

Switching behaviour in activity based working environments - An exploration of the reasons and influencing factors of switching behaviour in ABW

Lukas Windlinger
Zurich University of Applied Sciences
wind@zhaw.ch

Eunji Haene Kim
Zurich University of Applied Sciences
haeneun@students.zhaw.ch

ABSTRACT

Purpose: Opposed to underlying assumptions of ABW offices, previous empirical studies ascertained a tendency that employees do not frequently switch between different activity settings. Even though ABW is more and more becoming the default office concept, employees' switching behaviour has not been investigated in depth. This study aims to understand employees' switching behaviour by determining reasons to switch and not to switch and various influencing factors of switching behaviour.

Theory: Switching behaviour is defined as switching between different places within an office building with work-related, preference-based and/or social purpose, including breaks. Switching behaviour is divided into mandatory and voluntary switching. Mandatory switching is switching due to scheduled activities (meetings) as well as switching due to confidentiality issues. Voluntary switching refers to discretionary switching that may be motivated by a perceived mismatch between either activity or preference, and environment. According to previous research, dissatisfaction with environment can cause switching between different settings in an ABW office.

Design/methodology/approach: A questionnaire study was conducted across Switzerland and Belgium, and 124 employees from various organizations and departments participated in the questionnaire. Frequency analyses were conducted to determine reasons (not) to switch, and multinomial logistic regression analyses were performed to identify influencing factors of switching frequency.

Findings: Findings show that the majority of the respondents switch multiple times a day, which runs counter to the previous research. In addition, the study revealed clear evidence that mandatory switching frequency is independent of various factors suggested in this study. This indicates that the distinction of mandatory and voluntary switching is valid. Furthermore, privacy, acoustics, distraction, proximity to team/colleagues were ascertained as reasons to switch, and place preference/attachment, proximity to team were determined as reasons not to switch.

Originality / Value: Overall, this study contributed to understanding switching behaviour better by defining, distinguishing switching behaviour, and identifying reasons (not) to switch and influencing factors of switching frequency. These findings can provide more knowledge of switching behaviour to workplace or facility management practitioners so that they can understand their employees' needs and behaviour better and integrate this into workplace concepts and design.

Keywords

Activity-based Working, switching behaviour, person-environment interaction, workplace management

1 INTRODUCTION

During the 1980s, the CoCon-office (Communications and Concentration) was firstly introduced, aiming to support the productivity of knowledge workers. People could use different types of office settings for different types of activities in a CoCon-office (Worthington, 1997). In 1990s, the low occupancy rate of this and other office types contributed to the idea of sharing workplaces. The development of mobile technologies and open structured offices further enabled the development of activity-based working (ABW), which refers to a shared work environment without assigned workstations (Appel-Meulenbroek, 2011). A fundamental assumption of ABW is that different settings are offered for different activities in the office, which should optimally support the respective activity (e.g. Becker, 2004, Stone & Luchetti, 1985). Shared work settings in APBW include non-assigned standard workstations, meeting rooms, informal communication areas and other zones, each designed to support a specific activity e.g. concentration, collaboration, communication, creativity, confidentiality, and contemplation (Harris, 2015). However, contrary to the basic underlying assumption of ABW, empirical studies have ascertained a tendency that workers do not switch frequently, or not at all, between different activity settings (Hoendervanger et al., 2016; Qu et al., 2010; Appel-Meulenbroek, 2011; Göçer et al., 2017).

To understand switching behaviour better, this study will determine reasons (not) to switch and influencing factors of switching behaviour in ABW. This can help that workplace management can align workplace concept and design with employee's behaviour and needs, so that employee satisfaction and productivity can be improved.

2 THEORY

Switching behaviour refers to switching between places within an office building. This means that switching behaviour includes switching between different work settings, switching between different floors, switching between different workstations in the same work setting. In addition, switching refers to short-term switching such as switching from one place to another place and come back to a former place within few minutes as well as to long-term switching.

