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Name module/course code	: Thesis/BUIL-1230
Name tutor	: John Brands
Name student	: Joey Willemse
Full-time / Part-time	: Full-time
Greenwich student nr.	: 001046173
Saxion student nr.	: 2434830
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Concentrating on concentrated work

Finding the solution for concentrated work in open-office plans

Preface

This thesis is the final product of the Master Facility & Real Estate Management (MSc) at the Saxion University of Applied Sciences and University of Greenwich.

Starting off I would like to thank my tutor John Brands for his help and feedback during the research phase. Subsequently, I would like to thank all the respondents involved in the interviews and observations: Femke Leyte, Frank van der Leest, Joyce van Aken, Inge van der Ploeg, and Wendy Koldenhof. The interviews were interesting and provided me with a lot of insight into the topic at hand as well as a broader perspective. Furthermore, I would like to thank Hester van Sprang and Feike Bergsma as teachers at Saxion who provided me with a lot of guidance regarding the topic at hand. Lastly, I would like to thank family and friends for their support during my research

During the research, I had the opportunity to improve my research skills to a master level as well as garner a lot of knowledge about concentrated work and personal characteristics. It was especially interesting reading all the different findings of experts all around the world, as well as talking to national experts such as Yvette Tietema.

I am quite content with the results of this process and would like to share these results with the readers of the thesis.

Joey Willemse,
Didam, 19th of August 2019.

Executive summary

Purpose – The purpose of this research is to provide a framework which focuses on solving the problem of concentrated work in open-office plans. Since the introduction of the open-office plan concentrated work has been rated poorly in this environment. With constant developments in workstyles and the increasing importance of knowledge work, organisations need to find a better balance between collaboration and concentrated work. It is important to figure out which factors play a part in concentrated work, and how the situation can be facilitated better in open-plan offices. This has resulted in the following main question:

“How can organisations facilitate concentrated work in open-office plans? “

Design/methodology/approach – This research contains a literature review which clarifies and explores the content of above-mentioned key topics. Furthermore, it brings light to relationships and correlation between concentrated work and different aspects that affect it. Secondly, in-depth interviews have been conducted with professionals from five different organisations within the current market. These interviews were aimed at clarifying what the current market is doing to facilitate concentrated work, what they are focused on in general and why. These organisations have also been observed, through extensive tours and where possible half a day of observing. The purpose of the observations is to find out how the workplace concept works in practice and which problems might occur.

Findings – The results have identified multiple solutions for concentrated work and coupled this with important aspects to take into account to stay in touch with the identity of the organisation and its population. This has resulted in a framework which focuses on three steps, analyzing the current situation, solutions for concentrated work, and measurement and control. For analyzing the current situation organisational goals and focus, communication, persona's (based on personal characteristics, task characteristics, and mobility profiles), and behaviour have been identified as key aspects. Several solutions are proposed consisting of interior design, zonal solutions, cellular solutions, headphones, remote working, and education. Measurement and control take into account communication, analytical tools, and research.

Research limitations/implications – This research was mainly focused on identifying the factors that have an impact on concentrated work and finding the alignment between the organisation, business, and workplace concept. Furthermore, five organisations have been approached who are mostly located in the Eastern part of the country, which might mean results are not generalisable over the entire country. The key aspects however, do seem to be in agreeance with the findings of known literature and research.

Originality/value – The research provides a solid framework with factors to take into account, possible solutions and the aftermath of providing concentrated work in open-office concepts. This could solve the problem organisations having a hard time solving the problems with privacy and concentrated work in open-office plans.

Keywords – Open-office plan, concentrated work, privacy, workplace concept.

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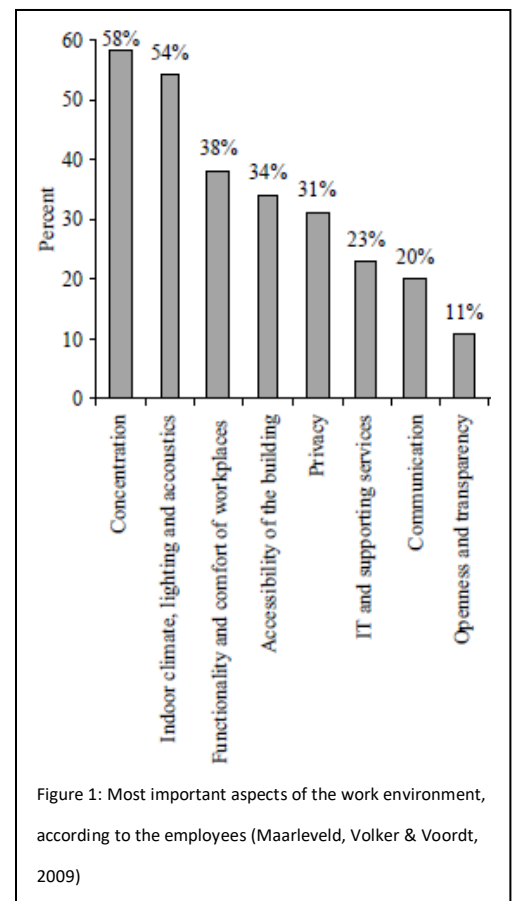
1. Introduction

As the economic crisis has slowly been coming to an end, the war on talent has been re-emerging (Beechler & Woodward, 2009). More and more of the baby boomers are retiring, creating a void of a lack of experience and talent that has to be filled in. With all of the companies fishing out of the same pool, trying to get the most suitable talent for their company, it takes extra work to stand out (Graft, 2017). In the old days, a company would mainly focus on primary terms of employment, there has been a shift in the demands of employees. Even though these terms of employment are still important, employees have also started looking at feeling respected and being provided with what they need to be successful (Mercer, 2018). In 2013 a survey has shown that when the organisation looks to take better care and attention of their employees, in this case based on wellbeing, sixty percent of the staff are more likely to recommend their organisation (Cushman & Wakefield, 2017).

Another important factor to take into account is the new economy. According to Morris (2010), most advanced economies have experienced three major structural changes, which are the rise of knowledge-based services, the shift in business priorities from investment in physical assets to intangible assets, and the growth of an increasingly well-educated and qualified workforce. With the changes in personnel and level of knowledge, the type of work also changes. The knowledge worker has become predominately more important within the field. Heerwagen et al. (2016) note that the structure, content and process of work has been changed and argue that work is now more cognitively complex and more team-based and collaborative. This brings up an interesting dilemma for organisations since they need to offer both sides of this equation, the concentrated work and the collaborative work.

As open-office concepts have become the common norm for most organisations, the benefits and problems have been brought to light. Open offices are good for economic-, organisational- and collaboration benefits for the business. However, research has shown that open offices also have several drawbacks. One of the biggest problems with open offices is that concentrated work and privacy are almost always rated poorly. Maarleveld et al. (2009) found with their WODI toolkit that in offices privacy has a dissatisfaction rating of 31 percent, whereas concentrated work has a dissatisfaction rating of 40 percent. Comparatively only the indoor climate has a lower rating. In the same report they found that concentration is considered the most important aspect of the work environment according to employees, whereas privacy holds the fifth place, as can be seen in Figure 1 (Maarleveld, Volker, & Voordt, 2009).

The economic incentive for organisations regarding facilitating concentrated work is obvious, as they want to get the most out of their employees and stay strong in the battle of knowledge-work. Besides this, satisfied employees tend to



stay at organisations for longer and help with the continuity of an organisation. In a time where it is becoming harder for organisations to find the right people, it is important to create the right circumstances for people to thrive. When employees get distracted during high-focus tasks, research has shown that it takes them up to fifteen minutes to get back into the high state of concentration needed to deliver a good result for the task (DeMarco & Lister, 1999). Furthermore, research has shown possible further consequences on a personal level where interrupting the performance of employees for only 20 mins resulted in significantly higher stress, frustration, workflow, effort, and pressure (Gudith & Klocke, 2008).

Even though the industry and researchers have concluded that concentrated work is quite important in the changing landscape of the workforce and different tasks, there has yet to be a framework for successful concentrated workspace. For the above-mentioned reasons, the problem this report focusses on is concentrated work and how to properly facilitate it within open-office concepts. The end-goal is to create a framework that helps organisations identify the conditions for concentrated work and how to facilitate it. For this reason, the main research question that is looking to be answered is as follows:

“How can organisations facilitate concentrated work in open-office plans? “

2. Literature review

The main research question of this study contains multiple core concepts, being office- and work concepts, concentrated work and privacy, distractions, which can be divided into auditive- and visual distraction and the effect it has on perceived productivity. There are several different factors that are also important to the research, but they are covered within several of the core concepts since they have overlap.

2.1 Office concepts and work concepts

To get a broader perspective on the developments that have been happening related to concentrated work it is important to first see how office concepts and work styles have developed over the years. Gottschalk (1994) defined the development of office philosophies and office concepts in Europe as can be seen in Figure 3.

Period	Office concept	Office philosophy	Number of people
1950s	Cellular office	Representative arrangement	1-2 persons (up to 4-6 persons)
Mid 60s	Open plan office	Organisational flexibility	> 20 work stations
Late 60s	Group office/ office landscape	Ergonomic work environment	6-20 work stations
1980s	Combi-office	Communicative space structure	1 person cellular office + multi-functional zones

Figure 3: Different office concepts throughout the years (Design Council, 2005).

In the 1990s a second workplace revolution was introduced, coined the ‘new ways of working’. This introduced the concept of working independently from time and place and has been developed over the following decades. This change is synonymous with the developments in the cultural, social and technological processes. A side-effect of this change is that the office space was increasingly seen as a space for social and interactive engagement. This means that organisations are looking less like “corporate islands” and are more extensively involved in complex supply chain relationships (Design Council, 2005). This highlights the importance of networks, collaborative production and multi-disciplinary skills (Harris, 2016). This is also supported by Bell and Anderson (1999) who noted that the future environment must have more shared spaces, spaces for collaborative work for small and larger groups. They did however make the distinction that these spaces must be easily adaptable to change, where possible, by the workers themselves. This brings up the idea of the ‘Agile’ workspace, which goes beyond flexible and adaptable to address the issue of time and cost. In current times this is seen by example in companies who have flexible contracts with their furniture supplier, to exchange furniture when the demand changes. According to Petrulaitiene and Jylha (2015), there can be several reasons for an organisation to change its workplace concept. The main drivers can be divided into four groups:

- External economic or social factors, such as economies of scale and aging society (Pullen, 2014);

- Technological developments (Sullivan, 2013);
- Changes in business processes;
- Changes in organisational structures (Dewulf, Krumm, & Jonge, 2000).

Petrulaitiene and Jylha (2015) also found that the majority of organisations find employees more important than cost reductions. However, companies still do not clearly understand the purpose and value of workplace strategy. This results in some organisations focussing more on the design than an actual strategy, which might result in mis- or sub-optimal use of the workplace concept. A way of lowering this risk is by actively involving employees in workplace development (Petrulaitiene & Jylha, 2015). Babapour (2019) found, based on activity-based offices, that clearly defined and well-communicated rules were crucial for having a shared understanding of expected behaviour, making the flexible office concepts work, and avoiding uncertainties, conflicting interpretations and disregarding of rules.

Nowadays a lot of offices are designed following the open-office plan. The original idea behind the open-office plan was that by breaking down the real walls, the social walls that divide people would be broken down as well (Musser, 2009). For organisations the open-office is very interesting because it has financial benefits due to less space provided per person, and should stimulate collaboration and knowledge sharing between employees (Heerwagen et al., 2004; Lansdale et al., 2011). According to Haynes et al. (2017), open-office plans tend to assume that collaborative work is more productive than individual focused work, and that office collaborations in an open-plan environment are what people do most of their time. On the other side Pejtersen et al. (2011) found that when comparing shared and open-plan offices with cellular offices, the shared and open-plan offices tended to have a significant relationship with a higher number of days of sickness absence than those in cellular offices. In general, the occupants in shared or open-plan offices reported almost twice as many days of sickness absence compared to occupants in private offices. Pejtersen et al. (2011) concluded that because of this the employees, employers, and society in general, pay a high price for the benefits of open-plan offices in terms of sickness absence and loss of productivity. Erlich and Bichard (2008) found that in this day and age there is a need for collaboration and concentration for knowledge workers. The respondents of their research, mainly aimed at ageing knowledge workers, found that it is quite hard to perform concentrated work in the current open-office plan. Figure 3 shows the perception of the respondents on their workspace design and performance. The workspaces are placed in terms of how conducive they are perceived to be for concentration and collaborative activities.

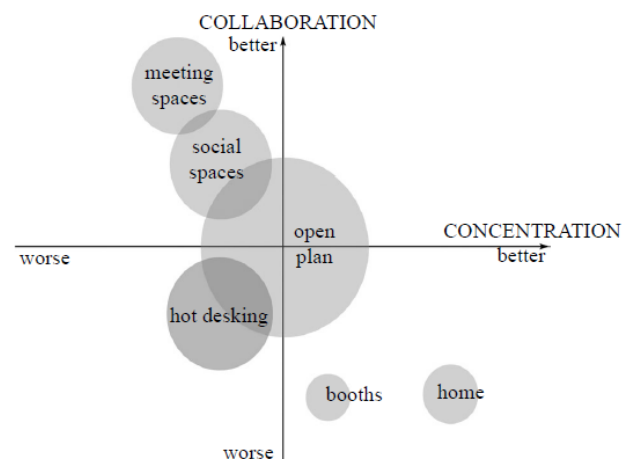


Figure 3: User perception of workspace design and performance (Erlich & Bichard, 2008)

Another workplace concept that has been used more is the activity-based work environment. This concept focusses on developing several areas within an office that all relate to a certain style of working. The basic assumption behind ABW concepts is that it enables workers to use the most appropriate activity setting at all times, by switching between different activity settings whenever they switch between different types of work activities (Koetsveld & Kamperman, 2011). For example, one of the most used concepts is developing areas for collaboration, concentrated work, and short-term work. One of the pitfalls of this concept is that a part of the employees in an organisation does not have high mobility. This means that the employees do not like to change their work environment often, so would rather stick to their current desk. This could be due to social reasons or just because it is a habit. Research by Hoendervanger et al. (2016) found that workers typically do not switch frequently, or not at all, between different activity settings, which is detrimental to the concept. Their research showed that when people do switch frequently, several times a day, the satisfaction ratings are significantly higher. This is to be expected because they are using the diversity of work environments for what they were designed for. Hoendervanger estimated that sixty to eighty percent of the activity-based work environments in the Netherlands do not utilise the potential, because they undervalue the importance of privacy and concentration (Tietema, 2019). Babapour (2019) found that activity-based offices work provided they match the individuals' personal circumstances and work-related preconditions, support the individuals' work, fulfil the individuals' preferences for wellbeing and enjoyment, and facilitate flexibility and the shared use of spaces through well-designed rules, spaces and instruments.

One of the newly introduced ways of working is 'Agile working'. This style of working has an emphasis on mobility and includes working away from the office (at home or a remote 'third party'), but also considers the mobility within the office as workers share space and resources. The benefits that come with this style of working for staff are flexibility, work-life balance and so on, but on the organisational side there are also benefits due to controlling cost through restricting demand for expensive real estate. This creates a process of optimising the use of space available and will increase the density and utilisation (Harris, 2016). Harris (2016) also notes that if agility and connectivity are the two defining aspects of the corporate agenda, then choice and flexibility help define the demands of today's workforce. These dynamics have led to a situation in which workplace design and management is increasingly focused on meeting workforce expectations. Another new way of working is transactional knowledge work. Design Council (2005) described transactional knowledge work as a pattern of work with high interaction, high autonomy and a high variety of tasks and mobility. In an interview with Tietema (2019) Hoendervanger notes that the problem with the mindset behind this idea is that not everyone in an office works in this way. The result of this mindset is that it creates a risk that there is no separation between different types of working people and personalities. Furthermore, Hoendervanger notes that this type of workplace concept caters to the 'flexible millennials', however they are not the only ones to have to use the workspace. Different generations have vastly different needs, preferences and expectations of the workplace environment. According to Hoendervanger one of the reasons for a lacklustre result for activity-based working so far is that there has been insufficient analysis when implementing such concepts. Companies create a common vision on a dynamic and open workspace with as much communication and collaboration as possible however do not take into account that the jobs might not be focused as much on these aspects.

Palvalin et al. (2017) and Harris (2019) found that the defining features of an effective workplace can be listed as follows:

- A variety of spaces match the workstyles of the building's users;
- Sufficient quality space for concentration and contemplation;
- Spaces for planned and incidental communication and collaboration;
- Shared amenity areas to support ad hoc working, recharging and collaborating;
- Technology and other resources enable flexible access to, and sharing of IT;
- Appropriate choice in selection of the right place and conditions in which to work;
- Acoustical and visual control enables effective use of each workspace.

Bell and Anderson (1999) do note however that it is important to realise that one environment is not the solution to all knowledge-worker workplace requirements. In a broader view, this means that each functional group has its own unique set of workplace requirements and those requirements will change often, as the work, size and structure of the group and task changes. Becker (2002) mentions that employees in the current climate need time to think, concentrate and reflect as well as to communicate, share information and interact socially. This results in the need for a balance between the activities and the work environment to offer a nice palette of diversity in workplaces suitable for the different parts of the work process. For this reason, it is very important to realise the needs of your workforce to create an optimal working environment.

2.2 Concentrated work and privacy

In the current economy where knowledge workers are becoming more important for companies, the rise of importance for concentrated work and privacy is self-evident. Oseland and Hodsman (2018) found that a quarter of their respondents said they are interrupted mid-way through completing an important task often or all of the time. In their case all of these distractions tended to be fundamentally behavioural issues. This is however a hard task for companies, as Appel-Meulenbroek et al. (2011) found that the differing need for privacy and interaction of employees makes it hard to design a general concept with all the differences in work style and activity patterns.

Concentration

Certain types of work activities require disruption-free working, due to the nature of the task requiring a deep level of concentration. Examples of these types of tasks are coding, programming, writing reports or reviewing cases. In the office environment several types of interruptions have been found. There are digital interruptions through e-mail and phone calls, physical interruptions from co-workers, and auditive interruptions caused by background noise (Haynes, Suckley & Nunnington, 2017). According to Tietema (2017) only when employees reach deep concentration, they get into a flow which is linked to the happiness of the employees. This increases the importance of knowing the task- and personal characteristics of your employees, to create an environment suited to their brains and cognition. Baron's (1986) theory suggests that because a complex task requires processing of a wide range of cues/stimuli at the same time, by restricting attention to the centre or by focussing the attention due to attentional overload, a performer tends to leave out crucial stimuli that must be processed for successful task performance, thereby impairing performance.

Van Sprang et al. (2013) found that the physical environment plays a vital role in the transfer of knowledge in organisations. Although work and learning styles may vary, knowledge workers share two basic needs related to different phases of knowledge development. Time and space to work in isolation, to think, to analyse and to reflect (internalisation). Time and space for interaction with others and for collaboration to generate and evaluate ideas (externalization and knowledge transfer) (Sprang, Groen, & Voordt, 2013). Although this research was conducted amongst academic researchers, the phases still apply to knowledge workers within other organisations. For this reason, the spatial layout of an office should support both in-depth concentration and communication. Van Sprang et al. (2013) noted that this balance issue is hard to address, as when respondents are asked most prefer a small individual workplace with an appointed desk and computer, at a quiet location in the building. Even though this supports concentration and privacy, it raises concerns for occupancy rates and collaboration or transferring knowledge. A solution to the occupancy rates might be by creating a library in the company, which supports both concentrated work and room for learning. By creating such a designated area, the square meters of the office is still being used efficiently. Working from home has also been coined as a solution to the problem for concentrated work, however it is also in contrast with transferring knowledge (Sprang, Groen, & Voordt, 2013). Appel-Meulenbroek et al. (2011) found that 48 percent of the respondents in their research found that the balance between individual and team workspaces is off. They also noted that in activity-based offices 56 percent of the respondents only used at most two different types of activity-based workspaces during an average week. Of these respondents 68 percent responded to never switch during the average day (Appel-Meulenbroek, Groenen, & Janssen, 2011). This means that is important to also look at the behaviour and mobility of employees within an organisation.

An experimental study by Gudith et al. (2008) found that after only 20 mins of interrupted performance, participants reported significantly higher stress, frustration, workflow, effort and pressure. Furthermore, it takes no more than two seconds to break someone's train of thought (Altmann, Traflet, & Hambrick, 2014). Researchers have also noted that the importance of acoustic comfort also depends on the job. For example, the theory of 'The state of flow' talks about the amount of time it takes an employee to regain their concentration when focussing on complex tasks. A few examples of such complex tasks are designing, editing, programming, and writing. It could take an employee up to fifteen minutes to regain their needed high state of focus for these complex tasks (DeMarco & Lister, 1999). Several researchers found that the ability to handle interruptions and minimise their impact is linked to an office occupiers' personality type (Furnham & Strbac, 2002; Maher & von Hippel, 2005; Oseland, 2009; Oseland & Hodsman, 2018).

Privacy

For the sake of privacy Van der Voordt and van Meel (2002) have distinguished four types of privacy: visual, auditive, territorial and informative (control which information is seen by others). In the past, the concept of privacy has been conceptualised as a dialectic and dynamic process for controlling the level of availability to others. The dialectic aspect means whether people are seeking or avoiding social interaction, and dynamics describes the desired level of interaction which varies according to individual differences and circumstances over time (Altman, 1975). By not achieving the desired level of privacy it

can result in discomfort and stress and feelings of overcrowding, whereas too much privacy can create social isolation. In open-plan offices this is a dilemma however it can be overcome by offering a choice of work-settings and introducing office protocols to interaction, quiet pods and meeting rooms (Altman, 1975). Barker (1968) noted that the behaviour setting theory indicates that office culture makes that certain places are used in a certain way. This culture depends on the organisation and can be very different for different types of office organisations. This also influences the interaction and behaviour between employees (Barker, 1968). It has to be taken into account that personal choice of employees matters. Appel-Meulenbroek et al. (2011) made a flowchart describing the different choices employees have when deciding where to work. This flowchart can be seen in Figure 4.

