The Home Office, A New Perspective on Workstation Design

Johan Rogberg

MASTER THESIS

SUPERLAB

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What can the home office workstation during the Covid-19 pandemic tell us about the future of office furniture design?

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LUND
UNIVERSITY

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Abstract

The development of office furniture design has been stagnant while digital technology has changed drastically over the last decades. There is a need for a new approach in order to bring the design of the office workstation into the future, which this thesis sets out to contribute to. The Covid-19 pandemic which has affected the lives of almost everyone around the globe in 2020, and has resulted in many employees working from home, either fully or partially. Never before have so many worked from home for so long. This enables a new, democratic, novel perspective in office furniture design. Can learning about the home office workstation, reflections and comparisons to the ordinary office yield valuable insight into the future of office furniture?

In this study, the younger generations of the workplace have been the focus in order to keep the spotlight on the workplace of tomorrow. A target demographic with similar experiences at their ordinary office have answered an online survey and a selection of the respondents have subsequently been interviewed.

Conclusions that can be made from the master thesis, amongst others, is that a height adjustable sit-stand desk is heavily utilized at their ordinary office and missed while working from home. The social aspect of the ordinary office is of great importance to the respondents, they want an office landscape and workstation which can facilitate interaction. Adequate lighting with sufficient contrast was also requested along with access to natural lighting as illustrated by many respondents moving around their residence throughout the day to follow the sun. Lastly, respondents at home seem to employ an activity based workflow to varying degrees, and to some extent desire aspects from that philosophy in their ordinary office, however, having their own private desks with their furniture settings and belongings were stressed as very important.

Keywords: *Workstation, Home office, Office furniture design, Covid-19*

Sammanfattning

Utvecklingen i möbeldesign för kontoret har stagnerat och inte följt med den digitala revolutionen som skett de senaste årtionden. Det finns ett uppdämt behov för ett nytt perspektiv för att föra kontorsmöbeldesignen in i framtiden, och det är något detta examensarbete har målet att bidra till. Coronapandemin har påverkat livet för i princip alla, oavsett vart man befinner sig. Det har resulterat i att många har jobbat hemifrån, allt från delvis till helt. Aldrig förut har så många jobbat hemifrån under så lång tid. Det ger upphov till en ny, demokratisk och färsk infallsvinkel för design av kontorsmöbler, kan lärdomar om hur hemmakontoret samt reflektioner och jämförelser med denna frambringa värdefulla insikter för kontorsarbetsstationen?

I den här studien är de yngre generationerna ute i arbetslivet fokuspunkten, för att ge ett resultat som är relevant för framtidens kontor. Målgruppen, som alla har snarlika arbetsförhållanden och arbetsbeskrivningar, har fått svara på en webbaserad enkät och ett urval av dessa har därefter intervjuats via telefon.

Av detta kan vissa slutsatser av undersökningen göras, bland annat är det tydligt att sitt-stå skrivbord är något som är eftersökt i hemmakontoret och används ofta i kontorsmiljö. Det sociala sammanhang som kontoret innebär är väldigt viktigt för respondenterna till studien och de eftersöker ett kontor och arbetsstation som främjar detta samspel. Belysning i kontorsmiljö är något som också lyftes tillsammans med att direkt solljus värderas högt, detta illustrerades bland annat med att många respondenter svarade att de bytte plats inom deras bostad för att följa solen under dagen. Sist men inte minst tyder resultaten på att respondenterna i sina hem, iallafall till viss del, använder ett aktivitetsbaserat arbetssätt. Något de också delvis eftersöker i deras ordinarie kontor. Dock var ett eget skrivbord med sina inställningar av till exempel stol och bord samt deras tillhörigheter betonat som väldigt viktigt.

Sökord: *Arbetsplats, Kontorsmöbeldesign, Arbetsstation, Covid-19*

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I have also gotten some priceless support from my parents, Martin & Mikaela, which has helped me tremendously. Lastly, I would also like to thank Isabella for her patience, listening to me rant and rave about the thesis, both in times of high and low.

An acknowledgement chapter in a master thesis done in 2020 is not complete without mentioning the Covid-19 pandemic. While it has been a hindrance in lots of aspects, and I regret not being able to work at the psychical location at Superlab it has also been the entire foundation for the thesis. Over the last year, and especially in the last couple of months we have seen the world as it never has been before, and it has allowed me to study office furniture design from an entirely new perspective than what has been previously possible. With that said, I sincerely hope that we come out stronger and better on the other side, and maybe, just maybe, these kinds of studies can help with that.

Johan Rogberg
January 2021

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Acronyms & Definitions

Activity based office - As Flex office, with zones designed for specific activities

ABO - Activity Based Office, also referred to as AB office

ABW - Acitivty Based Workplace

Cell office - Most of the employees have their own room, or share with a few colleagues

External response rate - Proportion of responses out of all recipients of a survey

Flex office - Most employees have no private workstation

GDPR - The General Data Protection Regulation

Generation Y - Interchangable for for Millenials

Generation Z - Persons born 1980-1994

Gen Z - Short for Generation Z

Home Office (Workstation) - From where one works in their residence

Internal response rate - Proportion of respondents answering a particular or set of question(s)

Millennials - Persons born 1995-2010

Open-plan office - Most employees have a private workstation in a larger room

Ordinary office - The office where the employee would spend their time working if not for the Covid-19 pandemic

Primary office - The ordinary office where an employee spends most of their time working

Systematic non-responses - If non-responses stem from a particular group or groups not answering, the survey as a whole or parts of it

Workstation - Where one works, which includes furniture, hardware, accessories and the close proximity environment

Chapter 1

Purpose

This project has its mission statement made in collaboration with the Helsingborg based design bureau, Superlab. The goal is to study and explore the needs of the office space of tomorrow. In particular this thesis has its scope on the office workstation and how it can be designed for the future.

The purpose of this master thesis is to study whether the Covid-19 and subsequent increase in employees working from home can offer a new perspective on office furniture design of the future. Today's office furniture design does not follow the development in information technology which will from a user perspective present result in at best jarring experiences. Design rooted in old ideals and concepts are still permeating today's office landscape, which are based on pre-information era workflows. The contemporary and future office will need to be more dynamic, mobile and flexible in order to match the ever changing nature of the workplace of tomorrow. This needs innovation and research methods that are new, contemporary and applicable to the design process for the future office [Horvat et al.], [Tuncel and Kayan, 2018].

The Covid-19 pandemic has led many organisation to transition into fully or partially work from home since its outbreak in the beginning of 2020. Many employees have as a result worked from home during the majority of the year, and have had the opportunity to set up their own home office workstation, whether that means repurposing a room into an office or adapting already existing furniture. Can this yield new, novel, insights into what features, functions or design the employees of tomorrow will need or crave, in other words, *What can the home office workstation during the Covid-19 pandemic tell us about the future of office furniture design?*

Chapter 2

Background

2.1 Introduction

The background chapter consists of three main chapters, *The Future Generation*, *The Office of the Future* and *The Covid-19 Pandemic*. Together these will form a theoretical background to this master thesis and will be used in order to derive the *Problem Formulation* as well as a foundation for the *Discussion* in chapter 6.

The headlines are chosen with the goal of creating an understanding of the purpose of the study. Insight into a combination of the future generations of the workplace, current forecasts and trends as well as potential implications of the Covid-19 pandemic will be essential to set this thesis into its context and to answer the question stated in the last line of the *Purpose*.

The workstation as a concept will for the purposes of this master thesis be defined as from where one works, whether that be a desk, a kitchen table or an armchair. Accessories, and other nearby furnishings or features is also included in the term.

2.2 The Future Generation

How does one define *The Future Generation*? There are probably as many definitions as are there studies. For this project it was decided to amount to a focus into the younger generations in the workplace in order to both spotlight the future while still being able to study the workplace at this point in time. Hence, "Millennials" and "Generation Z" (also referred to as "Gen Z"), the two youngest generations in the workplace, will be the core of the study. Even though the younger generations will be in focus, their older peers will be included to ensure that the result are applicable and relevant for today's office landscape. Different sources give slightly different cut-off ages for the generations, however for the sake of this thesis *Millennials* will

be defined as being born 1980 -1994 and *Gen Z* 1995-2010 [Tracy and Fernanda, 2018].

Herein lies an inherent issue with studying the needs for the up and coming *Generation Z*, they are not yet established in the workplace, the oldest are only 25, going as low as 10 year old. As the *Millennial* generation are still considered young, they are also of great value to study. In contrast to *Generation Z*, this group is established in the office workplace and may be better able to give feedback as to their experience both working in an office as well as working from home during the Covid-19 outbreak. Another name for *Millennials* is *Generation Y*, which can be used interchangeably.

2.2.1 Generation Z

In order to design office furniture for the future one needs to understand this up and coming generation. An article from 2016, *Understanding the Generation Z: The future workforce* sets out to accomplish just that. They identify several key characteristics of *Gen Z*. Personal freedom and flexibility is highly valued, as well as their expectation to have their opinions heard and acknowledged. Independence is also a key identified value, where they also expect that this independence will yield opportunities to prove themselves and earn recognition. Face to face communication, a disregard for hierarchy based on age in favour of focus on contribution and an open leadership style with integrity are other vital values of the age group. The idea that learning does not stop when exiting school is a way of thinking typical of *Generation Z*, with focus on professional and personal development. This comes with the need for flexibility to accommodate this, as well as entrepreneurial values being highly regarded. Possibility to make adjustments within the workplace and job description is also important. Lastly they prefer to work for companies that demonstrate social and community responsibility, ta a larger extent than previous generations [Singh and Dangmei, 2016].

As previously stated, in this thesis *Gen Z* is defined as people born 1995-2010, and to understand their needs and wants in the future workplace, a grasp of the key characteristics of the generation is essential. It is also important to note that the generational distinctions made in this study are not universal, and they often differ slightly. One compilation of deviating definitions finds sources stating *Being born in 1990 or later*, to *1995 or later* with varying age groupings in between. Whichever way one chooses to define the generation, for this study what is interesting is investigating behaviour, preferences and characteristics of younger employees. Similar varying definitions also exist for *Millennials*, which in the same way as *Gen Z* is defined as people born 1984-1994 [Dolot, 2018].