Switching behaviour is defined as switching between different places within an office building with work-related, preference-based and/or social purpose, including breaks. Switching behaviour is divided into mandatory and voluntary switching. Mandatory switching is switching due to scheduled activities (meetings) as well as switching due to confidentiality issues. Voluntary switching refers to discretionary switching that may be motivated by a perceived mismatch between either activity or preference, and environment. According to previous research (Göçer et al., 2017, Hoendervanger et al., 2016) dissatisfaction with environment can cause switching between different settings in an ABW office. It can be assumed that a mismatch between activity, preference, and environment leads to switching as suggested by the person-environment fit theory (Kristof-Brown & Guay, 2011). Person-environment fit theory helps to

define the match between workers' characteristics, their work environment, and tasks (Hoendervanger et al., 2019). In addition to mismatches ("push-factors") this study also covers pull-factors, i.e. aspects that attract employees to switch to other places. For example, employees may switch to different places, if they perceived that a better place is available, even their current place is satisfactory. Additionally, as suggested by Göçer and colleagues (2017) a desire to explore various places can act as a pull factor.

This study is designed to examine whether a mismatch between employee activity and work environment causes switching between different places. The environment is divided into three dimensions: physical environment, social environment, and technological environment. In addition to mismatches, practical drawbacks of switching can prevent office users from switching (Hoendervanger et al., 2016). Therefore, also reasons not to switch are examined.

3 METHOD

A quantitative study of employees in ABW office concepts was conducted in order to investigate frequency of switching between different places, reasons to switch and not to switch, and influencing factors of switching between different places in ABW. A questionnaire was developed that covered the mismatch between activity and environment (Figure 1). A link to the questionnaire was distributed to workplace management practitioners in various organizations by email by the authors. The respondents were invited to participate in the research and were asked to distribute the email further to colleagues in various departments of their organizations. Therefore, diversity of sample selection was achieved since all respondents have multiple positions, experiences, different departments, organizations. To collect data only from the respondents who are currently working in ABW, all respondents were asked to answer whether they work in ABW or not, before starting the survey. A description of ABW was presented so that the respondents had a clear understanding of ABW and could report accurately.

A total of 144 respondents from Switzerland and Belgium participated in the survey, and 124 respondents were working in ABW offices.

Physical environment	Social environment	Technological environment
<ul style="list-style-type: none"> • size • furniture • acoustic • temperature • lighting • visual/acoustic distraction • visual/acoustic privacy • crowdedness 	<ul style="list-style-type: none"> • proximity to colleagues • proximity to team 	<ul style="list-style-type: none"> • WIFI speed • mobile phone connection • a specific technology or piece of equipment

Figure 13: Attributes of environment to measure the mismatch between activity and environment

4 RESULTS

First, two frequency analyses were conducted to examine the frequency of mandatory switching (Figure 2), and the frequency of voluntary switching (Figure 3).

