What is the experience of public sector employees on the use of open-plan workspaces?

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Abstract

This article discusses the introduction of open-plan workspaces in the public sector. The main objective of the study is to examine the experience of public sector employees in changing to open-plan workspaces and whether the implementation of these extensive changes has been successful. It is also questioned whether the Icelandic Government has formulated and adopted a formal policy on the implementation of open-plan workspaces in the public sector.

Opinions on the use of open-plan workspaces are varied. Previous studies have shown that the design of the workspace and employee participation are crucial when changing to an open-plan workspace. Within Iceland, very little research has been done on employee experiences of changing to open-plan workspaces, and this is the first study on public sector employee attitudes toward such changes. In this study, two public sector organisations and two ministries that had recently implemented open-plan workspaces were selected. A survey was sent out to 180 of their employees, of which half of the employees participated, answering questions on the positive and negative aspects of the changes. Government officials were also interviewed in order to obtain information on whether a formal policy has been formulated and adopted for the implementation of open-plan workspaces in the public sector. The main conclusion of the study is that half of the participants liked being in an open-plan workspace, but given the choice, the majority preferred to be in a closed office. Most participants felt that there was less privacy to do their work, noise levels had increased and it was harder to concentrate on projects. One-third believed that productivity had also been reduced. The results from Iceland are in line with previous research on open-plan workspaces abroad. Furthermore, interviews showed that no formal policy has been formulated by the authorities regarding the introduction of open-plan workspaces in the public sector.

Keywords: Open-plan workspaces; interaction; collaboration; government

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Introduction

The use of open-plan workspaces in Iceland is increasing, and according to information from the Government Construction Contracting Agency, it is expected that in the future, a large part of the government's office space, together with all the office space of the institutions and companies that the ministries and government agencies use for their operations, will be open-plan workspaces (Örn Baldursson, 22 November 2017). The public sector has been looking at the implementation of open-plan workspaces in the Nordic countries and in several other European countries, with the aim of learning from their experiences and getting ideas for the design of workspaces. The main objective of these changes is to achieve efficient utilisation and flexibility in the use of housing and also to promote a good working environment for employees.

There are available numerous studies relating to working conditions, job satisfaction, employee turnover and other factors that affect the well-being of employees in the workplace. Working conditions and the working environment have a significant impact on employee turnover and job satisfaction for public sector employees. This refers to factors such as the working facilities, relationships with colleagues, the opportunity for the person to develop in their job and the possibility of further promotion (Borzaga & Tortia, 2006; Ellickson, 2002; Kim, 2002 & 2004; Wright & Davis, 2003).

Managers often mention that lack of communication and dissemination of knowledge can be blamed on the walls within the workplace, as each employee stays within their office, more or less throughout the day. Therefore, open-plan workspaces, where walls do not hinder the flow of information, are the solution (Bernstein & Turban, 2018).

This article discusses the experiences of public sector employees at two institutions and two ministries in Iceland that have recently introduced open-plan workspaces. The benefits and effects of such changes on various aspects of the working environment are examined. An

attempt is also made to evaluate the objectives and intentions of the public sector concerning such changes and whether there is a fixed policy behind them.

The two main research questions are: The first relates to public sector policy and a discussion on whether a clear policy on the implementation of open-plan workspaces has been formulated. The second question, concerning public sector employees and their experience of working in open-plan workspaces, is whether open-plan workspaces promote increased communication, knowledge sharing and teamwork, thereby delivering increased productivity.

The presentation of the material in the article is such that the first chapter deals with policy formulation and specifically looks at the policy on open-plan workspaces. The second chapter deals with open-plan workspaces, and they are defined and analysed using foreign research in this field. Next, there is discussion on the key factors to keep in mind when implementing open-plan workspaces, such as acoustics, whether employees have enough privacy to perform their tasks, job satisfaction and health-related issues, such as stress and the consequences of stress. The third chapter reviews the research methods used in the study. The fourth chapter describes the results, and the final chapter is a discussion of the results, the limitations of the study, as well as final words.