From the same study as referenced above, conducted in Poland and published in 2018, one major finding is the craving for feedback from employers or supervisors,

which the author attributes this primarily to the internet culture. Another interesting finding is that only 51 % of respondents claim that working on one task at the time is of importance. This could have implications for office and furniture design if employees flow more seamlessly from task to task without clear distinctions.

The study also compares the top end of the *Gen Z* spectrum in the workplace to the lower end, and finds slightly better stated organizational skills for the older members of *Generation Z* and more openness to change with their younger peers. Although, the author, Dolot, also states that, as a whole, no major differences could be observed. This indicates that whichever exact definition of the generational groups being used, one could expect similar results. Furthermore, of course, an exact generational cut-off point is not reflected in reality, communal changes in attitudes happen over time. The generational distinctions should therefore be used as a lens to understand these changes, rather than labels to discretize the population [Dimock, 2018]. With that said, using them as a frame of reference for attributing different ideas and ideals as a base for research can be valuable.

Generation Z traces back many of its behaviours to a single idea according to a Mckinsey study, **The search for truth.** Engaging in many different causes, individual expression and a will to improve the world are some of the characteristics that the study identifies. Their thinking is also highly analytical and pragmatic which is why Mckinsey coined the expression **True gen**. In terms of the typical behaviour of the generation, the study states that *Gen Z*'s have an undefined identity, they are "radically inclusive", have fewer confrontations but more dialogues as well as a realistic and pragmatic view on life compared to their older peers [Tracy and Fernanda, 2018].

Similar findings can be found in a University of North Carolina article, *Managing the Multigenerational workplace*. As a major attribute, the will to change the world is valued highly by the generation. The article also highlights that compared to *Millennials*, they are even more used to having technology in their lives. [Bursch and Kelly, 2014].

A Master thesis from Arizona University published earlier in 2020 studied *Gen Z* from a workplace communication perspective. The study concluded that *Generation Z* have a large degree of self regulation and awareness when it comes to technology and a concern for work and private life boundaries. This younger generation also expressed a willingness to use instant messaging services instead of email, which is a movement already established with the increasing popularity of services such as Slack or Microsoft Teams [Lansmann et al.]. How this will affect the furniture of tomorrow is unclear, however the self regulation with personal technology can open doors for furniture integration with employee mobile phones for example that were not worthwhile with earlier generations [Janssen, 2020].

2.2.2 The Millennial Generation

Similarly to *Generation Z*, the *Millennials* or *Generation Y* have, as a whole, identified behaviours, ideals and ideas. The distinction of who qualifies into the generation is in the same way as the definition for *Gen Z* depending on who you ask. For this study, having a birth date between 1980 - 1994 will be the one used [Tracy and Fernanda, 2018]. There are however multiple other definitions which may be equally valid, ranging from being born *1971 or later* to *1982 or later* according to a compilatory article published at the University of Bath in 2009 [Kelan, 2009].

Millennials is the first generation to grow up with digital technology around them, and it has shaped their workflow and how they approach a challenge. They are adept at finding information and expect it to be available. Unlike earlier generations, they do not feel the same constraints by hierarchical structures and feel more free to contact people directly which can be disconcerting for their older peers [Valcour, 2013]. Another result of the technological upbringing of the generation can be that more and more digital integration will permeate office workflows [Kaifi et al., 2012], a development which is presumed to only accelerate as *Gen Z* start taking more and more room in the work force.

As for characteristics of the generation in comparison to especially their elders, they display a high self-esteem and assertiveness while being focused on achievements. They want to do well, preferably even surpassing their goals. This also means that *Millennials* are willing to focus heavily on success, working harder and even overtime to help their organization succeed. A feeling of accountability is identified as a reason for the achievement focus, career and otherwise. Simultaneously they value work-life balance and are family focused, as well as having non-career related, private goals and aspirations [Smith and Nichols, 2015].

Millennials in the workplace is a subject that has been studied extensively and a common conclusion many draw is that they have a different outset to work. They significantly prefer to be employed by organisations who have attractive work-life balance conditions in a way that earlier generations do not [Buzza, 2017]. Another article finds an example of a recruiter stating "It's not a question of whether or not they are right for the job, it's a question of is the job right for them" [DeVaney, 2015].

The same article as cited above, states that *Millennials* prefer to work where they can make an impact and actually have a hands-on role. Together with the willingness to change employers, it puts the pressure on to accommodate these values to keep the talent in house. This can be an explanation for the seemingly contradictory findings of both valuing work-life balance and the willingness to work hard and long hours.

2.3   The Office of the future

To understand *The Office of the future* it is deemed important to inquire into the predictions of the landscape as they stand today. Office furniture manufacturers have their own prognosis for the coming trends. Steelcase, one of the largest manufacturers of office furniture identifies five design implications they predict will be central for 2020 and one can assume, beyond [Steelcase, 2019].

First, they highlight what they call *Origin Story*, a growing trend towards natural materials and to connect with where they work. This trend to connect with where they work also extents to their colleagues, a sense of community within their workplace is becoming more important, they call this design implication *Connected Culture*. Steelcase attributes this to increased burnout rates and loneliness. The sense of community is closely tied to *Social Medium*, the team work and social interaction continues to become more important.

Time is becoming more and more scarce, digital and analog solutions intended to ease the day to day chores and operations will be important in design. *Frictionless environments* is Steelcase's name for this phenomenon. Lastly, *Make you mark* is highlighted, which means that a focus on individuals needs to be taken, and move away from the one-size fits all mentality.

How could this be interpreted into the design of the office desk of the future? One way of looking at the design implications above is that there is a need for furniture to communicate a feeling of togetherness and ethical sourcing. Could it, for example, be that more natural, untreated materials will be the coming trend in workplaces? Choices of material which for the employee feels ethical may contribute to a sense of community and in turn, the perceived connection to the company increases. In the post Covid-19 world, working from home will become more common according to for example Robin Dunbar, emeritus professor at University of Oxford [Gates, 2020], this could be interpreted as working against the *Frictionless environment* key design implication, as moving between the office and home environment may be jarring or inconvenient.

Another challenge for the future workplace can be found in the last point, as co-working spaces and activity based offices increase in popularity, how can one design for the individual when the office is shared and one's workstation is forever moving? One study in Australia suggests that user responsive design is of great importance to employee satisfaction [Kim et al., 2016]. Another paper from 2005 concludes that the need for individual control should be highlighted in the design process [Anjum et al., 2005].

Reading Kinnarps Trend report from 2015 and in particular the *Designing for diversity* chapter, spotlights many of these issues, of course, in a pre-pandemic world [Kinnarps, 2020]. They feature a focus on subjects such as "The 4G workforce",

meaning that four generations with wildly different approaches and competencies that need to coexist and thrive together. Kinnarps also emphasize the male dominance in workplace design and culture. In the last decades men and women have been spending time at work more equally. However, years and years of having male dominant workplaces has seeped into the culture and design of offices and office furniture. This divide is bolstered by the fact that 83 % of the creative industry are male according to Kinnarps. Lastly they talk about how to balance the office between introverts and extroverts. Both yesterdays and today's workplace often favour high noise and open environments, orimarily suitable for extroverts. A change is coming as more companies are starting to acknowledge the needs of introverts, as an example, one way the market has tackled the issue is with more and more advanced acoustically insulating furniture to create areas of peace and quiet.

Another study suggests that in the future, the office is fully flexible, modules that double as storage, pallets, walls and can be, almost lego-like in its on the fly customizability. Changing the shape of the furniture around to adapt them depending on the task at hand or personal preference, the study claims are examples of the future workplace. Acoustic issues are inherent to a more open office landscapes, and adaptable solutions are coming to tomorrow's offices and creating breakout rooms or areas [Tuncel and Kayan, 2018].

2.4 The Covid-19 Pandemic

Since the 1st of April 2020 the Swedish public health authorities, Folkhälsomyndigheten, have a stated recommendation that employees should work from home if possible. This has since stood firm and no indication that a change in policy has been shown as of the date of starting this project, or indeed during its duration [Folkhälsomyndigheten, 2020a]. This means that many Swedes have been working from home either in majority or entirely, for example 48 % of respondents to a study performed by Tele2 report that they work at least 75 % from home. This shift off course has multiple implications, on job satisfaction as well as perceived effectiveness [Tele2, 2020]. Telia has performed mobile data analysis which indicates similar trends [Telia, 2020].

What the result of the pandemic will be is yet to be seen, however, there are many predictions. Could it be that more and more employees start working remotely, even after the pandemic, and when they are at the office, work in other ways? The shift could be towards smaller regional hubs as opposed to larger office buildings. Whether direction the exact shift is heading one can expect changes to the workplace dynamic [Courtney Connley, 2020].

Lena Lid Falkman claims that companies need to start to support home offices with monetary support. This can mean that the home office furniture and accessories will open a new market for professional grade office furniture manufacturers. Another result is that the gap between the office and home decreases, which may be a positive as alternating between working from home and the office becomes more common. This shift could be helped by this study as it approaches this gap from the other side, and can yield office desk products which makes the office feel more like home and therefore may lower friction when switching between the two [Falkman, 2020].

What the future workplace will look like is a discussed subject, as are the implications of Covid-19 for its development. Some believe that ABO will increase as a result of the pandemic [Falkman, 2020] , others believe that the demands for reducing risk of contagious diseases will see the return of the personal working spaces [Courtney Connley, 2020]. What this means for the office furniture manufacturers is unclear, however, this can be seen as a sign that the organisations must be agile and ready for whatever the post-pandemic workplace may need or crave.