Figure 2: Frequency of mandatory switching

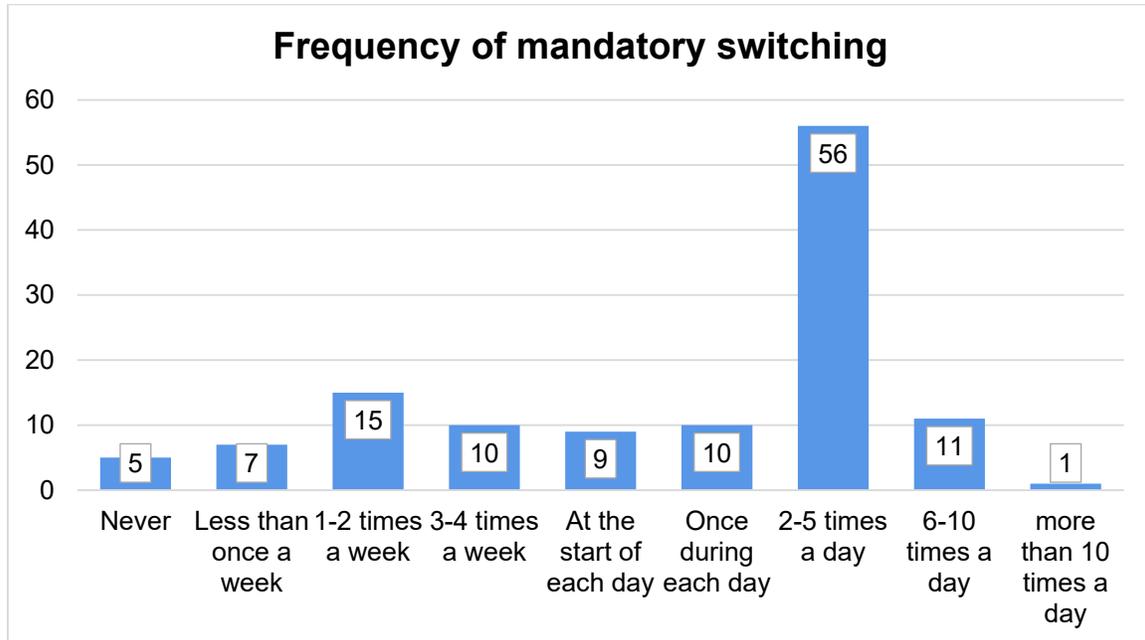
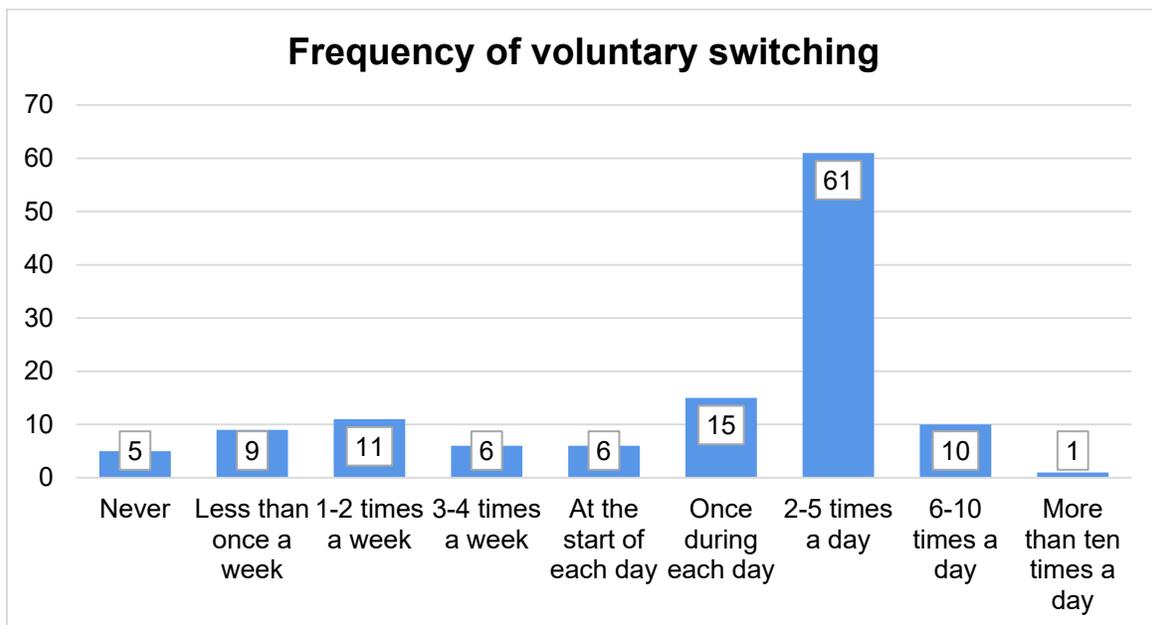


Figure 3: Frequency of voluntary switching



Regarding the reasons to switch, first the pull factors (A better place is available, I would like to explore more places) were examined by frequency analysis. Results show that 48 out of 116

participants who answered this question agreed that the availability of a better place is a reason to switch for them, while this was not the case for 39 and 29 were neutral (Figure 4). For the second pull-factor disagreement was more frequent with 58 participants who indicated that the wish to explore more places is not a reason to switch for them; 23 are neutral and 35 agreed (Figure 4).