1 Policy formulation concerning open-plan workspaces

Policy formulation is one of the most important tasks being addressed within organisations. It is a task that deals with the future and the unknown. However, it does not only refer to the future, but also involves assessing and examining what is being done at any given time, what has been done before, how it has succeeded and how it will evolve in the future (Runólfur Smári Steinþórsson, 2003, 2007; Henderson, 1989). Therefore, it can be said that the answers to these three questions are used to shape a formal policy and/or plan an organisation's description of the objective to be pursued, based on a thorough analysis of the current status and future vision.

Implementing major changes, such as moving the operations of an organisation to using an open-plan workspace, requires policy formulation.

Appel-Meulenbroek (2010) argues that there has previously been no single policy on how office space for employees should be designed. Decisions were often taken without any consultation with human resources managers, technical departments or others who might have a different perspective than senior management, let alone in consultation with the employees who were to work in the office space. In addition, changes were often made without regard to types of projects or employee communication.

A summary of 49 studies on the design of space and job satisfaction show that a person's personality can affect job satisfaction. They also show that open-plan workspaces create more disturbances and thus reduce job satisfaction (Seddigh, Berntson, Platts and Westerlund, 2016). Surveys conducted and repeated over a long period of time show that job satisfaction diminishes after employees are wholly or partially relocated from traditional offices to open-plan workplaces, and it is believed that there is a relationship between low job satisfaction and low performance. There is also a greater risk of disruptions in complex and challenging projects than in easier fields (Kim and Dear, 2013). All of these are important factors, and it is therefore vital that decisions are based on a thorough needs analysis and that a clear policy, with measurable objectives, is the basis for such an extensive adjustment as changing to an open-plan workspace, especially where thousands of people are employed, as in the public sector.

If the implementation of the policy is to succeed, employees must be consulted on the proposed changes. If employees are not included in discussions from the start, there is a greater risk that the policy will not reflect employee needs and circumstances, and therefore, it is more likely that the policy will not succeed. However, if employees are consulted, there is an increased likelihood that they will become the owners of the policy and therefore a greater likelihood that consensus will be reached between employees and management (Burby, 2003).

The involvement of stakeholders is therefore important at all stages of the process when implementing equally wide-ranging changes as moving operations into an open-plan workspace environment (Bryson, 2004).

2 Working environment and open-plan workspaces

According to information from Statistics Iceland, in the third quarter of 2018, there were about 206,700 people employed on the Icelandic labour market, which corresponds to participation in the job market of more than 82% (Statistics Iceland, 2018). Within the law concerning the 40 hour working week, the principle can be found that an employee in full-time work is considered to have fulfilled all work obligations, according to employment contract, upon working 8 hours a day, 5 days a week (Althingi, 1 January 1972). There are, however, comprehensive wage agreements from individual trade unions that in reality define how employees' working hours are organised.

This shows that people spend a lot of time at work and many work indoors. Therefore, employee workspace and facilities are very important. According to Hancock (2002), people living in cities or towns in Western countries spend up to 90% of their time indoors. This information demonstrates the importance of arranging the working environment in such a way that people feel comfortable and that it is organised so that it is possible to cope with the projects of the day.

The working environment has changed considerably in recent years, both in Iceland and abroad. Open-plan workspaces seem to have become much more common than before, and some Icelandic companies and institutions have adopted open-plan workspaces. In the United States, they have been popular for some time, as according to a study conducted there at the turn of the century, about 70% of office workers were working in open-plan workspaces to some extent (Davis, Leach and Clegg, 2011).

An open-plan workspace is generally defined as two or more individual workstations merged into one space. There are, however, many different versions of open-plan workspaces. For example, there may be partitions between workstations, employees may also be on the same table without partitions, with an individual workstation and no partition, or even without any workstations (Smith Jackson and Klein, 2009; Brennan, Chugh, and Kline, 2002).

Although the use of open-plan workspaces is relatively new in Iceland, they have a somewhat longer history abroad. In 1904, Frank Lloyd Wright designed the first office building based on open-plan workspaces. The office space was set up like a classroom, a large room with tables in long rows and chairs. During this time, open-plan workspaces were primarily used for general office workers, as managers kept their offices (Sundstrom and Herbert, 1982; Sundstrom, 1986). Today's open-plan workspace concept appears to have come from Germany around 1960, when furniture manufacturers were engaged to design open space for workplaces. The managers of the time wanted to take down all the walls with the aim of encouraging flexibility, increasing communication and trying to have more influence on employee behaviour and performance. Maher and Hippel (2005) pointed out that the environment and design of the workplace can have a great impact on the experience and well-being of employees, their behaviour and performance.

