

# Social interaction in an office environment: A qualitative study after relocation to a smart office

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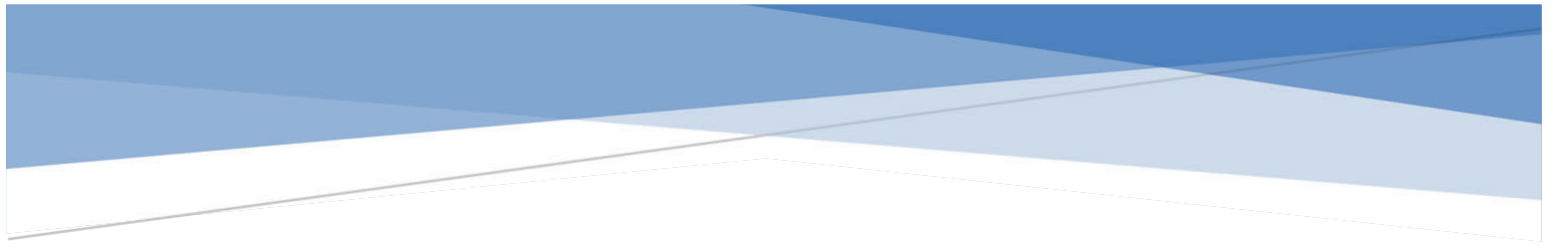
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60528 Frankfurt am Main

[twr2020@twrnetwork.org](mailto:twr2020@twrnetwork.org)

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## **Social interaction in an office environment: A qualitative study after relocation to a smart office**

Deniz Tuzcuoğlu

Built Environment Department, Eindhoven University of Technology

Department of Architecture, Yıldız Technical University

d.tuzcuoglu@tue.nl, denizt@yildiz.edu.tr

+31 (0) 40 247 2262

Dujuan Yang

Built Environment Department, Eindhoven University of Technology

d.yang@tue.nl

Bauke de Vries

Built Environment Department, Eindhoven University of Technology

b.d.vries@tue.nl

Aslı Sungur

Department of Architecture, Yıldız Technical University

asungur@yildiz.edu.tr

### **ABSTRACT**

The purpose of this study was to examine user experiences on social interaction after moving into a smart office environment. The study was conducted after the relocation to ‘Stadhuistoren,’ a smart office building of Eindhoven Municipality. Semi-structured interviews with eleven office users and observation for five working days were conducted. The data was analyzed based on grounded theory and thematic analysis. The results revealed various components of social interaction happening in the new office environment and emphasized the importance of spontaneous meetings and the need for non-work-related conversations. This study further suggests that the spatial configuration, and if possible smart applications, should facilitate social interaction in an office environment.

### **Keywords**

Social interaction, privacy, user needs, user satisfaction, smart offices.

## **1 INTRODUCTION**

Organizations that relocate to a new office environment consider user satisfaction since it has significant impacts on occupants and organizations in various aspects, such as productivity, efficiency, and stress-related issues. As social interaction plays an important role on user satisfaction in an office environment, in this study, we aimed to identify user experiences on social interaction after relocation to Stadhuistoren, a smart office building of Municipality of

Eindhoven, the Netherlands. We investigated factors related to user experiences on social interaction after the relocation.

## 1.1 Literature Review

The office environment has an important role in maintaining or avoiding social interaction. For instance, the open-plan layout is promoted with absent interior barriers and walls to facilitate better communication, and activity-based offices to create more balanced communication and social interactions among employees (Brand and Smith, 2005; Appel-Meulenbroek, Janssen, and Groenen, 2011). Scholars have mostly associated the impact of social interaction on occupants and organizations with various issues such as productivity, satisfaction, and user stress (Croome, 2001; Danielsson, Bodin, Wulff, and Ores Theorell, 2015; Haynes, 2007; Kim, De Dear, Cândido, Zhang, and Arens, 2013). Researchers investigated factors related to social interaction whether they are perceived as a positive (Chiaburu and Harrison, 2008; Sias, 2005) or negative components (Haapakangas, Hallman, Mathiassen, and Jahneke, 2019; Labianca and Brass, 2006; Oksanen, Kouvonen, Vahtera, Virtanen, and Kivimäki, 2010) from occupants and organizations.

Privacy also plays a vital role in social interaction in the office environment. Considering the desired level of privacy indicating the need of individuals for more or less privacy (Altman, 1975); Haans, Kaiser, and De Kort (2007) investigated privacy in office environments by developing a scale that evaluates users' motivation to withdraw from social interaction and to seek a social exchange. Their results present that users engage in activities that help them to either increase or decrease social exchange based on the strength and the direction of the individual's need for privacy or social interaction.