Figure 4: The results of the frequency analysis of pull factors (n = 116)

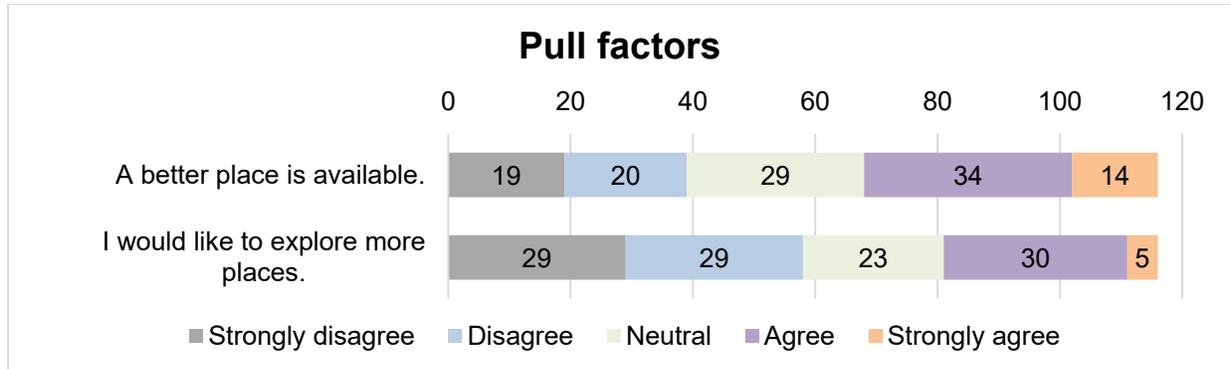
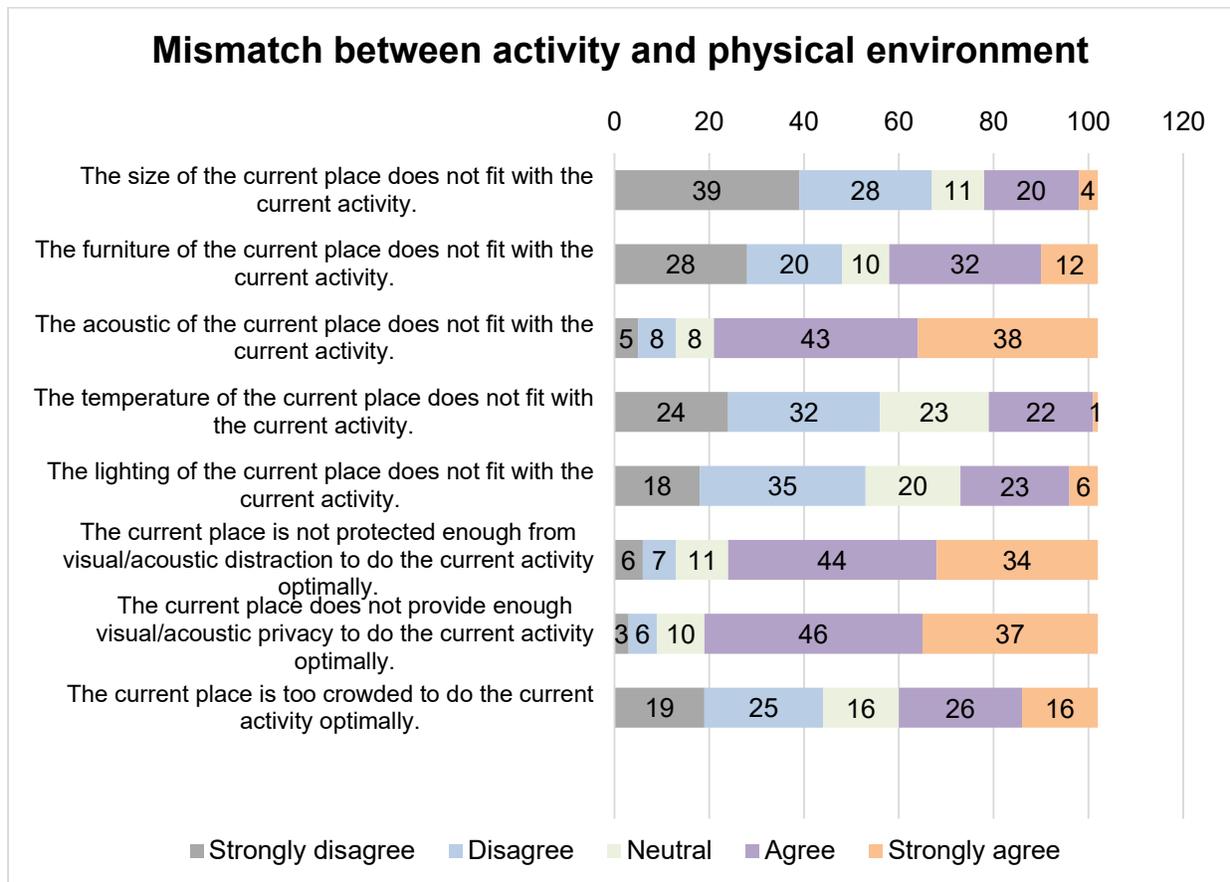


