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The Power of Nudging when Working from home

A study on how nudging can influence the assessed productivity of employees working from home

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Abstract

Working from home has become common in the aftermath of the Covid-19 pandemic. Extensive research about different aspects of the area has been made, but employee productivity is still an issue that many companies struggle with as employees have gained a new type of freedom when working from home. As a result, this study will explore if the behavioral economic theory concept of nudging can have an impact on employees' productivity when working from home. Nudging has through previous research been shown to effectively direct people towards preferred behaviors, but no research has established its potential impact on people who work from home. The purpose of this thesis is therefore to examine whether employees who work from home believe that nudging tools, presented in scenarios, would affect their productivity. This is followed by if the impact of nudges is moderated by the field of business, level of seniority, or the working-from-home frequency that the individual possesses. To obtain the results, a quantitative survey and qualitative interviews were performed and the result was established through Reliability tests, Correlations, Paired Sample t-tests, and descriptive analyses. The study shows that when nudging is defined by certain tools, the concept has an impact on productivity among employees who work from home. When applying moderators, the result is altered and therefore they can be taken into consideration when implementing nudges. These findings are useful for managers responsible for employees working from home, as the nudging tools can be applied in strategies and used to create a more productive work environment.

Key Terms: behavioral economics, nudging, work-from-home, productivity, fields, seniority, WFH frequency, management

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1. Introduction

Is there a way to make less productive individuals more productive when working from home, and could nudging be the answer to this question? This thesis aims to analyze the impact nudges have on individuals' productivity and conclude if nudging is a tool for helping managers overcome productivity issues. Since working from home has become more common, the outcome of this thesis can be applicable in many different aspects and settings. Moderators that potentially impact the way employees work from home, like the field of business, level of seniority, and working-from-home frequency, are also investigated in order to provide managers with important insights to take into consideration when implementing nudging in their strategies.

1.1 Background

In March 2020, the Covid-19 pandemic reached Sweden and to prevent the spread of the virus, the Swedish government took action to restrict the movement of citizens. The implemented restrictions forced people to adapt to a new lifestyle, implying that more time was spent at home and that social contact was limited. Further, the governmental recommendations encouraged people to work from home instead of going to the office (SvD 2020). As the power of the pandemic ceased, restrictions and recommendations decreased, but many employees had become comfortable with working from home (WFH). As a result, employees today demand changed workplace policies, which have introduced employers to new challenges rarely faced before this paradigm shift. In combination with the new way of working, the economy is heading toward a recession (Regeringen, 2022), that forces companies to use their resources responsibly to survive.

This thesis addresses the previously mentioned challenges with the behavioral economic theory concept nudging. Nudging was popularized in 2008 and is a theory in which decision-making can be influenced to generate desirable outcomes without manipulation (Thaler & Sunstein, 2021). Despite the concept's broad definition, the techniques used can be sub-categorized based on their characteristics. The techniques are called nudging tools and in this thesis, they are used to provide managers with impactful insights that influence the productivity of the employees working from home.

1.2 Problem Areas & Research Subject

Employees and payrolls are one of the biggest expenses for companies. On average, it in fact stands for approximately 70% of a given company's expenditures (FundSquire, 2022), and employees are for many companies one of the biggest resources. It therefore is in the interest of companies and managers to ensure that the money invested in the employees is utilized efficiently. In addition, Russia's invasion of Ukraine has had many implications for the world economy, especially in the euro area as well as for companies (ECB, 2023). As a result of the war, the supply of energy and food has decreased and led to higher prices, resulting in increased costs and smaller margins for many companies. In addition, the war has major effects on inflation. According to ECB (2023), inflation has increased from 0,3% in 2020 to 2,6% in 2021, and eventually 8,4% in 2022, whereof food and energy accounts for two-thirds of the 2022 numbers. Consequently, a strong focus for companies is on expenditures and it currently is of great importance to ensure that resources, including work labor, are as efficient as possible. At the same time, inflation causes wages to be worth less and employees' purchasing power to decrease, which in turn makes them demand higher salaries (Sekotidningen, 2022).