In the sixties, the use of a classroom arrangement as Wright had designed in 1904 had ended and management no longer had individual offices. At about the same time, many US companies began to use open-plan workspaces. At that time, the goal was primarily to save costs associated with space-intensive workspaces. Instead of offices, employees were packed together into open-plan workspaces (Shafaghata, Keyvanfara, Lamitb, Mousavic and Majida, 2014).

Today, management goals have changed and the thinking is different. The goal of managers with open-plan workspaces today is not only to save money, but also to increase

efficiency and productivity (Shafaghata et al., 2014). Management's goal is also to strengthen the relationship between employees, increase knowledge sharing, increase performance and facilitate communication between people. It seems that these goals are often achieved; however, research has not shown that open-plan workspaces increase the performance of employees, but rather that people work more efficiently than before (Danielsson and Bodin, 2008; Smith-Jackson and Klein, 2009; Oldham and Brass, 1979; Brookes and Kaplan, 1972; Hundert and Greenfield, 1969).

2.1 Open-plan workspaces and noise

Research on open-plan workspaces has shown that conversations between people around other employees is the factor that has the most negative impact on the workplace. Such conversations lead to less productivity and more stress among employees. Research has also shown that open-plan workspaces lead to less job satisfaction, less motivation and less privacy. Other studies showed that conditions in open-plan workspaces could cause stress and that there was a relationship between open-plan workspaces and fatigue, headaches and irritation amongst employees (Green, 1993; Smith-Jackson and Klein, 2009).

In a Danish study from 2001, 3200 employees in 20 organisations were surveyed and it was found that approximately 10 times more employees complained of noise in open-plan workspaces than in traditional offices. Fatigue and headache was observed to be three times more likely to occur in open-plan workspaces than in those where workstations were in closed offices. In addition, employees in open spaces had much more difficulty concentrating because of disruptions than those who worked in traditional offices (Pejtersen, Allermann, Kristensen and Poulsen, 2006).

In another study, from 2014, on open-plan workspaces in Denmark, it was found that 60% of employees who worked in open-plan workspaces considered themselves to have difficulty concentrating, due to ambient noise caused by their colleagues. About 35% of

employees mentioned that they had made mistakes in their projects due to disruption in the workplace and that they had needed to work overtime to compensate for disruptions during the day. The results also indicated that the design and installation of the open-plan workspaces had not been done in a way that was most suitable for the workplace; for example, a call center was placed next to a department that worked with difficult and demanding tasks that required concentration (Dalager, 2016; Smith-Jackson and Klein, 2009). Research has shown a connection between noise, design space and capacity (Mak and Lui, 2012).

A study of about 300 workplaces in the United States, with over 42,500 employees working in different types of office spaces, showed the greatest satisfaction in traditional offices. There people were comfortable with the privacy they had. Open-plan employees complained the most about noise but less about disturbances caused by, for example, other employees' computer screens and the room temperature of the workspace. Although the noise that people in open-plan workspaces mentioned was work-related conversations between colleagues, it was considered to be significantly disturbing. Colleagues found it difficult to converse without disturbing others or without others hearing what the topic was (Kim and Dear, 2013).

A study by Hongisto et al. (2016) of 153 employees in open-plan workspaces in Finland looked at how different designs of the workspaces influenced how noise is transmitted throughout the workspace. In some spaces, conversations between people were heard up to 20 metres from the place they started, but in other spaces, it reached only 5 metres. It is clear, therefore, that when the working space is designed, acoustics must be taken into account in order to minimise disruption. This could lead to an increase in job satisfaction.

It should not be forgotten that individuals are unique and have differing sensitivities, opinions, backgrounds and experiences. Therefore, the way individuals experience disruption around them differs.

Whether or not an employee wants to be in an open or closed workspace is personal, and various studies have been done on the personalities of people and their attitude towards being part of a crowd or a small group. In addition, research suggests that introverts prefer to work with small numbers of people, but those who are extroverts prefer large groups of people and group work (Eysenck, 1967; Wilt and Revellem, 2009). Research on disruption and noise could therefore give erroneous results when people's personalities are not taken into account (Belojevic, Jakovljevic and Slepcsvic, 2003). As there are no walls in open-plan workspaces, employees are very close to one another. As a result, employees may not be able to focus on projects, or they may have to avoid communication in order to maintain concentration (Maher and Hippel, 2005).