Contrary to Lena Lid Falkman, articles from Vox and New York Times argue that the social distancing norm created to combat the pandemic will engrain itself into the culture of tomorrow. This may result in a move away from the ABO and shared open plan office spaces, as employees are no longer comfortable with the close proximity and the (perceived) risk of spreading illness. What it will mean exactly is tough to predict, but according to the articles a likely outcomes could be the return of private offices, cubicles or a more spread out offices, with larger distances between desks [Molla, 2020], [Richtel, 2020].

The trend towards open workspaces and ABW yields a lower demand for office space, which of course is cheaper for the employer. How companies will adapt to these new potential demands from employees whilst having suffered economically from the pandemic is yet to be seen. One way of both combating the need for employees to feel safe in the future office and cutting down on cost could be to encourage more working from home, as many have seen the positives of the distance working. Susan Stick of Evernote even states 'You can't put that genie back into the bottle.' indicating that she thinks that this change will be campaigned for by employees and impossible to decline [Richtel, 2020].

Chapter 3

Problem Formulation

The Covid-19 pandemic has had the result that working from home has significantly increased since its large scale outbreak in march of 2020 throughout the period of conducting this master thesis.

Since the Covid-19 pandemics outbreak in March, working from home has surged and has continued to increase throughout the period. This is of course a disruption to the regular day to day work of many employees. However, it also opens the window for an entirely new way of gaining insight into design choices of office workstation furniture. The prolonged time of working from home has given employees the time and opportunity to adapt and customize their home office workstation to their liking, of course with residential limitations, as opposed to their office where the employers as a rule make the interior design decisions.

As previously stated, the design of office furniture has not kept up with the digital development, and in extension the workflow of today. This is a development that is assumed to only continue. The time spent working from home have the potential to allow employees to develop their own workflows and preferences in terms of office workstation furniture which can be of great value in designing future office furniture.

To answer to question of stated in chapter 1 of this thesis, *What can the home office workstation during the Covid-19 pandemic tell us about the future of office furniture design?*, information about the future generation, their experiences, thoughts and reflections will need to be gathered, discussed and analysed. To be able to answer the question, the future generations, the home office as well as the ordinary office will need to be investigated. An understanding of these will be the key to identify crucial insights for the office space of tomorrow.

The main focus is the home office workstations the respondents have set up for themselves together with their reflections and thoughts. The goal is to create a clear image of the employees home offices and their attitude towards it. This will be complemented by their thoughts about the current office, and especially comparisons between the two, as this will be a tool for them to better express opinions on the home office furniture.

In order to gain a full understanding of the user experience of the home office workstation, the approach chosen is to both to first try to understand how their home office workstation looks and works. The novel perspective of the home office hopes to offer another approach to office furniture, and the office desk or workstation in particular. This approach has the goal of gaining new learnings that may not have been possible with just studying the office environment.

What do the employees think about their experience in the home office? Both fulfilled and unfulfilled needs as well as desires are important to learn about, and to set in relation to their experience in the home office. This type of inquires could for example also answer questions such as 'Is there any set up, function or feature which is correlated with higher satisfaction?'

How Covid-19 has affected the home office workstation is central for the study, and primarily how their time has been spent during the pandemic. Have WFH led the respondents to adjust or adapt their workstation? These insights could also be important for comparison between existing studies and future research.

The point of comparison, or in other words, the reference point, is the ordinary office. Learning more about the shared or similar office setting between the respondents could help to understand the thoughts and feelings of the respondents. Having this reference point may also aid the respondents with their thought process and reflections when answering the survey or being interviewed. This also gives the opportunity for the employees to give feedback on their ordinary office setting.

While the focus of the study is the next generation of employees and office furniture, one can not disregard the experience of older generations with the office as it stands today. Consequently, all age groups of the workplace will be taken into consideration for the study, however differences in opinions and experiences between age groups will be accounted for where necessary to ensure that the end result will be relevant for the future.

The growing trend towards activity based office layouts is something that heavily influences office furniture design and something many organisations are moving towards [Rolfö, 2018]. If employees use an activity based behaviour when they are at home, by their own accord, it can be valuable to learn more about it.

Chapter 4

Method

4.1 Introduction

Given the problem formulation in chapter 3, a survey method was deemed to be the appropriate approach. In light of the Covid-19 pandemic, where during the start-up phase of this project, threats of a "second wave" of the virus spreading was a real possibility [Boffey, 2020]∗, a method for the study that could be performed entirely off-site was chosen. Pros and cons of different approaches to collect user data was established in order to best answer the problem formulation. The result of this being a qualitative online survey in conjunction with in-depth interviews. This combination strives to ensure enough respondents were included to secure the ability to reach conclusions on generational preferences as well as sufficiently comprehensive and detailed level of the data gathered.

∗During the fall of 2020, the spread of infections in Sweden increased yet again [Folkhälsomyndigheten, 2020b].

4.2 Target Demographic

The goal of the target demographic is to in the best way encapsulate and represent the overall purpose and in extension problem formulation of the study. In this case, the future workplace is the focus, in which *Generation Z* and *Millennials* are the two youngest age groups in the workplace today. A natural issue is that *Gen Z*, according to the definitions used in this thesis, at ages 10-25 they are just starting to enter the workforce. As a result do not have white-collar professions to the same extent as their older peers. This means that they are not as likely to have office based jobs, and as a result may not the same options in working from home.

Herein lies an inherent challenge, how does one focus on the younger generations in a meaningful way, as well as ensuring that the respondents fit the other requisites that of the study? As the choice of using a single company as means of distribution was made, the issue at hand was to find suitable candidates, whilst being limited by the overall condition that a significant proportion of the respondents fit into the the *Gen Z* or *Millennial* age group.

As the survey population, the choice falls upon customer support which has a low average age and are normally office based, but have a potential to work from home. Specifically, company within the telecom industry was chosen. The company had, according to the contact person, a majority of employees in the department which is either *Gen Z* or *Millennials* as well as a significant portion working from home during the pandemic∗.

The employees are based in multiple locations in Sweden and their job description differ slightly, however, all of the respondents work primarily in customer service. This narrow demographic enables analysis and comparisons that would not be possible to the same extent with a more loosely defined survey demographic. Of course, this also means that the number of responses will suffer, though it is deemed to be more worthwhile to have a more focused approach. As all of the respondents share many aspects of their job description as well as office environment and culture, the ability to gain deeper understanding of their experiences and needs increases. This means that the reliability of the results increases and discussion around how their perceptions carry more weight as the general experience of respondents is similar.

∗This was later confirmed by the online survey

4.3   Online Survey

The design of the questions and the online survey as a whole is primarily based and inspired by two major sources, *Enkäten i praktiken* [Ejlertsson, 2005] and *Frågor och svar* by SCB [Statistiska centralbyran, 2016]. These two handbooks largely coincided in their proposed processes and guidelines, however they were also complemented by other reports or articles. The online survey in its entirety can be found in appendix A.

To increase the response rate as well as striving for an inclusive survey, a guide from PTS, the Post and telecom authorities in Sweden, were used as a checklist [Post och Telestyrelsen, 2020]. Some of the rules were not applicable or unfortunately not available due to the technical platform used. However, the mindset of inclusion sets out to reduce both internal and external nonresponses, according to the universal design philosophy which claims that inclusive design makes the experience better for all respondents [Case, 2003].

The choice of distributing the online survey via the employer through the respondents closest managers or supervisors was made in accordance with the formerly mention handbook to encourage participation and ease distribution.

Göran Eljertsson discusses several factors concerning to the response rate, both tied to internal and external non-responses. Anonymity, a feeling of value of the study and personal gain from the report are some of these. A suggested method for communicating these considerations is a cover letter. This type of introductory information also enables a short description of the study being conducted and the reason behind it, hopefully further improving the quality and response rate of the survey, see appendix B.

The online survey consists of three sections, first off, background information with age and whether the respondent have worked from home, if the respondent have not, they were thanked for their contribution as the study's condition is that one has worked from home.

The second section focuses on the main subject of the study, the home office. The section aims to let the respondent reflect upon their home workstation setup, what they like, dislike, lack or desire to bring back to their ordinary office. They were also asked about activity or flex based working at home, as to compare to their ordinary office as well as gain understanding into the behaviour from a residential perspective.

Another important subject is the potential ergonomic strain when employees start working from suboptimal stationery and furniture from their own homes. Insight into problems caused while working from home, or the lack thereof could pinpoint where issues might arise and where the ergonomic focus needs to be while developing new office furniture. Not only can this result in more satisfied employees as well as savings in for example sick leave.

Lastly, the ordinary office section asks questions about the respondents office as it currently stands, at least before the pandemic. As previously mentioned, this can be seen as a reference point. Knowing more about their ordinary office can also yield insight into if their offices have any features which the respondents see as irreplaceable or must haves.

In order to ensure the quality of the online survey, two pilot studies were conducted, and the online survey was improved iteratively in accordance to the feedback. The two pilot studies were performed in a similar fashion, where the trial respondents answered to the survey while in a video conference call. They were asked to read the questions and comment both how to interpret the questions, and pre-determined answer alternatives as well as actually answer the questions. These comments and answers were then analyzed and compared to the purpose and problem formulation of the study to make appropriate adjustments. Each of the pilot surveys were performed with five persons respectively.

4.4 Interviews

The online survey were summarized and analysed in order for the next stage of user insights, the interviews. The subjects of the interviews were chosen amongst the survey respondents who volunteered. The same two handbooks as was referenced for the online survey was used here as well. It is important to note that the online survey responses were kept fully anonymous, and as a result the interviews were performed with no prior knowledge of the respondents individual answers.

The interviews and interview questions were performed with the goal to complement and gain a deeper understanding of the answers given in the survey, as such the already asked questions were seen as a basis. What this means is that some of the survey questions were asked again, with appropriate follow up questions in order to gain a deeper understanding and more precise and in depth answers. Other questions were similar to the survey, but asked in different ways or more in detail in order to have the respondents reflect again on their experiences and preferences. This also allows the survey responses to be validated and confirmed to have reliability. Other questions which were based on the collective answers from the online survey, were also asked, with slight variations as to keep the interviews unstructured not to hinder any insights with a needlessly streamlined process.