Figure 5: Mismatch between activity and physical environment (n = 102)



The results of the frequency analyses for the “push factors”, i.e. mismatch between current activity and environment are presented in Figure 5 - Figure 7. The main reasons to switch are acoustics, visual or acoustic distractions, and a lack of visual or acoustic privacy at the current

place that lead to a mismatch with the current activity (Figure 5). As regards the social environment, distances to colleagues or the team are reasons to switch that occur with similar frequencies (Figure 6). Mismatches between current activity and technological environment mainly concern the (lack of) availability of specific technologies/equipment (Figure 7).

Figure 6: Mismatch between activity and social environment (n = 102)

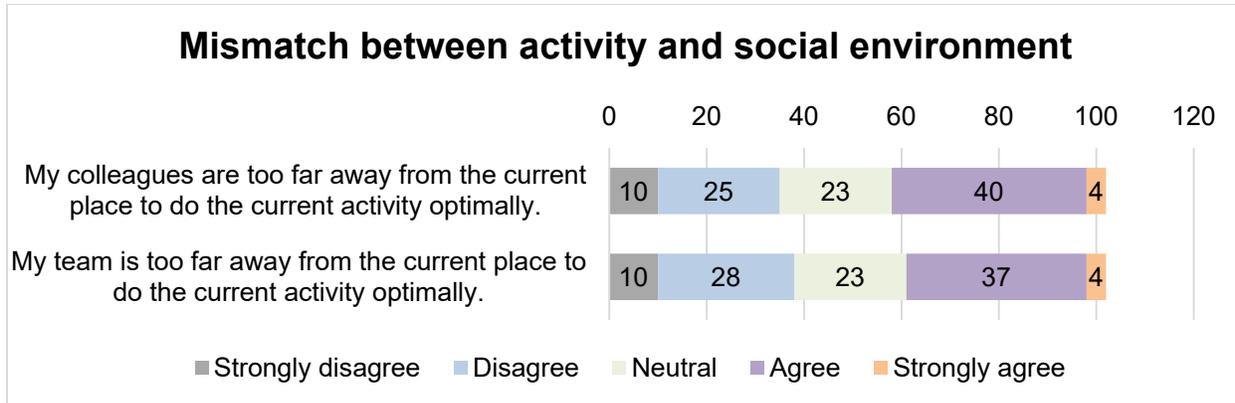
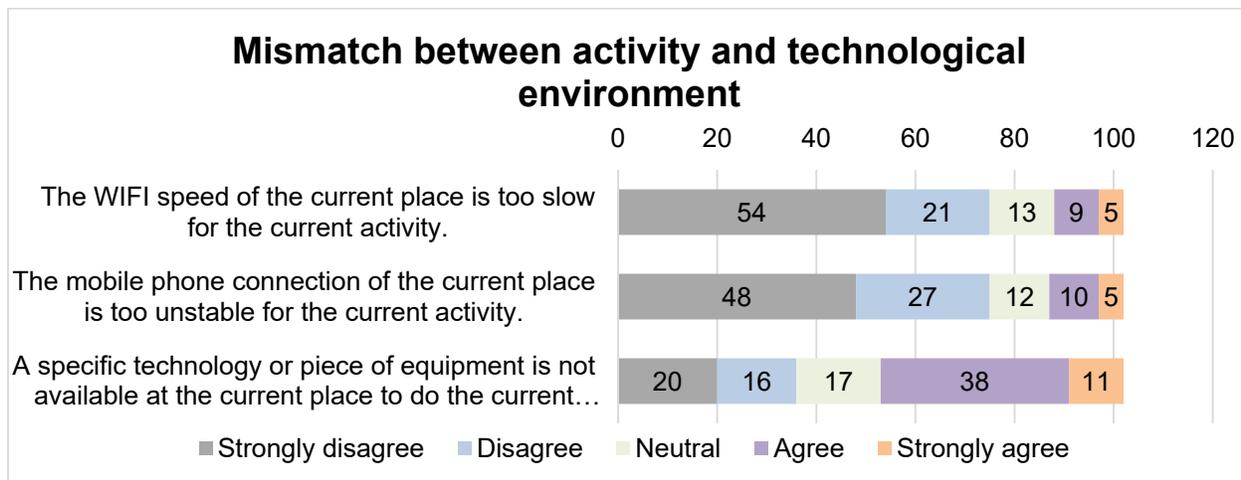