2.2 Communication and concentration

Some research has shown that by taking down interior walls in open spaces, communication between employees and groups within the workplace increases, and this leads to increased employee satisfaction. However, this has not been confirmed by adequate research. Researchers have wondered if colleagues and groups talk together less than before because open-plan workspaces do not offer the opportunity for confidential conversations or sharing personal issues (Kim and Dear, 2013). Bernstein and Turban's (2018) study of Fortune 500 company employees revealed that by changing to an open-plan workspace, communication and co-operation was reduced amongst employees. Employees send more e-mails than before, even if they are in the same open area. The study also revealed that participants spent 73% less time on face-to-face communication, whilst the use of e-mail and social media messages increased by 67% after changing to an open-plan workspace.

Different situations are suitable for different individuals, and it depends on the personality of each person whether the employee wants to sit in a quiet environment or whether the person is not concerned to some extent about surrounding noise and conversations. In general, the

seating arrangement in open-plan workspaces is determined in advance and is decided according to tasks and how the space is designed. The pattern of communication within the space therefore depends on how the workstations are arranged. Therefore, it cannot be seen in advance, only after employees move into the open space and begin to communicate with each other, how each and every employee will respond to the changes. Only then is it possible to change the setup of the workstations to accommodate the wishes of employees (Leaman, 1992).

In a study conducted at two workplaces with 88 employees in an open-plan workspace, employees were asked if they were ever disrupted at their workstation. Almost all, or 99%, responded that they were experiencing disruption, mostly because of a phone ringing at an empty workstation or because co-workers were talking. Participants responded that if this disturbance was not present, their productivity and job satisfaction would increase in the open-plan workspace (Banbury and Berry, 2005).

2.3 Job satisfaction

Job satisfaction has, amongst others, been defined as a pleasing or positive emotional state resulting from an individual's experience at work (Locke, 1976). To achieve increased motivation and better performance from employees, job satisfaction is crucial. The working environment affects the employees' experience and their satisfaction. Factors such as the design of the space, installation and size of the workstations and the design of the furniture has an impact. The working environment can be complicated, and more than one issue can affect the individual and whether or not he or she experiences satisfaction at work. Many studies have been conducted on the working environment and job satisfaction in open-plan workspaces. They all have in common that job satisfaction is always greater in organised units with traditional offices and less in open-plan workspaces (Danielsson and Bodin, 2008; Pejtersen et al., 2006; De-Croon, Sluiter, Kuijer and Frings-Dresen, 2005). A long-term study conducted in

the United States revealed that employees in traditional offices (closed) were happier with their circumstances than those in open-plan workspaces (Kim and Dear, 2013).

Ellickson (2002) examined the factors would affect the job satisfaction of local government employees and found that workplace facilities were very important, as unacceptable working conditions can lead to dissatisfaction in the workplace and even lead to employees leaving employment. Research results indicate that one of the reasons why public sector employees leave employment is because of burn out, caused by, amongst other reasons, the environment in which they work. Other reasons that have been mentioned are that there are not enough employees to carry out tasks and that the pace is too fast in the surroundings. All these factors mentioned were the reason employees were mentally exhausted after a day in such surroundings (Sonja Ýr Þorbergsdóttir, 2018; Hjördís Sigursteinsdóttir, 2016; Kim, 2004; Samantrai, 1992). In a Swedish study that examined the relationship between job satisfaction and the planning of workspaces, 491 employees participated from 26 organisational units with different types of workstations. Job satisfaction in open spaces was smaller than in all other types of office space, but it was highest in closed or semi-closed spaces (Danielsson and Bodin, 2008).

No significant research results have shown that job satisfaction is higher in open-plan workspaces. The source of dissatisfaction in open spaces is usually due to noise and lack of privacy, but these issues often cause difficulties in concentration, as previously pointed out, and add to employee stress (Hongistoab et al., 2016).

2.4 Stress

Stress is becoming increasingly evident in modern societies, and according to a 2013 survey by the European Agency for Safety and Health at Work, over half of Europe's employees experience work-related stress. This is a similar percentage to that measured in Iceland, where 47% of Icelanders say that they have experienced work-related stress (The European Agency

for Safety and Health at Work, 2013). Therefore, it is important to organise working conditions in such a way that stress is reduced or at least to avoid increasing people's stress further.