With the online survey answers as a base, in a preliminary compilation of the results, the interview questions were formed. The format of the interviews were chosen to be free form, as such the interview questions were used as guidelines and a general structure, rather than a rigid survey format. One of the reasons for this decision is to differentiate from the online survey in order to reach new insights.

The technical solution for the interviews were chosen to be performed over the phone, as to reduce friction, non-responses due to technical issues and make it easier for respondents to participate. This also allowed for more flexibility for the respondents as they were not tied to a computer in the case of using video conferencing software.

Similarly to the online survey, the phone interviews were tested with iterative pilot studies where the questions and structure were tested and adapted. For this pilot study three persons were interviewed thoroughly and asked to give feedback.

Eight interviews were performed, as deemed appropriate to represent the respondent demographic. However, depending on the consistency and saturation of the answers given in the interviews adaptations were planned to be made. No changes were however made in terms of the number of interviews as the amount were deemed to be representative of the survey demographic and further interviews were not expected to have a significant chance of improving the results.

4.5   Ethical Considerations

The study is not deemed to be of a sensitive nature, however, all necessary precautions were taken to ensure that the relevant ethical considerations were taken. The study primarily consisted of an online survey and interviews. Together with the link to the survey, a cover letter including information about how their answers would be handled was included, see appendix B. This meant that all of the respondents were well informed about what their participation in the study would entail. Any and all of the answers, from either the online survey or the phone interviews that contained (or risked to contain) identifiable information were deleted without further processing.

All of the answers were treated anonymously and kept confidential, being only handled by Johan Rogberg with supervision from the master thesis supervisors. This is in accordance with the information communicated to the respondents in the cover letter. If the respondent voluntarily gave their email address for follow-up questions, the necessary GDPR guidelines were followed and information about how their personal data was handled and stored were clearly communicated within the survey. The email address and their answers to the main survey questions were kept apart to ensure anonymity.

For the phone interviews all of the participants were informed that their personal information, in this case email and phone number were to be deleted after the interview was concluded.

One of the potentially identifiable question could be the respondents age. Hence, the choice of age groupings as opposed to asking for particular ages were made. This decision was to ensure that the respondents were kept, and had a feeling of anonymity, as it is possible that their age is unique within their department. This sense of anonymity is tied to an increased response rate according to Göran Eljertsson.

Chapter 5

Results

5.1 Introduction

The presentation of the results will be made in two chapters, with the online survey and interview being kept separate unless otherwise stated. The interview respondent population is picked at random from volunteering survey respondents. Note that the survey as well as interviews were performed in Swedish and as a result, some translations have had to be made. One noteworthy consequence of this is that quotes also have been translated.

The respondents are all employed by the same telecom company and work fully or partially in customer support or service.

The online survey as well as the interview guide which is the source for the results in this chapter can be found in appendix A and C.

5.2   Online Survey Results

The online survey results is product of the answers of 33 respondents.

First and foremost, in figure 5.1, the age of the respondents are presented, with 27 % *Generation Z* and 52 % *Millennials*. In the *36 or older* category, all age groups of five years each up to *60 or older* were represented.
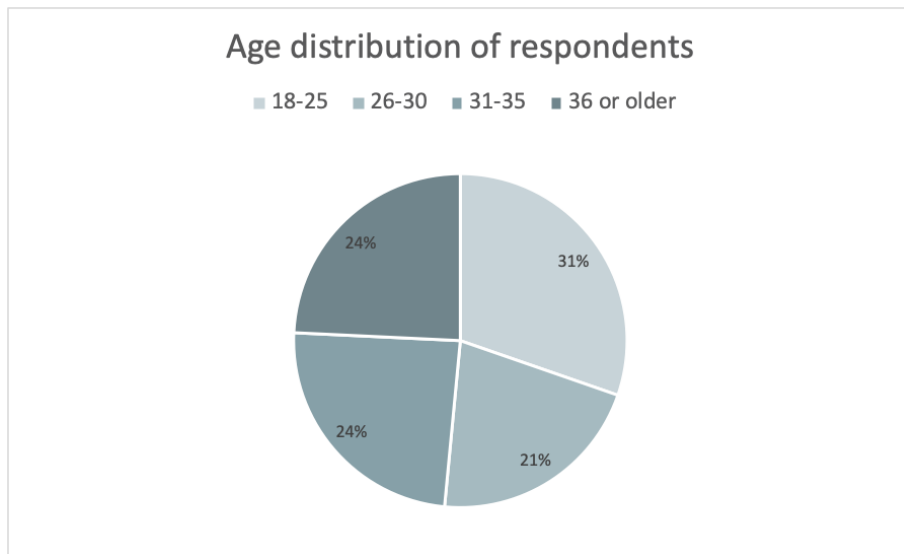

Figure 5.1: Age distribution of the respondents.

The figures below, 5.2 and 5.3 show that the respondents as a whole have gone from primarily working from the ordinary office to working from home during the Covid-19 pandemic. Only 12 % of respondents worked partly or more their from home before the pandemic while during the pandemic 88 % have worked at least partially from home.
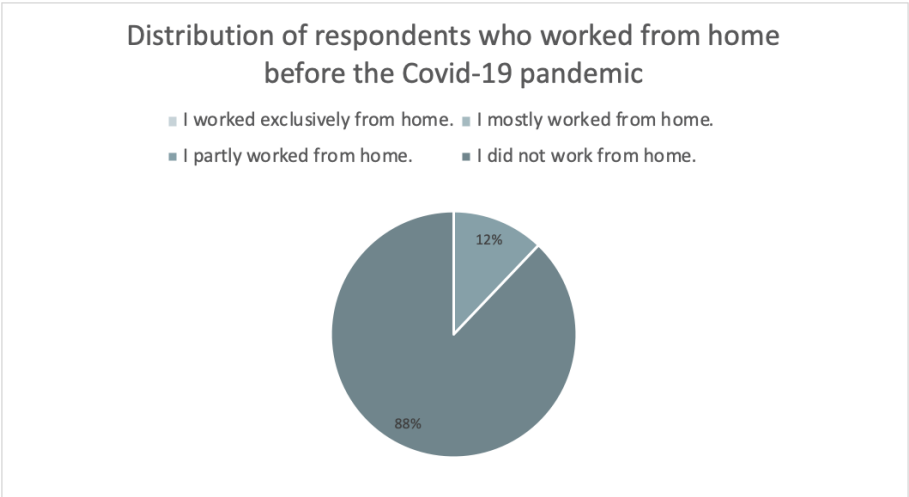

Figure 5.2: Distribution of respondents who worked from home before the Covid-19 pandemic.
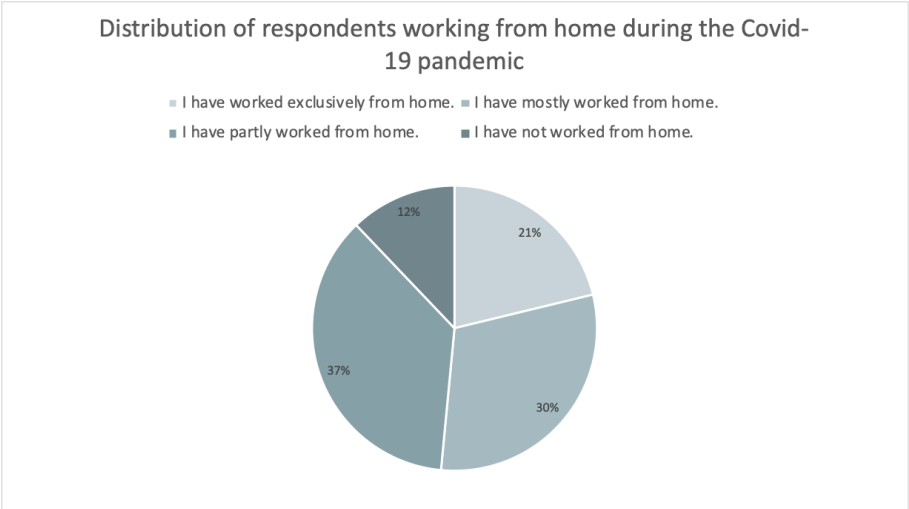

Figure 5.3: Distribution of respondents who worked from home during the Covid-19 pandemic.

There are several different types of home office setups utilized by the respondents, as seen in figure 5.4 below. 59 % have a workstation primarily for work, where the rest of respondents mostly use existing home furniture. Out of the 59 %, 15 % have a room with work at its primary purpose.
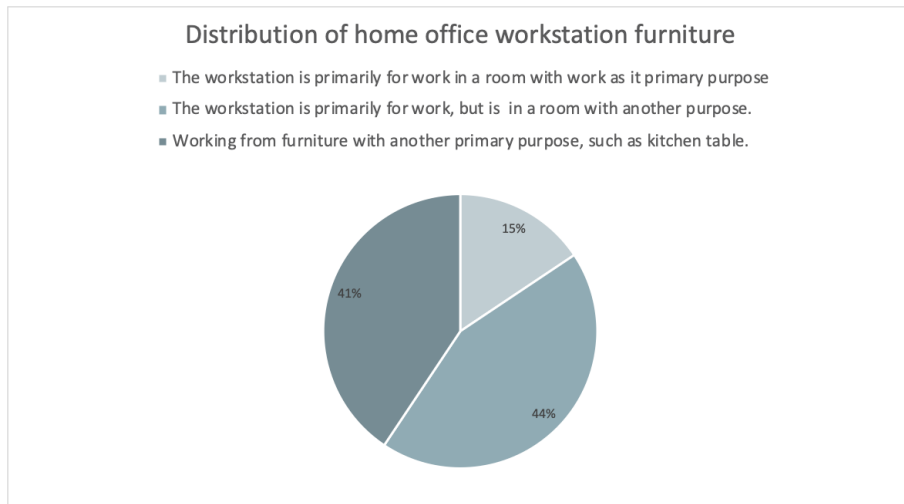

Figure 5.4: The different types and distribution of home office workstations.