Figure 7: Mismatch between activity and technological environment (n = 102)



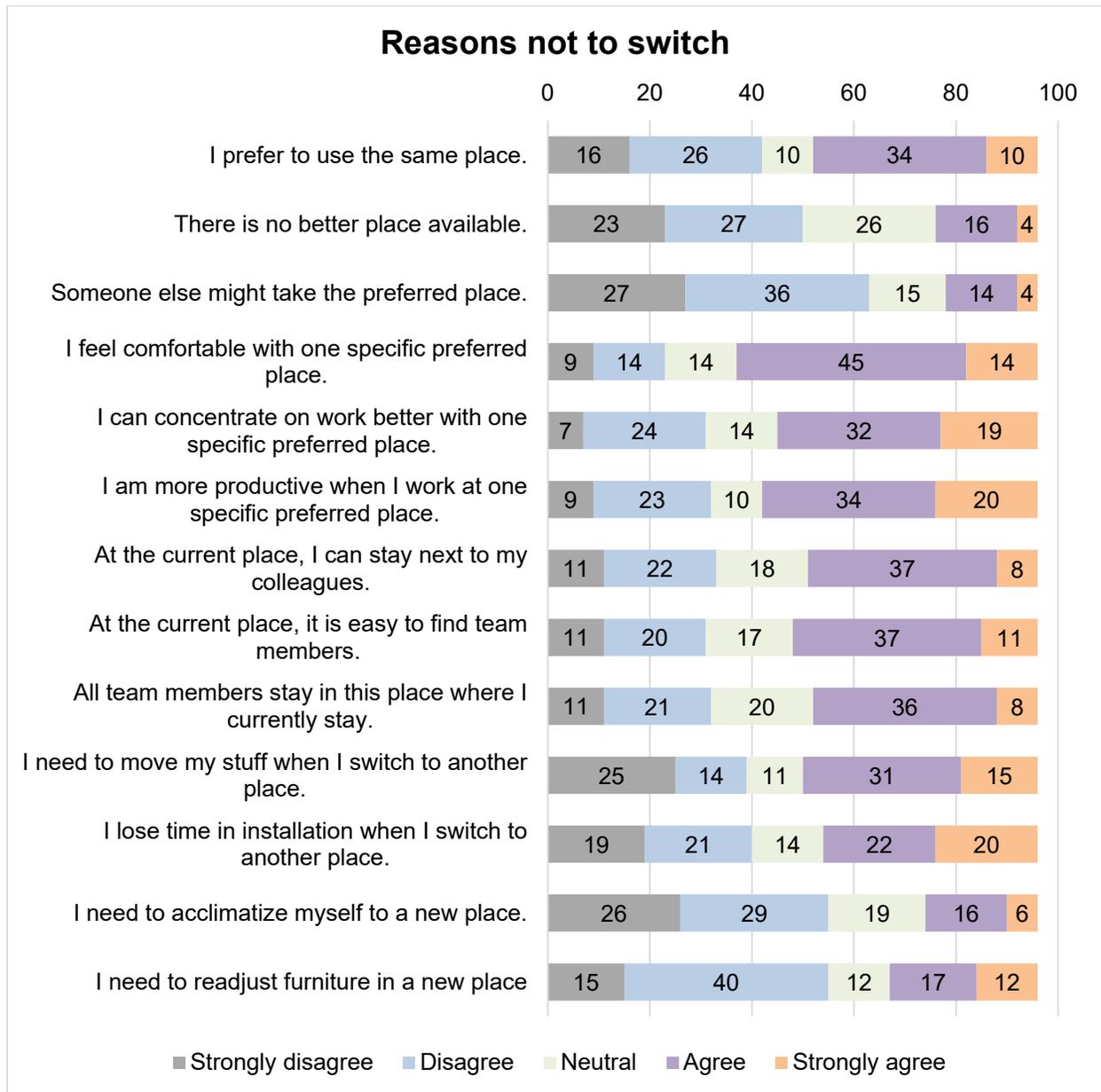
Frequencies of reasons not to switch, i.e. assessment of practical drawbacks of switching, are presented in Figure 8. The figure shows that various reasons seem to be considered similarly important to participants of the study. The main clusters of reasons are attachment to a specific preferred place, proximity to colleagues and team, the need to move things and to lose time in installation at a new place, and the preference to use the same place.

