employees rated the activity-based flex office in positive or very positive terms. The company’s process can be considered as a good example of planning and design processes.

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