The word stress brings to mind a number of negative meanings. Everyone feels stress at some point, to some extent. However, moderate stress can be encouraging and can help employees achieve their goals. If it continues for a short time, it is not considered harmful. If stress continues for a long time or is high, it can have a negative effect, be harmful and suppress the immune system. For example, work-related stress can be attributed to the mental and social burden at work caused by working conditions and workplace planning. The consequences of work-related stress are numerous, including musculoskeletal problems, anxiety, depression, sleep disturbances, fatigue, cardiovascular disease, as well as reduced capacity to work. If work-related stress is a problem in the workplace, it can reduce the productivity of organisations, as stress is the cause of more than one-third of employees' illness and is the reason behind nearly half of employee sick days (Despréaux, Saint-Lary, Danzin and Descatha, 2017; Dhabhar, 2014; Guðrún Ragnarsdóttir, Ásrún Matthíasdóttir and Jón Friðrik Sigurðsson, 2010).

Individual control over circumstances is of great importance when addressing stressful situations, as research has shown that if an individual experiences that he or she has control of their surroundings, then stress decreases (Wilt and Revellem, 2009). Employees in open-plan workspaces do not have the same control over their surroundings as those who work in closed work spaces. For example, employees in open spaces cannot shut doors or control temperature, noise or other stimuli. It is therefore very important that the objectives of management in introducing open-plan workspaces are clear and that a policy is the basis of such an extensive change as changing to an open-plan workspace. Most foreign research shows that noise and lack of concentration accompany the use of open-plan workspaces and that it reduces productivity. Job satisfaction is reduced in open spaces, and conversations between colleagues are generally considered to be significantly disturbing. It is therefore interesting to see how

public sector employees in Iceland experience open-plan workspaces and whether they experience the same influencing factors.

3 Method

The questions underlying the study are two: the first is whether the public sector has formulated a policy for implementing open-plan workspaces and the latter is about the employee experience of the implementation. In order to obtain information on whether the public sector has formulated a policy on the implementation of open spaces, two interviews were conducted. These were held with Örn Baldursson, the Division Manager of the Department of Study and Planning at the Government Construction Contracting Agency on 22 November 2017, and with Stefán Thors, Chairman of the project for the development of the government office square (Stjórnarráðsreit) on 24 July 2018.

Participants in the study are employees of public institutions and ministries. Two institutions and two ministries were selected that had both very recently implemented open-plan workspaces, and a questionnaire was submitted electronically to employees. First, approval was obtained from public sector officials and ministries to conduct the investigation and to send questionnaires to employees and invite them to participate in the study. The survey was sent to 182 employees, but not all employees of these institutions and ministries work in open spaces. The survey was open from 2–19 December 2017. Care was taken that it was not possible to trace individual answers to employees, and this was done in order to increase the likelihood of honest answers from the participants.

To obtain employee experience and attitudes, a quantitative methodology was used to conduct the study. Descriptive statistics were used in the processing of data, which enables a simple description of the results to be obtained. Thus, overall averages from the study as well as from different sample groups could be seen. The questionnaire consisted of questions

designed to capture the way in which public sector and ministerial employees experienced change to their working environment upon changing to an open-plan workspace. The questions were 19, of which 4 were background questions.

There were 14 questions about the changes experienced in relation to the introduction of open-plan workspaces. Respondents were asked to evaluate various aspects of the changes on a five-point Likert scale, where 1 corresponded to the lowest value and 5 the highest. First, participants were asked about their expectations in relation to changing to an open-plan workspace, with a scale of 5 being very positive and 1 being very negative. Participants were asked whether they liked the open-plan workspace they were in, where 5 was very good and 1 was very bad. Then there was a question on whether participants felt a difference in concentration and performance after they changed to an open-plan workspace, where 5 was a significant difference and 1 was very little difference. Experiences of participants on the change in work culture was measured, with 1 being much worse and 5 being much better. It was then asked about knowledge sharing, where 1 indicated that people shared much less knowledge in the open space and 5 that people shared much more knowledge. Then they were asked about stress, where 1 was for increased stress and 5 was for a reduction in stress, upon changing to the open-plan workspaces. The last question was an open question where participants were asked if they wanted to comment. The participants were then asked if they had received sufficient information regarding the change from management, where 5 was for very good information and 1 was for very little information. Participants could then add comments on each question should they chose to. The list was pre-tested on four individuals from the general population and corrected according to comments received.