In order to analyse the relationship between reasons (not) to switch and mandatory and voluntary switching frequency, multinomial logistic regression analyses were conducted. To do so, three switching frequency groups were created that have also been used by Hoendervanger and colleagues (2016):

- Group 1: Never or less than once a week
- Group 2: Once until five times a week
- Group 3: Once or multiple times a day

Multinomial logistic regression analysis for the relationship between the mandatory switching frequency and pull factors, as well as various factors regarding the mismatch between activity and environment was not statistically significant ($\chi^2 (30, N=100) = 33.26, n.s.$).

Figure 8: Reasons not to switch (n = 96)



A second multinomial regression analysis was performed to examine the relationship between the mandatory switching frequency and various reasons not to switch. The regression model was statistically significant ($\chi^2 (24, N=96) = 65.89, p<0.001; Nagelkerke R^2 = 0.622$). The reference category was the group 3 (once or multiple times a day). Thus, each predictor has two parameters, one for predicting mandatory switching frequency in group1 (never or less than once a week) rather than the one in group3 (once or multiple times a day). Another predictor was one for predicting mandatory switching frequency in group2 (once until five times a week) rather than the one in group3 (once or multiple times a day). The result shows no significant effect for

the mandatory switching frequency in group1 rather than the one in group3 and various reasons not to switch. However, there was a significant ($p<0.01$) positive relationship between one reason not to switch (I do not switch because someone else might take the preferred place) and the mandatory switching frequency in group2 rather than the one in group3.

Multinomial logistic regression analysis for the relationship between the voluntary switching frequency and pull factors, various factors regarding the mismatch between activity and environment was statistically significant (χ^2 (30, N=100) = 51.78, $p<0.01$; Nagelkerke R²= 0.508). The reference category was the group1 (never or less than once a week). Significant effects were found between the voluntary switching frequency and pull factors, various factors regarding the mismatch between activity and environment.

Regarding the item 'Desire to explore more places', the comparison between group1 and 2 revealed a significant ($p<0.01$) positive relationship, indicating that employees will be more likely to switch once until five times a week than never or less than once a week, when they would like to explore various places. Also, the comparison between group1 and 3 found a significant ($p<0.05$) positive relationship, which indicates that employees will be more likely to switch once or multiple times a day than never or less than once a week when they would like to explore various places. Additionally, for the item 'Size of the current place' the comparison between group1 and 2 revealed a significant ($p<0.05$) negative relationship, indicating that employees will be more likely to switch never or less than once a week than once until five times a week, when they switch more due to the size of the current place. Similarly, the comparison between group1 and 3 showed a significant ($p<0.05$) negative relationship, which indicates that employees will be more likely to switch never or less than once a week than once or multiple times a day when they switch more due to the size of the current place. Next, regarding the factor 'Temperature of the current place', the comparison between group1 and 2 showed a significant ($p<0.05$) negative relationship. The result indicates that employees will be more likely to switch never or less than once a week than once until five times a week when they switch more due to the temperature of the current place. Regarding the factor 'Temperature of the current place', the comparison between group1 and 3 was not statistically significant. Lastly, regarding visual/acoustic privacy, the comparison between group1 and 3 found a significant ($p<0.05$) positive relationship. It indicates that employees will be more likely to switch once or multiple times a day than never or less than once a week, when they switch more due to visual/acoustic privacy. The comparison between group1 and 2 for this item was not statistically significant.