Numerous relocation studies investigate social interaction before and after moving into a new office environment. For instance, some relocation studies on activity-based offices show improvements in social interaction after relocation (e.g., Robertson, Huang, O'Neill, and Schleifer, 2008), while others observed negative effects on users (e.g., Berthelsen, Muhonen, and Toivanen, 2018; Blok, Groenesteijn, Schelvis, and Vink, 2012). However, the literature on the understanding of the needs and expectation for social interaction from smart workplaces after the relocation is rare. Therefore, we focus on social interaction after relocation to a smart office environment by the following research question: *How do office users experience new office environments in means of social interaction after the relocation, and what kind of preferences they have for smart offices?* In this study, we define smart office building as referring to the working environment that provides flexible, efficient, effective, and attractive use in means of the combination of spatial, organizational, and information and communication technology (ICT) based solutions. We focused our research methods to specify user needs and expectations for social interaction and to understand the relation to user satisfaction in smart offices.

## 2 METHOD

A qualitative study was designed to understand user experiences on social interaction in a new (smart) office environment after the relocation. It consisted of semi-structured interviews and observation. The study was conducted approximately 6-12 months after relocation to Stadhuistoren. The building was renovated as a smart office building for the Municipality of Eindhoven in 2018. The motivations for the renovation as a smart office were not only to achieve

sustainable building goals (e.g., energy efficiency, reduction of CO<sub>2</sub>) but also to enhance the quality of the office building by improving user satisfaction and productivity. Accordingly, (new) technologies were implemented (e.g., sensors, individual climate control system). The relocation started in August 2018 with moving 355 out of 590 employees from Stads Kantoor (previous building) to Stadhuisstoren and the others to two other municipal buildings in the centre of Eindhoven. The previous building had six floors (of which four were in use for the municipality) with an overall 11000 m<sup>2</sup> floor area. Several departments shared each floor (2000 m<sup>2</sup>) with an open floor layout, a variety in adjoining rooms for single offices, closed offices, silent offices, and meeting rooms in different sizes, and a pantry which separately located from workplaces. Unlike the previous building, Stadhuisstoren has nine floors with an overall 5500 m<sup>2</sup>, and each floor (450 m<sup>2</sup>) is dedicated to only one department with an open layout, flexible desk use, single offices, and meeting rooms in different sizes. However, employees are also provided flexibility to choose to work on other floors or other municipal buildings. Different from the pantry in the previous building, a shared area with a table and kitchen is located on each floor, adjacent to the workplaces (Figure i). At the time of the study, only four floors were occupied, and a common area for the entire building on the ground floor was temporarily closed due to ongoing renovation.

## 2.1 Interviews

Semi-structured interviews were originally designed particularly focusing on three aims: users' general attitude towards relocation, user experiences after relocation and appraisal of the new office, user expectations for smart office concept. Based on the objectives of this study, the data about users' experiences on social behaviour in the new office was analyzed in this study. The lead author conducted interviews with eleven participants between 02 April and 28 May 2019. The interviews lasted on average, forty-five minutes. At least one participant presented one floor, which was occupied at the time of the study (Table 1).

Table 1 The socio-demographic profile of interviewees (N=11)

Demographics	Frequency	%
<b>Sex</b>		
Female	4	36.4
Male	7	63.6
<b>Location &amp; Department</b>		
3rd floor (Communication)	3	27.3
6th floor (Call Center)	2	18.2
7th floor (Control)	5	45.5
9th floor (Security)	1	9.1
<b>Age</b>		
25-34	2	18.2
35-44	3	27.3
45-54	4	36.4
55-64	2	18.2
<b>Education</b>		
Bachelor	9	81.8

Master	1	9.1
PhD	1	9.1
<b>Time Experience</b>		
3 months	1	9.1
3-6 months	2	18.2
12 months	8	72.7

## 2.2 Observations

The observation was designed to understand the user experiences on social interaction in the new office environment. The data gathered from observation provided the complementary data for this study. The main observed activities: observing office users' actions and interactions (how they behave and use of office spaces, and how they interact to each other); identifying different types of activities; finding varieties among physical and social settings on floors. The lead author conducted the observation during working days between 08 - 12 July 2019. Only three floors (third, sixth, and seventh) were observed because the access to the ninth floor was denied. Therefore, the interview data of one participant from the ninth floor with three-months experience was removed before the analysis. Three observation points selected from the open office area and one from the common area on each floor (Figure i). The observation conducted with approximately two hours intervals.