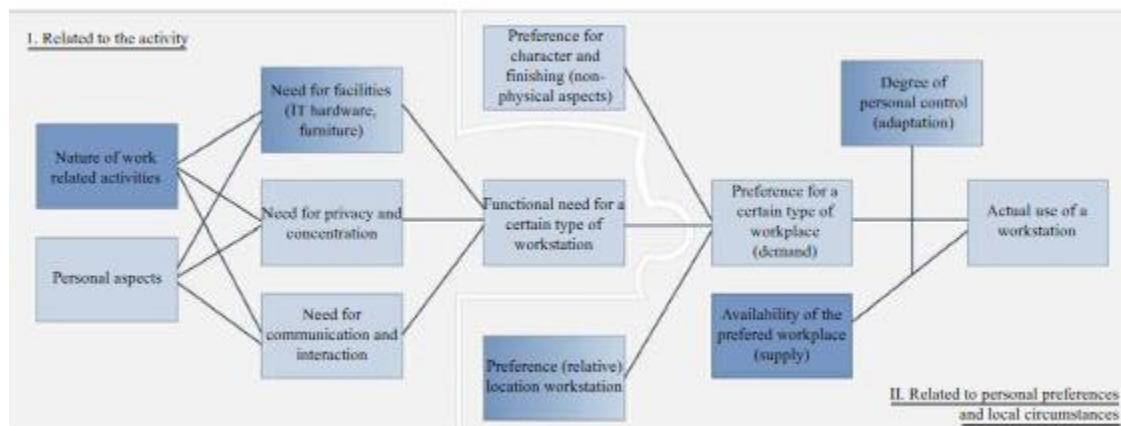


Figure 4: Workplace decisions (Appel-Meulenbroek, Groenen, & Janssen, 2011)

Undesirable acoustic consequences of open-plan offices, such as lack of speech privacy and reduced concentration as a result of overhearing other conversations, are often ignored or not taken seriously. This is due to the apparent advantages of the open-plan office especially regarding economics and organisational benefits. Organisations also expect that personnel will adjust to the office situation (Roelofsen, 2008). Roper and Juneja (2008) note that in spite of the advantages of open-plan workspaces, employees working in them feel little enthusiasm about their work environments and mostly have complaints, such as too many interruptions, an increase in auditive and visual distractions, and an increase in stress. From an environmental psychology point of view, it is also important to know what the space is going to be used for. What researchers noticed is that when people do not understand what certain spaces are supposed to be used for, they tend to avoid them (Oseland, 2009).

2.3 Distraction

Distraction is a generally occurring phenomenon in human surroundings that can be caused by many factors, such as noise, anxiety, stress, temperature, poor appraisal, and new organisational policies. There is a distinction between internally generated distractions and externally generated distractions. In Figure 5 a model is shown that gives examples of both.

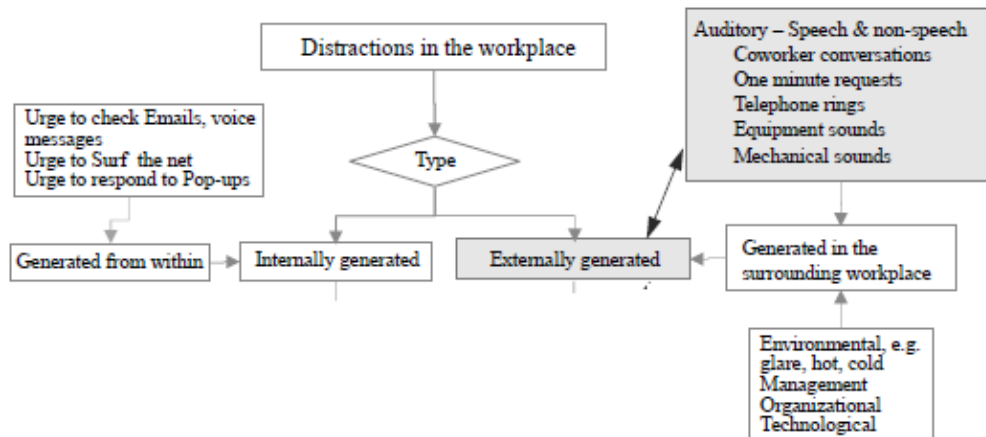


Figure 5: Edited comprehensive distractions model (Roper & Juneja, 2008)

For this research, there is an important divide to be made for the most relevant distractions relating to concentrated work. These distractions are auditive distractions and visual distractions.

Auditive distraction

The research of Chigot (2005) shows that end-users and design consultants might not understand each other well as there is no correlation between the objective assessment and subjective experience of the effects of sound in the office. This shows that there seems to be no easy solution to the problem of auditive distractions in the office.

Research from Landström et al. (1995) found that there is a direct relationship between acoustic comfort and occupant productivity in commercial buildings. With the current growth in open-plan offices, the issues of acoustic comfort and privacy are becoming increasingly important due to their effect on occupant productivity (Sundstrom, Town, Rice, Osborn, & Brill, 1994). Veitch et al. (2002) found that noise from other people talking, telephones ringing, and other irregular sounds may create more annoyance and disturbance compared to continuous sounds. In Japan the effect of ringing phones was specifically tested and showed that mental tasks would be performed to a higher standard when a telephone is not ringing (Mouri, Akiyama, & Ando, 2001). Sundstrom et al. (1994) listed overheard conversations as one of the most distracting sounds in the work environment. Furnham and Strbac (2002) added to this the presence of uncontrollable background music that seemed to worsen performance, compared to working in a silent environment. The regular solutions for noise problems are the absorption of sound (using ceiling tiles), the blocking of sound (using workstation panels or workspace layout) and covering up sound (using electronic sound masking techniques) (Loewen &

Suedfeld, 1992). Oseland (2009) uses the acronym DARE to create workplaces which enhance interaction but minimise distraction. The acronym is short for Displace the distraction, Avoid the distraction, Reduce the distraction and Educate the personnel. An often-added letter is C for containing the distraction, by for example keeping noisy and quiet teams apart from one another.

Cushman and Wakefield (2017) found that there is a 66% performance decline when employees are exposed to background noise. However, they have also noted that a space can also be too quiet and not all noise is unwanted. Oseland (2009) noted that from an evolutionary perspective point of view this might be because people prefer noise to be at a similar level to that found in the natural world, with a slight buzz of activity. This means there is a need for balance and personal control so that employees can figure out their preference.

Many studies conclude that office workers prefer silent and less noisy environments to more noisy environments. Office noises may cause stress, tiredness, lack of motivation, but do not show a direct relationship to increasing the number of sick leave days (Rasila & Jylhä, 2015). The claim of noisy environments not affecting the chance of illness is disputed however. Evans and Johnson (2000) and Abbot (2004) claim that noise is a source of distraction, frustration and can ultimately cause stress, which in turn can lead to higher incidents of illness and more turnover of staff. The biggest benefits that have been found in acoustic measures over the years are less noise, less distraction, and less fatigue. All of these outcomes result in higher productivity and comfort for the employees (Jensen & Voordt, 2017). Several studies have shown that speech (incidental or formal) is the most disturbing source of noise in an open office accommodation. The disturbance is not due to an increase in speech volume or whether there is one or multiple voices speaking. It has been found that in particular it is just due to overhearing a conversation which distracts people. Furthermore, it has been noted that conversations have a more negative influence than any background noise if the conversation concerns a recognisable subject (Roelofsen, 2008; Marsh et al., 2009). Marsh et al. (2009) add to this that a solution to this problem could be that office occupiers should be located with those performing contrasting roles. Conversations that one cannot follow, for example in another language, are therefore deemed much less disturbing (Roelofsen, 2008). The fact that speech intelligibility is the most important factor of how much it has a negative influence is supported by Schlittmeier and Liebl (2015). Furthermore, Roelofsen (2008) notes that once a person has been distracted it will take ten minutes or more for that person to return to the same level of concentration. Open-office plans have virtually constant conversations that can be disturbing. This means that the reduction of speech intelligibility disturbance between various working areas in open-plan offices takes on great importance. Schlittmeier and Liebl (2015) found that acoustic measures in open-plan offices need to be combined to facilitate silent, concentrated work, despite the presence of ambient background speech. The intelligibility of this background speech from distant workstations is the key determinant for successful acoustics in open-plan offices. Oseland (2017) found that the mean estimated impact of noise on work performance is -5.1 percent. This amount seems low, however it can offset the cost of the building and operating an office property. Appel-Meulenbroek et al. (2011) found that 55 percent of their respondents indicated that they are distracted often by conversations of others, while only 34 percent is distracted by other sounds such as doors or copiers for example. Oseland and Hodsman (2018) found that a high proportion of their respondents come in early

or work late to avoid noise and wear headphones at work. Respondents found it hard to raise the issue with colleagues and challenge them, so they rather learn to cope by changing their behaviour.

The four main non-physical factors relevant to offices that affect noise perception and performance are task and work activity, context and attitude, perceived control and predictability, and personality and mood (Oseland & Hodsman, 2018). Oseland and Hodsman (2018) found that based on the big five personality types, being openness, conscientiousness, extraversion, agreeableness and neuroticism (OCEAN), there are significant differences in perception of distraction. Introverts respond more negatively than extroverts on self-assessed performance, stress, well-being, concentration and productivity. This is supported by the “arousal theory” which claims that sound is a stimulus so extroverts should perform or cope better than introverts in noisy environments (Broadbent, 1958). In general, extroverts perform better in noisy conditions than introverts at cognitive tasks (Morgernstern, Hodgson, & Law, 1974), comprehension tasks (Standing, Lynn, & Moxness, 1990) and mental arithmetic (Belojevic, Slepcevic, & Jakovljevic, 2001). Campbell and Hawley (1982) found that when studying in libraries introverted people tend to choose a place to work away from the “buzz”, whereas extroverted people tend to be more attracted to these places. For neuroticism, Von Wright and Vauras (1980) found that the more neurotic performed worse in complex mental tasks when exposed to noise. Eysenck and Graydon (1989) add to this that the neurotic introverts are more adversely affected by noise than emotionally stable extroverts when carrying out work-life tasks. Matthews et al. (2004) found that emotionally unstable people are overly concerned with the source of unwanted sound and respond to it more negatively, resulting in stress. Franklin et al. (2013) found a correlation between acceptable noise level and openness or conscientious personality dimensions. They suggest that people who are more open to new experiences may accept more noise, whilst those with a more conscientious personality type accept less background noise. Oseland and Hodsman (2015) therefore opt that it might be useful for companies to start using personality profiling to cluster people who prefer and function better in similar acoustic environments. Other factors that have been found to affect noise perception are age, workplace, design and the innate ability of the person to “screen” out noise (Oseland & Hodsman, 2018). Regarding the aspect of age, they found that the older respondents perceived noise to be slightly less of an issue than younger respondents. From a cynical view, this could be due to poorer hearing, however that is not the consensus in the literature. Most literature expects the reason to be that older respondents may have adapted to their acoustic environments or have more choice over their work-settings. Tietema (2015) honed in on the perception of highly sensitive people, which is a characteristic that occurs within big groups of people. Most of the highly gifted people tend to be highly sensitive, but this is not specific just to this group. In general, Tietema (2015) states that one of five people is highly sensitive. Tietema (2015) mentions that highly sensitive people could be used as an example of the canary in the coalmine. By using them as an early warning, and considering their complaints seriously it can prevent hindrance and consequences for other employees such as loss of productivity or increased days of sickness. Eventually this should result in an effective work environment that stimulates collaboration but does not lower productivity.

Whilst the results show that working from home is good for minimizing noise distraction and speech interference, it does not necessarily mean that it is the only solution to the problem. Appel-

Meulenbroek et al. (2011) found that 62 percent of their respondents who work in activity-based offices indicate that they work at home to achieve better productivity on busy days. In general, the respondents of Oseland and Hodsman's (2015) research preferred the office work-settings for teamworking and face-to-face meetings. They found that the office is generally considered to facilitate collaboration and mentoring, and provide supporting equipment and facilities. Their advice was not to create more private and shared offices, even though they were deemed less distracting. The challenge is to create open-plan offices which minimize noise distraction which is achievable with well-considered acoustic design, management and use of the space (Oseland & Hodsman, 2015). Another aspect to note is that respondents who perceived to have more control over noise were less distracted by it. This would make it seem that control over noise is more important than the place of work. The design challenge then becomes to create office environments that have the same level of perceived control as at home (Oseland & Hodsman, 2018).

Visual distraction

The aspect of visual distraction is mostly about an employee being seen or seeing others. When an employee is seen they are more approachable for colleagues, meaning the odds of distraction are higher. Brill (1985) describes privacy as personal control over interactions and/or communications with others. Privacy however has many aspects of which three, related to visual distractions, most predominately show themselves. These three are about controlling accessibility, visual distractions and interruptions. Control over accessibility refers to the ability to limit the undesired impact of the presence of others. Visual distractions and interruptions refer to the unintended and accidental effects of the presence of others or activities of others (Brill, 1985). When an employee sees others the reflex-brain activates, which is responsible for direct responses on sensory input. This discourages the archiving and thinking brain which is needed for deep concentration (Compennolle, 2014). Appel-Meulenbroek et al. (2011) found that in activity-based offices 44 percent of the respondents were easily distracted due to a lack of visual privacy, showing that this is a problem that affects almost half of the population of an office. Becker (2002) did however find that being able to see team-mates and notice what they are doing makes it possible to avoid interruptions and maintain concentration. They found that in closed cubicles people feel obliged to interrupt because they took all the effort of moving to someone. The data in their research also suggests that more visual contact contributes to fewer unwanted interactions, not more, by changing not so much the frequency as the timing of conversations. Due to technological advancements however, and more possibilities of contacting colleagues or checking in on their status, this might have changed over time.

2.4 Perceived productivity

Batenburg and Van der Voordt (2008) have created a research model that encapsulates most, if not all, of the factors that play a role in the perceived productivity employees experience. The model is shown in Figure 6. The value in this model is that a lot of factors that are linked to perceived productivity can also be linked to concentrated work. In 2018 this model has been re-evaluated to see if it still holds up in the current times. Groen et al. (2018) found that 38% of their respondents, which included a variation of office employees, can still be explained by employee satisfaction with facilities, the organisation and current work processes, and personal- and job characteristics. The psychological aspects, for example

opportunities to concentrate and communicate, privacy and diversity of workplaces are deemed very important. They also found that a sound balance between opportunities to concentrate and opportunities to communicate is leading in perceived productivity support. This strengthens the claim for provided choice between openwork settings and closed workplaces with less distraction (Groen, Voordt, Hoekstra, Ypma, & Sprang, 2018). This claim is supported by de Been and Maarleveld (2011), who did not find a bearing extent on productivity in their research however still recognised the importance of this factor for a lot of types of work.

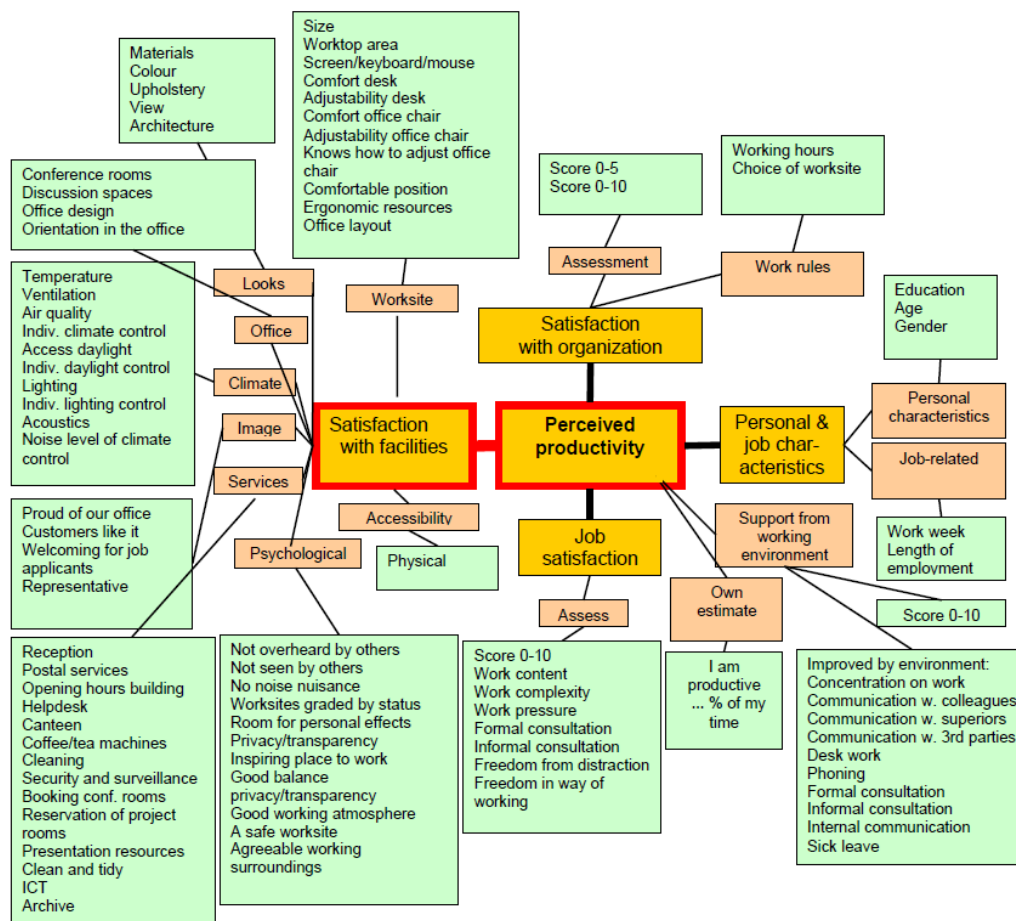


Figure 6: Batenburg & Van der Voordt's research model including the concept's sub-dimensions and measurements.

A study by Barber (2001) found that technology, storage space, quiet space, climate control, personalising the workspace and its' visual appeal were the most important factors to affect an employee's productivity. This result was supported by Hameed and Amjad (2009) who also added a few other factors like furniture and spatial arrangements. De Been and Maarleveld (2011) found that having the opportunities to concentrate, privacy and workplace variety and functionality had the most effect on an employee's perceived support of overall labour productivity. They noted however that focusing solely on opportunities to concentrate, workplace functionality and comfort alone will not always optimise a work environment's contribution towards productivity. This can partially be linked to research conducted by Whitley et al. (1996) who found that people prefer to have an internal "locus of control"

and report that they are more productive when they perceive that they have control over their physical environment, so having the opportunities should garner positive results.

Haynes (2007) found that interaction and distraction are the behavioural aspects of the work environment with the greatest impact on self-assessed productivity. These distractions can be divided into visual and auditive distractions, focus on sight and sound. This claim was supported by Haynes' follow-up research that looked at the extent to which the work processes of employees play a part in their productivity. All groups in this research described distraction to harm their productivity (Haynes, 2008). Hedge found in 1982 that working in an open-plan office, even though there are also upsides, can lead to distraction and disruption, which will in turn hurt performance and productivity.

2.5 Conceptual model

In order to visually and comprehensively show the relations between the key concepts of this research, a conceptual model has been made. The conceptual model consists of outcomes found in the literature review and can be seen below as Figure 7.

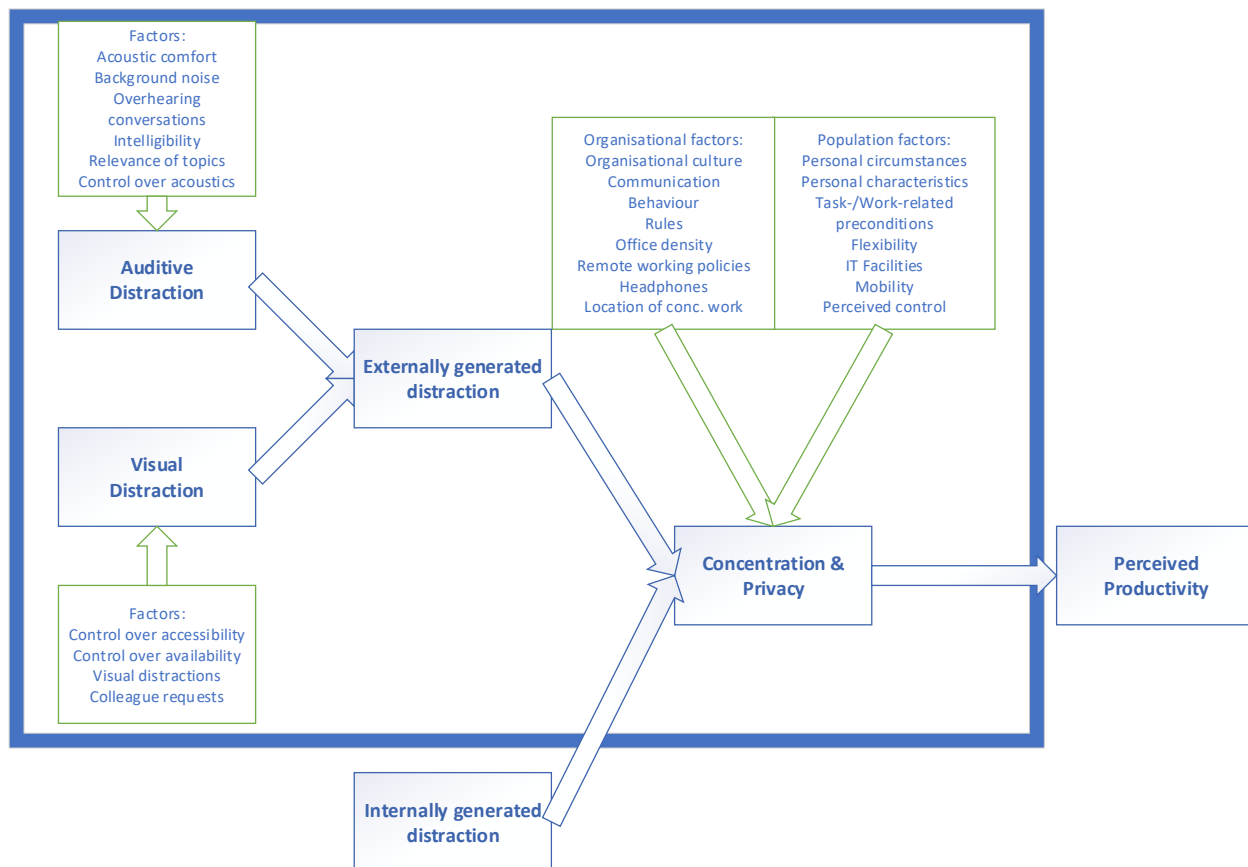


Figure 7: Conceptual model

The arrows and boxes with a green outline indicate that these are factors that are important to the bold boxes. As much general factors as possible have been included in the model, to indicate a full overview of all the aspects that play a part in concentrated work. The focus of the research has been outlined,

which means that internally generated distraction and perceived productivity fall outside of the scope of this research. They have however been included in the literature review due to the relevance they hold for the case as a whole.

Based on the literature review, as well as some additional findings from the interviews, the operationalisation has been made. The operationalisation can be found in Appendix 1.

3. Research objective and questions

Based on the introduction and the literature review, the research objective and questions are formulated. The theoretical background has led to a conceptual model which shows the relationships between the core concepts regarding the main question. Based on these relationships the sub-questions are formulated.