The concept of working from home has become highly common and is today a normalized way of working. According to a SIFO study conducted at the end of 2021, just as many people who have been working from home in Sweden during 2021 (43%) were planning to continue doing so in 2022 (42%), which indicates that working from home is here to stay (HR-nytt, 2022). WFH has many advantages, such as decreased commuting time and facilitated household responsibilities (Wheatley, 2017), personal comfort (Kurland & Bailey, 1999), as well as work-life flexibility and control (Baruch, 2001). However, as a result of working, living, and spending free time in the same place, WFH also brings disadvantages. One of them is the lack of social connection and interaction with colleagues, and thus the increased risk of feeling isolated (Fonner, 2012). This also has implications for communication, which has been shown to be inadequate when WFH (Tustin, 2019). Further, the fine line between work and leisure gets blurred, which implies a harder time turning off work and an increased risk of working more than expected (Felstead & Henseke, 2017). In turn, the risk of multi-tasking increases (Glavin & Schieman, 2012). In a study made by Gurstein (1996), it is stated that WFH is especially challenging for employees with children of school age and younger, but other common disturbance factors are family members, pets,

and neighbors. Moreover, the study mentions that all employees do not have a housing situation that allows them to set up a home office (Gurstien, 1996). Describing the reality for many employees, these are all examples of obstacles and problem areas that companies and managers around the world now encounter. Important to note is that a big part of the control over how WFH affects the employee lies in the hands of the employee, and not the managers, as the employees themselves need to control both their own working environment at home as well as how they behave in it. Therefore, important employee skills required when WFH are self-discipline, self-motivation, and the capability to manage time in a good way (Richardson et al, 2014).

As a result of the WFH paradigm shift and the current state of the world economy, the benefits and costs of working from home, both directly for the company as a whole and indirectly through the employees, are important problem areas. Therefore, it is in the interest of companies and managers to find strategies that help the employees along the way to good decisions and productivity when they work from home. With proven methods, managers could regain some of the control that has gotten lost as employees moved their work from the office home.

1.3 Purpose

The purpose of this thesis is to investigate whether employees who work from home believe that nudging tools, presented in scenarios, would affect their productivity. This is followed by whether the impact of nudges is moderated by the field of business, level of seniority, or the working-from-home frequency that the individual possesses. The thesis aims to contribute to existing research about nudging and work-from-home productivity, by exploring new areas of application. The purpose will be fulfilled by combining a quantitative study to explore a larger sample's assessed productivity and receptivity towards nudging tools, with qualitative interviews held with managers to gather insightful knowledge about the subject.

1.4 Previous Research & Expected Research Contribution

The high demand from employees to work from home in combination with the currently unstable world economy calls for research on how productive employees are when working from home. Not only does it have an effect on the way future workplaces are structured, but also on company performance.

In the past years, working from home has been the subject of extensive research, which provides the benefit of up-to-date studies in the area. Previous research about WFH incorporates productivity and states results about influential factors that contribute to productivity. Nudging has been explored within numerous settings as a result of its many application areas but has yet to be investigated within the subject of WFH productivity. Therefore, the intersection between WFH and nudging has left a knowledge gap regarding how nudging impacts productivity for employees when WFH.

Based on what has been stated in the background, problem areas, and purpose, the expected research contribution is to provide practical managerial insights as well as theoretical contributions. The practical contribution is expected to be on how to overcome productivity issues among employees working from home by implementing nudging tools in their work strategy. In combination, theoretical contribution on the further usage-areas of nudging will be contributed to, by establishing new relationships with moderators that can be further studied and discussed in fields of work-place related behavioral psychology research.

1.5 Limitations

As this study is conducted during a restricted time period, certain limitations are made to enable relevant outcomes. First of all, this thesis is based on productivity as a factor for employee performance, although it can be assumed that there are other factors affecting the progress of a company and its success. Secondly, the sample group in this thesis almost exclusively consists of people operating in Sweden or a Nordic country, and due to national work regulations and potential cultural differences, one can not confirm that the results provided in this report are applicable to a global scale. Furthermore, since the research area, namely the specific relationship between nudging and productivity when working from home, is not established it can not be determined that this study covers the complete complexity of

the relationship between the factors. The aim of this thesis is rather to provide valuable insights that can be useful in practice and for further research.