Figure i The Observation Locations (dots) on 3rd (communication), 6th (call centre), and 7th (control) floor.





### 2.3 Data Analysis

The interview and observation data were transcribed verbatim and anonymized. The purpose of the analysis was to examine the data with a focus on social interaction in the new office environment and understand the issues from a user perspective. The analysis was based on grounded theory and thematic analysis. The analytic software ATLAS.ti® (Scientific Software Development GmbH, version 8) was used for coding. All transcription data were re-read and coded for multiple times, and relevant themes on social interaction emerged.

## 3 RESULTS AND DISCUSSION

The majority noticed a change in social interaction in the new office environment. Most participants emphasized the lack of the spontaneity of encountering with colleagues, and the difficulty of finding a place for unscheduled, short meetings. Some noted they had less privacy and less possibility to have informal conversations in the new office. Most seemed to be dissatisfied with the decreased amount of social interaction, while a few were satisfied as they mentioned they were easily being distracted by those interactions.

The new spatial configuration of the office layout seemed to influence social interaction, where each floor is being used in two parts because of elevator and facilities located in the middle of the floor. In conclusion, the main implication of the data is some experiences with social interaction was satisfying, but some seemed to be missing (i.e., non-work-related conversations, the spontaneity of meeting). The results identified within the data analysis are listed in Table 2 and will be discussed respectively in the following sections.

Table 2 The components of experiencing social interaction for an individual, derived from interview and observation data analysis

Groups	Codes
Interaction initiators	Physical confrontation (spontaneous)
	Visual interaction
	Conversation involvement
Spaces – office layout	Workspaces



	Facility and social areas
	Available places for spontaneous meetings, conversations
	Possibility to meet with colleagues
Contents of interactions	Work-related
	Non-work related
Individual/cultural related factors	Personality
	Past experiences
	Job-task
	Culture of the department
Problem-based	Seeking solutions
	Acknowledgement of the change

### 3.1 Interaction initiators

*‘Physical confrontation’*, *‘visual connection’*, and *‘conversation involvement’* were identified as they contributed to initiate interaction. The majority of the participants pointed out that the spontaneity of *‘physical confrontation’* was less in the new office. *‘Visual connection’* among colleagues was also reduced, and it induced difficulty to know whether a colleague was in the office or not. Hence, a few participants noted that they tended to proceed with their task, sometimes without discussing with a colleague, because they wanted to avoid spending time searching for them in the office. Accordingly, several participants expected that smart technology could enhance social interaction and communication and could decrease the difficulty of finding their colleague in the office. However, smart technologies implemented in the office at the time of the study did not have this intended function.

Another initiator was identified as *‘conversation involvement’*, which perceived as a positive or negative experience by participants. A few participants noted that they prefer to overhear the conversations because they believed this could enhance the knowledge sharing among colleagues. However, they experienced that such interaction was less occurring in the new office. On the other hand, several participants noted that when they discuss with colleagues somewhere in the office, they mostly received a warning to speak quietly from other colleagues. They were agreed with their colleagues because they were also experiencing a similar distraction while working. This experience also seemed to avoid them to initiate or prolong these conversations in order not to disturb their colleagues. Several participants emphasized that they had less privacy in the new office, especially because of their conversations were easily hearable from surroundings. Additionally, it was also observed that noises from the coffee area were easily hearable from workplaces. Hence, the way of communication and interaction among colleagues seemed to be influenced because of not having a good balance of quiet and social spaces in the office environment.

### 3.2 Spaces – Office layout

*‘Workspaces’*, *‘facility and social areas’*, *‘available places for spontaneous conversations’*, and *‘possibility to meet with colleagues’* were identified as they were influencing user experiences on social interaction. The conversations happening around workplaces seemed to enhance knowledge sharing among colleagues; however, this needs to be further verified. As mentioned

in the previous section, the conversations happening around the common area caused a distraction for users in workspaces. Thus, some noted that their social interactions decreased during their coffee breaks as they tend to keep their conversations short since they did not want to disturb their colleagues in the workplaces. Therefore, this shows the need for social areas to be located separately from working areas, where distraction can be less in working areas.