When asked about what features or functionality they missed at their home office workstation, the two, clearly, most common themes were a more comfortable and adjustable chair as well as a sit-stand desk. Many also stated that they missed additional screen real estate as well as more desk area. Proper cable management with docking stations, like most respondents have at their ordinary office was also commonly mentioned. Lastly, another prevalent answer, not having to do with actual furniture, was a lack of social contact and someone to bounce ideas with or asking questions.

During the pandemic a majority of respondents claimed to have made adaptations or changes to their home office workstation, either through refurnishing, purchases, bringing in stationary and accessories from their ordinary office or a combination of the above. The adaptations have mostly consisted of clearing out a desk, preferably a large one, cleaning up and connecting a display to their laptops. One respondent has moved another chair to their desk in order to be able to change sitting positions switching between the two. The most common purchase has been an additional display monitor.

Even though the conditions vary greatly between the respondents, and many do not have any purpose built furniture at all, no respondent claimed to be *very dissatisfied* with their home office, and only 17 % are fairly dissatisfied, see figure 5.5. 50 % of the respondents were satisfied to some extent with their home office setup. The interviewees also in a clear majority stated that they were satisfied with their office workstation.
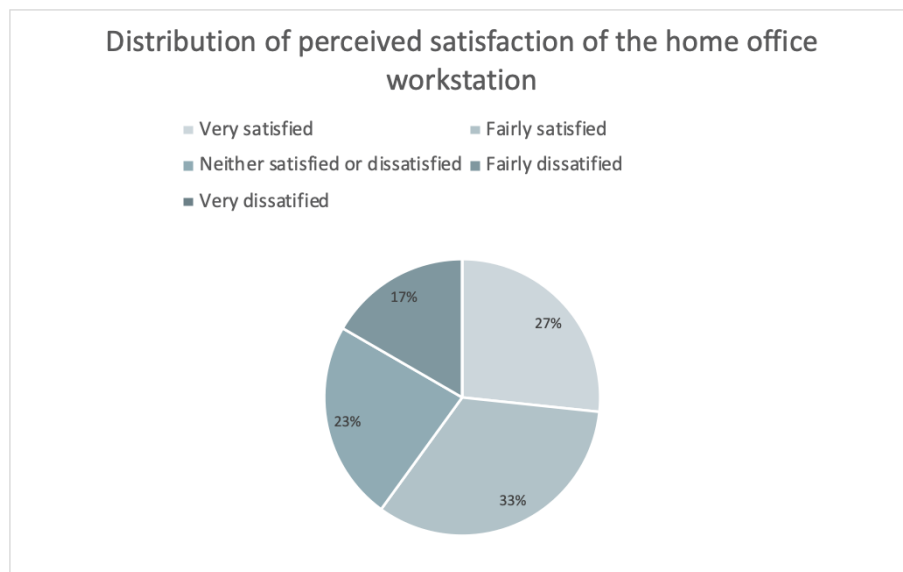
Figure 5.5: Employee satisfaction of the home office workstation. Note that no respondent claimed to be *very dissatisfied*.

The peace and quiet as well as the ergonomics of primarily their chairs, were the two main aspects that the respondent group found to be the best aspect about their home office. Others stated the freedom to change location in their home, proper personal lighting, larger desk area and more screen real estate.

When being asked about what the respondents wanted to bring from the home office to their ordinary counterpart, the theme of the ambient noise levels were dominating the answers. One respondent stated "In the ordinary office we are sitting in crowded spaces close to each other, I'd rather sit in smaller groups, if people around you are in phone calls the noise levels get very loud which makes it hard to focus". Another respondent said "Maybe we don't need as many and as large rooms as we do now, because we will have the opportunity to work from home in the future". Lastly, a larger desk area was something that was commonly requested.

Figure 5.6 shows that 29 % of the survey respondents choose to work from other furniture than their primary office workstation. However, all of the interview respondents claimed that they spent time working from somewhere else.

Those who claimed to change between furniture, most stated a couch or armchair as their alternative, with some also moving to their kitchen or dining tables. Worth noting again, is that during the interviews all respondents stated that they changed between furniture from their main workstation during the working day.
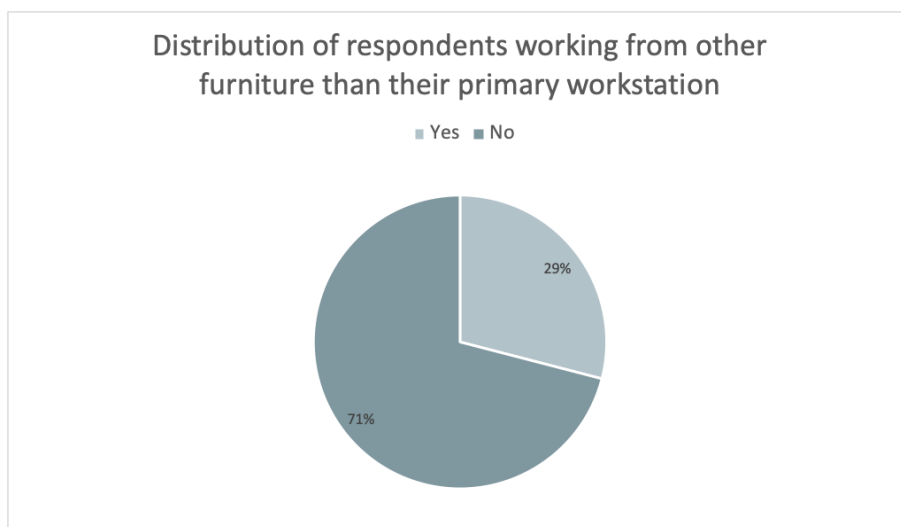
Figure 5.6: Distribution of respondents claiming to use different furniture than their main home office workstation.

The respondents claimed several reasons for changing position or locations, mostly having to do with wanting to alternate pose and environment, but also following the natural light to increase focus and during complex high focus tasks some respondents claimed to move to a low-distraction environment within their home. All of the respondents of the interview reported that during less demanding phone calls they walked around their residence to "stretch their legs". This was also reported to be done in the ordinary office, however to a much lesser extent and by fewer of respondents.

In figure 5.7, one can see that 37 % claim to have been experiencing physical discomfort or strain due to working from home, where 6 percentage points of those consider the issues to be equal to or less than the ordinary office. The issues, in a majority, are neck and back pains, according to some respondents due to not being able to customize their home office furniture. Another common reason is that they claim to be more still-sitting during the day, and not leaving their workstation to commute or for example go for lunch as they would commonly do when working from their ordinary office.
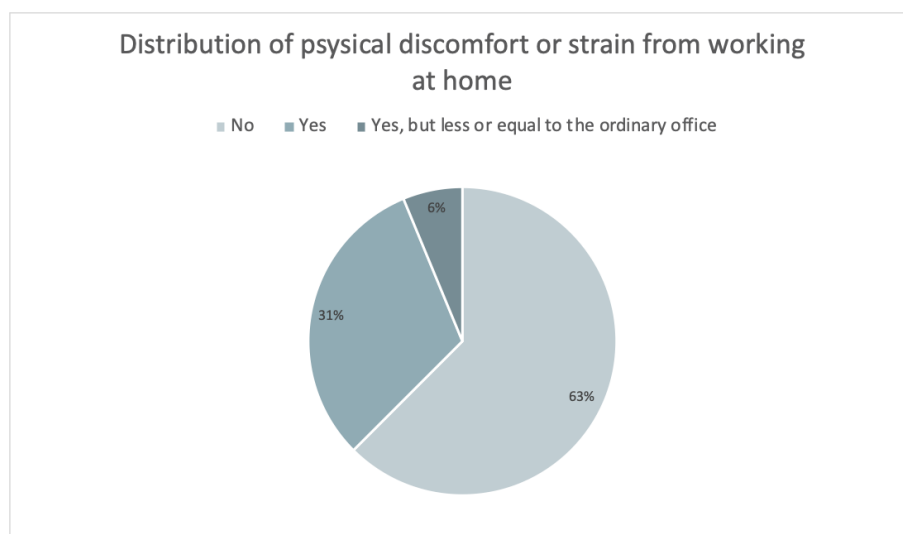
Figure 5.7: Distribution of employees claiming physical discomfort or strain from working from home.

The respondents thoughts and reflections on what feature or functionality they missed the most with their workstation at their ordinary office varied. A more ergonomic chair was mentioned by several respondents as well as better acoustic insulation. The latter was also similar to other answers which expressed that they wanted smaller rooms with fewer colleagues per room as well as an answer "We also have small conference rooms you could possibly use to have some peace and quiet for when you need to focus on something, but they are almost always booked. I also miss having some kind of quiet break room where you can take 15 minutes if you are tired or not feeling well away from the noise of the colleagues in the regular break room". Lastly two other issues were mentioned, which was the size of the desk area as well as the lack of a personal light source.

The office type in the respondents ordinary office proved to be very uniform with almost all of the respondents working in an open-plan workspace with dedicated, private desks (figure 5.8). They reported slightly differing layouts of the open-plan office, however all of the respondents shared to larger room with at least 10 other people, often significantly more. The "rooms" were also reported to be made up of smaller, partial dividers in a much larger area.
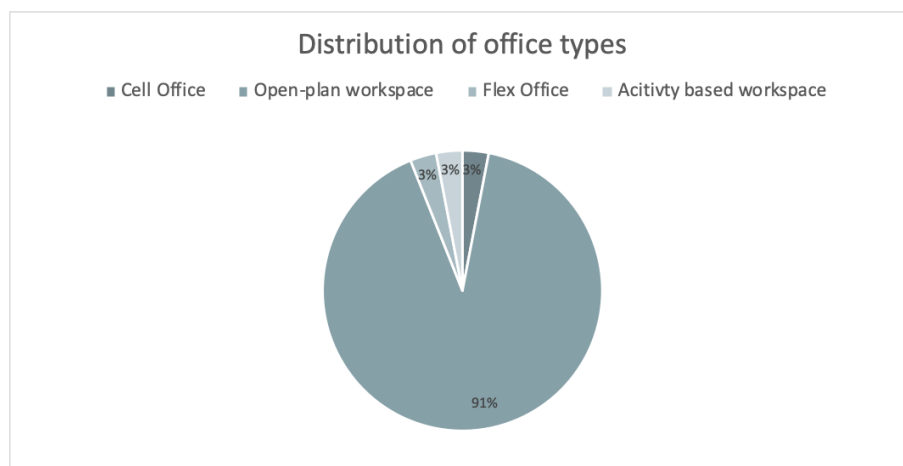
Figure 5.8: Reported distribution of office type at the respondents primary ordinary office.