4 Results

With such extensive changes as those that arise from changing to an open-plan workspace, it is important that a well-thought-out policy exists with specified and measurable objectives. One of the key roles of the public sector is to be a policy maker and to achieve cost effectiveness and efficiency in its operations. Therefore, it can be argued that planning and policy making are a very important part of all public sector activities, whether among institutions and ministries or in relation to operations and employee facilities.

4.1 Public sector policy on open-plan workspaces

As has previously been pointed out, it is the aim of the Icelandic government to change their office space, together with all the office space of the institutions and companies that ministries and government agencies use for their operations, to open-plan workspaces.

The primary objective of the government in using open-plan workspaces is economical utilisation, flexibility in the use of housing and provision of a good working environment. The flexibility in the use of housing means that it is easier to make changes later on to the space and that in ministries, for example, it is easy to add or reduce the number of workstations. The emphasis from the Ministry of Finance and Economic Affairs is to consider good internal organisation where space is reasonably large and can be shared in the best possible way. The well-being of employees is also a guiding principle, and care is taken that operating costs are within reasonable limits (Örn Baldursson, verbal reference, 22 November 2017).

When examining the public sector to see what policies underpin the implementation of open-plan workspaces, one of the interviewees was Stefán Thor, Chairman of the project for the development of the government office square. He states that the Government Construction Contracting Agency (FSR) has set out criteria for the number of square metres per employee and the proportion of team space, but the policy has not been announced. Whether the responsibility for presenting such a policy lies with the Construction Agency or the Ministry of

Finance and Economic Affairs does not appear to be clear (Stephen Thors, verbal reference on 24 July 2018). If there is no policy for the introduction of open work spaces, the obvious question is for what purpose is the increasing of the number of open-plan workspaces in the public sector? Stefán states that the main reasons for open-plan workspaces in the public sector are better utilisation of the number of square metres per employee, as it is seen as too large today, as well as increasing teamwork. The reason is therefore not due to savings but to achieve better utilisation of housing. In addition, project-oriented work facilities are being promoted as well as an increase in teamwork.

It is clear that no formal policy is behind such an extensive change, as is stated here, for the change to open-plan workspaces. Therefore, it is of interest to examine the experience of the employees.

4.2 Expectations of employees towards open-plan workspaces

When changes like these are made, expectations are high and employees can have different priorities. A total of 42% of the participants had positive expectations, i.e. very or rather positive expectations of changing to an open-plan workspace, whilst 28% of respondents had negative expectations. There are many things that affect employee attitudes and expectations for change. According to these results, it can be concluded that the management support for this change was substantial and that the work culture in the workplace was generally good, as this affects the expectations of employees for change. The majority of respondents felt that the work culture had not changed upon moving to an open-plan workspace, or 53%, while 35% thought it had changed for the worse. If you consider how satisfied the participants are with the change, then the majority of the participants, or 57%, say that they like being in the open space very well or rather well, but 30% of respondents say they dislike or very much dislike the new working environment.

4.3 Concentration and productivity

As previously mentioned, it is of great importance when implementing changes that managers show consideration and understanding of the needs and interests of individuals and groups that are undergoing these major changes (Raineri, 2011). The majority of respondents, or 52%, are of the opinion that by moving to an open-plan workspace, their ability to concentrate has diminished. This finding is in line with previous research on open-plan workspaces, as research shows that when walls are removed, employees feel that they are disturbed and disrupted more, reducing concentration and productivity. Research has also shown that the number of mistakes made due to disruption increases and that employees are required to work late in order to peacefully focus on their projects (Dalager, 2016; Maher and Hippel, 2005; Smith-Jackson and Klein, 2009).

The majority of participants in this study, or 65% say that they have felt a very large or rather large difference in privacy from the previous arrangement, that is, employees feel they had more privacy before, as d studies have shown. One participant puts it this way, "this is a very bad arrangement for those employees who need privacy, which is not possible with open-plan workspaces".