Finally, the multinomial logistic regression model for the relationship between the voluntary switching frequency and various reasons not to switch was statistically significant (χ^2 (24, N=96) = 52.16, $p<0.01$; Nagelkerke R²= 0.538). The reference category was the group3 (once or multiple times a day). The result shows that there was a significant ($p<0.05$) positive relationship between voluntary switching frequency in group1 rather than the one in group3 and one reason not to switch (I do not switch because I prefer to use always the same place). This result indicates that the least frequent switching group (group1) do not switch between different places more due to the reason 'I do not switch because I prefer to use always the same place' than the most frequent switching group (group3). Besides, a significant ($p<0.05$) positive relationship between voluntary switching frequency in group2 rather than the one in group3 and one reason not to switch (I do not switch because someone else might take the preferred place). This result indicates that group2 do not switch between different places more due to the reason 'I do not switch because someone else might take the preferred place' than group3.

5 DISCUSSION

In this study, mandatory and voluntary switching in ABW was examined. The comparison between mandatory switching frequency and voluntary switching frequency reveals three similarities: First, for both mandatory and voluntary switching, the most frequently answered response was 2-5 times switching a day. Second, for both mandatory and voluntary switching, the majority of the respondents answered that they switch once or multiple times a day. Third, the distribution of switching frequency was similar for both mandatory and voluntary switching.

Besides these similarities, there are also differences between mandatory switching frequency and voluntary switching frequency: Various factors (pull factors and push factors) regarding reasons to switch did not affect mandatory switching frequency at all, whereas voluntary switching frequency was significantly influenced from some of those factors. This result indicates that distinguishing mandatory switching and voluntary switching is necessary for understanding switching behaviour in ABW.

The results of the study have a significant meaning since the results are contradictory to results from previous studies (Appel-Meulenbroek et al., 2011; Göçer et al., 2017; Hoendervanger et al., 2016; Qu et al., 2010). While previous research found that the majority of workers do not often switch between places, this study found that the most frequently given response was 2-5 times a day for both mandatory and voluntary switching. Furthermore, for both mandatory and voluntary switching frequency, the majority of the respondents answered that they switch at least once a day. This difference can be explained by the fact that this research broadened the scope of switching, whereas previous research only focused on work/task-related switching. Hoendervanger et al. (2016) also stated that some respondents might have answered the question regarding switching frequency having only standard workstations in mind, and this limitation may explain why the majority of the respondents indicated to switch never or less than once a week. To prevent misunderstanding and give a clear understanding of switching behaviour, the definition of switching behaviour was introduced at the very beginning of the questionnaire.

6 CONCLUSIONS

This study extends the focus of some previous research on switching behaviour in ABW by including not only work-related switching behaviour but also switching with social purposes and break time. Additionally, this study defines switching behaviour and distinguishes between mandatory and voluntary switching of places. The results show that the majority of the respondents in the questionnaire study switch places multiple times a day, which runs counter to the previous research. In addition, the study revealed clear evidence that various reasons and factors suggested in this study had significant effects on the voluntary switching frequency, but no effect on the mandatory switching frequency. This result demonstrates that mandatory switching frequency is independent of various reasons and factors suggested in this study, which indicates that separation of mandatory and voluntary switching is required.

Overall, this study contributed to understanding switching behaviour better by defining, distinguishing switching behaviour, and identifying reasons (not) to switch and influencing factors on switching frequency. These findings can provide more knowledge of switching behaviour to workplace or facility management practitioners so that they can understand their

employees' needs and behaviour better and apply them to workplace design. Future research on switching behaviour in ABW is required that puts switching in relation to work performance, health, and well-being.

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