The respondents were asked to elaborate on what they think is the best feature in their ordinary office workstation. The answers varied between respondents, although, with common themes. Accessories and stationary such as good quality displays, mouse and keyboard were mentioned as well as a height adjustable sit-stand desks. The close proximity to colleagues in order to ask questions and socialize with was also raised by many. Having a dedicated area for only work, customized for the respondents themselves was mentioned to be valued, without the need to "clean" the desk for other uses or users.

The final questions the respondent answered was what they considered to be the most important features or functionality of a workstation desk. Again, to have the table be height adjustable was mentioned by almost all respondents with the other answer being having the desk area be large, both in order to fit all the accessories comfortably, able to rest their elbows and to not feel or look cluttered. An example of an answer illustrating this is "It should be possible to raise or lower, it should also be spacious to not make it look cluttered as soon as you add a coffee mug because it takes up too much space.

5.3   Interview Results

The interview results will be presented below, with common themes or learnings as well as respondent quotes to exemplify and illustrate the findings. Similarly to the online survey quotes have been translated into English from Swedish. The results presented below are a compilation of the eight interviews conducted.

Asking respondents to describe their home office workstation resulted in many different setups, all based on the company issued laptop, however note that two of the respondents had set up a purpose built desk for work in the time between the online survey and the interview. Still, many, due to space limitations or otherwise in their residence still used the company laptop without connecting larger displays or other accessories. These respondents claimed to move around more and with higher frequency within their home to different furniture or positions.

When working from home all the respondents claimed to move around in their home while working to some extent, for example between a desk and the couch or to their kitchen table. The most common reason for this is for variation as well as to "move with the sun", having natural light throughout as much of the day as possible. Some respondents also added that the variation had to do with ergonomics, as they felt that sitting in the same position for too long was resulting in discomfort or strain. With that said, all of the respondents stated that during more low effort phone calls, they walk around their residence. The option for this was also noted as a improvement for the office. On the same topic requested a "half-sitting" chair or preferably as a setting to their existing office chair, similar to how you would sit on a bar stool was an expressed desire. Another request that came up was to be able to work from another location within the office with standing desks and lots of natural light, however they also added that in order for that to work they would want to still keep their private desk.

When asked about an activity based workflow several observations were made, primarily, which were stated by all but one respondent is that they highly valued their own private desk and chair. This was mostly due to the customization of the desk, chair and accessories as well as "my things are exactly where I left them" as one respondent said. They were however open to, and in some cases even requested more opportunities to change their location within their office. Most of the respondents have not worked earlier in a flex or activity based office, although those who have worked in that environment also put emphasis on having their private desk, customized to their liking and with their private belongings.

The lightning situation at the ordinary office was something that was raised by many respondents. About half of the respondents expressed that they wanted a personal lighting source (a desk lamp or similar) as they felt that the ambient lightning was not enough. The ambient lightning also got critique for adding to an existing issue

within the furnishing, namely the lack of contrast within the office. One respondent explained it with this quote: "The lighting is very yellow [warm] which together with the light wood looks very boring and lacks contrast".

Cable management in the office furniture was also highlighted, as respondents said that a proper docking station together with a good system for the cables to the different accessories saves a lot of space on the desk, something that is at a premium for many of respondents. "It should be easy to connect and disconnect [from the workstation]" was a common statement during the interviews.

Desk workspace is a subject where the answers differed between the respondents, however they all agreed that a desk area of around 1.5 times 1 meter was their estimated minimum needed area. Note that this is an estimate during the phone interview by the respondents. The preferences about the shape of the desk table varied, where many respondents wanted a cut-out for their chair in their desk, some wanted a corner desk and some preferred a rectangular desk. These discrepancies seemed to depend on the chair being used as well as sitting position. One respondent explained the cut-out as "[It is] good as it gives a feeling of having a corner desk without taking up that as much space".

Similarly to the online survey, noise levels in the office was again lifted by all of the respondents as an issue. Many claimed either tiredness or trouble focusing on more complex tasks as a result and some even experienced headaches due to the noise levels. However, they were also unanimous in their strong preference to not "build themselves in" with acoustic desk dividers or similar as the social aspect of the office is highly valued. "I don't wanna work in a booth" is a quote from one of the respondents exemplifying this. Another negative aspect of acoustic dividers was that they hindered light from passing through making the workstation more dim. However, an issue with the more open-plan that was raised was that respondents with desks in proximity to the "corridors" where their colleagues passed through were often interrupted in their work.

The social aspect of the ordinary office was not only lifted as a part of the desk and workstation design, but also something that the office needs to facilitate in terms of communal areas and encourage interaction, "[If it works] you can manage with so much more" one of the respondents stated. During the pandemic the use of instant messaging services has increased, and one respondent thought that this development has been very beneficial and hopes that it will continue when they return to the office, which will both allow for more dynamic communication as opposed to email as well as offer an alternative to disturbing your colleagues by walking up to their desks.

Chapter 6

Discussion

6.1 Introduction

In the *Discussion* chapter the results will be summarized, interpreted and analysed, both in between themselves but also in relation to the theoretical background of the thesis. The limitations of the study pertaining to response rate, scope of the study and generalizability will also be discussed.

6.2 Analysis

As can be seen in figure 5.1 in the *Results*, a clear majority of respondents being either *Gen Z* or *Millennials*, the target demographic is found to be fulfilling the purpose of the study. One can also see that older generations are represented in the survey which is of importance as to make sure that the findings account for both the future workplace as well as current generations. This is vital as many companies and organizations are starting to question how to manage the landscape as more and more generations share the workplace [Bursch and Kelly, 2014]. A strive for the coming generations office furniture cannot disregard the present generations needs. That the study was able to have 31 % of respondents within the *Generation Z* bracket is considered a success as the age group only just started joining the workforce.

The respondents have also worked in majority from home during the pandemic, another presumption of the study that needed to be fulfilled, see figures 5.2 and 5.3. This is also consistent with the mobile data from Telia and the study performed by Tele2. These find similar results or results pointing towards a significant decrease in working at the ordinary office have been found. What this means for the study is that respondents both have been spending a significant amount of their time working at home, and that this is a change of behaviour due to the Covid-19 pandemic.

That the respondents have been working from home primarily means that they have had the opportunity to, and have spent enough time at their home to warrant both adaptation and reflection on their home office workstation set up.

A majority of respondents have some kind of workstation with work as its primary purpose, figure 5.4. This is interpreted to also mean that respondents have had the opportunity to in some way adapt and customize it to their needs during working hours as the workstation does not have to be utilized for something else, such as a kitchen table. Most likely as a result of the young demographic not having large residences, few of the respondents, 15 % had a separate chamber for work. Having this more or less dedicated piece of furniture also means that connections and comparisons to their ordinary office probably will come easier to the respondents, and particular solutions they like at home could be more clear. At the same time, having respondents working from other types of furniture is also equally valuable as new experiences and coming from a more novel perspective can yield new learnings.

No significant relationship between the exact type of home office setup and the respondents experienced satisfaction of the home office could be made. They were however, as a whole, satisfied as seen in figure 5.5. It is also interesting to note that although many of the respondents worked from what can be seen as the most barebones settings, such as just using a laptop on a couch or at a kitchen table, no respondent claimed to be *very dissatisfied* with their home office workstation.

Figure 5.6 shows that 29 % of the survey respondents choose to work from other furniture than their primary office workstation. However, all of the interview respondents claimed that they spent time working somewhere else than the aforementioned workstation. As the interview survey population was picked at random from the survey population it is reasonable to presume that a larger portion than 29 % in some way vary where they work from at home. This is considered to be a natural effect of the different survey methods. The interview format lets both the respondent take their time to thoroughly reflect on the questions as well as the interviewer to ask follow up questions.

Examining figure 5.8 it becomes clear that an overwhelming majority of respondents work in open-plan workspaces. In the interviews the respondents reported on different layouts of the office space, however they were shared with at least ten other people, often significantly more, with only partial dividers between the "rooms". In open-plan workspaces the employees have their private desks [Bodin Danielsson and Bodin, 2009] and as confirmed by interviews no significant opportunities to work at other locations in the office exist. This means that when the respondents are at home, and can choose for themselves, they seem adopt a flexible practice when working. This can be seen as one of the most interesting findings of the study, as it can yield key findings into how to introduce ABO, which are gaining in popularity [Rolfö, 2018].

Central to the transition to be successful hinges on the preparation and education of employees according to another article by Maral Babapour Chafi & Linda Rolfö [Babapour Chafi and Rolfö, 2019]. This can help significantly in identifying key aspects for the activity based workflow to reach its full potential.

As stated in the interview results (Chapter 5.3), the respondents who only use a laptop at home for work without a lot of connected accessories move around more in their residence between furniture. This can of course seem perfectly reasonable, naturally it is easier to switch location when you have less stationary tying you down. However, this can also be a indication that the respondents like to use what can, arguably, be described as an activity based workflow if not limited by outside factors. Simultaneously, the respondent had a clearly stated preference for a private desk, with their own particular customizations and belongings. Combining these insights one can reason that the friction in switching locations in a flex or AB office is one of the main aspects that need to be addressed to have a successful implementation. If one can find solutions to the concerns previously mentioned, by for example, giving employees shortcuts or easier access to their chair and table adjustments. Could the preference for a private desk be alleviated by creative solutions and the positives outweigh the negatives.