In terms of productivity, the majority of participants, or 53%, felt that open-plan workspaces did not affect employee productivity. In addition, 32% believed that productivity had decreased in the open-plan workspace and 14% that it had increased.

4.4 Is the open-plan workspace suitable for the work being done?

When participants were asked whether their work was suited to an open-plan workspace, the participants were split in two. Almost 41% thought that open-plan workspaces suited their work very or rather poorly, but 39% thought their job was well suited to open space. As the results of other studies reported have shown, individuals often experience difficulties in carrying out complex tasks that require a high degree of concentration in open spaces (Booth, 2017).

Participants in this study are all employees of institutions and ministries, and most of them have completed further education at the tertiary level, or 82%. Their work requires expertise and presumably specific focus.

4.5 Stress

Research shows that the working environment can have a major effect on stress amongst employees and that when employees do not have control of their working environment, stress increases.

When asked about stress and whether the participants felt a difference in stress from the previous arrangement, 35% say that stress has increased greatly or rather much with the change. One participant stated that *"morale has deteriorated and stress has increased after we changed to the open-plan workspaces"*. Research has also shown that chronic and/or severe stress can contribute to musculoskeletal problems, displeasure, fatigue, cardiovascular disease, as well as reduced work capacity and consequently, greater absence from work (Dhabhar, 2014; Guðrún Ragnarsdóttir et al., 2010). Participants in the study stated *"sick days have increased due to more harassment"*, *"stress has increased and sick leave reflects this"* and *"there is far too much disturbance, it is not possible to concentrate due to people moving around and gossiping, it is like being in an airport lounge"*.

4.6 Environmental noise

One might say that it is only natural that the noise level increases when moving to an open-plan workspace. More people are gathering in fewer square metres. Footsteps, conversations, phone calls, rustling of paper and keyboard sounds are amongst the things people mention when discussing environmental noise. Most participants found the difference in environmental noise

to be worse compared to the previous arrangement, or 68%. Of these, 46% experienced a change for the worse and 22% much worse. As research has shown, noise and environmental sounds are more common in workplaces that have open-plan workspaces. Studies have shown that disturbances from music, phone calls, buzz, chats and the coming and going of employees is much more common in open-plan workspaces than in closed ones (Kim and Dear, 2013; Maher and Hippel, 2005; Smith-Jackson and Klein, 2009).

Therefore, the results of this study are not unlike the results from studies conducted abroad. It is very common to see employees in open-plan workspaces wearing headphones during their work to exclude noise.

4.7 Information on changes and workspace definition

When implementing change, it is important to include the employees in the process so that they feel that they are a part of that change. When participants were asked how the information related to the change had been disseminated, it was found that the majority received good information from their workplace on the proposed changes, or 52%. On the other hand, 29% believed they had received little or very little information on the proposed changes. It can be assumed from previous studies that those who are most dissatisfied with the open-plan workspaces have received too little information and have not been involved in the process from the beginning. The majority of respondents felt that the new space was well defined, or about 57%, whilst 36% felt that the spaces had not been adequately defined.

Participants also said *"there was a lack of information about the implementation of new items, in-house systems, recruitment, etc. I experienced that some managers were getting tired of all the changes and even avoided communicating with subordinates"*. Another participant mentioned that employees had not been listened to and that they had not been involved in the process *"employee points of view and arguments were completely ignored"*. Care must be taken of employee interests, and it is desirable that employees accept the changes. One of the most

important steps during changes is to have a clear policy and to get as many participants to take part as possible, thereby reducing opposition to change if there is any. If this is done, changes can be implemented much more effectively and efficiently (Lazăr, 2005; Raineri, 2011).

4.8 Open-plan offices versus closed offices

Opinions differ as to whether employees want to work in open or closed spaces. Of the participants in this study, half of the employees said they would rather work in a closed office and 41% in an open-plan office. Then 10% said they did not have an opinion on the type of office space that they worked in, which is an interesting attitude in itself. A summary of 49 studies on the design of space and job satisfaction shows that people's personalities can greatly influence how much job satisfaction they experience. Furthermore, research shows that open-plan workspaces create more disturbance and reduce further job satisfaction.

5 Discussion

In this study, public sector employees' experience of open-plan workspaces has been examined, as has whether a clear public sector policy has been the basis.