3.1 Research objective

According to Lewis and Saunders (2009), the research objective gives insight into the aim that the researcher will achieve by finishing the research. The objective of this research is as follows:

“The objective of this research is to find out the different aspects that affect concentrated work. This will be translated into a framework which will help organisations facilitate concentrated work.”

3.2 Research questions

As mentioned before, the Main Research Question in this research is as follows:

“How can organisations facilitate concentrated work in open-office plans?”

To enhance the structure of the research several sub-questions will be used which will be further divided into more specific topics.

SQ.1: Which factors influence the ability to perform concentrated work?

- **1.1:** Which personal and task characteristics influence concentrated work?
- **1.2:** Which visual distractions influence concentrated work?
- **1.3:** Which auditive distractions influence concentrated work?

SQ.2: How do organisations currently facilitate concentrated work?

- **2.1:** How do organisations currently facilitate the workplace concept?
- **2.2:** What goals do organisations have with their workplace concept?
- **2.3:** How do organisations see the future of the workplace concept?
- **2.4:** How do organisations measure if the users are content?
- **2.5:** Which measures are taken to support the workplace concept?
- **2.6:** Are organisations familiar with the findings in research about concentrated work?
- **2.7:** How do organisations provide concentrated work?

In Appendix 2 the research breakdown structure can be found. This framework illustrates the relationships between the questions as well as show how these questions are going to be answered. It also shows a chronological order where needed, for certain subjects where prior knowledge is needed before proceeding to the next step.

4. Research methods and analysis

In this chapter, the choices made about the research strategy, data collection, sampling and analysis are explained. Furthermore, the limitations, reliability, and validity are discussed.

To create a transparent process of proper choices and coherence in the design of this research it is important to look through the project as a whole. To support this process, the research onion by Saunders et al. (2016) will be used, which can be seen in Figure 8.

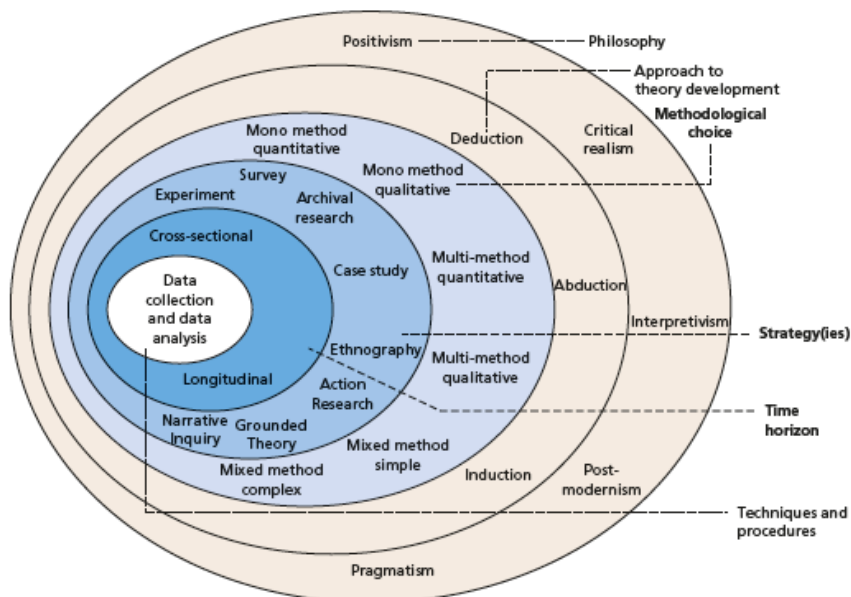


Figure 8: The research onion (Saunders, Lewis, & Thornhill, 2016)

4.1 Research approach and strategy

The approach of this research is inductive. This is the case because it heavily relates to the thought of collecting data to explore a phenomenon, identify themes and patterns to create a conceptual framework. Furthermore, in an inductive approach the idea is to generate and build a theory in the end, which is the goal of this research by creating a framework (Saunders, Lewis, & Thornhill, 2016).

The purpose of this research is to be exploratory in nature at first. The research focusses on understanding the problems relating to concentrated work. To explore the options within this research several methods are used, which turns the research into a multi-method qualitative study. At first desk research is used to explore the topic as a whole and find out what is already known. The outcomes from this desk research are also important for the follow-up steps, as it can create new insight into the subject and therefore supply input for the interviews. The next step is qualitative research, which according to Saunders et al. (2016), fits well with an inductive study. Qualitative research is used to focus on determining certain specifics of a certain situation and measurement in words (Boeije, 2010). The qualitative approach is executed through in-depth interviews with Facility Professionals within five different organisations. These are in-depth interviews regarding several subjects that all influence concentrated work or an organisation's view on concentrated work in one way or another. These

subjects can broadly be summarized as the workplace concept, workstyles, measurement, measures, personal characteristics, organisational culture, collaboration between departments, and future of the office concept. To properly conduct the interviews an interview guide has been made. This ensures that roughly the same subjects are considered in every interview, yet still gives the room to explore other subjects if they arrive. The full interview guide can be found in Appendix 3. It is important to note however that the data collection is non-standardised in a sense. This means that the questions and procedures may alter and emerge during the research process (Saunders, Lewis, & Thornhill, 2016). For this reason, respondents are asked if the interviewer can come back at a later time with additional questions which occurred due to further interviewing or additional research. The last step is to conduct observations in different organisations. The form of this observation is for the most part participant observation, where the goal is to enter the world of the observed organisation and attempt to participate in the concept (Saunders, Lewis, & Thornhill, 2016). Furthermore, the idea is to become an observer as a participant, where the identity of the researcher is not a secret and is revealed when asked about. The goal of the observations is to get a clear view of the lay-out of the building, the diversity of the workspaces and get a slight feel of the organisational culture. Beyond just observing, when certain things stand out employees are shortly asked about it. These additional notes are analysed amongst the other findings.

4.2 Data collection

In a broader scope the research can be divided into two parts. First of the desk research looks at the theory, what has been established throughout the years regarding the topic, which factors play a part and how do they play a part. The second part is the multi-method qualitative research, where research is conducted in the field to see how much organisations know about these factors, how they apply this knowledge and what they do themselves.

The data from the in-depth interviews is collected in a sample frame of five in-depth interviews with mostly open questions. At the end of the interview, the respondent is asked to rank different factors regarding the work environment, to give perspective to what the respondent finds important in the workspace. Each of these interviews takes about an hour and are recorded. The interviews are held to garner information needed to answer the sub-questions and the main-question. For this reason, an interview guide is made as preparation, which can be seen in Appendix 3. This interview guide, is as it says, a guideline for the interview of the several topics the interview has to touch up-on. During the interview some of the pre-established questions can be removed, or new ones can be added, depending on the answers of the respondent, which is a benefit of an in-depth interview according to Verhoeven (2011).

The data from the observations are garnered through participant observation. The data received from this process is emergent and requires the researcher to start analysing as soon as you collect it. This means that the researcher has to be alert because they are carrying out data collection and analysis simultaneously (Saunders, Lewis, & Thornhill, 2016). The data can be divided into primary observations, secondary observations, experiential data and contextual data (Delbridge & Kirkpatrick, 1994). Unfortunately, the observations cannot be executed in the same manner in all the organisations due to security reasons. Certain organisations do not allow people from outside of the organisation to walk

around, observe and possibly ask questions. This means that for Alliander, Rabobank, Nederlandse Spoorwegen, and Redacted organisation an extensive tour has been used for observational purposes.

4.3 Sampling frame

The sample frame of this research consists of five respondents, who are interviewed with in-depth interviews and of which the main office building of the organisation of the respondent is observed. This sample is contacted through mail or LinkedIn, to gauge if they are interested to partake in this research. Table 1 shows an overview of the respondents who are included in the sample frame, the market-segment their organisation operates in, the job-title they hold and some general information of the building observed.

Organisation	Market-segment	Contact	Job-title	Building adress
Alliander	Energy	Femke Leyte	Advisor of the work environment	Arnhem, Utrechtseweg 68.
VGZ	Health & insurance	Frank van der Leest	Location manager of Human Facility Management	Arnhem, Nieuwe Stationsstraat 12.
Rabobank	Financial	Joyce van Aken	Service manager	Apeldoorn, Eendrachtstraat 133.
Nederlandse Spoorwegen	Public transportation	Inge van der Ploeg	Regional housing manager	Utrecht, Laan van Puntenburg 100. Eindhoven, Neckerspoel 22a.
Redacted organisation	Energy infrastructure	Wendy Koldenhof	Strategic housing program manager	Redacted

Table 1: Respondents & observed office buildings

The organisations have been selected in different market-segments to make sure that there is a broad scope of tasks and jobs, possibilities for concentrated work and possible different organisational goals. To ensure the cohesion of the interviews, the interviewed people in different organisations all have roughly the same job and need to have good knowledge over the subjects they are being questioned about. Considering that every organisation labels their jobs differently, and sometimes the organisational structure makes it so that certain jobs have different responsibilities, the interviewees are considered on knowledge and responsibilities rather than a job title. It has to be noted that one organisation has been redacted due to their confidential nature and not publicly wanting to be involved in research at this moment. The only organisation that has two observations is Nederlandse Spoorwegen. This is because the workplace concept has recently been changed, and the initial location of Eindhoven is a lot less utilised than Utrecht. The location in Utrecht also has both the old and the new workplace concept, which makes it even more interesting for the research.

4.4 Data analysis

Within this research there are three main sources of information that are analysed, which are the desk research, in-depth interviews, and observations. The following paragraphs elaborate on the methods used.

Desk research

Desk research is an important part of this research, as it serves as the foundation for the research. Research documents and journal articles from acknowledged researchers are analysed and the outcomes are combined in the operationalisation. To ensure the proper use of these findings the documents open axial coding is used as a part of the qualitative coding mechanism. Open axial coding refers to the disaggregation of core themes into labelled conceptual aspects and recognised relationships between categories (Saunders, Lewis, & Thornhill, 2016). The documents are also summarised and labelled with certain keywords. Summarised data can be further explored in further sessions of the research, for example when comparing it to the outcomes of the in-depth interviews.

In-depth interviews

Recording the interviews is a step used to ensure the reliability of the outcomes of the interviews. It prevents the interviewer from forgetting or misrepresenting opinions (Saunders, Lewis, & Thornhill, 2016). For further coherence, interviews have to be transcribed as soon as possible, preferably within a few days, to ensure that the context is correct. Another tool is confirmation of the transcribed information by the respondent. After being transcribed the interviews count as qualitative input for the coding process. Open axial coding is used, to link up the findings, find relationships and compare results between the several steps of this research. The core themes of open axial coding are already used in the interview guide which eases this process. In accordance to Saunders et al. (2016), the categorising of data consists of mainly two activities, formulating categories and attaching these categories in meaningful data for the research. After these activities are done, the relationships between the results can be recognised.

Observations

For the analysis of the observations it is important to keep it as a part of an ongoing iterative process. This means that the observer revisits the earlier observations and analysis as they continue to collect and analyse data to maintain consistency and interpretation (Saunders, Lewis, & Thornhill, 2016). To analyse the findings of the observational research, the primary observations, secondary observations, experiential data, and contextual data are put into perspective as to what it means in a broader scope according to the labels found in the axial coding process used in the desk research and in-depth research. By using the same labels, the process becomes more coherent to combine the findings of the observational research with the rest of the findings.

5. Reliability, validity & limitations

According to Saunders et al. (2016), reliability and validity are central to judgements about the quality of research. In essence, reliability refers to the ability to replicate the research and the consistency of said research. Validity refers to the appropriateness of the measures used, accuracy of the analysis of the results and generalisability of the findings (Saunders, Lewis, & Thornhill, 2016). For this reason, the issues and safeguards regarding the reliability and validity are discussed in the following paragraphs. Furthermore, the limitations are also brought to light.

5.1 Reliability

To establish the reliability of the research several aspects are analysed, regarding the participant error, participant bias, researcher error, and researcher bias.

Participant error and bias

The participant error can be explained as any factor which adversely alters how a participant performs (Saunders, Lewis, & Thornhill, 2016). For the qualitative part of the research it is important to pick neutral places to conduct the interviews. The majority of the interviews take place at the offices of the respondents, with one being over the phone due to time constraints. Because the respondents are familiar with the location, it breeds a feeling of trust and makes the respondents more open, which might lead to more in-depth insight. To avoid the respondent misunderstanding questions it is important to have an active interview approach. In this approach the interviewer often paraphrases and summarises answers as well as asking additional questions to reach the correct information. The participant bias is any factor which induces a false response (Saunders, Lewis, & Thornhill, 2016). When the interviewer notices that the respondent might have the idea they are being overheard and therefore changes their answers, a more private room is requested or even a reschedule if needed. Furthermore, time constraints are also taken into account by giving the respondent the freedom to schedule the appointment. Furthermore, for the observations, there is a concern for observer effect, where the target group acts differently simply due to an observer being present. To minimise this effect the observer appears to work naturally in the concept of the organisation and tries to blend into the background (Saunders, Lewis, & Thornhill, 2016). It is important to note that the research takes place close to and during the summer vacation. This means that the offices in general are less busy.

Researcher error and bias

The researcher error is any factor which alters the researcher's interpretation (Saunders, Lewis, & Thornhill, 2016). To prevent this from happening it is important to conduct the interview actively and paraphrase and summarise the answers to ask if the interviewer understood the respondent correctly. This can also be safeguarded by asking for confirmation of the interview transcript after it has been transcribed. Furthermore, a semi-structured interview is used by applying an interview guide as a guideline yet refraining from holding to this structure to give the interview a natural flow. The researcher bias is any factor which might induce bias in the researcher's recording of the responses (Saunders, Lewis, & Thornhill, 2016). To prevent researcher bias from playing a big part the interviews have been recorded. For the observations, it is important to understand the setting of the office because it is unknown to the observer, which might mean the observer misunderstands cultural and

interpersonal nuances. To minimise this effect the expert within the organisation first offers a global tour, in which they roughly give a feel for the kind of departments in the organisation that house in different parts of the buildings, which also includes how they usually interact. Furthermore, one of the organisations is known as a previous place of employment to the researcher. To prevent personal bias from playing a part in this observation, findings are tested with a few members of the population of this organisation. Additionally, a few meetings with the tutor and other experts have been arranged, to increase the reliability of the research steps and discuss the motives.

5.2 Validity

To establish the validity of the research several aspects are analysed regarding the internal validity, external validity, and construct validity.

Internal validity

Internal validity is established when the research accurately demonstrates a causal relationship between two variables, for example researcher observations and theoretical developed ideas. Furthermore, the internal validity is based on a logical analysis of the results (Everaert & Van Peet, 2006; Saunders, Lewis & Thornhill, 2016). First and foremost, for the credibility of the research it is most important to critically assess the results to draw the correct conclusions. To help this aspect different organisations have been chosen, which operate under different circumstances to get a broader scope of the phenomenon as a whole. This enhances the data quality because data can be compared between multiple perspectives. This is further strengthened by using several data collection methods, being the literature research, qualitative research, and observations. The constraints within the observations do hurt the validity, however due to security constraints and organisational access this cannot be helped. The operationalisation of key concepts, which are based on academic literature and are included in the interview guide, also improves the validity as it guided the data collection and analysis process. An important aspect to take into account is that the data collection is non-standardised. This means that the questions and procedures may alter and emerge during the research process (Saunders, Lewis, & Thornhill, 2016). For this reason, respondents are asked if the interviewer can come back at a later time with additional questions which occurred due to further interviewing or additional research.

External validity

The external validity applies to the extent to which the results of the research also apply to other groups and phenomena. In qualitative research the external validity, also known as the transferability, is somewhat of a concern since in general relatively small groups are used (Saunders, Lewis, & Thornhill, 2016). This means it is hard to properly generalise the results, however they still hold value. To increase the external validity, the target interview group consists of members from five different market-segments. To further enhance the external validity, where possible, a lot of clarity is offered on what is researched with additional pictures to clearly show what has been observed. This enables the reader of the research to see if they reach the same conclusions. Furthermore, the research, the methods, the used sources and the time-period is described to ensure external validity.

Construct validity

The construct validity defines the extent to which the researcher has measured that which was intended

to be measured (Saunders, Lewis, & Thornhill, 2016). To ensure the construct validity the literature review is supporting the research, where it has been translated into the operationalisation and a conceptual model. Where possible, previous research techniques are applied to this research. This applies when looking at the questions asked in interviews, which does look at previous research to ensure that the most important topics are covered. The interview guide is also reviewed before conducting an interview, and during the process of interviewing several respondents, the guide is critically assessed. When new topics arise, these topics are added to the guide and the previously interviewed respondents are asked about these topics.

5.3 Limitations

The main focus of this research is to create a framework for concentrated work in open-office plans. On one side this takes into account the aspects that influence concentrated work. This is based on the findings of previous research that acquired a palette of different aspects that might affect concentration, which then are looked into even more. By using the interviews, it also takes into account what organisations find important in their work-field, and what they think the employees need to properly conduct their tasks. Due to the nature of the organisations, all being country-wide, this strengthens the sample. Another strength is that they are all in different markets, however this could also be considered a weakness since the research does not delve into one specific market-segment to find out in detail how things are in that sector. The other side of the framework consists of looking into the different options for concentrated work that there are available right now and possible further developments in the sector. This is retrieved from interviews, desk research, and observations.

A big limitation of the observations is the problem with not being able to do a consistent observation in multiple of the organisations. This means that for some organisations and observation is held that consists of working in the concept for multiple hours to get a feel for the culture, observe possible problems and shortly question employees when certain things occur. For organisations where this is not possible, due to security reasons, an in-depth tour of the building is used to gather similar findings.

A big limitation of the solutions is that, even though the nuances are made, it might not apply to all cases nationwide. Most of the organisations' buildings that have been analysed are located in the Eastern part of the country. Therefore, it is very important to look at the organisation, the jobs, and the population to ensure that you develop the correct solutions for the organisation.

According to Saunders et al. (2016), the skills of the researcher might also form a limitation, since the researcher does not have extensive experience in conducting research, and critically analysing data and literature. These skills however have been trained throughout the year and through consultation with the tutor as well as other experts in the field, this limitation is minimalised. Furthermore, time constraints are an issue for the depth of the research. Due to the limited amount of available time and the scope, the plan for the research has to be set quite strictly, to ensure it is developed within the accounted timeframe.

6. Findings

Within this chapter, the main research question and corresponding sub-questions are answered. These answers are given based on the analysis of five interviews, five observations and the literature research. The first sub-question focuses on the factors that influence the ability to perform concentrated work, whereas the second sub-question focuses on the current methods used to facilitate concentrated work.

The findings are based on the analysis of the gathered data from in-depth interviews with five professionals from five different organisations, who were mentioned before in Chapter 4.2. Furthermore, the results from the observations also add some additional information about the different workplace concepts, as well as comparing the results to the literature review. The input from the interviews, observations, and rankings can be found in Appendix 4, whereas the full transcript can be found on the USB-stick.

6.1 The workplace concept

In this paragraph the sub-questions “How do organisations currently facilitate the workplace concept” and “What goals do organisations have for their workplace concept” will be answered.

To start of this paragraph the workplace concept of the different organisations is analysed.

Alliander

The workplace-concept of Alliander is based on activity-based working. The office concept of Alliander offers meeting rooms, atelier-floors, office-floors, library-floors, and informal meeting space. The four different activities that Alliander has picked to support are individual work (with your colleagues and in peace and quiet), connecting, collaboration and meetings. This immediately shows the focus of Alliander’s building, which is all about connecting people and collaborating. These activities have been translated into three different types of workspaces. The atelier floor is the first of these workspaces, which is a rowdier and dynamic environment meant for working together in project teams. Additionally, the atelier floor is not committed to specific departments. The second workspace is a regular office floor, where you work with your colleagues. The third workspace is the library-floor, which is meant for concentrated work and reading. Following the idea of collaboration, the office uses a lot of transparency, to make it as easy as possible to connect. When designing the current concept Alliander used a flex-ratio of 0.6. When looking at how the different office space was divided Alliander looked at certain job-profiles. Together with the employees, they made a summary of what these people need to execute their activities, and how often they have to perform certain activities in a day. This gave Alliander a summary and insight into the needs of their users, which they used as input for the activity-based concept. Because Alliander finds the connection-aspect important they also have a focus on putting the people together that need to work with one another. For this reason, Alliander works with orientation-points in the office, where an employee is most likely to find their colleagues. Additionally, it has to be noted that with designing the office of Alliander, they have paid some extra attention to having a genuine organic flow in the building. When walking through the office you notice that the organic flow goes from having a lot of buzz, activity, and meet-ups in the middle of the building whereas when you move towards the outer parts of the building it becomes gradually quieter. This translates well into the behaviour of the employees as they notice, how they are expected to behave within

different parts of the building. As found during the observations, when an employee moves through the building they are first greeted by an atelier-floor with a genuine buzz surrounding it, then when moving further outwards move towards the regular office floor, which has less buzz than the central floors, to eventually end up in the library-floors which are almost completely quiet.

VGZ

VGZ is currently transitioning from one office-concept to the next, which makes it a bit harder to define. The current environment however is based on the task-based work environment of Davenport, where the new environment is going to be more activity-based. In their new concept VGZ is looking at three behaviour-zones, which are connected, collaborate and concentrate. This comes from the focus of VGZ which says that colleagues come to the office to meet with their colleagues and collaborate with them. VGZ offers regular office space, meeting rooms, short-term workspace, quiet workspace, and informal meeting space. The office consists of different types of workspace, which are often based on their tasks. At the moment VGZ still works with 'spots', although they use a less contaminated term, to house certain departments together in the same area. In the new situation they are letting this go for the most part, however during the observation it was noticed that this seemed to be a natural process where colleagues look for one another anyway. During the observations it was also quite noticeable that the atmosphere is completely different in the workspace of certain departments. An example of task-specific housing measure is the call-centre, in which there is a lot of acoustic material and higher walls to offer more seclusion. Furthermore, VGZ provides a Communication or Marketing department with a lot more room for stand-ups and informal meetings, since this fits with their culture. VGZ also used to offer some library-rooms, however they found that the need was not there for them at that time, so they transitioned them into meeting rooms which in higher demand. Additionally, it is important for VGZ that not everybody comes to the office daily, because their office and workspace have been designed with a flex-ratio of 0.7 in mind.