What the long term effects of the pandemic will be is a heavily discussed subject, with varying opinions and predictions (Chapter 2.4). The respondents of this study did not seem to indicate in their answers any long term aversions of working in a shared space environment, rather they embraced it. The trend was instead a longing for the social aspects of the workplace, and the meaningful exchanges, both professional and casual, it entails. The respondents opposed the screen dividers proposed to be a trend when the dust settles after the pandemic in a (amongst others) New York times article [Richtel, 2020], even requesting existing dividers to be taken down or restructured to not prohibit the social interactions.

Another possible consequence of the pandemic could be that working from home becomes more and more common, and normalized in the workplace, as was mentioned by one respondent (see 4.3). They predicted that there will not be a need for the large open-space offices as more and more employees will start working from home in the future. This and the previous paragraph is in agreement with Lena Lid Falkmans predictions, and may help mitigate some of the issues that the respondents had with the noise levels of the large offices as well as the desire to sit in smaller rooms [Falkman, 2020].

An interesting finding of the study is the discrepancy in the ergonomic experience, where many of the respondents claimed that the furniture at home is more comfortable at the same time that many have been experiencing physical discomfort or strain due to working from home. A continuation of this study could be to study what causes these discrepancies and what more can be learned from the positive experiences about working from home. One way of doing this effectively is on-site observations which are not feasible during the pandemic. However, some results as to why the respondents believe they have been experiencing this discomfort or strain at home have been found. These primarily have to do with the sitting position, due to either the chair or height of the desk as well as being much more prone to be sitting still more when working from home. This can be because the employees do not walk to the bus, coffee machine, toilets, or to have a chat with colleagues as frequently or with significantly decreased distances.

As for the most important features or functionality of an office or work-desk, the most commonly mentioned one is for the desk to be height adjustable with a sufficiently large desk area. The height adjustable functionality can be seen as a result of the employees becoming used to it from their ordinary office. This can be seen as a base level feature, however, it is also a result that coincides with earlier research with standing desks being beneficial [Sharma et al., 2019] and indicates that the employees actually use the mentioned feature.

An insight that appeared multiple times throughout the online survey and interview was the reliance and craving for casual social interaction. To be able to ask colleagues quick questions and to feel their presence around them. This manifested itself in preferences not to be "built in" with acoustic dividers or other furnishings and is most likely reinforced by having worked from home. This can be connected to *Generation Z* traits, as they are claimed to value face to face communication highly [Singh and Dangmei, 2016]. This can be important to understand for the design of future office furniture, as it also displays a contradiction between the need for social interaction versus the issue with noise pollution experienced by a clear majority of respondents.

The reliance of instant messaging services while working from home to contact colleagues, and the desire to continue this avenue even after the pandemic can be seen as natural progression as *Millennials* and *Gen Z*'s are taking their place in the workforce [Bursch and Kelly, 2014], Janssen [2020].

6.3 Limitations

The response rate of the online survey was 41 % with n = 33 respondents. The nature of the survey is not deemed to be sensitive or divisive which means that it is assumed that no extremes of significance in opinion regarding the subject would purposefully abstain from taking part in the survey. However, as expected with online surveys, the external response rate is quite low, but in line with expectation given the medium [Ejlertsson, 2005]. As all of the respondents are from the same company with similar job titles there is nothing suggesting that a particular group with different experiences have been missed. Therefore the non-responses are deemed to be in majority random as opposed to systematic [Statistiska Centralbyrån, 2020].

The internal response rate was rather high, where the question with the lowest internal response rate being 76 %. This indicates that the questions were of sufficient quality and clear for the respondents. It is expected that not all of the questions would be answered by everyone due to a variety of reasons, such as not having any strong preferences in the subject. However, no questions were marked as mandatory in order to keep a good will with the respondents, which is assumed to increase the quality of the answers. None of the questions are deemed to be of such a sensitive nature that outliers in opinion would purposefully skip the question.

It is important to note that this study has been conducted with a single swedish company and respondents with a similar job description. This means that while one can expect similar results in comparable companies and departments, but it is not directly generalizable. However, some key learnings seem to coincide in earlier research, which can indicate that the they are valuable and valid to some extent outside of the parameters of the target demographic in this thesis. Adding that the target demographic have a strong representation of both *Generation Z* as well as *Millennials* and that the respondents have gone from primarily working at the ordinary office to working from home.

6.4 Future Research

As mentioned in chapter 6.3 the results of this thesis is not directly generalizable due to the focused approach deployed. Hence, using the results and conclusion as a hypothesis for a larger study can be a natural progression. This larger study should include a larger cross-section of the population, of course, still with a focus on younger generations in order to maintain the spotlight on the office of the future. Using a similar methodology as this study but with a larger scope and, pandemic permitting, doing observations in the home offices of the respondents could be a way to utilize these findings. Doing live observations at the home offices can both lead to insight into more subconscious choices made by employees as well as generate more meaningful discussion in interviews.

6.5 Summary

The target demographic of the online survey proved to more than adequately represent the age groups of interest and the respondents had also generally moved from working at the office before the pandemic to working from home during it.

The young respondent group have a preference for workstation furniture which encourage and facilitates social interaction, as opposed to sitting in "booth"-like stations, even if it may help with noise pollution. This is conforming with values of *Generation Z* and *Millennials* as of earlier studies. At the same time they found that the mentioned noise issued to be an issue effecting focus and tiredness in the office environment.

The sit-stand desks of today's office is highly valued and something that is used frequently used. To have sufficient free tabletop desk area is also important.

Natural light within the office is highly regarded, illustrated very plainly by the many respondents moving location around in their residence to follow the natural light during the day. The respondents also requested personal lightning at their workstation as the ambient lightning was considered insufficient.

Both by respondents expressing the request for options in the office environment as well as by their behaviour at home, moving towards an activity based office seems to be the natural progression for the demographic in this study, however, having their own private desk with their customization and belongings were very important. They respondents also valued having proper accessories for their computer, such as large and even multiple screens.

Due the the scope of this master thesis there are some limitations concerning its generalizability, mainly because of how the respondent population was chosen. However, with an understanding of this, valuable insight can still be had from this study.

Chapter 7

Conclusion

What have we learned from the office workstation during the Covid-19 pandemic tell us about the future of office furniture design?

The study has made several key findings into the office workstation of future. Natural light as well as proper ambient and personal lighting is important for the group, with many of respondents moving around within their residence to "follow the light" during the working day. This is an example on how the respondents utilize different environments and furniture within their home and indicates that some features of activity based work procedure at their ordinary office is desired by the employees. Another finding is that being able to adjust between sitting and standing in an unanimously sought after feature, as well as the desire not to have a feeling of isolation or being "built in" by furniture, for example with acoustic insulation. This was due to the strong desire and value put into the social interaction of the workplace. A keyword encapsulating this could be *Social Workstation*.

The lightning at the workstation is important, both that it is sufficient, especially important is the natural light. These conclusions are based off of the target demographic from within a single company respondents of a similar job description. This means that the findings in the study does not automatically translate to the overall population, however, one can expect comparable results when studying other companies within the telecom industry. Even given these limitations, the results of the thesis are deemed valuable, both for future research as well as the more direct implications of workstations design of tomorrow.

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Appendix A

Online Survey

See next page for an exported version of the online survey. Note that the exact layout of the survey is impossible to recreate as an appendix in a report. This is due to functions such as drop down menus being used.

Hemarbete under Coronapandemin

Hej och tack för att du ställer upp och svarar på vår enkät! Dina svar kommer att vara anonyma och hanteras konfidentiellt av Johan Rogberg. Enkäten är en del av examensarbete på institutionen för designvetenskaper vid LTH i samarbete med designbyrån Superlab.

Svaren från ditt och flera andra företag kommer att sammanställas och publiceras som ett examensarbete vilken vid projektets slut kommer göras tillgänglig för er. Mer information finns i slutet på enkäten.

Johan Rogberg
Student, Civilingenjör i Maskinteknik med inriktning Produktutveckling vid Lunds Tekniska Högskola
Institutionen för Designvetenskaper
Examensarbetet skrivs på uppdrag av Superlab
mas15jr1@student.lu.se
+46 70 577 68 28

1. Hur gammal är du?

   Mark only one oval.

   ◯ 20 eller yngre

   ◯ 21-25

   ◯ 26-30

   ◯ 31-35

   ◯ 36-40

   ◯ 41-45

   ◯ 46-50

   ◯ 51-55

   ◯ 56-60

   ◯ Äldre än 60

2. Har du arbetat från hemmet under Coronapandemin?

Mark only one oval.

- ◯ Jag har inte arbetat hemifrån.
- ◯ Jag har delvis arbetat hemifrån.
- ◯ Jag har mestadels arbetat hemifrån.
- ◯ Jag har uteslutande arbetat hemifrån.

3. Innan Coronapandemins utbrott, arbetade du från hemmet?

Mark only one oval.

- ◯ Jag arbetade inte hemifrån.
- ◯ Jag arbetade delvis hemifrån.
- ◯ Jag arbetade mestadels hemifrån.
- ◯ Jag arbetade uteslutande hemifrån.

4. Vilket alternativ beskriver bäst din arbetsstation eller bord i hemmet?

Mark only one oval.

- ◯ Arbetsstationen är till stor del till för hemarbete, i ett rum med hemarbete som primärt syfte.
- ◯ Arbetsstationen är till stor del till för hemarbete, men ligger i ett rum med annat syfte, såsom sovrum.
- ◯ Hemarbete sker vid möbler med annat huvudsakligt syfte, såsom köksbord.
- ◯ Other: _____

Arbetsmiljön i hemmet

På denna sida ställs några frågor om hur du arbetar i hemmet och vad du anser om din arbetsstation du oftast använder.