1.6 Disposition

Firstly, the reader will be introduced to the theoretical framework that this thesis is based upon. This section will describe the research about nudging that has popularized the term for practical use, both close to the research area of this paper and beyond, as well as the concept of working from home. In connection with the theoretical framework, the hypothesis and research questions of this paper will be presented. These are followed by the methods and results of the two studies conducted, Study 1 and Study 2. Finally, a discussion of the findings and areas of further research will be held.

2. Theoretical Framework

The theoretical framework of this thesis will present the concepts that this study is based upon and provide the reader with knowledge about concepts, previous research, and implications of working from home and nudging.

2.1 Working from home

The Covid-19 pandemic altered the way business was done by creating a paradigm shift in the workplace environment. Many governments imposed lockdowns, forcing people to adjust to working from home. This created new challenges for employees and employers. As the years progressed and the pandemic decreased in its intensiveness, the default norm on how frequently one could WFH drastically increased compared to pre-pandemic. Some companies chose to return to previous policies in which working at the office was the default option, whilst some adjusted to the new norm and let their employees have a flexible work placement. Working from home was studied when Deole et al. (2023) examined the productivity of employees during the Covid-19 pandemic and it was concluded that increased frequency of working from home was positively correlated with employees' self-reported hourly productivity. Furthermore, WFH productivity was shown to be affected by factors such as autonomy in work, feasibility of WFH, and commuting (Deole et al., 2023).

According to Beno (2021), working from home generates more benefits than drawbacks. More than 50% of studies mention flexibility, productivity and efficiency, satisfaction, and work-life balance (WLB) as benefits of working remotely, however, the constant development of technological solutions will play a crucial part in the future working environment (Beno, 2021). This argument is strengthened by the increased rates of WFH households after the lockdowns and is a force that could increase the pace of developing the technology necessary for enabling a WFH environment for employees (Zhang et al., 2022).

Creating a stable and well-performing work environment for the company's employees at home brings many managerial issues. One of the most challenging is the number of possible distractions encountered by the employees when working from home. If the home worker is not used to the situation or has the wrong prerequisites, productivity will most likely suffer. In an attempt to avoid this, constant communication and follow-ups should be completed by

managers, so that the remote workers are frequently reminded to prioritize their work-related assignments and responsibilities. In addition, managers need to schedule face-to-face interactions as this will be crucial for remote working success (Jalagat et al., 2019).

Studies prove that managerial maintenance of their employees' abilities to have a healthy work-life balance (WLB) when WFH is crucial for supporting long-term psychosocial well-being, that in turn eventually will increase employees' work productivity. WLB is said to be the most significant factor regarding stress relievers to help increase productivity for home workers (Chu et al., 2022). WLB is benefited by WFH and could have a positive effect on work productivity if certain standards are met. To be able to perform well when WFH, household and organizational factors need to be conducted properly as well as instrumental and emotional support need to act as facilitating conditions (Ahmad et al., 2022). Work that is redesigned towards remote or hybrid settings enhances positive psychological and behavioral changes in employees by focusing on employee well-being at work. This in turn will strengthen the connection between the absorption in work and organizational identification ensuring people work for the company's interest even while being at home (Oben et al., 2022).

Some studies show that WFH could be beneficial for productivity, but research also suggests that that should not be the general conception of WFH. Monteiro et al. (2019) show that the type and size of the company can determine whether WFH is a successful concept to implement. For example, the study concluded that R&D activities are a moderating factor that influences companies' compatibility with WFH. This study resulted in the overall productivity effect of WFH being negative, however, could be analyzed differently when adding other moderators (Monteiro et al., 2019). For instance, small businesses in states (in the United States of America) that have a high percentage of employees who WFH perform better with industry variations (Zhang et al., 2022).