Rabobank

The office-concept of Rabobank is based on working independently from time and place. This translates to having about 80 percent of the office as an open-office plan. The office concept offers meeting rooms, short-term workspace, regular workspace, concentration workspace, and informal meeting space. On every floor Rabobank has several concentration workspaces. These are one or two desks placed in a room to offer the ability to perform concentrated work in a secluded manner. Furthermore, every floor has a start-up zone, mainly focused on people who have a more flexible job. These zones are suitable as workspace for just two hours, so if an employee has a flexible job with different activities this is an ideal area. This area is also used for informal meetings and when one is chatting a lot with colleagues. Between the start-up zone and the regular office floor there are some glass panels, to give a bit of seclusion and dampen the noise. The regular office space is suited with two monitors per desk. There is one more task-specific suited area, which is the call-centre, which has a lot of acoustic measures and elements offering seclusion. The office concept in general has a lot of focus for the atmosphere. The flex-ratio that Rabobank uses is 0.85.

Nederlandse Spoorwegen

Nederlandse Spoorwegen (mentioned as NS from here on out) is currently going through a transition

period at most of their offices. For this reason, two offices have been observed, since one office has gone through this period and the other is mid-way through. Every office that NS currently redesign has flex-working in mind, which for NS means that employees do not have a workspace purposed especially for them. The offices are suited with meeting rooms, short-term workspace, regular workspace, solo-concentration workspace, informal meeting space and in the old situation a lot of cellular office space. The departments get a certain number of workspaces assigned to them within certain areas. The concept does not focus on specific activities or tasks, however they do take some exclusions into account. An example of this is the planners, who are offered more seclusion, or team managers who have to be more visible. The focus of the office concept is to stay connected, so the current concept has a lot of openness, whereas the old concept used to be secluded rooms with a complete lack of openness. The office concept also focusses on flexibility, as changes come fast in the current society and NS wants the possibility to adapt fast. For atmosphere purposes, and the employees feeling like they are a part of something bigger, the office concept conveys the NS-identity and geographical identity. Besides this there is also a lot of focus on showing green and natural elements. The flex-ratio used for NS offices is 0.7, which might sometimes drop to 0.5 or 0.6 when dealing with teams which have more ambulant personnel.

Redacted organisation

The workplace concept of Redacted organisation is focused on stimulating collaboration and meetings. The office is a place where employees come to meet one another. With this in mind, they have decided on having an activity-based office concept. This activity-based office concept has certain building-stones, which are separated as calling, meeting, virtual meetings, and regular work. Redacted organisation offers meeting rooms, short-term workspace, regular workspace, solo concentration workspace, library-floor, and informal meeting space. The building of Redacted organisation is seemingly divided into two sectors, where on the eastern side (from an entry point of view) there is a coffee bar to receive guests, restaurant, meeting centre (for big meetings) and library floor, whereas to the western side one enters an area more dedicated to regular work, besides from the bottom floor which is focused on (reservable) meeting areas. The several regular office floors have quite a similar feel to them in general. They are all suited with regular office space, so-called train coupes for more soloistic work, meeting areas in between, pantry's and solo and dual concentrated workspace. The similarity between the floors seems to keep in mind the flex-concept, as it eases employees to move to different floors when they know what to expect on the floors. Through time Redacted organisation has reflected on this concept and decided to create less diversity in workspace and more flexibility. They found that certain workspaces were too specific and meant that employees could not use them. For example, this resulted in all meeting rooms being suited with the equipment to perform virtual meetings. At first the concept gave departments complete freedom in selecting their workspace within a floor, however this resulted in departments claiming certain areas without facilities like meeting rooms and then returning to the FM-department with this complaint. This resulted in the FM-department taking a more active role in assigning spots to departments. Redacted organisation conducted research to decide on their workplace concept and which activities to facilitate. This research consisted of interviewing employees and getting to know what they do in a day, what kind of activities and how much time do you spend on these activities. The flex-ratio of the office is 0.8.

In general, all of the organisations have quite a similar goal for their office concept, with the goal being mainly about collaboration and meeting each other. This trend was also found in the literature review, as multiple researchers found that collaboration and shared spaces would become more important (Harris, 2016; Bell & Anderson, 1999). The open-office plan that the organisations use seems to fit this plan well as Heerwagen et al. (2004) and Lansdale et al. (2011) mentioned that it should stimulate collaboration and knowledge sharing between employees. The reasons to come to this conclusion do however vary, as some organisations have had to adapt due to organisational changes, as is mentioned by Dewulf et al. (2000) to be one of the four main drivers for change of the office concept, whereas others seem to cater more to changes in business processes. Several of the factors of an effective workplace, as found by Palvalin et al. (2017) and Harris (2019), have been taken into account. The offices of these organisations offer a variety of spaces to match the workstyles of the users, offer quality space for concentration, offer space for planned and incidental communication and collaboration, have flexible access due to technology, and have an appropriate choice in the selection of the right place and conditions. The distinction in the way this is provided lays mainly in the choice for having an activity-based concept, as Allliander, VGZ, and Redacted organisation do.

Throughout all organisations there seems to be an active push to have a concept that fits with the culture in the company, and the mobility and behaviour of the users. Certain avenues have been explored, yet when deemed unsuccessful changes were made to the concept. As mentioned by Van der Leest (2019), this is something you have to be willing to do, *“if you find out that the concept does not fit and it is not what the people want, you have to be willing to cancel the plans and go back to the drawing board”* (Leest, 2019). It is important to take note of the fact that one environment is not the solution to all workplace requirements. Koldenhof (2019) mentioned this as one size does not fit all, which is supported by Bell and Anderson (1999) who note that every functional group has its own unique set of workplace requirements, and those requirements will change often. In line with this idea, the changing workstyles also offer some food for thought. For most of the respondents, the scrum and agile workstyles were the most important developments that affected the office concept. For Van der Ploeg (2019) it has emphasized the importance of flexibility, as they need to be able to change the environment quickly. Leyte (2019) noted that these workstyles focus on connecting and collaboration, which made Allliander adjust a few nuances in their workplace concept. These workstyles share similarities with transactional knowledge work, as it focuses on high interaction, high autonomy and a high variety of tasks and mobility (Design Council, 2005).

6.2 Measurement and control

In this paragraph the answer the sub-question “How do organisations measure if the user is content” will be answered.

For organisations it is very important to know if their workplace concept is working. There is a direct relationship between the satisfaction and productivity of the employees (Pullen, 2014), which makes it very important to get a good insight into these aspects. Hoendervanger et al. (2016) found that employees in general do not switch frequently, or at all, to different activity settings. This is detrimental to the concept of activity-based working, as their research showed that when employees do switch frequently the satisfaction ratings are significantly higher.

Another aspect to take into account is that the consequences of having too much distraction in the office concept have been brought to light by several researchers. Rasila and Jylhä (2015) found that office noises may cause stress, tiredness, and a lack of motivation. They did note that it did not have a direct relationship to increasing the number of sick leave days. However, this has been disputed by Evans and Johnson (2000), who found that due to the distraction and frustration of noise, it causes stress which in turn can lead to higher incidents of illness and more turnover of staff. The respondents found it hard to pinpoint if the possible problems are caused by too much distraction. Van Aken (2019) did however mention that when comparing her location of Apeldoorn, to their other location in Zwolle which has a lot more density and utilization, they do notice a lot more complaints. This is also where collaboration with the other departments comes in. Four out of five respondents mentioned that their communication and collaboration with the HR-department is currently sub-par to even non-existent. Increasing this collaboration could sincerely help the FM-department in acknowledging problems with the office concept. When the HR-department can provide figures and reasoning behind why possibly the amount of sickness amongst employees has increased. This is an aspect that is yet to be introduced within the researched organisations, however they did all see the value of increasing the collaboration with HR-departments. Another option is that the FM-department might have to rely on the highly sensitive people as mentioned by Tietema (2015). They could function as a ‘canary in the coal mine’ which warn the organisation that a problem is about to occur in regard to the office concept, as they perceive distractions quicker than other people.

There are several measurement tools in the market right now, for example the WODI-survey, WPA-tool, and Leesman research (which has been used by two out of the five organisations). The output coming from the Leesman research, which focuses on the working environment and productivity, has been acknowledged to be quite useful, as it translates the findings into numbers and makes the problems (or strengths) more tangible (Leyte, 2019; Leest, 2019). Van der Leest (2019) did however mention that the measurements should not bring anything new to light, as ideally these problems are already on the scope of the department. Van Aken (2019) mentioned that an important aspect to take into account is that measuring things, and actively surveying people might create the expectation that you are going to try and solve the problems immediately. When you are just trying to get insight and create an overview of how things are going, this might not be the goal of the measurements. Therefore Van Aken (2019) prefers constant communication with managers and users as a form of measurement, over actual tools or questionnaires. The concept behind a lot of communication has been acknowledged to be important within all of the respondents. In Redacted organisation they have started using smart-signs and sensors to measure the impact of the workplace concept. This serves a double function, as it also provides real-time information of the occupancy for the users of the building (Koldenhof, 2019).

Some organisations also purposely do not measure a lot of aspects at this moment, as they are going through turmoil with for example reorganisations. Van der Ploeg (2019) mentioned that with the current movement in some departments there is some discontent, which in turn will not provide us with the most useful feedback. Koldenhof (2019) shared this sentiment, as she noted that amid reorganization it is just not a good plan for Redacted organisation to measure different aspects.

All of the respondents also mentioned that when they are measuring aspects, they do want it to be useful information. This is sometimes a problem, as Van der Leest (2019) mentioned that they find it hard to show the added value of being a great place to work.

6.3 Supporting the concept

In this paragraph, the sub-question “Which measures are taken to support the workplace concept” will be answered.

For an office concept to properly work there are several aspects to take into account. The population must understand and accept the plan behind the concept. To make this happen the FM-department needs a lot of input from communication as well as output towards the population.

The input of communication is focused on receiving signals and developments to stay ahead of the curve when looking at the demand-side of the workplace. At Alliander to support the new workplace concept they had an intensive program. This program aimed to find ambassadors in all parts of the organisation to develop a good and complete image of what people need as well as support the transition to a new way of working. By involving the people this process was guided a lot better and smoother (Leyte, 2019). The importance of clear communication about the workspace speaks for itself and is supported by the findings from Oseland (2019), who found that when people do not understand what a space is supposed to be used for, they avoid these spaces. This is in following what Petrulaitiene and Jylhä (2015) found, that the risk of misuse or sub-optimal use of space can be lowered by actively involving employees into workplace development. This is also communication that makes the transition from input to output, as the demands are translated to actual output. The importance of communication is also found in the literature as Hoendervanger mentioned that companies create a common vision on a dynamic and open workspace with as much communication and collaboration as possible without taking into account that some jobs might not be focused as much on these aspects (Tietema, 2019). Several of the respondents mention that they want to be involved with the business of their different departments. By constantly keeping in contact with the departments they can quickly adapt to developments, recognise the demand, and look for ways to improve the concept (Leest, 2019; Leyte, 2019; Koldenhof, 2019). Koldenhof (2019) adds to this that their job is focused on communication, just like the other supporting services of HR and IT. As one of these departments, you want to stay ahead of the curve by constantly keeping in touch with the users.

The output of communication is focused on communicating about the concept, staying in touch with the users and creating clear descriptions about the workspace environment. When making slight nuanced changes to the workplace concept, such as providing a new team with certain workspaces it is also important to stay in touch. Van der Ploeg (2019) mentioned that a lot of managers show concerns with the flex-ratio beforehand, so you have to stay in touch. After staying in touch though, and through time, these concerns disappear as they notice that everything is going to be all right. Furthermore, it is very important to carefully pick the communication, as some terms might be ‘contaminated’ with a negative connotation (Leest, 2019). Outside of direct communication, indirect communication is also very important. Leest (2019) mentioned that at VGZ they try to make the atmosphere of the space speak for itself. Examples of this are the atmosphere an employee feels at Alliander when moving towards the

edges, which give signals of it becoming quieter the further you move from the centre (Leyte, 2019). At VGZ they also try to do this by indicating it in 'fun' ways, by example by putting a mannequin dressed up as a librarian in a silent zone of the building.

Babapour (2019) found that in activity-based offices, clearly defined and well-communicated rules were crucial for having a shared understanding of expected behaviour, making the flexible office concepts work, and avoiding uncertainties, conflicting interpretations and disregarding of rules.

The communication could however be more than just focused on the users. Several of the respondents mentioned that they would like more collaboration between HR, IT and FM. The amount of involvement the FM-departments expect from HR and IT does vary however within the organisations, whereas some want HR to take over certain aspects, such as behaviour yet not touch the core business of FM (Ploeg, 2019), and others would like to increase the collaboration as a whole and think about the concepts together (Leest, 2019; Leyte, 2019).

6.4 Concentrated work and the aspects that influence it

In this paragraph, the sub-questions "Which personal and task characteristics influence concentrated work", "Which visual distractions influence concentrated work", "Which auditive distractions influence concentrated work", and "Are organisations familiar with the findings in research about concentrated work" will be answered.

When looking at concentrated work several factors can influence it. Among these factors are distractions (auditive and visual), personal and task characteristics, behaviour, and mobility. In regard to personal characteristics, several researchers have found many aspects impacting the ability to perform concentrated work and the ability to handle interruptions and minimise their impact (Furnham & Strbac, 2002; Maher & von Hippel, 2005; Oseland, 2009; Oseland & Hodsman, 2018). Oseland and Hodsman (2018) found that introverts respond more negatively on the correlation between perception of distraction and productivity. On the other side of this equation, it is also important to consider the more extraverted people. In general, these people are covered less within research, because they suffer less from the problems regarding concentration in an open-office plan. As mentioned by some of the respondents they thrive when having a buzz around whilst trying to perform concentrated work (Aken, 2019; Leest, 2019; Leyte, 2019). This is supported by the arousal theory, which found that in general extraverts cope and perform several types of tasks better in noisy conditions (Broadbent, 1958; Morgenstern et al., 1974; Standing et al., 1990; Belojecic et al., 2001). However, with the current office concept in place this is not a big concern, as most of the concept caters to this. Von Wright and Vauras (1980) found that the more neurotic performed worse in complex mental tasks when exposed to noise. Furthermore, Franklin et al. (2013) found a correlation between acceptable noise level and openness or conscientious personality dimensions. They suggest that people who are more open to new experiences may accept more noise, whilst those with a conscientious personality type accept less background noise. Regarding the aspect of age, it has been found that older respondents perceived noise to be slightly less of an issue than younger respondents. This is to be expected due to older respondents having adapted more to their acoustic environments (Oseland & Hodsman, 2018).

Closely related to personal characteristics are behaviour and mobility. The respondents noted that in all organisations mobility is somewhat of an issue, which is very important for office concepts such as activity-based working. At Alliander research showed that 67% of the population has a mobility profile consisting of entering the building in the morning, choosing a spot to work and remaining there until it is time to go home. Having this knowledge of a mobility profile also improves effectiveness within the FM-department, as it helps in developing and choosing the right measures to tackle the problems. For example, they can either tackle the problem and try to improve the mobility or take it into account when designing the workplace concept. Mobility can also be impeded by behaviour, as mentioned by Van der Ploeg (2019). At NS the people find their mobility impeded because there is a high amount of 'claim-behaviour' in the workspace. This means that one works from a different desk than is assigned to their department, they feel watched and as a guest in somebody else's area. Furthermore, Koldenhof (2019) mentioned that they try to stay away from behaviour as FM at Redacted organisation. They do not believe that they can truly influence the behaviour of an entire organisation as just 35 people in their FM-department. They do however set certain guidelines and rules when it comes to the use of space. Babapour (2019) noted that clearly defined and well-communicated rules are crucial for having a shared understanding of expected behaviour, making the flexible office concepts work, and avoiding uncertainties, conflicting interpretations and disregarding of rules. This is to support this open dialogue culture and gives people something to lean on when addressing unwanted behaviour. An open dialogue culture can enhance the ease of solving problems related to distractions. In most organisations when there are complaints or concerns the FM-department starts up the conversation with the different parties and tries to get everything cleared up. It is important to then try and understand one another, why is something being experienced as a problem or concern and why are there certain limits to which can be provided. By creating understanding, the collaboration between departments tends to improve.

Task characteristics also play an important part in the necessity of concentrated work, as some tasks have higher importance when related to concentrated work than others. Examples of this are coding and programming, which require a lot more need for a deep level of concentration than others (DeMarco & Lister, 1999). Baron (1986) found that complex tasks require processing of a wide range of cues/stimuli at the same time. When restricting attention to the centre, or by focusing the attention due to attentional overload, a performer of the task tends to leave out crucial stimuli that must be processed for successful task performance, which impairs the performance of the tasks. For this reason, organisations need to know what tasks their different departments perform.

Taking these personal and task characteristics into account is something that was witnessed at VGZ. Besides the fact that the atmosphere of certain parts of the building would indicate which departments were housed here, they also looked at the tasks to provide an optimal workspace. When looking at personal characteristics the respondents in general do see some value however not on a detail-level. What most of the organisations do is create persona's, by which they try to group up people, tasks, activities, and characteristics. With taking these findings into account, Oseland and Hodsman (2015) opted that it might be useful for companies to start using personality profiling to cluster people who prefer and function better in similar acoustic environments. In this case they take the characteristics into account, but looking at it on a detail-level does not seem to hold much value to the respondents. Van

Aken (2019) also showed concern in regard to the idea of really taking it to a detail-level. She mentioned that it would become an increasingly hard puzzle when you have to take all these factors into account and does not know if she would want to be the one to try and solve that puzzle. In a sense this relates to Koldenhof's (2019) statement which says they have a concept regarding one size does not fit all, which means they try and supply an optimal workplace concept, however you cannot please everyone (Bell & Anderson, 1999). Furthermore, when using jargon-terms (such as OCEAN personality traits) the respondents seemed to not be quite up to date with the latest findings in research. However, when shortly expanding on the jargon the respondents noted to know quite a few things about it, and would even add onto the findings. In general, the respondents did have quite a bit of the knowledge, although not always on a detail level, as they found out about it intuitively through experience or professional curiosity.

Another aspect that influences concentrated work is visual distraction. This aspect is mostly about being seen or seeing others. If an employee is seen by others, in general they are more approachable and therefore more prone to distraction. Appel-Meulenbroek et al. (2011) found that 44 percent of their respondents were distracted due to a lack of visual privacy, showing that it affects almost half of the population of an office. Becker (2002) noted that being able to see colleagues might also prevent distraction because in cubicles people felt obliged to interrupt someone when they took the effort to go and visit a colleague. With technological advancements however this is less of a problem in current times as Koldenhof (2019) mentioned. There are now possibilities to check from a distance if someone is available or not, through internal communication programs which show one's availability for example. According to Brill (1985), visual distractions and interruptions refer to the unintended and accidental effects of the presence of others. Furthermore, Compennolle (2014) notes that seeing someone else activates the reflex-brain, which is responsible for direct responses and sensory input. At the same time this discourages the archiving and thinking brain which is needed for deep concentration. In general, visual distractions are not the focus for most of the organisations, which is to be expected since a lot of the organisations focus on transparency and togetherness. Some do address the visual distractions by providing secluded cellular concentration space (NS, Rabobank, and VGZ).

When looking at auditive distractions different types of distractions have been noted. Whereas some researchers talk about the background noise, noise from other people talking, telephones ringing, amongst many others (Haynes, Suckley & Nunnington, 2017; Veitch et al., 2002). Veitch et al. also mention that irregular sounds in general create more disturbance than continuous sound, most likely because they require more effort to zone out for the users. Mouri et al. (2001) found that telephones ringing affects the level of performance when performing mental tasks. Furthermore, several studies pointed out that speech (incidental or formal) is the most disturbing source of noise in an open-office accommodation. The matter of disturbance is related more to the intelligibility and substance of the conversation than the speech volume (Marsh et al., 2009; Roelofsen, 2008; Schlittmeier & Liebl, 2015). The problem of auditive distraction is also recognised by the respondents, as Van Aken (2019) mentioned that the location in Zwolle has a lot more problems with this due to the density, and Koldenhof (2019) mentioned that they started receiving signals from people working from home to perform concentrated work as they found they could not do this at the office anymore. It has also been

noted that a space should not be too quiet either (Cushman and Wakefield, 2017). From an evolutionary perspective, Oseland (2009) noted that this might be due to people preferring noise to be at a similar level to that found in the natural world. In general, auditive distractions are being considered to a certain extent within the organisations of the respondents. Several of the respondents note that they use acoustic walls or elements that provide sound absorption (Aken, 2019; Leyte, 2019; Ploeg, 2019).

6.5 Solutions for concentrated work

In this paragraph, the sub-question “How do organisations provide concentrated work” will be answered.

When it comes to finding a solution for concentrated work it is always a hard task, however the organisations do have different ways to try and solve this problem. These solutions can be summarized as interior design, zonal solutions, cellular solutions, headphones, remote working and educating the employees. All of these solutions can be placed under the acronym DARE, coined by Oseland (2009). This acronym is short for Displace the distraction, Avoid the distraction, Reduce the distraction and Educate the personnel.

For acoustic and visual distractions several measures can be taken in interior design. Several elements provide sound-masking or sound-absorption, such as carpets, special lampshades, elements on the wall and many more. All of the respondents already acknowledged that their organisation uses some of these measures in one way or another. Furthermore, seclusion through walls can help with both visual and auditive distractions. As of late, a new development has also entered the market against visual distraction being Smart foil (Smart Folie, 2019). This foil is an activatable layer that can be applied to transparent windows, which by activating provides a lot of visual seclusion.

The zonal solution can be explained as a designated area for concentrated work. At Alliander and Redacted organisation this has been translated to an actual library-floor, where people are obliged to abide by rules regarding being quiet (Leyte, 2019; Koldenhof, 2019). Implementing a zonal solution requires a certain set of behaviour from the occupants, as they have to be willing to abide by these rules. Having a common area could also be a zonal solution, as having many different departments sitting together this could play into the strength of not overhearing conversations that interest employees on a professional level.

The cellular solution is amongst one of the (if not the) most common in the industry right now. The cellular solution can be explained as having a separate room for one or two employees to perform concentrated work. This plays into having seclusion from other employees, creating visual and auditive privacy. There is a concern however as the mobility profile of the employees has to be in line with this solution if it is going to work optimally. If the employees are not willing to move for different activities, the cellular solution might just be an inefficient waste of space.

Using headphones in the workspace is becoming a more regular solution as of late. All of the respondents recognised the fact that more and more people in the workplace are using headphones, and more importantly it is also accepted. Oseland and Hodsman (2018) acknowledged that wearing headphones at work is one of the ways employees address the issue regarding distractions. Even though

most organisations do not provide these headphones themselves, the employees find the investment worthwhile enough to acquire them. In part this is also because they can use them for traveling in peace and quiet, be it by public transport or airplanes. Headphones also have the advantage that they prevent both auditive and visual distractions. They prevent auditive distractions by doing the obvious which is blocking and masking the sound. Visual distractions are blocked through showing signals that the person wearing the headphones is not available. This phenomenon has been found to work at both Alliander and VGZ. It does not mean that employees with headphones do not get interrupted at all, however it is something that others take into account.