The decision seems to have been made by the Icelandic government to move public institutions, their companies and ministries from closed workspaces to open-plan workspaces. For it to be done in the most positive and efficient way, it is important to know how employees experience such a significant change in circumstances as moving to an open workspace. Including employees in discussions on major changes is one of the prerequisites for success, so that each employee has a role to play in the change, and are able to have a say about it. It is not possible to implement the opinions of everyone, but it is important to regularly inform and hear people's opinions, because as has been pointed out in previous research, one way is not always suitable for everyone. One must also pay careful attention to who is suited to open-plan workspaces and who is not.

The results of foreign studies are in line with the results of this study, that noise is one of the main things people complain about in open-plan workspaces. In addition, physical symptoms such as fatigue and headache are three times more common in open-plan workspaces than in closed, and employees find it much more difficult to focus on demanding tasks in such spaces. Employees need to whisper and tiptoe around the workplace. The participants point out that it is necessary to formulate a policy and design the space as an open-plan workspace from the start with accompanying solutions, not just collect as many people as possible and put them in a large room.

The main objective of the study was to examine the experience of public sector employees when moving into open-plan workspaces, what expectations they had for such space and how successful the implementation was. Efforts were made to answer the question: What is the experience of public sector employees of open-plan workspaces?

The results show that the participants had positive expectations towards changing to an open-plan workspace and more than half were happy to work in an open-plan workspace. In addition, the employees shared more knowledge, and about half of the participants felt that the work culture of the institution or the ministry had changed for the better by changing to an open-plan workspace. However, the participants experienced more disturbance in the open-plan workspaces, and they did not get as much privacy as before to carry out their tasks and were less able to concentrate.

One-third of the participants felt that productivity had been reduced after moving to the open space. There was a large difference in whether people wanted to be in the open space or not, if they were given the choice, but 40% preferred the open space, whilst half preferred the closed office. These findings fit well with the foreign research presented here, as few studies show that open-plan workspaces are the best choice in all respects.

Much of what has been stated here, both in this study and in the foreign studies that have been reported, shows that there are extremely divided opinions on the use of open-plan workspaces. In spite of this, they show that if an open-plan workspace is designed correctly from the start and if the employees' suggestions are implemented, then it is possible to create a good working environment with the open-plan workspace. This could lead to increased employee satisfaction. However, managers must keep in mind that not everyone can work in an open space, and not all jobs are suitable for open-plan workspaces. Therefore, targeted policymaking needs to be the basis for this.

Although no formal policy is behind the changing of the entire office space of the Icelandic government, together with all the offices of institutions and companies that ministries and government agencies have the use of, to open-plan workspaces, obtaining information on the implementation was successful. Since no clear policy seems to be the basis and a comprehensive needs analysis does not seem to have taken place in the public sector, then there could be some insecurity and fear amongst employees and managers towards changing to an open-plan workspace (Stefán Thor, verbal reference on 24 July 2018).

The few number of workspaces examined is a limitation when it comes to interpreting the study's findings. It would have been beneficial to examine more institutions and ministries in order to gain an even better overview. It is also important to formulate a clear policy when it comes to extensive changes like these, which affect a number of institutions and ministries and the jobs of thousands of individuals.

Research on what type of office space is suitable for different jobs is lacking, but considering the results presented here, all indications show that the different needs of both organisations and employees can call for different types of spaces, and therefore, many questions remain unanswered as to what is the best way to organise the government office space policy.

It should be noted that the lack of housing is probably one of the main reasons why open-plan workspaces are being implemented, as was the case when done at similar institutions in Canada. There, the presence of employees at the workplace is only 30–45% of working hours, and therefore, each employee does not need a large and closed-off space to work in. Considering the nature of work in the institutions and ministries, it can be assumed that the situation is similar in Iceland. In this respect, a change like this is well suited to better utilise the housing that the public sector has at its disposal.

Therefore, a clear policy must be formulated by the public sector as to what the objective and purpose of the open-plan is and to introduce it to employees and managers. It is important to choose ways and implementations that are appropriate for the organisation in question, and it is important to include the employees of the organisation in the formulation of the policy. With clear policies, ministries and institutions can allocate their funds and prioritise projects in a much better way than otherwise. This brings together the welfare and well-being of employees, a clear policy and a sensible allocation of public sector finances.

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