During the Covid pandemic, people, within a short period of time, managed to develop the necessary skills to handle the new digital working environment. Eliminating travel to work was seen as an advantage of working from home, concluding that this was an element of disturbance for many. What could be seen as a variable affecting whether working from home was a functioning work concept, was family conditions. Some lived without a family or had functional family conditions, not inflicting any harm to their capabilities of conducting a

productive work setting. In contrast, others had less beneficial home conditions, causing the new work setting to hinder the work and create a disturbance. What was found was that a vast majority of employees considered the lack of face-to-face discussion to be a major disadvantage of working from home, leaving some employees involuntarily alone (Al-Habaibeh et al., 2021). A WFH dilemma today is that many work in a hybrid setting by choosing to implement WFH occasionally in their weekly work routines. What drives some employees to work at home to a greater extent even if they are not forced to, seems to be factors such as crowdedness and lack of available private spaces at the office. Other factors that play important roles in the decision of working from home or at the office are distance of commute, value of real-life communication, type of work assignments as well as education level (Appel-Meulenbroek et al., 2022).

2.2 Nudge Theory & Nudging Tools

Nudge theory was presented in 2008 by the book *Nudge: Improving Decision about Health, Wealth and Happiness* authored by the Nobel laureate and University of Chicago Professor Richard H. Thaler and Harvard University Professor Cass R. Sunstein. The authors revised and re-published a new version of the book in 2021 called *Nudge: The Final Edition* which is used as the base for this thesis. The theory of nudging has its foundation in behavioral economics and the fact that humans face numerous decisions every day, however rarely consider how these decisions are presented and how that affects the final outcome of an action. The nudge theory's main concept is Liberal Paternalism, which describes how a decision maker's choice architecture can influence people in a certain direction without jeopardizing or hindering the free will of the individual (Thaler & Sunstein, 2021). Choice architecture is how certain products and actions are designed to create an easy understanding of what the preferred behavior is. For instance, traditional gas stoves have their controls arranged so that the control on the top right controls the burner on the top right (Norman, 2013).

To use this theory in practice, a number of nudging tools used for different purposes and practical implications, are presented. With regard to the prerequisites for a nudging tool, the authors explicitly conclude that it should not manipulate the respondent, restrict options or change economic incentives greatly (Thaler & Sunstein 2021). The focal point of the theory is that nudging should be easy to implement, have low cost, and provide decision-makers

with a discrete tool to positively affect people's choices. Furthermore, a nudge should prevent its opposite, called *Sludge*, which is unnecessary effortful processes that hinder the desired outcome. Sludge is when over-complicating the process to reach the desired target. For example, when canceling a gym membership requires emails to be sent at a certain time, otherwise, the consumer will have to wait in telephone queues for hours (Sunstein, 2021).

Nudges can be seen as tools pushing people in the preferred direction. They are required because people believe to have all the information necessary before making a decision, however, individuals tend to take irrational decisions that are to their disadvantage both in the short and the long term. As a result, this contradicts traditional economic theory where people are expected to make rational and beneficial decisions (Thaler & Sunstein, 2021).

As previously stated, there are a number of nudging tools for different usage areas, where one of the most famous examples of application was at Schiphol Airport in Amsterdam in 1999 where management painted one small fly in urinals to minimize spillage on the surroundings. The fly acted as a spot that people naturally targeted and the experiment cut the spillage by over 80% (Thaler & Sunstein, 2021). Nudging has since then evolved and in the 2019 edition of the book *Nudging i Praktiken* (Lemoine et al., 2019) the best nudging tools for managerial purposes were mapped out based on Thaler & Sunstein's nudge theory research. These will now be presented in more detail.