Another option that has been opted quite a lot through columns in newspapers in the Netherlands as of late is working from home or remote working. This trend is in line with the current (and what some respondents expect to be the future) of office concepts, as they are all focussed on collaboration and meeting up with colleagues. By seeing remote working as a solution for concentrated work in open offices, in a sense the organisation looks for a solution by not providing it in the office itself. Appel-Meulenbroek et al. (2011) found that 62 percent of the respondents in activity-based concepts already work at home to achieve better productivity on busy days. The respondents all noted that working remotely is allowed within their organisations, with some exclusions for certain specific tasks that need to work from the office. Alliander provides a budget to employees to create an optimal workspace at home, whereas VGZ offers advice in creating the right workspace. It has to be noted however that working from home also has possible problems for some employees. Depending on their private circumstances, the employees might have children which prevent them from performing concentrated work at home (Aken, 2019; Koldenhof, 2019; Leest, 2019; Leyte, 2019; Ploeg, 2019). Koldenhof (2019) mentions that it is quite important to see remote working as more than just working from home. At Redacted organisation they are also looking at possibilities for providing remote working through partnerships with Van der Valk or Regus for example, which is located throughout the country and provides flexible workspace. To provide remote working properly, the IT-facilities have to be in order. At Redacted organisation they do this by providing the ability to conduct for example videoconferences from home, as the laptops are suited with the correct software (Koldenhof, 2019). This ensures that employees can still stay in contact with, and collaborate, with their colleagues.

Leyte (2019) did find it important to emphasise that working remotely has to be an option, not a necessity. It has to be an extra option for the employees, not a necessity due to not being able to perform concentrated work in the office.

Educating the population could also be a solution for concentrated work at the office, as it is also mentioned in the DARE acronym by Oseland (2009). Van der Leest (2019) questioned how much the population knows about concentrated work at the moment. Therefore, it is important to start educating the personnel, which aspects influence the ability to perform concentrated work, which personal characteristics do you possess and how could you help yourself improve your abilities to perform concentrated work, and many more questions. Van der Leest (2019) also mentioned that it is important to try and get your employees involved, which could be done by letting them know of the advantages of concentrated work. In general, this activates the population to start researching a bit themselves and getting involved and active with the plans. Furthermore, employees can be taught different methods to

perform their tasks. In the 1980s the Pomodoro technique was developed, which is a time management technique that traditionally breaks activities down to 25 minutes in length, separated by short breaks (Francesco Cirillo, 2019). By involving these kinds of techniques this might also improve the ability of employees to perform concentrated work. Furthermore, employees could also be taught a critical attitude, is it necessary to come to the office to perform their tasks, or would they be better off working remotely so there are no distractions. Van der Leest (2019) expects that in the future the office building helps with this critical attitude, as he expects the office building to become more dominant and guiding. This would mean that in the future the office building would look into your schedule and recommend certain work-settings as well as guide you through the day. Currently there is already some software available for this, being MyAnalytics, which shows your working behaviour, checks if it fits with what you are supposed to do, and recommends if you had a productive day (Leest, 2019).

7. Conclusion

This chapter answers the main research question *“How can organisations facilitate concentrated work in open-office plans?”*

To answer this question this research elaborated on what influences the ability to perform concentrated work and how organisations currently facilitate concentrated work. The research found that the organisational goals and focus are very important for the ideas behind the office concept. Whereas most organisations focus on collaboration & transparency, which is on the opposite side of concentrated work. This does not mean however that there are no solutions, it just gives perspective to what the organisations find important and what might be the reasoning for certain decisions when providing a workplace concept. It is important to analyse these goals and get insight into the focus because it has to fit with concentrated work in the bigger picture.

Furthermore, communication has a very important role in the office concept and concentrated work. The concentrated work topic can be divided into input and output. The input aspects are focussed on staying in touch with the users, the regular employees and the managers, to get input for the persona's which can help in deciding a proper solution. These persona's need input from the perspective of personal characteristics, as certain characteristics convey different messages and respond differently to solutions. As concluded by several of the respondents, these characteristics should be taken at a group level, instead of focussing on an individual level which would make the puzzle too complex to solve. It also requires task characteristics, as the workstyles and activities keep changing in the current market and it is important to provide for the proper demand when thinking of the workplace concept. Mobility is the last aspect that is very important for the persona's, as certain concepts require a lot of mobility from the users. If a mobility profile therefore is low, the organisation can take this into account and focus on solutions that do not require a lot of mobility. Furthermore, this input-side of communication can create ambassadors which support the concept and make it easier for it to succeed. Several respondents also mentioned the importance of thinking carefully about the words one uses when providing output and communicating their message, as quite a few topics have been contaminated and therefore create a negative perspective when communicating. Furthermore, the output is focused on communicating the concept. As mentioned before clearly defined and well-communicated rules are crucial for having a shared understanding of expected behaviour, making the concepts work, and avoiding uncertainties, conflicting interpretations and disregarding of rules (Babapour, 2019).

Analysing this situation could result in different solutions that are applicable to the organisation, which can vary from changes to the interior design, zonal solutions, cellular solutions, headphones, remote working, and educating the personnel. It is important to note that every solution caters to different aspects. Taking all of this into account resulted in the framework which can be seen as Figure 9.

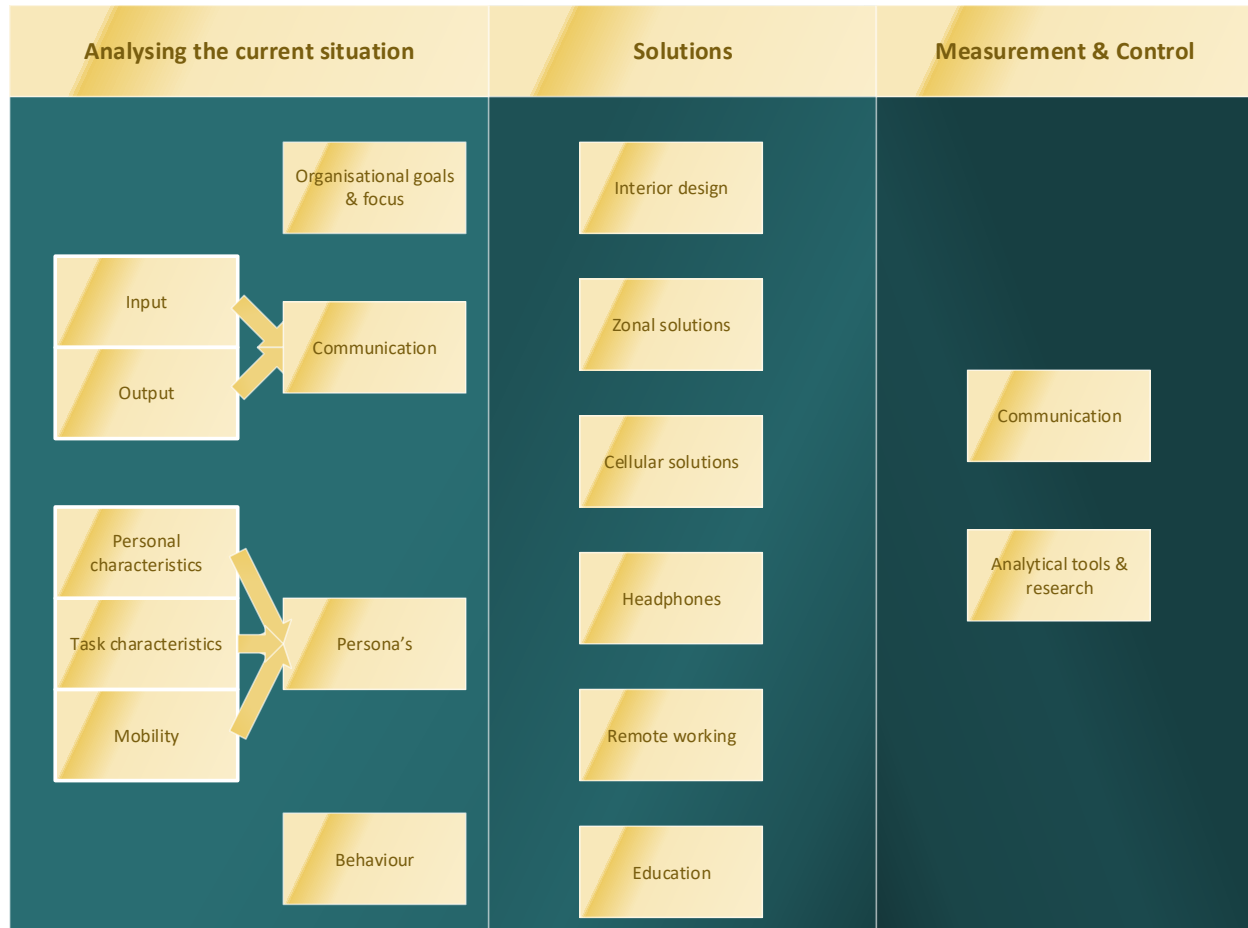


Figure 9: Framework for concentrated work

Summarily it can be concluded that there are several solutions for concentrated work, but it is most important to analyse the current situation to find a fitting solution. When mismatching a solution with the current situation an organisation might waste a lot of time and money. An example of this can be an organisation going all-in on remote working, whilst the population does not have the IT facilities needed for this solution. Furthermore, it is very important to stay ahead of the curve and keep on measuring and controlling the situation, as the current climate has everchanging demands for the workforce population. In the end it is always important to remember that there is not one easy solution for concentrated work and it all depends on the factors that affect the organisation and population.

8. Recommendations

8.1 Recommendations for the field

According to the findings, there are quite a few of ways in which the organisations in the market can expand their possibilities for concentrated work. For years and years research has concluded that in current open-office plans the possibilities for privacy and concentrated work are sub-optimal. It is important however for organisations to take into account that there is no easy solution for concentrated work, as Appel-Meulenbroek et al. (2011) mentioned, the differing need for privacy and interaction of employees make it hard to design a general concept with all the differences in personal characteristics, work style, and activity patterns.

The first recommendation is to improve alignment between the organisational goals, organisational culture, and the workplace concept. It is always important for organisations to realise their strengths and weaknesses as they can help a company orientate itself in the market. For organisations it is always important to critically assess if the workplace concept aligns with the organisational goals, culture, mobility, behaviour, tasks and personal characteristics of the population. Better alignment of these aspects can strengthen the organisational culture as well as the results in general and make the workplace concept truly add value to the organisation.

The second recommendation is to increase collaboration between HR, IT and FM. As mentioned by the respondents, they all see the value of increasing the collaboration between these departments. When looking at the factors affecting the workplace concept in general the departments can help one another in different ways. For example, HR and FM can together think about the behavioural aspects and how to best introduce new concepts, as it touches the interests of both departments. IT and FM can together provide a better more user-oriented service. Furthermore, IT is very important for certain solutions, such as remote working which needs IT facilities to work at all. In conclusion, all of these departments are supporting services trying to provide the best situation for the users, which they could take to the next level by collaborating.

The third recommendation is for organisations to get insight into the demand of the users. In too many situations it seems that organisations abide by a certain concept because it is currently new and trendy in the market. Different concepts however, have different requirements and provide different strengths and weaknesses. Therefore, organisations need to stay in touch with their business, as well as their users. This provides the organisation with the knowledge of the demand of the users, and can therefore provide better service to them which in turn lets them be more productive and increase satisfaction. Within the current climate in the market, where technology keeps developing, jobs and tasks keep changing and knowledge work is becoming increasingly more important it would be wise if organisations stayed ahead of the curve and try to be pro-active when it comes to developing the workplace concept by providing slight nuanced changes when necessary.

8.2 Recommendations for further research

Further research is recommended, to find out if the proposed framework is complete as well as look at the different factors that have been explored. Furthermore, similar research would be interesting as it could include different types of companies, throughout the country, and look at the different aspects affecting their workplace concept.

There are also a few aspects that fell outside of the scope of this research but could hold a lot of value for concentrated work. These aspects are focused on the atmosphere and climate of the workplace. It would be interesting to see a study which looks at these aspects, looks for the impact and finds the optimal situation for concentrated work.

Furthermore, the concept of education of the personnel with regards to concentrated work has not yet been researched. It would be very interesting to find out how much the personnel of organisations knows about concentrated work, and how finding out more might impact their ability to perform concentrated work. This could be a combination of qualitative and quantitative research, as it takes into account both what the population knows as well as how it affects their perception of their productivity.

Lastly, it would be really interesting to see more observational research regarding concentrated work. In this research, due to restrictions the observations were quite limited unfortunately. It would be really interesting to see how distractions occur in open-office plans and see how behaviour, mobility, measures, and communication can impact this.

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Appendices

Appendix 1: Operationalisation

Appendix 2: Research breakdown structure

Appendix 3: Interview guide

Appendix 4: Interview, observation and ranking results

Appendix 1: Operationalisation

The operationalisation has been divided over several pages, to improve readability. In general, there are four divisions, being organisation, building, privacy and perceived productivity. Even though for the most part perceived productivity falls outside of the scope, it still held enough relevance especially when thinking about the effects. Some axial coding has been added to the different boxes, but only when it does not affect the readability. These codes are used in the later stages of the research. Table 2 shows where the subjects came from, related to the literature review. Some subjects have been added due to the interviews, observations or logical thoughts.

Topic	Phenomenon	Source
Office concepts	Different office concepts	Gottschalk, 1994
Office concepts	Importance of networks, collaboration.	Design Council, 2005 Bell & Anderson, 1999
Office concepts	Flexibility	Bell & Anderson, 1999
Office concepts	Why change the concept?	Petrulaitiene & Jylha, 2015 Pullen, 2014 Sullivan, 2013 Dewulf et al., 2000
Office concepts	Density and utilisation	Harris, 2016
Office concepts	Success factors	Palvalin et al., 2017 Harris, 2019 Bell & Anderson, 1999 Appel-Meulenbroek et al., 2011 Becker, 2002
Office occupiers	Employees over cost reductions	Petrulaitiene & Jylha, 2015
Activity-based	Success-factors	Babapour, 2019 Koetsveld & Kamperman, 2011
Activity-based	Problems with mobility / inefficient use	Hoendervanger et al., 2016 Tietema, 2019
Open office	Improves collaboration	Musser, 2009 Heerwagen et al., 2004 Lansdale et al., 2011
Improves collaboration and creativity	Collaboration more productive than individual work?	Haynes et al., 2017
Open office	Sickness and productivity consequences?	Pejtersen et al., 2011 Roelofsen, 2008 Roper & Juneja, 2008
Open office	Concentration problems	Erlich & Bichard, 2008
Workstyles	Transactional knowledge work	Design Council, 2005
Transactional knowledge work	Problems with TKW	Tietema, 2019
Personal characteristics	Distractions linked to personal characteristics and personality	Furnham & Strbac, 2002 Maher & von Hippel, 2005 Oseland, 2009 Oseland & Hodsman, 2018

Noise perception	Irregular sounds annoy and disturb more than continuous. Noise disturbs productivity over silence. People prefer slight buzz over complete silence.	Veitch et al., 2002 Furnham & Strbac, 2002 and Rasila & Jylha, 2015 Oseland, 2009
Object measures	Benefits for comfort and productivity	Jensen & Voordt, 2017
Object measures		Oseland & Hodsman, 2018
Auditive distractions -> Consequences	Consequences, leading to sickness <i>Productivity loss</i>	Rasila & Jylha, 2015 Evans & Johnson 2000 Abbot, 2004 <i>Oseland, 2017</i> Appel-Meulenbroek et al., 2011
Noise perception	Overheard conversations are one of the biggest distractions	Sundstrom et al., 1994 Roelofsen, 2008 Marsh et al., 2009 Schlittmeier & Liebl, 2015
Privacy	Measures to counter, and more general	Loewen & Suedfeld, 1992 Oseland, 2009 Oseland & Hodsman, 2018 Altmann et al., 2014
Visual distraction	Definition and how it works	Brill, 1985 Compernelle, 2014
Visual distraction	Visual privacy Benefits and disadvantages	Appel-Meulenbroek, 2011 Becker, 2002
Interruptions	Different types of background noise	Haynes et al., 2017
Interruptions	Consequences	Gudith et al., 2008
Deep concentration	Deep concentration linked with happiness	Tietema, 2017
Deep concentration	Deep concentration needed	DeMarco & Lister, 1999
Task and work activity, and personal characteristics	Linked with brains and cognition Tasks itself	Tietema, 2017 Baron, 1986
Personal characteristics	Personality affecting noise perception and performance	Oseland & Hodsman, 2018 Broadbent, 1958 Morgernstern et al., 1974 Standing et al., 1990 Belojevic et al., 2001 Campbell & Hawley, 1982 Von Wright & Vauras, 1980 Eysenck & Graydon, 1989

		Matthews et al., 2004 Franklin et al., 2013 Oseland & Hodsman, 2015 Tietema, 2015
Spatial lay-out	Transferring of knowledge, internalisation and externalisation	Van Sprang et al., 2013
Spatial lay-out	Hard to balance both collaboration & concentration	Van Sprang et al., 2013 Appel-Meulenbroek et al., 2011
Remote working	Working from home, in contrast with transferring knowledge and possible problems/solutions	Van Sprang et al., 2013 Appel-Meulenbroek et al., 2011 Oseland & Hodsman, 2015
Behaviour, mobility and personal choice	Importance	Appel-Meulenbroek et al., 2011 Barker, 1968
Behaviour	Hard to bring up	Oseland & Hodsman, 2018
Types of privacy		Van der Voordt & van Meel, 2002 Altman, 1975
Privacy	Consequences of a lack of privacy	Altman, 1975
Communication	Lack of understanding what spaces are used for, means they do not get used.	Oseland, 2009
Communication	Lack of understanding between end-users and design consultants	Chigot, 2005
Acoustic comfort	Direct relationship between acoustic comfort and occupant productivity	Landstrom et al., 1995 Sundstrom et al., 1994 Cushman & Wakefield, 2017
Perceived productivity		Batenburg & Van der Voordt, 2008 Groen et al., 2018 De Been & Maarleveld, 2011 Barber, 2001 Hameed & Amjad, 2009 Whitley et al., 1996 Haynes, 2007 Haynes, 2008 Hedge, 1982

Table 2: Origins of different subjects

Operationalisation overview

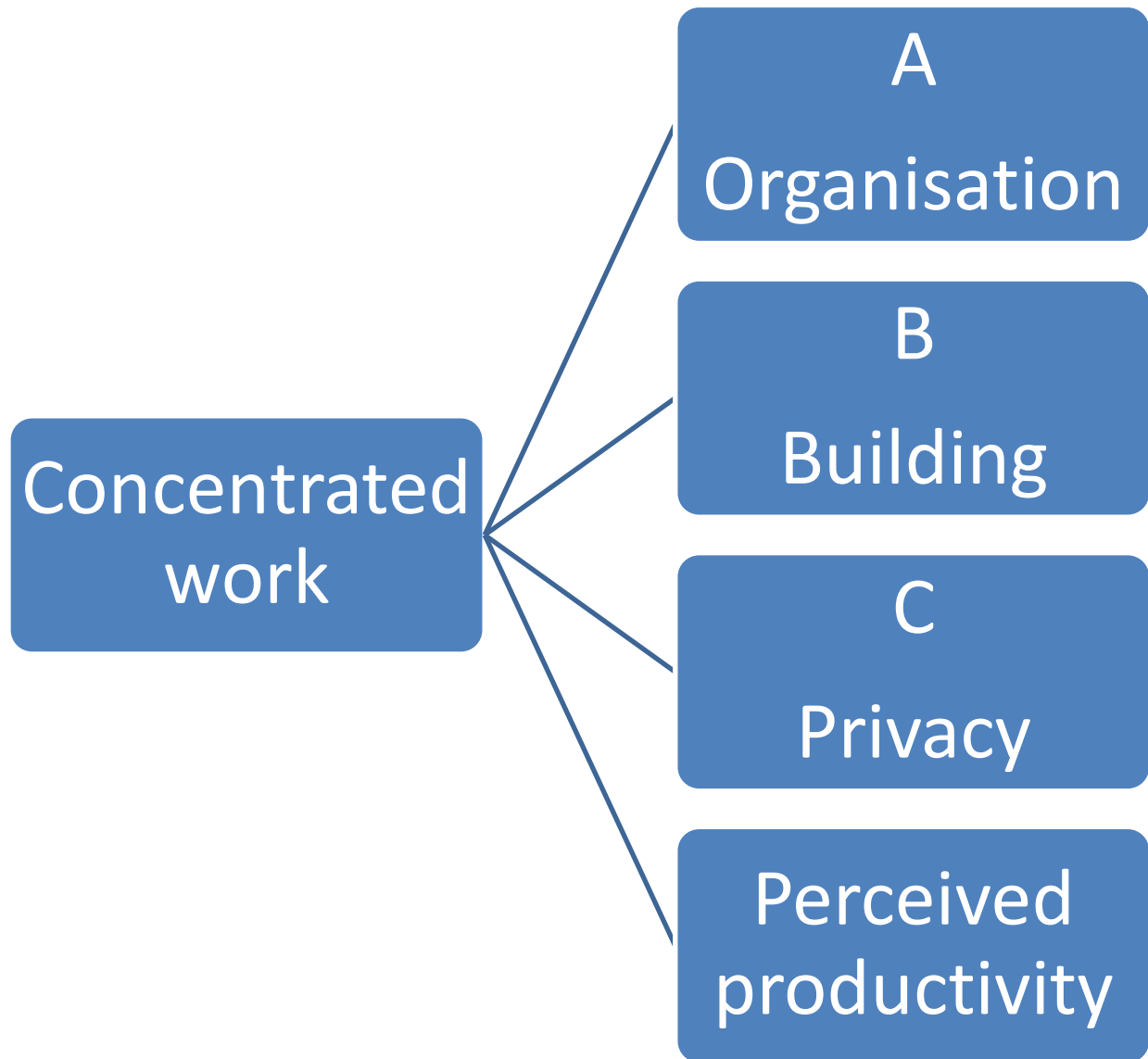


Figure 10: Operationalisation overview

Operationalisation: Organisation chart (Code A)