5. Beskriv den arbetsstation du primärt använder i hemmet.

    _____
    _____
    _____
    _____
    _____

6. Hur nöjd är du med din arbetsstation för hemarbete?

    Mark only one oval.

    ◯ Mycket nöjd

    ◯ Ganska nöjd

    ◯ Varken nöjd eller missnöjd

    ◯ Ganska missnöjd

    ◯ Mycket missnöjd

    ◯ Other: _____

7. Vad anser du är det bästa med din arbetsstation i hemmet?

    _____
    _____
    _____
    _____
    _____

8. Finns det några egenskaper eller funktioner du saknar kopplat till din arbetsstation i hemm
Om ja, beskriv dessa.

_____

_____

_____

_____

_____

9. Vilka förändringar eller inköp till din arbetsstation i hemmet har du gjort sedan
Coronapandemins utbrott?

_____

_____

_____

_____

_____

10. Är det något kopplat till din arbetsstation i hemmet du vill ta med dig till eller förändra på
ordinarie arbetsplats?

_____

_____

_____

_____

_____

11. Arbetar du tidvis vid någon annan möbel/möbler än din primära arbetsstation, såsom en fåtölj eller ståbord?

Mark only one oval.

◯ Ja

◯ Nej

◯ Other: _____

12. Om du svarade ja på föregående fråga, beskriv möbeln/möblerna.

_____
_____
_____
_____
_____

13. Har du upplevt några fysiska besvär eller obehag på grund av ditt hemarbete? Om ja, beskriv vad du tror dessa beror på. Svara annars "Nej".

_____
_____
_____
_____
_____

Din ordinarie kontorsarbetsplats

I denna del kommer frågorna att handla in din ordinarie arbetsplats eller kontor. Har du p flera olika arbetsplatser, svara utifrån den du oftast använder.

14. Vilken typ av kontorsmiljö beskriver bäst din ordinarie arbetsplats?

Mark only one oval.

◯ Cellkontor (De flesta medarbetarna har ett eget rum, eller delar med ett fåtal personer)

◯ Öppet kontorslandskap (De flesta medarbetarna har en fast plats i en större lokal)

◯ Flexkontor (De flesta medarbetarna har ingen fast arbetsplats)

◯ Aktivitetsbaserat kontor (Likt flexkontor, men med zoner inredda för specifika arbetssätt eller aktiviteter)

◯ Other: _____

15. Vad anser du är det bästa med din arbetsstation på ditt kontor? Har du inte en fast arbetsstation, svara utifrån det du oftast använder.

_____
_____
_____
_____
_____

16. Finns det några egenskaper eller funktioner du saknar kopplat till din arbetsstation i kontorsmiljö? Om ja, beskriv dessa.

_____
_____
_____
_____
_____

17. Gällande specifikt bord för arbete, vilka anser du vara de viktigaste egenskaperna eller funktionerna?

_____

_____

_____

_____

_____

Tack!

Jag vill rikta ett stort tack till dig som fyllde i enkäten! Information om hur du tar del av resultat och andra svar på frågor du kan tänkas ha finns på nästa sida.

Den nedanstående frågan är frivillig och din e-postadress kommer inte behandlas tillsammans med dina övriga svar. Du kan när som helst kontakta Johan Rogberg på mas15jr1@student.lu.se om du önskar att din e-postadress skall raderas eller har frågor om hur den lagras.

18. Får vi kontakta dig för några ytterligare frågor? Skriv din e-postadress nedan. Dina tidigare svar kommer att förbi anonyma och ej kopplas samman med din e-postaddress.

_____

19. Om du fyllt i e-postadress ovan, godkänner du att din e-postadress sparas till och med examensarbetets slutförande?

Check all that apply.

☐ Ja

20. Har du några övriga tankar?

_____

_____

_____

_____

_____

Appendix B

Online Survey Cover Letter

Hej,

Jag heter Johan Rogberg och studerar Maskinteknik vid Lunds Tekniska Högskola, just nu skriver jag mitt examensarbete inom Produktutveckling. Arbetet skrivs i samarbete med Superlab, en designbyrå baserad i Helsingborg som arbetar med design av kontor och kontorsmöbler med fokus på framtidens arbetsplats.

Hur kommer framtidens kontor se ut? Vad söker den yngre generationen av kontorsmöbler? Och hur ska flera generationer samexistera på arbetsplatser? Examensarbetet skall försöka svara på delar av detta, nämligen vilka behov och viljor det finns för design av framtidens bord på arbetsplatser. Coronapandemin har drastiskt ändrat hur och var många arbetar; kan vi använda detta för att lära oss något nytt? Enkäten har som förhoppning att studera hemarbete och arbetsmiljön i hemmet med målet att hitta lärdomar som kan appliceras på framtidens kontorsbord.

För att undersöka detta utför jag en enkätstudie för att samla in information och åsikter om arbete i hemmet. Denna enkät tar ca: 10 minuter att svara på och nås via länken nedan, ditt deltagande uppskattas och värderas högt. Sista svarsdagen är [redacted].

Länk till enkäten: [redacted]

Tack för att du tar dig tid att svara på enkäten , ditt deltagande är frivilligt men ökar kvalitén på den sammanställningen du och ditt företag sedan kan använda för att förbättra din arbetsmiljö, förutom att det är till stor hjälp för mitt examensarbete. Jag hoppas därmed att du är villig att delta och svara så utförligt som möjligt. Enkäten beräknas ta ca: 10 minuter.

Dina svar kommer behandlas konfidentiellt, alltså kommer inga identifierande uppgifter att behandlas tillsammans med dina svar. Dina svar kommer också endast att presenteras i sammanställningar.

Behandling av enkätsvar sker endast av Johan Rogberg, i handledning av Per Kristav (Doktor, Universitetsadjunkt LTH) samt Niklas Madsen (VD Superlab). Identifierande information i svaren kommer att raderas omgående utan vidare bearbetning.

I slutet av enkäten kommer du att kunna ange din e-postadress för att göra dig tillgänglig för att svara på några ytterligare frågor. Den uppgiften kommer inte att kopplas samman med dina övriga svar och endast användas för att upprätta kontakt med er för uppföljningsfrågor. Du kommer att kunna kontakta Johan Rogberg för att få dina uppgifter raderade eller för frågor angående hur din e-postadress lagras eller behandlas.

Har du frågor om enkäten eller projektet, vänligen kontakta Johan Rogberg.

Johan Rogberg
Student, Civilingenjör i Maskinteknik med inriktning Produktutveckling vid Lunds Tekniska Högskola
Institutionen för Designvetenskaper
Examensarbetet skrivs på uppdrag av Superlab
mas15jr1@student.lu.se
+46 70 577 68 28

Appendix C

Interview Guide

Hej, jag heter Johan Rogberg och ringer angående uppföljningsfrågor till enkätundersökningen som du besvarade tidigare under hösten. Under intervjun kommer en blandning av förtydliganden av tidigare ställda frågor och följdfrågor ställas. Jag vill också påminna att jag inte har kopplat ihop din mail eller telefonnummer med övriga svar.

Beskriv den arbetsstation du primärt använder i hemmet.

Om du jämför din arbetsstation hemma och kontor, kan du berätta vad du tänker på då?

Om du hade fått ersättning från din arbetsgivare för att investera i din arbetsstation i hemmet, vad hade du inhandlat?

Vilken form på kontorsbord-skivan tror du är bäst och varför?

Byter du plats när du jobbar hemma? Varför? Hade du velat ha möjligheten byta plats på jobbet? Vad hade krävts för att det skulle fungera bra på jobbet? Vad tror du är det som hindrar mest? Finns det funktioner till skrivbordet som du tror hade underlättat detta?

Många som svarat på enkäterna tyckte att ljudnivån på arbetsplatsen var störande, vad tror du man kan göra åt det, med hjälp av kontorsmöbler?

Vad är det största problemet med din arbetsstation och specifikt bordet på ditt ordinarie kontor, om du sätter på dig dina mest kritiska glasögon?

Appendix D

Project Plan & Evaluation

D.1   Project outline

Throughout the project: Update and work on the report, evaluate earlier work and made adjustments.

31/8: Project start
31/8 - 11/9: General literature studies and theoretical background to the thesis.
14/9 - 25/9: Continued literature studying. Formulation of purpose of the study. Learn more about online surveys and form a purpose of these from the overall purpose of the study. Start structuring the *Background* and *Method* chapter. Initiate contact with respondents.
21/9 - 29/9: Formulation of online survey, first draft and technical platform. Pilot study 1.
30/9 - 2/10: Rework online survey according to pilot study 1 and prepare for pilot study 2.
5/10 - 14/10: Adjust online survey after pilot study 2. Finish the online survey and prepare for distribution.
15/10: Distribution of online survey.
30/10: Reminder to fill out the survey is sent out to respondents.
13/11: Deadline for online survey answers.
30/11 - 4/12: Interviews performed if deemed necessary.
18/12: First draft of the report
14-15/1: Presentation of the thesis
29/1: Final version of thesis report is sent in

D.2   Outcome & Evaluation

As a whole, the project outline where valuable and mostly complied with. Up to the 15/10 all of the deadlines stated were followed as well as the report being kept up to date with the practical parts of the study. Analysing the results from the online survey, developing the interview guide and contacting the respondents to that part of the study took longer than planned for, and were a week late in relation to the outline. In the end of October, between the 26/10 and 29/10 the mandatory opposition of another master thesis was performed. Even though writing on the report was attempted to be a priority throughout the project, the deadline of the first draft of the project where passed, and finished just after the new year, 3/1 instead of 18/12. Note that the the Christmas holidays fell in between these dates.

The project had very few dependent tasks that where handled in tandem, given the choice of first an online survey and using the results of that to perform the interviews yielded a natural structure of the work. Gantt chart or similar methods in order to achieve a clear plan was deemed unnecessary for this thesis. The amount of detail in the outline was sufficient to plan accordingly while at the same time not resulting in any limiting time issues as there where some built in flexibility.