Another factor mentioned as missing was *'available places for spontaneous meetings, conversations'*. Most emphasized the need for places where they can have spontaneous meetings, phone calls or short conversations with privacy and without disturbing others. *'Possibility to meet with colleagues'* was noted as important, indicating spontaneous encounter with colleagues from different departments. One expressed that she was glad she already met with many colleagues from different departments in the previous office; because she doubted if she could have a chance to meet with them in the new office easily. Hence, interaction with colleagues from different departments seemed to be reduced since each department is located on different floors in the new office. But also, encountering with colleagues within the same department seemed to relatively also reduced as each floor has two separated workplaces. Some emphasized they would prefer to share one working area instead of sharing two workplaces within the same floor in order to have more interaction with their colleagues.

### **3.3 Contents of interactions**

Most participants emphasized the need for *'non-work-related conversations'* as they experienced the lack of having informal and non-work-related conversations with their colleagues. Some further noted that non-work-related conversations were salient as much as *'work-related'* ones in the office environment. Participants, especially managers, seemed to be discontent as they wanted to engage with their peer by having more satisfying conversations to know more about them. Not having a good balance of quiet and social spaces (as mentioned in Section 3.1 and 3.2.) seemed to decrease the amount of these conversations.

### **3.4 Individual and cultural characteristics**

*'Personality'*, *'past experiences'*, *'job-task'* and *'culture of the department'* were identified considering their relation on participants' social interactions. Some participants had different preferences for social interaction in the office environment. For instance, one participant was disappointed while the other one was content with experiencing less interaction with their colleagues in the new office. Unsurprisingly, a few, who had a job task required reading and concentrated work, explicitly needed for a quiet and isolated workspace with less interaction. Based on this need, the communication department agreed to use the office floor for two different working types: one part was dedicated to collaborative work, while the other part was dedicated as a silent part for working without distraction. Besides, social interaction observed in the call centre department was observed differently compared to the other two departments. For instance, the noise level was noted less since people were talking most of the time quietly, especially when they were on phone-consulting. Also, short interactions with colleagues around while waiting for the next call seemed to be a motivational factor in the call-centre. Thus, using two separate workplaces on the same floor was creating distance between workstations, which also seemed to influence (may reduce) these interactions.

### **3.5 Problem based**

*'Seeking solutions'* and *'acknowledgement of the change'* were identified as they were related to user experiences on social interaction and relevant problems. Participants, who were dissatisfied with the decrease in interaction with their colleagues, sought for possible solutions to foster communication. Some attempted to change their desk every day; however, this did not continue. Because changing desk every day required an extra effort in daily bases, and the experience they had also was not the same as having spontaneous meetings in the office environment as before. Like mentioned in Section 3.1., some expected smart technology could help them in means of an application which can foster interaction by various functions, such as suggesting to switch desks in a daily (or weekly) basis or finding a colleague.

### **3.6 Limitations of the data collected**

The data in this study should be considered in the context of the aims of qualitative research, including a small sample of office users ( $n = 11$ ) and observations for five days from one office building. Further research is needed to elaborate and examine the representativity of the users' perspectives and experiences found in this study. As some participants were recruited through other participant's referrals, there is a possibility that this sample may be more likely to share similar attitudes rather than a random sample. It must further be noted that at the time of the study, not all smart features of the office building were operating and experienced by participants as well as not all floors were occupied. This data needs further investigation when all floors are in use. Eventually, future studies can further investigate the factors discussed in this study by identifying needs for social interaction and how to facilitate and enhance communication with smart technology applications in future office designs.

## **4 CONCLUSIONS**

The results of this case study show the importance of spontaneous meetings the need for non-work-related conversations for office users, as these two components of social interaction seem to affect user satisfaction negatively when they are absent. Even though smart technologies implemented in the office did not have an intended function for social interaction, the results reveal that users expect for smart technologies to enhance their social interaction in the office environment.

The result of this study supports the need for informal conversations, which can increase the bonding among colleagues as well as satisfaction (Altman, 1975; Haynes, Suckley, and Nunnington, 2019; Inalhan & Finch, 2004; Oseland, 2009). The results show the need for social areas to be located within a proper distance from workspaces to create an office layout that provides the desired level of privacy and interaction. As proposed by Haynes (2007), the results support the view on the physical environment include linkages between space, work patterns and organizational culture. Thus, this study further provides evidence for the importance of identifying specific needs for social interaction based on individual and cultural characteristics of each department while designing office environments.

Eventually, this study supports the view on a good balance of quiet and social spaces in the office environment, by enhancing social interaction with spontaneous meetings but also providing a minimum distraction within the office environments. This study further suggests that

the spatial configuration, and if possible smart applications, should facilitate the needs for social interaction in an office environment.

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