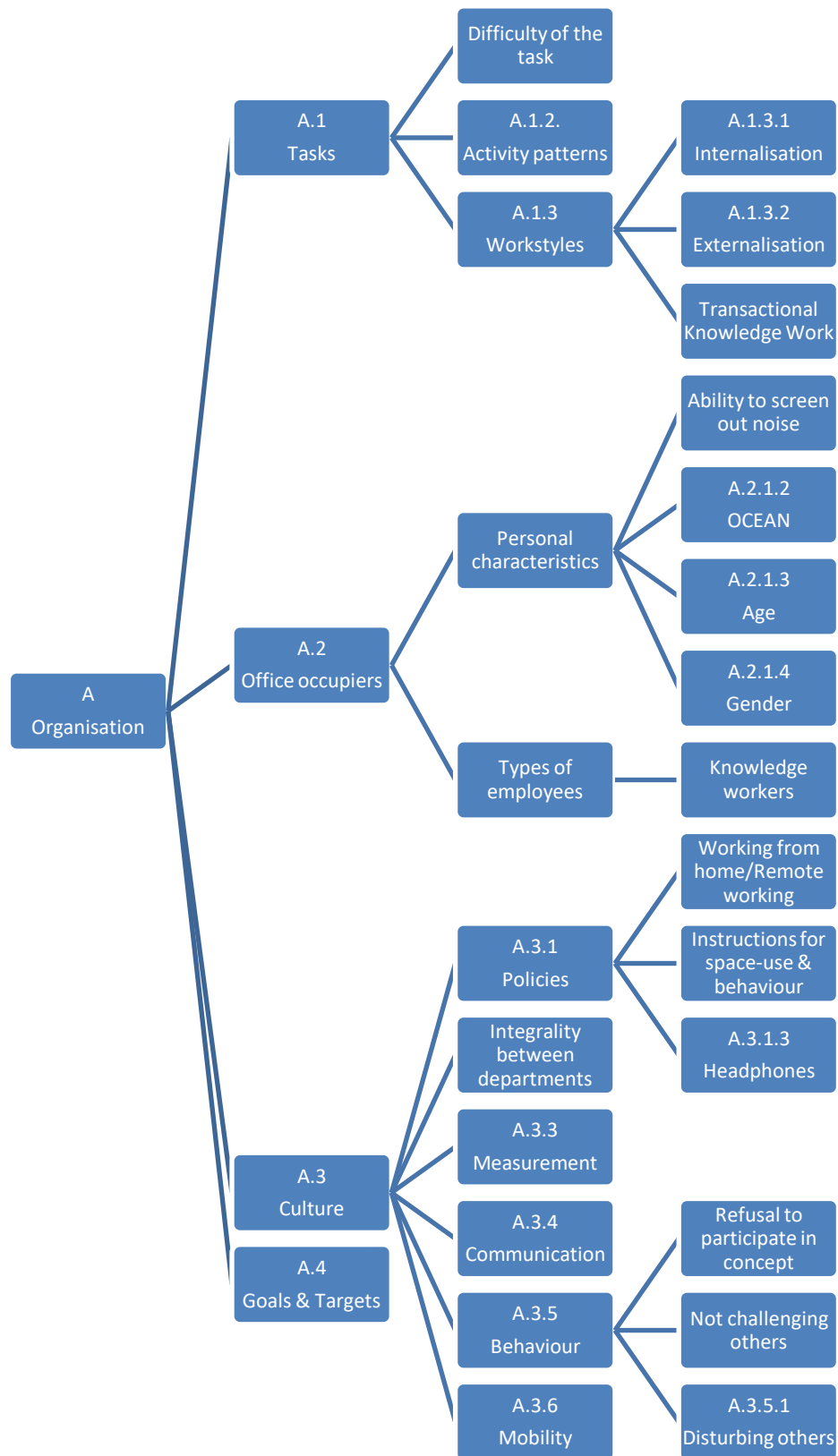


Figure 11: Operationalisation relating to organisation

Operationalisation: Building chart (Code B)

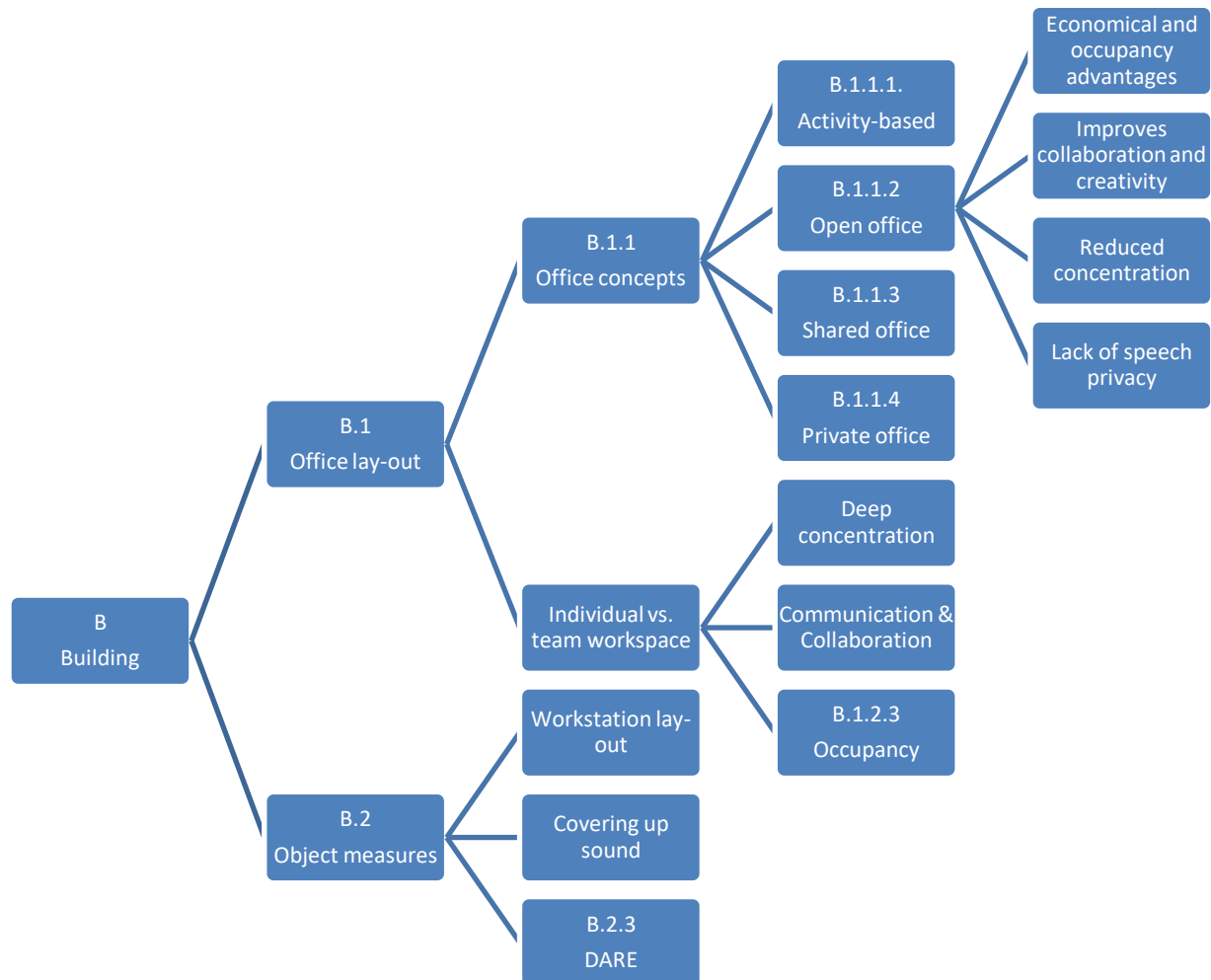


Figure 12: Operationalisation relating to building

Operationalisation: Privacy chart (Code C)

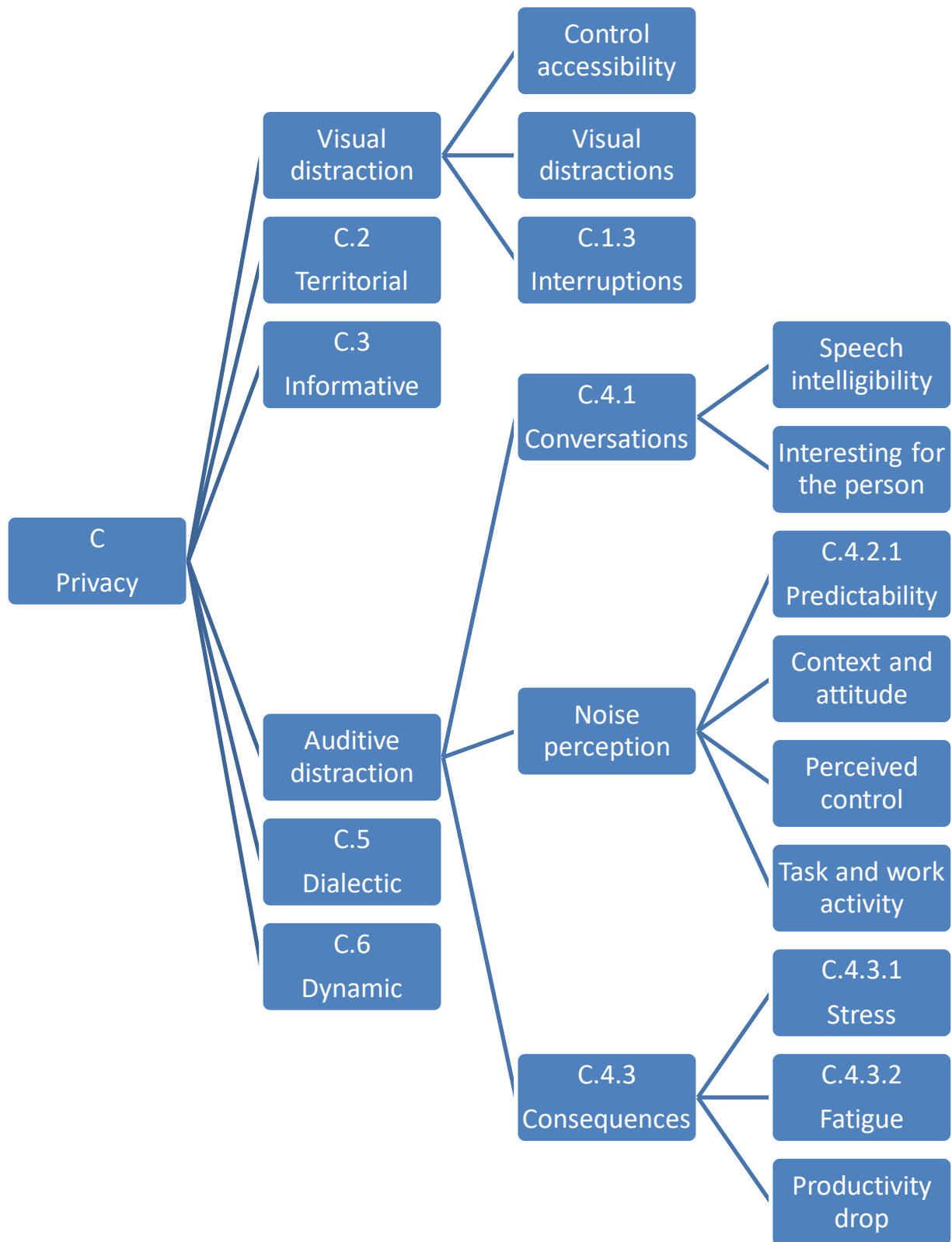


Figure 13: Operationalisation related to Privacy

Operationalisation: Perceived productivity chart (Code D)

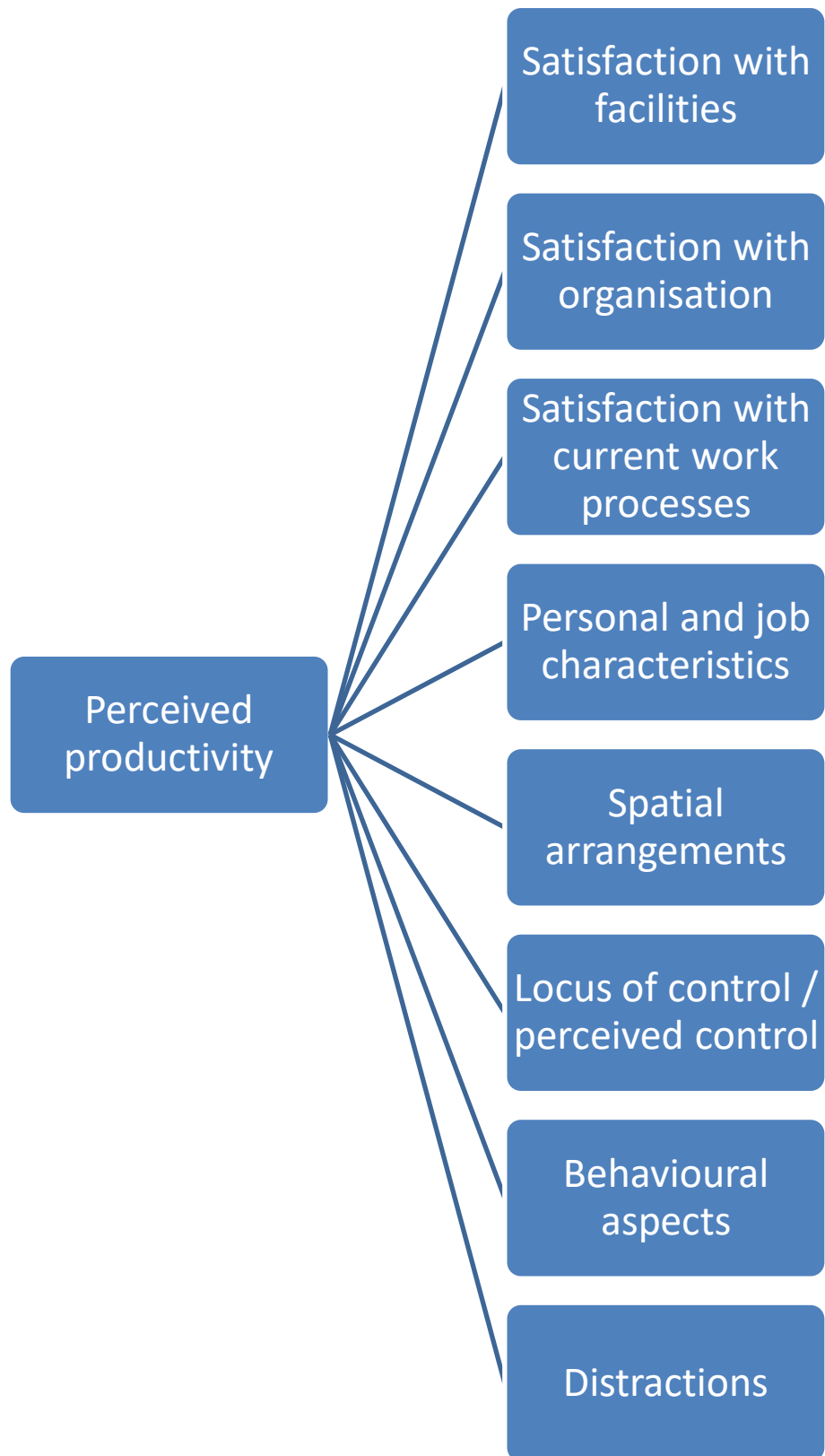


Figure 14: Operationalisation related to perceived productivity

Appendix 2: Research breakdown structure

Figure 15 below shows the research breakdown structure. The different outlines indicate different input that is needed to answer the question. The black outline means it is a combination of all different methods, being the interviews, observations, and desk research. The orange outline means it is a combination of interviews and observations. The red outline means the input comes from interviews. The grey outline means the input comes from desk research. In the end the results will always be analysed together with other findings, so this is not a definitive map of input.

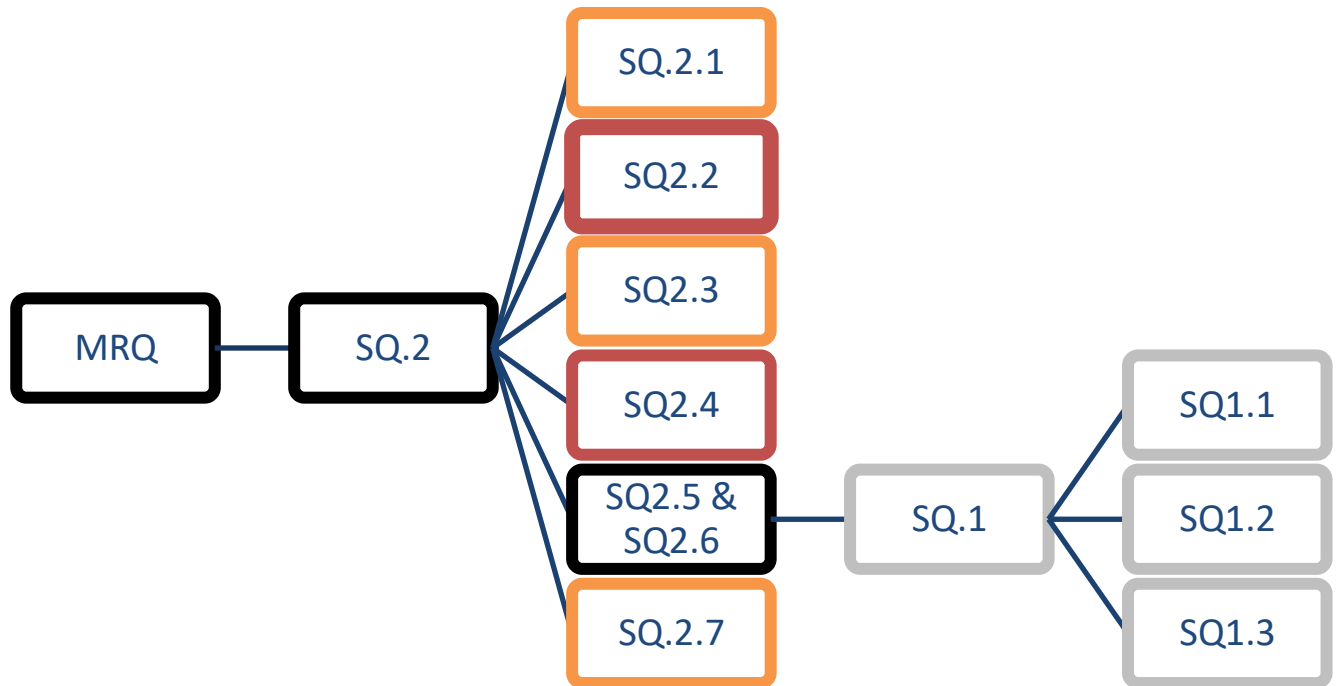


Figure 15: Research breakdown structure

Appendix 3: Interview guide

Interview guide FM

Short introduction of the interviewee and some background information

Work-place concept

Global explanation of the concept.

Do you use an activity-based concept?

Based on what did they decide the number of workspaces for certain activities?

How do you decide what the target group wants?

Is there an explanation for what the workspaces are meant for?

How does the lay-out work?

Do you use mixed zones?

Based on what did you divide the zones?

How much control do employees have over the concept?

Workstyles

Do you use, and notice impact, of Agile, Scrum or other methods?

How do you provide individual and collaborative work?

How do you provide externalising vs. internalising?

Do you look at the difficulty of the tasks and type of employees?

How do you balance these aspects?

Measurement

What is being measured? (Productivity/satisfaction/efficiency)

How is this being measured?

How satisfied are the users at this moment?

Personal characteristics

How much insight do you have in personal characteristics? (Personality types, age, and ability to mask out sound for example)

Do you take personal characteristics into account when looking at the concept?

Is there collaboration with HR? Do they perform intakes/assessments? Do you receive this information?

How familiar are you with the findings regarding personal characteristics and concentrated work? (For example age, OCEAN, etc.)

Measures

How do you prevent visual distraction? (Control in accessibility, visibility and interruptions)

How do you prevent auditive distraction? (DARE, Speech intelligibility, etc.)

Do you notice any consequences from a lack of privacy or too many distractions? (Stress, tiredness, productivity-loss, sickness, etc.)

What are your organisation's policies regarding acoustic measurements/headphones?

What are your organisation's policies regarding remote working, and why do people work remotely?

Do you see working from home as a solution for concentrated work?

What happens when someone does not abide by the set rules of the workplace concept?

Organisational culture

Start of relating it to the core values of the organisation, how do you see these come back in the concept?

How much do users take other users into account?

Is there an open dialogue culture?

Collaboration between departments

Do you work together with IT, HR and FM?

How did you clarify the importance if you find it important?

Complaints

How do you deal with complaints or concerns regarding the workplace concept or concentrated work?

Personal

What do you get judged on as FM?

What do you get judged on personally?

What do you think about concentrated work at a personal level?

What is your own vision on the future of the office concept?

What do you think of the importance of the different added values, for your department and organisation? (Rank the different aspects of the WODI-survey)

Tips for the future

Are there any aspects I did not mention you would like to see included?

Would you mind answering additional questions at a later date?

Most important aspects of the work environments (For the ranking)

- | | |
|---|---|
| - Accessibility of the building | - Archive and storage facilities |
| - Architecture and appearance | - Concentration |
| - Communication | - Facility management |
| - Facilities for remote working | - Functionality and comfort of the workplaces |
| - Indoor climate | - Interior design appearance and ambiance |
| - IT and supporting services | - Location of worksites |
| - Number, diversity and functionality of workplaces | |
| - Openness and transparency | - Privacy |
| - Spatial configuration | - User influence |

Appendix 4: Interview, observation and ranking results.

Below in Table 3 a slight overview is given for the codes used for several parts of the different research methods. For the interviews the most important statements have been collected after analysis, and coded by subject. The full interviews, in audio-form, and transcribed and coded, can be found on the USB-stick.

Name	Organisation	Code respondent	Code Observation
Femke Leyte	Alliander	R1	OB3
Frank van der Leest	VGZ	R2	OB2
Joyce van Aken	Rabobank	R3	OB3
Inge van der Ploeg	Nederlandse Spoorwegen	R4	OB4
Wendy Koldenhof	Redacted	R5	OB5

Table 3: Code table

Interviews

Concept

R1: The work concept is based on activity-based working, where we divide it into four different activities being: individual work, connecting, collaboration and meetings.

R1: Our concept is focused on connecting and meeting, which is reflected in the transparency of our offices, ... and shows in the connection between places.

R1: Based on a number of job-profiles, for example the knowledge worker, CAT-drawer, customer service employee, we have checked what these jobs need to execute their activities. What do these people do the most in a day, and in which spot do they do it, this raw data is what we translate to the needs of our people and that is what we use as input for our concept.

R1: In our concept we try to put the people together that need to work with one another, we try to listen to our people when doing this.

R1: In essence a department has an orientation-point in the office, which means that an employee is most likely finding his colleagues in that area.

R1: The activity individual work acknowledges two types in our company, with your colleagues on the regular office floor, and in peace and quiet. These activities have been translated to three different types of workspace, the atelier floor in which you work together in a more rowdy environment which is mainly meant for project-wise work and more dynamic work and are not granted to certain office departments, regular office floors as you know them in which you work with your colleagues, and library-floors where you really notice by the atmosphere that you have to be quiet and that employees do concentrated work here and read, this is something that people really live by.

R1: Eventually you do have to keep in mind that your concept is not leading, if it is not working then you have to figure something else out.

R1: It sounds a bit rude, but if this concept does not work for you Alliander is probably not the right organisation for you because this is the way we work. We offer plenty of facilities to work in a concentrated manner, we offer the ability to work from home and we offer a diversity in our different offices.

R2: We are currently in the transition of moving from one concept to the next one. Our current concept is based on the task-based work environment of Davenport, where we are looking to transition to a more activity-based concept. With this concept we are looking at three behaviour-zones, which are connect, social-informal interaction and meeting with colleagues, which is a vocal point of our organisation because we use time- and place independent working so our IT facilities for this need to be in place. So you go to the office to connect and meet with your colleagues and collaborate with them. We do not necessarily focus on 'focuswork', because that is something you can also do at home, but it is something we have to provide at the office because otherwise it becomes a problem for people.

Besides this we are removing appointed areas to certain departments, which we are expecting to be a cause of some stir, however it is important to keep communicating with people about this.

R2: In the end when you are presenting plans you do have to be honest enough if you find out that it just does not fit and it is not what the people want, that you have to be willing to cancel the plans and go back to the drawing board.

R2: For our concept it is important that not everybody comes to the office every day, because then our office is too small. So we tell the people that you come to the office to connect, meet and collaborate, if you plan on just focus-working then plan it somewhere else.

R3: Our concept is based on working independent from time and place. For us that means that about 80 percent of our office is an open-office plan. On every floor we have several silent zones, but these are more like silent rooms, which have one or two desks to work secluded. Beyond this every floor has a 'start-up' zone, for people who have a more flexible job, for example meeting up with people half of the day and having to work from a laptop the other half of the day. We have two big glass screens at both sides of this start-up zone, to offer a bit of seclusion to the rest of the office floor. We expect our people to take in consideration with who they work and that they do not create too much noise. If you want to chat a lot, we recommend to sit in the start-up zone. We do realise however, that because it is an open-office plan, there is going to be noise.

R4: At this moment, everything that we redesign has flex-working in mind, which means that you do not have a workplace that is purposed just for you. We provide desks on a department, spot, basis because we want the people that have to work together to be able to do sit together. This means the teams get an area provided for them.

R4: Our focus is to stay connected with each other, so our concept is open yet we still provide enough seclusion for certain groups that require it.

R4: In essence we do not look at specific activities for tasks and focus our concept on that. This only happens for privacy for example, when people in their job cannot have people looking over their shoulder. So based on their job we might have slightly different nuances, a team manager has to be visible, someone who makes the shifts has to be more secluded, but if you have more meetings in your team our goal is not to provide you with more meeting space.

R4: When it is medically relevant, for example when someone has autistic characteristics which makes them sensitive to sound, we create individual workspaces for people, or we purpose a part of the working floor to house as much of the people with the same characteristics together so they do not get bothered as much.

R4: Changes in the current society come at you fast, so we focus on flexibility and being able to change things as quickly as possible.

R4: For atmosphere we try to show our NS-identity and geographical identity. We think it is important in such a big national company to have personnel feel like they are a part of something.

R5: Our workplace concept is based on a couple of important targets. We had relocated several offices to this one office and used a concept that is specifically focused to stimulate collaboration. With this we have a focus on activity-based working, and more efficiently designing processes. We have set several so-called building stones which are separated as calling, meetings, virtual meetings, and regular work (with sitting and standing). We have actively reflected on certain workspaces, such as the ones that were designed to just sit at for two hours max, which were used as full-time working space. With this in mind we lowered the diversity of workspaces, but made sure they were flexible enough for everyone to use them. Besides this we also have more flexibility in meeting rooms, so you can use them for meetings, virtual or not and scrumming for example. We used to be less flexible, have a designated space for every type of activity but we purposely stopped doing that because it lowered the utility of our space.

R5: To decide on our workplace concept we engaged in research, where our teams had to designate what they do in day. For example, what kind of activities are you doing in a week, how much of the time are you in meetings, etc.

R5: For us it is really important to keep in mind that one size fits nobody when considering the workplace environment because there are so many variables. This means you cannot ask everyone what they want, you try to look for averages and facilitate that and have a few diversions that work.

R5: Our concept started of having entire floors to share for certain departments, people could just figure it out themselves. The problem with this was that people started claiming certain areas for departments, then one area would have concentrated work, the other would not have meeting rooms and they would look at us as the Housing concern to figure this out for them. Now we do have the 'spots' because otherwise the concept just would not work yet.

R5: People thought that the physical environment was not right, but it turned out to be the way of working. In part this was due to the guidance program stopping too soon. Currently this is working out better because we are taking an active approach in this ourselves, as well as leadership supporting this process.

R5: Our goal with this office is to make it a place where you come to meet one another. We want to focus on meetings, collaboration and less on concentration.

Flexratio

R1: 0.6

R2: 0.7

R3: 0.85

R4: 0.7, with ambulant personnel this might drop to 0.5 or 0.6 (for example train conductors).

R5: 0.8

Vision on the future of the office concept

R1: I believe that the 'home' (in Dutch huiskamer-effect) effect is going to become increasingly more

important. You have an environment in which you have to be able to work in different ways, formally, meeting up with others, and in general just getting a diverse offer of ways of working. It has to be a healthy combination between who you are and want to be as an organisation. You have to find the balance between trends and developments in the market, on which you base the demand, the actual demand of your population and who you are as an organisation.

R2: I feel like the office of the future is a lot more dominant and smarter than now. The workplace tells you how to work instead of the other way around. The office of the future guides you in what way you work, looks at your agenda and sets you with the right environment for the task.

R3: When looking at the office of the future I believe in comfortable spaces where you can meet each other, where facilities are available, you can have a nice cup of coffee and something to eat, informally meet one another in a nice environment. Afterwards you can seclude yourself a bit more in the working environment. I am not a big fan of open offices, I do not think they are the best because they are too noisy and the climate is hard to regulate. I would prefer putting groups together (four to ten desks) and zoning it with some silence and no-silence zones.

R4: I feel like the office of the future is focused completely on connecting people. So it is all about meeting one another in offices. This goes hand in hand with the developments in technology, but eventually people do not want to be just dependent on technology. I also think that the fluctuations in the concept are not going to be as big as they have been over the past thirty years. We are probably going to stay at about an average in the diversity of workspaces we have now.

R5: I believe that the future has to be a lot more flexible, short contracts, more flexibility, less local, more decentral hubs and spots, less traveling, people looking more for spots close to their living environment, because at a certain time the highways are full as well and the traffic jams become too large.

Organisational focus of FM

R1: At Alliander we are really cost-driven. At the moment this is somewhat hard because from FM we really want to focus on our added values, for which we are constantly talking to the customer to find that connection to the demand, because we believe that is our right to exist.

R2: We have developed from being a result-oriented FM organisation to a performance-oriented FM organisation. Furthermore, we have developed from just facility services to real workplace management.

R2: Our goal is to facilitate our organisation in an as healthy as possible manner.

R2: We do have to stick within a certain budget, however this is not our main focus. In the end we get judged by the satisfaction of the employees.

R3: At the moment we are really focused on costs, which sometimes annoys me. It annoys me because I feel like we cannot prove from time to time where we would really offer something extra and show what effect it would have and it would not hurt our cost-efficiency balance.

R4: For NS the customer is always on spot one, two and three, so we are really customer driven. This is something that also counts for us, so we are driven by our internal customer so they can show this attitude to the real customer. We try to keep our operational costs as low as possible but stimulate investments a lot. That is why for example we are updating all our workplace concepts.

R5: At the moment we are constantly focusing on budget costs. We personally try to also take into account quality, but in the end it is all about the budget.

R5: Personally I would prefer to talk about efficiency, quality and flexibility as a triangulation.

Communication

R1: The introduction of our new workplace-concept was quite a challenge in which we used our Alliander works program. This was an intensive program in which we looked for ambassadors from all parts of the company, to develop a good and complete image of what the people need as well as supporting the transition to a whole new way of working. It really helped us with guiding the behaviour-change as good as possible, by doing this together with the people.

R1: I personally want to hear what departments are doing, so I work amongst my colleagues from different departments. When I hear what the different departments are doing, I receive triggers of things to think about, what we can start helping them with. This is a strategy that HR also uses, to sit in the business and look for points of contacts and gather knowledge.

R1: In your change of work-concept you really have to involve your employees, otherwise it will not have the effect you are looking for.

R1: As an organisation you try to influence your employees, because you have certain convictions, for example that certain behaviour is more productive, inspiring environments help with a creative process, so you want to guide your employees to understand that. But in the end, it has to be a good balance between the demand of employees and what the concept strives to be.

R2: In an Agile way we try to constantly get input from our customers to recognize the demand. We are starting conversations with our customer, how are we going to do things, what do you think is important, these kinds of aspects.

R2: From our customer-managers we received the feedback that we have to work more with behavioural-zones. Employees have more need for by example call-facilities. In my opinion, and in my experience, you do not just place these types of changes, you also have to guide this change-process properly, to learn your people and seduce them to use the facilities properly.

R2: We also find it important that the ideas do not just come from us or from the top-level. We have to figure this out together with the people who are going to use it. It really helps when you involve your target-group in your design and when choosing products.

R2: It helps to physically show what something is used for, for example our library-floor in a different location where we have used a mannequin dressed up as a librarian. Make it fun and exciting for the people.

R2: Stay in touch with your population to understand where they experience pain and what the demand is, so that we can support our people and change things. Accordingly also let them know that you are listening and are going to change things.

R2: Involve the people in why you are changing things, involve managers and employees, try to

create ambassadors. Let them know why you designed something in a certain way, let them know it is also because the demand is there with the employees. The fun part about this is when you let your employees know the why they come with useful questions, tips and points of improvement.

R2: Also when we develop new concepts we take it by a focus-group that has worked here for a long time, test the concept and adjust it.

R2: Communication towards the employees is also really important when using certain terms. For example 'vlekken' is a word we do not use because it has been contaminated and has negative connotations. It is also important due to wanting to make people excited for your plans.

R3: We do not really enforce a certain style of working on people. We do have a few guidelines which state for example that you are not supposed to claim a concentrated workspace for the entire day.

R3: Instead of measurement I prefer staying in contact with the people, just like we are doing right now. I prefer to just talk to a manager, ask about how things are going, do you have any problem, staying in touch in this way feels better to me, instead of creating a bunch of expectations that I am going to solve everything for them by measuring everything. This also helps me because I know everyone here, so I know who is really in touch with their team and brings up the most pressing concerns.

R4: When people request new, or more, workplaces we take an active role. In general, we tell them to try it first with our current flex-ratio, because managers tend to want to have 10 workspaces for 10 employees. It is about the security of wanting to provide the workspaces for your employees. When they start working most of the time, they find out they do not need the ten workspaces, and they can just use some nearby workspaces of other teams that are not always at the office.

R5: It is quite important for us that we constantly stay on top of the feedback we get and translate this into plans for the future. An example of this was the overload of diversity in workspaces, which were not flexible enough so people could not work everywhere.

R5: My role is built on communication, together with FM, IT and HR, we are supporting departments that should all constantly be talking to our users. Currently it is getting harder due to the large numbers of diversity and having so many questions that it is hard to be pro-active as we like to be. We like to stay ahead of the curve by constantly keeping in touch with our users, but for the users at the moment it is also quite hard because they are not even sure what they will be doing in five years, are their jobs still around, is the process completely different.

R5: For the sake of guidance we have cards with pictograms that show what the building stone is used for. Which activities are suitable for this environment, is the environment good for collaboration or for meetings, etc. On the backside of the card we had some general rules. Lately we have been looking more into letting go of telling people what to do, we want the environment to speak for itself. We are also think that people should figure out certain things for themselves, the call-cells are meant for calling however if meeting rooms are full and you need to have a short meeting with just two people, feel free to use it for that purpose.

R5: It is really important when changing things that we keep the topics active and we keep

communicating actively. In September, when the office is starting to get busier again, we are taking the pro-active role in this again to start communicating about the rules we have here.

Mobility

R1: The research showed us that 67% of our population has a mobility profile consisting of entering the building in the morning, choosing a spot to work and staying there until it is time to go home. I personally do not think this is wrong, if it is the demand then that is alright, but it is good to know this.

R2: Leesman showed us that the correlation between satisfaction for certain things and mobility is quite high. People would rather not be bothered by colleagues in certain behaviour they show, but they are not prepared to move a lot for this. We are trying to increase the mobility to tackle this problem.

R4: In essence everyone can sit in our flex-concept where they want, however in reality this is a lot tougher. You notice that when people move out of their designated zone, they feel quite some obstruction from sitting somewhere else. This is because in a sense other departments have already marked these other zones as theirs. So when you 'invade' their zone they notice you and you feel watched, and people are questioning why you are there. Employees feel like a guest in another departments' zone. That is why in our new concept we want a common area for everybody of NS.

Behaviour

R1: There is a culture here that if people are too loud, for example due to having a slight celebration, people talk to each other about this and then change their behaviour. This is process in which we respect one another.

R1: When we get complaints or concerns then we start a meeting with the person or department. We try to get everybody's needs on the table, show the borders that we have in our concept, and try to look for a solution of how we can help one another. It is also important to understand help each other understand why we have certain limits, and that is something departments really appreciate.

R2: At the ground level we are going to start developing a focus-zone, where you have to abide by certain behaviour like not making a buzz, but that is a hard part to start up. So we are thinking about how we are going to do this and how are we going to nudge and seduce our employees to perform this behaviour.

R2: When people do not abide by certain rules, for example claiming a desk, they find it hard to tell others that they are doing something wrong. We do not currently have the culture that talks about these sorts of issues and holds each other accountable.

R3: I feel like this is also somewhat of a generational thing, that in my generation people claim areas more, whereas the younger generation looks for a more dynamic environment, meeting a lot of people. This does not really work for my generation in general unless we are forced to do so because of a lack of space.

R3: My impression is that when there are problems on the workfloor, for example someone is being too loud, they just talk to each other and understand one another. There is an open dialogue culture.

R4: Claim-behaviour is a big problem in our organisation, people claim the workspace.
R4: Managers are afraid that they cannot house their whole team.
R4: In the sense of correcting behaviour, we do not really have that culture here. People find this a hard topic and try to deflect it on the Facility department, that they should enforce measures.

R5: Personally, I think we should take care of the facilities and physical things, however we have to stay away from behaviour. As a team of only 35 people we can not influence the behaviour of an entire organisation. We have to make sure that what we provide fits with the people, and for that you have to communicate with your users. We always try to find out the question behind the question, what is the actual demand, we do not only execute plans we are also advisor because we have a lot of experience and knowledge in doing this.

R5: In terms of correcting one another's behaviour it is very limited here. We tried to set as little rules as possible, because then people start looking for ways around the rules and finding loopholes. We use the rules so people can correct each other's behaviour, and they have something to lean on when someone has unwanted behaviour.

R5: I do have to say that more and more people are starting to take each other's wishes into account, this is also due to the office become more and more busy so people do not have the space as they used to.

Measurement

R1: The moment of evaluation is coming and we have done several things to prepare for this. For example, we have done a Leesman research, which focuses on the working environment and productivity. We have also had several conversations with customers in which we evaluate how they experience the office concept. Beyond this we also look at trends and developments, and look at if they are useful for the concept we are developing and applying here.

R1: This is also something that we find hard, because we want to measure things that we find useful. When you measure happiness, you get a number and that is nice to know but what purpose does it serve in the end. The risk in this is also that people get tired of questionnaires, so when we measure things we really want it to have added value. That is why we did the Leesman research, because we got to see what we want to give to our employees, does it match with the employees think and is it supported.

R2: One of the measurement tools we use is Leesman, in which we question our 2000 employees, and this showed that the ability to 'focuswork' is really important to them. At the moment this is quite a negative point for our employees, so there is room for development here for us. Our measurements showed that we are doing really well on interaction, connection and these kinds of aspects when developing our new part of the building focused on these aspects.

R2: The nice part about a measurement tool like Leesman or WPA is that it should not show anything that you did not already know. It is a way of confirming what you are experiencing and really making it visible in a complete manner, which also helps translating it into actual plans.

R2: We do find it somewhat hard to show the added value of a being a great place to work, how can you really set this in stone.

R3: At the moment barely anything. There has been some movement in certain departments, reorganisations, so there is some discontent, and that is not when we think we will receive the most useful feedback.

R4: We tried some workspace measurements, such as counting the availability, most of the time the numbers are really low, which means there is plenty of space left.

R5: Furthermore, we are currently using smart-signs and sensors to measure our workplace concept, but we are still waiting on the results. These smart-signs also give employees real-time information of the occupancy of the building so it gives the user a heads-up of how busy a floor is and if there is space to go and sit there.

R5: We do have plans to start using tools to measure more things, however at current times in the midst of a reorganization this just is not a good plan for us. We would really like to measure more in this manner, because people say it is too full, that they cannot be as productive as they used to be able, it would be nice if we could quantify this, but then you need to measure these kind of things daily and over a big population in the organisation.

R5: At the moment we do measure the customer satisfaction with account management. Furthermore, we measure our service delivery twice a year, to get to know what the users think about it.

Workstyles

R1: What we see at the moment is a lot of Agile workstyles, which made us re-imagine our concept slightly and adapt with some nuance. This nuance is mostly in the balance of the activities we support, we are seeing a movement towards connecting and collaboration so this is what we are offering more.

R4: Due to the new workstyles we mainly focus on flexibility. We do not want secured walls when possible, we prefer flexible acoustic walls of 2 meters high, that you can move and also use as whiteboards. This is due to the teams having fluctuating size.

R5: Scrum and Agile is an important development for us, as it has changed the demand and made us change a few accents in our work-concept.

R5: On a personal note I sometimes doubt the new workstyles, because they are developed by guru's who sell them and everyone is impressed because it is new and fresh. Currently they think it is really important to see each other, see the results, because otherwise there are no results. I personally do not believe in this way of thinking. People just say this so many times that they start believing in it.

Collaboration between departments

R1: I really believe that collaboration between departments offers a lot of value between HR, IT and FM.

How can we strengthen each other's processes, that is something to think about. This process however is not going very smoothly so far, which mainly seems to come because we have the time and space to look at this but HR, enveloped in the war on talent, does not have the focus right now to look at the working environment and think about how it can help them with this.

R2: With HR we are one club, Human Facility Management. This happened with more luck than actual knowledge, because of a reorganization. But when we started working together we noticed we have a lot of subjects in common and can really help one another. This is a trend that you also see in the market. We are looking into the next step in this evolution, where on September first we are turning into People & Experience and involving Communication in our department, because it is important to communicate properly about the plans that you have. Eventually we would also like to have IT involved, so you have the Bricks, Bytes and Behaviour together. We also think it is important to involve IT to make them look at things from a User Experience type of view instead of system type of view. Furthermore, it is important for HR because it is not just about attracting the right people but also keeping the right people, how can you keep them for longer instead of having to keep training new people which would hurt your productivity.

R3: In the sense of collaboration between departments I do not receive information from HR, I use the information I get from the managers, the people, and by just walking around the building.

R3: I have honestly never really considered if I need to receive information from HR. When talking about personal characteristics I am not sure if I would want to know that on such a detail level, because I am not sure if that is a jigsaw that I want to solve, unless it is a team full of completely the same characteristics.

R3: At the moment this is really too less of a connection. IT has been disconnected from FM which means that some things work well now, however a lot of things also do not. With HR we touch some of the same fields, for example when looking at Arbo rules, however we do not collaborate enough. Everyone is just trying to get the problems in their departments sorted out, which is in part due to the fusions and reorganisations. Some departments currently just do not have the time to think about collaborating and integrating with other departments, but it could really offer added value to the business.

R4: At our company this is not really organised well. In an ideal situation I do believe that HR, IT and FM should work together closely, and should constantly be in communication with one another because they influence each other. At this very moment for example HR just does not do anything for us, not even letting us know raw numbers of the amount of people who are coming to work in certain locations. We develop new workplace concepts, so we decorate the workfloor, put all the furniture in, but HR does not do anything with the attitude and behaviour side of the new concept. Another example is simply when IT does not let us know when someone has a new computer somewhere and then we find out that there is no power there so we have to start figuring that out.

R4: It is quite hard to convince people of the importance of collaboration between departments, not as much in the departments, but from the management side. We are instructed in a top-down manner, so we do provide the higherups with information, but they (so far) do not really see the impact of collaboration between departments. They are mostly focused on defending the budget of their departments and managing them instead of looking at it from an efficiency point of view.

R4: What also has an impact is the immense hit that HR departments throughout the country had to take, they do the same job with only 40% of the people they used to have due to the economic crisis.

R5: Yes, collaboration between departments is there and very important. You cannot act out these supporting services without helping one another. On the other hand it is also quite difficult to put a concept together with the three departments, because we all have different priorities, but I certainly think in the future we cannot live without one another.

R5: For us it is quite easy to find one another with FM and IT, because it is about physical things. HR is really a behaviour-component, and they often deflect to say that it is an organisation-component which means we need the board to help.

R5: It is also important to note that at this moment we are all just too busy with the reorganization to really be proactive. We are constantly running behind the curve, and we are trying to get ahead again so we know what the current and future users want.

Concentrated work

R1: To perform concentrated work people move towards the library floor or they work from home. Alliander supports working from home and gives people the freedom to do so. There is a budget for employees to decorate an Arbo-reliable workspace at home. Other ways that people perform concentrated work is by creating their own privacy with earphones or headphones. We do not have policies that say that you are supposed to be quiet around people with headphones, but it is a way to seclude yourself a bit more and people respect the use of it. It does not garner the same effect as sitting on a library floor, however people do acknowledge it as a small speedbump that people do not want to be disturbed. We do not facilitate the headphones, however this is something people do on their own and what we see happening.

R1: We do not facilitate concentrated work on the regular office floors throughout the office. We specifically selected the idea of dedicating certain floors to concentrated work, which means you are not sitting with your colleagues. We chose to do this because from the experience of others we heard that with a dedicated area the people really respect the rules, when you integrate it within different floors people start using it for different activities such as a short telephone conversation or a small meeting. That is why we chose a hard divide between the activities in areas.

R2: If you just have an hour of free time in which you really need to work in a concentrated manner, I understand that people do not want to move all the way down just for one hour, so we need a few options on other floors, this is something we have to take into account. How are we going to develop this, how are we going to find the balance in this, that is something that we are developing right now.

R2: I, and other employees, use an Active Noise Cancelling headset when I am in a regular working space and get distracted too much and have to work focused for a bit. It has a double function, because on one hand it helps you with masking sound, and on the other hand people also see it as a physical barrier, so when people want to disturb you they will think about it again and will come back later or just send an e-mail.

R2: For concentrated work we have literal cabins in which you can close the door and make yourself invisible.

At the moment we are moving towards a behaviour-zone for concentrated work. We want to call it a focus-zone, where you for example can use a headset and we set certain interactional arrangements in which we decide that you do not disturb people who are wearing headphones in that zone. We have

also looked into using lights on desks, to show your availability. When trying to make people abide by certain rules we try to do it through nudging, try to make people realise on their own what is expected.

R2: What is also important that if we realise the concentrated work environment, we might have to learn our employees on how to properly work concentrated. An option could be the MyAnalytics tool which shows your working behaviour and checks if it fits with what you are supposed to do, and in the end shows you if you had a productive day that fits with you.

R4: We honestly have quite a lot of space here in this office, but when we start moving around desks, and moving them closer together then you start noticing problems. People get less satisfied and experience more distraction.

R4: We think it is very important that people also get enough rest and privacy, that is why we also provide concentration-workplaces, meeting rooms, and sometimes we provide seclusion through acoustic walls for teams. We do not want to put teams in separate rooms, that used to be a thing in the past.

R4: Our concentrated work spots are secluded rooms with a workspace inside of them. They are spread throughout the building. We call them focus-rooms, and the definition we have decided for it is as follows: The focus-room has optimal acoustic quality, in this space you experience peace and quiet, it is a space with as little external stimuli as possible, the light is indirect, and the space coheres by all Arbo-requirements.

R4: Headphones are not that common in our offices, in IT departments you see them a little bit more. I do not think people really mind them. I cannot tell if people wear them to mask sound or to just listen to music.

R4: I think people also want a place at the office to be able to work in concentration, and not just from home where you might have children distracting you. I do believe that the social talks decrease when working from home.

R4: I think giving people the possibility and flexibility to decide this for themselves also increases their motivation. Our organisation should focus on results and not attendance.

R5: Our library-floor is our biggest concentrated work-space. Beyond this we have some train-coupees on the floors, and some separate secluded rooms with a desk on each floor. On each floor there are eight of these concentrated work spaces where there are 300 regular workspaces, which I think is too less. Furthermore, we have some spaces that could house two people in a secluded room to work concentrated (or together), this is something you can decide together. I personally think that is the way to go, to make these rules together, another option that we have been thinking about is setting certain times apart where the restaurant can be used as one big concentration hot-spot.

R5: In general it is up to the people themselves to move towards the silent areas, we do not provide any additional aspects against auditive distraction. Some people do provide themselves with noise cancelling headsets, as BEDRIJF we only provide regular iPhone earphones, people also get it because they have to travel by plane a lot. The use of headphones is socially accepted and it does make the fact that they are trying to concentrate more visible. You still might occasionally get disturbed, so if you do not want to get disturbed at all it might be better to go somewhere else. We have also looked at actual

lights on your desk, to show your availability, however we thought this went too far. You can also indicate your availability via Jabber (internal chatting program).

Personal characteristics & Task

R1: On an individual level I do not find this very interesting for our organisation, we do focus on the characteristics of groups we try to speak to however we do not 'peel this onion' very far.

R1: Personally, for me concentrated work in seclusion does not work. I need a dynamic and rowdy environment to thrive.

R2: When developing our concept we did a workspace-analysis with focused on how people work, how much time do you spend in certain tasks.

R2: Demographically speaking, gender, age, where are they from this kind of information is available to us. However actual persona's and character types is something we do not have access to. This is something we looked into with an organisation. To be fair you can also wonder how much it helps to know these things. I am not really convinced that it helps to really zoom into the details. Certain types of jobs have certain types of people in general and this can help you, so on a more global level we know these things but on an individual level we do not. But again, this is mostly based on assumptions. You have to keep in mind though that real personal characteristics are not anchored in our process.

R3: We try to keep the people together that do similar kind of tasks, because it creates less nuisance for people.

R3: Our concept takes into consideration that employees need a certain workspace for certain jobs. This translates to for example the need for double monitors. But we do try to keep the workplace accessible for as many people as possible. So even if you do not need the two monitors, you might find it easy to use so you can.

R3: There is no intense thought process that happened to create the diversity in workplaces. We just decided to have variation, that can cater to a lot of people and to give the people different possibilities to choose from.

R3: When talking about considering personal characteristics on a detail level I am not sure if I want to solve that jigsaw puzzle. Taking into account all these different factors, all these different relationships, it turns into a really difficult puzzle.

R4: We do not have any insight in personal characteristics regarding the workspace.

R5: Officially we have insight in our demographic data, we also used persona's, what kind of people do we have. This is quite useful information because we noticed we have a lot of 'blue' people here. At HR they are not really working with this type of data yet, but that is also due to the reorganization that is giving them a lot of work at the moment instead of letting them develop further.

R5: To be fair it also fits with our one size fits nobody, to not look at the departments but at the types of people that we have. We do not yet know how many of each type of person we have so far, then we would have to test this with our current population and again, in the current times this would not bode well.

R5: I do see the value of these kinds of data, but it has to be a combination with communication. I

would never make decisions just based on the data, it has to be communicated, we think about it together, and develop it into a better plan.

Visual distraction

R1: For visual distraction we do not do very much, as the strength for which our concept has been designed is in transparency and togetherness. The visual aspect of being seen is something we focus on, and we accept the disadvantages that come with it. I quite often hear colleagues sigh when they want to focus, put on their headphones but still sit in an open area and then someone comes at their desk to ask something. The library floor is a solution for this, but for most of our employees the aspect of visually being there and connecting with your colleagues has a higher priority than secluding yourself. A lot of people feel the need to seclude themselves, however do not take the step to work from home or go to the library floor, so when we ask them about this they say that they want to also sit with their team, which is very practical and human.

R3: Consciously we do not really have many measures in place to do this. Our office is quite simple because it is a six-story box. You are visible to everyone on your floor, which also means you are invisible to everyone on different floors.

R4: We situate our desks in a way that people do not walk towards you from your back, people find that uncomfortable. In focus-rooms we try to use peaceful imagery, to really get the atmosphere across.

R5: We do have the secluded concentration spaces, but in a sense you are still behind glass so people can still see you.

Auditive distraction

R1: Apart from regular 'filt'-walls and normal sound absorption we do not use extra acoustic materials.

R3: We have quite a bit of measures against auditive distraction. Quite a bit of acoustic material, for example in the carpet, the ceiling, screens, seclusion walls on the desks, even special lampshades. These are all types of materials that absorb sound.

R3: Headphones are not given to employees as a standard package, but when someone asks for them that is no problem. I personally find it a bit odd and it takes some getting used too, but in general people do not really mind it.

R4: We use acoustic materials in the sense of carpet, acoustic walls (which also works against visual distraction), and if needed we use acoustic 'clouds' on the ceiling and additional panels.

Remote working

R1: Employees in general are allowed to work from home, but within the company we have different cultures and reasons for why people work from home. For some it is nice because it can help them in their work-life balance. It gives you more freedom and flexibility, so people think hard about if they need to travel if they do not have appointments at the office anyway. For some people it is a scheduled focus-day, in which they elaborate certain tasks.

R1: An important note is that we think working from home should happen because they have the option, not because it is mandatory. Something that we notice right now is with more and more people coming to the office due to the Agile working trend it is starting to really get a lot busier again. Now we are starting to hear sounds that people are saying that they are working from home because there is no capacity at the office, which is the wrong reasoning for us. It has to come from the necessity/option, not the hindrance.

R2: On purpose we use the term place- and time-independent working, and we use remote working instead of working from home because you can work anywhere. Everyone has a laptop, smartphone and can get a passive noise cancelling headset. When creating a proper workplace at home we do give advice but we do not facilitate it, because our people earn enough to take care of this themselves.

R2: I do want to stress that we do not want people to work remotely because they feel like they can not at the office. If you have a travel time of two hours and can do your work somewhere else, then please do it in the coffee shop on the corner for example. We want people to make a proper choice.

R3: Every department is allowed to work from home, however the standard is to be at your office more than to work from home. Working from home has to fit in the sense of being available to your colleagues, you also have to meet up every once in a while.

R3: I personally do not think working from home should be a necessity for concentrated work. It should be available but should not be a necessity.

R4: NS is an employer that gives employees the freedom to work everywhere in the country, however this is a subject sensitive to managers. Some managers think they mainly have control when having their employees at the office.

R4: In the winter season for example we ask our employees to not come to the office, or go to an office closer to where you live, unless it is strictly necessary. We try to create less strain on our networks by doing this.

R5: We do not really like to use the term working from home, we would rather use remote working because we also want to offer options like van der Valk or Regis. Just make it independent of time and place.

R5: You are allowed to work from home, but always in accordance with your superior.

R5: The reasons people work from home seem to be more due to wanting to work in concentration, which I personally do not mind. Traveling times are also an important reason. As long as the facilities are there, in a sense you also do not have a reason to come here as long as you stay in touch with your team. We have Jabber for short questions to colleagues, you can call into meetings with videoconferencing tools.

Findings from research

R2: I heard about the research that when you are removed from your concentration it can take up to 23 minutes before you can get back to that state of concentration.

R2: There are developments amongst sound masking and sound scaping which help you create a certain acoustic comfort so that you can work without distraction. This is all aimed at buzz, which in a

sense is not that bad, but you have to make sure that you can not actually understand others, so the speech is unintelligible. If it is within your interests then you have an even bigger problem, I believe that you are allowed to hear up to 60% and it will not be a problem.

R2: Developments-wise I also find it quite interesting the tunnel of Microsoft they have at Schiphol, where you experience another acoustic environment, which triggers people to adjust their behaviour in a positive manner.

R3: I have read that when you put people together that have similar tasks and activities that they experience less distraction. So for example if everyone has to call a lot, they find this a lot less of a nuisance. In our company this is also something the departments realise, because they come to us and ask us to move them away from the rest because they realise they are too noisy for other departments.

R3: I also recognize the fact that you get more distracted if you sit in an environment where you are interested in the conversations, because they relate to your job for example. If I work in another location for a day, or sit next to colleagues from different departments, I find it a lot easier to concentrate.

R5: In general, I am not that familiar with those kinds of terms, like OCEAN, we do know you have to take notice of different types of people and how they react to things.

R5: I also noticed that people get used to sounds, when I move to another floor I have to get used to the sound, but if I stay on that floor for three weeks I do not hear the sounds anymore.

Consequences

R1: This is not something we, as FM, have insight in.

What we do notice, which other research also proves, is that an environment like we have is not suitable for everyone. A part of the people has a hard time finding their way in such a concept. This is why some of the people nearly always sit in the library floor and only meet up with their team when there is a meeting.

R2: In our housing we acknowledge that when your housing really fits with the demand it has benefits for employees, because they are sick less of the time, they are more motivated, they want to work with you instead of the competition.

R3: Related to consequences like stress, tiredness, and a loss of productivity this is something we really notice in Zwolle. Here in Apeldoorn it is quite a comfortable location, people have plenty of space in between their workspaces so it is a relatively high number of square meters per person. In Zwolle however the density is a lot higher, so we start to notice a lot more complaints. It is something that we really have to do something about.

R5: It is quite hard to say why people get sick and go home, the amount of people that went home over the last few years is negligible, and we can never tell for sure if it is due to the office concept. At this moment we are starting to receive signals that people think it is too busy in the office, and they work from home due to that reason. As long as it does not affect the productivity that is fine, but when it starts to, we have to intervene.

Observations

Most of the observations have been done through extensive tours throughout the building, on other days than the interviews, and asking the respondent several questions. The observation of VGZ is an extensive tour to get a feel for the building followed up by half a day of observing the different areas in the office. In the Appendix below the most important findings are listed, however on the USB-stick there are also pictures of the office environment and further observations.

Alliander

Types of workspace:

Meeting rooms

Atelier-floors

Office-floors (normal workspace)

Library-floors (quiet workspace for concentrated work)

Informal meeting space

Tour of the building

The building of Alliander has been designed with a genuine flow in mind. This flow is felt throughout the building where the centre of the building is meant for meeting one another, and having informal meetings. When you move towards the outskirts on the bottom floor you end up in more secluded places, where more formal meetings and genuine meeting spaces are arranged. This also translates on the other floors, where the central floor where you enter is always a more informal work-space, called the atelier, meant for short-term work. When you move towards the next zone, called the office, it is more formal and this is felt through the material, which masks more noise, as well as a bit more cover from others. When moving even further towards the outskirts of the buildings in most cases 'library' floors are located. These floors are meant specifically for concentrated and quiet work. Employees know the rules for these floors, and as far as I could see, abide by these rules. The materials in this space masks even more sound and the furniture offers more seclusion and privacy.

VGZ

Types of workspaces

Meeting rooms

Short-term workspace (with and without seclusion)

Office-floors (normal workspace)

Quiet workspace for concentrated work

Solo or dual-concentration workspace (segregated rooms on a normal floor)

Informal meeting space

Call-cells

Tour of the building and half a day of observing

The concept of VGZ can be divided in three different types of spaces with different goals, being connect, collaborate, and concentrate.

What stands out is that VGZ thought of using a library-floor, however due to the need for space, this room is used as a regular meeting room. This is something that is known to the expert, and it is something they are looking into. They are looking at if the need for a library-floor, as they meant it with a collaborative place to study and work in peace, is there or if it is better to facilitate this in a different way.

VGZ also has 'speaking-rooms' which are meant for short (stand-up) meetings and to start of the day together.

The callcentre area of VGZ has a lot of different acoustic and flexible panels. Privacy and sound masking is really important in this area, due to the nature of their jobs. Since the organisation slightly shrank in this department, they also have this furniture available around the corner for other types of jobs, which is now just a genuine flex-zone and they are looking into if this is used. From the observation I can say that it is used by employees and they tend to abide by different unmentioned rules in this area. Due to the materials and lay-out of the area the employees treat it like more of a 'silent-zone'. They also seem to come here when they want to work secluded and at most work together with one or two other colleagues. This gives them the possibility to really focus on the task at hand.

What the expert mentioned in the interview, as well as reestablished as an idea when giving a short tour that if an employee knows they have to work concentrated for a full day they might be better off working remotely. The idea to go to the office should come from the idea of collaboration and interaction. This is something that you notice walking through the entire building as a lot of thought has gone into making it as interactive and open as possible.

A point of contention is that in VGZ's building you can really notice when you walk into certain departments. For example, when observing at the Communication department you immediately notice a different atmosphere as well as different furniture. There is a lot more task-related furniture, which includes a lot of room for short stand-ups, and spaces for two people to shortly collaborate and talk about work. These spaces do provide acoustic material for seclusion, but this seems to be based more on privacy than the actual idea of reducing the buzz. The atmosphere in this department has a lot of buzz.

The different areas are secluded by having seating areas made out of fabric, which visibly as well as acoustically separate the different departments. These areas are meant for short working spans, and are used by all the employees in the companies. Flexibility with this seems to be key for Facility Management, as in some areas they found the need to use this as short meeting space and use the whiteboards to start of the day. These seating areas are adjustable so Arbo-technically abide the rules as well as making it more comfortable for employees to sit there.

At first the meeting spaces were not reservable, however due to demand they turned this into reservable. If Facility Management did not provide this, the people would start doing this themselves by just hanging up papers, because they found the need for security when having certain meetings.

The different departments are indicated by colour, which besides the buzz, makes it visible for people to realise they are entering a different zone.

It is visible that VGZ is currently transitioning between working concepts. There are quite a few desks temporarily put together to provide working space for new trends like Agile and Scrum teams, however you can see that these spaces were not meant for this. This also reestablishes the need for flexibility within a concept, which Facility Management at VGZ lives by. This transition also means that in certain areas it is hard to tell what the idea for the tasks executed there is, so people have to fill that in themselves.

In general, VGZ seems to locate the people with the same kinds of needs together, however in a certain way (due to the flexibility) this is also just a natural process, as you look for the most suitable place for your tasks and team. When people run into certain issues they try to work this out amongst each other, for example when the start-up meetings of the day turned out to be too loud they talk to one another and move the meeting in a stand-up space.

Besides the acoustic and visual measures, in certain areas VGZ also provides actual curtains towards the hallway, to provide even more seclusion when needed.

When areas have more acoustic materials, the employees tend to sense this and adjust their behaviour to suit the area. When people are sitting on the seating area with fabric, they are more prone to being talked to, as people recognize that it is normal to be talked to in such an area.

Rabobank

Types of workplaces:

Meeting rooms

Short-term workspace

Regular workspace

Solo or dual-concentration workspace (segregated rooms on a normal floor)

Informal meeting space

Tour of the building

In het midden van de verdiepingen zitten aanlandzones, kortstondig werk en niet Arbo-verantwoorde plekken.

There is a relatively low amount of people working, which means the buzz is quite limited.

There is a lot of acoustic material, by example glass wands that separate different parts of the floors, acoustic walls with sound-absorbing materials, and higher separation walls within desks. Furthermore, there is also a lot of carpet used in the floors, to lower the amount of noise. When looking at specific tasks, such as the jobs that need to have more phone calls, the environment is decorated to cater towards these needs. These environments have even more separative walls so people bother one another less.

There is a lot of attention for atmosphere and use of colour. This concept was figured out in collaboration with architectural company ZENBER. ZENBER (N.d.) states that where a state of

concentration is needed, the colours, materials and design are sober and reserved, whilst in spaces where communication is required, they are more expressive and colourful.

The concentration workplaces are found on the regular floors. They are separate rooms with two desks, removed from the buzz of the usual workflow. They have their own doors, so can be completely closed off.

Nederlandse Spoorwegen

Types of workspaces

Cellular office space

Meeting rooms

Short-term workspace (with and without seclusion)

Office-floors (normal workspace)

Quiet workspace for concentrated work

Solo concentration workspace (segregated rooms on a normal floor)

Library segment for concentrated work

Informal meeting space

Call-cells

Tour of the building in Eindhoven

The office building in Eindhoven has a classic open-office concept, all be it with quite a bit of focus on the atmosphere. The atmosphere has a focus on using a green environment and openness. There are also several acoustic measures on the wall, and floor, that absorb or diminish sound. They have a relatively low amount of complaints, but that also has to do with the density of the building, as it is not as busy as most offices. The workspace has been decorated in a functional way, they look at what the employees need and tend to try and provide this. This also means that the employees always have an alternative to relocate to for certain tasks, which gives employees the freedom of planning their day as they wish. When redecorating this office, as it is a relatively new concept, they focused on having involved employees through workshops and creating ambassadors. The concentration workspace is all solo-concentration workspace, where an employee can seclude themselves from the buzz of the workspace. Besides this there are quite a few normal clusters of office workspace, as well as a focus on having informal meeting space.

In general they found that 80% is positive about the workplace concept, and they think communication and creating ambassadors has a lot to do with this.

Tour of the building in Utrecht

The office building in Utrecht is in somewhat of a unique position compared to the other buildings that have been observed. The office building is in the midst of transitioning to a newer work-concept. This means that certain floors have the new work-concept, certain floors have the old work-concept and one floor is under construction. The process behind this is also interesting since they reflect every three weeks, when a transition is complete, to see what works and what they need on another floor.

The old work-concept floors look really traditional and cellular. The floor consists of long hallways, very little transparency and just cellular offices with desks. This also means that there is very low diversity of different workspaces on this floor, since it consists of separate chambers with pretty similar desks.

The transitioned floors offer more diversity in workspace. In general, it is more of an open-office plan, but the eyecatcher compared to the old concept is the immense amount of transparency. Employees can actually see each other and interact more, due to the open nature of the space, as well as more meeting rooms, more informal meeting space and regular clusters of desks. The floor also has a library segment, but the employees here do not really treat it as such. This seems to be a recurring theme, that in a way it is hard for the housing concern to make the employees abide by rules, since they feel like this is outside of their own scope. The concern was also raised that even though there are new 'living conditions' which were set as soft rules, people do not abide by them. For example, a lot of employees do not use the concept as a flex-concept yet still try to claim a location. This also means that when people do treat the concept as flex, they feel out of place because they are 'invading' sort of say, some other department's space. It is condoned, however the employees say they feel out of place.

Last but not least, the entrance of the building is also very open with the reception and a luxurious coffee bar concept. This space is also very suitable for receiving guests and having informal meetings.

Redacted organisation

Types of workspaces

Meeting rooms

Short-term workspace (with and without seclusion)

Office-floors (normal workspace)

Open concentration workspace

Solo concentration workspace

Dual concentrated workspace

Library segment for concentrated work

Informal meeting space

Call-cells

Tour of the building

The building of this organisation is seemingly divided into two sectors, where on the eastern side (from an entry point of view) there is a coffee bar to receive guests, restaurant, meeting centre (for big meetings) and library floor, whereas to the western side one enters an area more dedicated to regular work, besides from the bottom floor which is focused on (reservable) meeting areas. The several regular office floors in general have quite a similar feel to them. They are all suited with regular office space, so called train coupes for more soloistic work, meeting areas in between, pantry's and solo and dual concentrated workspace. The similarity between the floors seems to keep in mind the flex-concept, as it eases employees to move to different floors when they know what to expect on the floors. There are some nuances on certain floors, where some have a bit more meeting space or a bit more seclusion. In general, most regular office workspaces have a bit of visual and acoustic measures to lower the amount of distraction. For visual distraction quite a few clusters of desks have plants in between to give a sense

of privacy. The acoustic measures are in some of the materials used, as well as sometimes having actual borders between areas.

It has to be noted that the library floor is on the eastern side of the building, so mobility might be an issue here. Furthermore, the library-floor is above the restaurant, although acoustically you do not hear this unless the doors are open.

Rankings

These rankings have been asked to fill out at the end of the interviews. The respondents were asked to rank the different factors most important to the work environment, according to the WODI-surveys. For Alliander a top five of factors has been ranked instead of ranking them all. The bold subjects were the top five ranked when adding all the rankings and dividing it by the number of responses.

	Alliander	VGZ	Rabobank	NS	Redacted
Accessibility of the building		16	15	6	13
Archive and storage facilities		17	17	16	17
Architecture and appearance		5	2	17	15
Concentration	5	8	11	14	14
Communication		10	5	11	12
Facility Management		15	6	9	8
Facilities for remote working		2	7	7	1
Functionality and comfort of the workplace	1	6	4	2	6
Indoor climate	4	7	8	4	6
Interior design appearance and ambiance		4	9	8	10
IT and supporting services	2	3	1	1	9
Location of worksites		14	14	5	4
Number, diversity and functionality of workplaces	3	1	3	3	5
Openness and transparency		12	10	13	2
Privacy		13	16	15	16
Spatial configuration		11	12	12	3
User influence		9	13	10	7