The first tool presented by Lemoine et al., as well as Thaler and Sunstein, is *Status quo bias* (make the desired decision the default option). This tool is most effective when the individual is about to take a one-time decision, faces many different alternatives, is stuck in routines, or does not know the preferred behavior. The practical implication and theoretical background of *Status quo bias* is that people are resistant to take decisions and prefer pre-set options to save energy (Samuelson & Zeckhauser, 1988). There are psychological mechanisms that encourage the individual to take mental and physical shortcuts and depend on the predetermined option (Lemoine et al., 2019). If the individual is aware of their preferences, then a default option could be counterproductive, since the individual will be uncomfortable as their choice architecture has been influenced negatively (Brown et al., 2013). As presented, this tool can be applied in a variety of situations and aspects, but in a WFH setting, the tool could be used by setting a desired behavior as the default option for the employees, minimizing the risk of them choosing an undesired behavior. For instance, if individuals

consider themselves to lose motivation when working from home, *Status Quo Bias* can be used by establishing a policy stating that employees should be present at the office on a specific day at the office, and then selecting a chosen day as default for employees.

The second nudging tool is *Lead the way* (direct the attention towards behavior), which takes the aspect of distractions in our surroundings into account. It can be challenging for an individual to navigate through distracting factors and therefore it is important that managers lead the way in the right direction. This tool is effective to use when the behavioral insights show that the individual does not know what the preferred behavior is, has a shortage of time, is acting from routine, or does not remember the desired behavior (Lemoine et al, 2019). One way of using *Lead the way* is to create automatic enrollment. Studies have shown that if the preferred behavior is known by management, enrolling employees automatically results in a participation rate of 93% (Clark & Young, 2018). In the context of WFH, this tool can be used to direct the employee toward a desired behavior that could improve productivity. This could be done by trying to influence an employee's home environment in a way that resembles office conditions, for instance by providing them with a desk. It could also be to encourage employees to eliminate distractions in their homes by ensuring that employees have the home office in a separate room.

The third tool is called *Provide social proof* (show what the majority does), and displays the primary herd-behavior humans biologically have. Individuals prefer being part of a group and not differing from the majority. With the knowledge of this behavior and the tendency to act similarly to others' actions, this tool can motivate individuals to do the preferred behavior, but if the "herd" follows the wrong behavior this tool can be counterproductive (Asch, 1956). The behavioral insights that show the opportunity for using social proof are when the social norm promotes the preferred behavior, the individual lacks the motivation of doing the preferred behavior, when the preferred behavior is outside the individual's time and space, or when the individual does not know what the preferred behavior is (Lemoine et al., 2019). Today synced calendars and software showing when colleagues are occupied, are examples of social proof. This could be developed further by establishing a software that measures and shows the specific progress of colleagues. This as it would be possible to get a better picture of what the colleagues are working with and what they have accomplished, which in turn could create motivation.

The fourth tool is named *Provide feedback* (create consequences for performance) and describes that people tend to re-do behaviors that are met with positive feedback. Positive reinforcement is a basic psychological tool that works for nudges as well. This tool is especially impactful regarding behaviors that have prolonged effects such as environmental, health, or saving behaviors. By not realizing the positive outcomes right away, positive feedback is a way to know that you are heading in the preferred direction. This tool is useful when the reward for a behavior is far away in time, when the individual lacks the motivation to do a behavior, when the behavior has become a long-term habit, or when the behavior is boring and grueling to accomplish (Lemoine et al., 2019). The digital era has established digital feedback as an acceptable method of receiving feedback. Today, software and unlimited communication forums enable employees to get feedback even if they are not physically present at the office with their superiors. In addition, they enable managers to answer quickly, either in text or with simple emojis to confirm or deny suggestions or ideas.

The fifth tool is called *Make the effect visible* (show the result of the behavior), and derives from reminding the individual of the consequences of a behavior. Generally, the higher the risk an action has, the less frequently individuals tend to do it (Camerer & Hogarth, 1999). This is effective when the individual does not know what the behavior leads to, when the effect of the behavior is too far ahead in time, when motivation lacks to do the behavior, or when the preferred behavior is unknown (Lemoine et al., 2019). This tool can be applied in a WFH setting by communicating what benefits the performed work of an employee has to projects or other objectives. As a result, the employee will be encouraged to perform the desired behavior.

The final tool is *Create ownership* (make the user a part of the solution) and is based on the concept that the more time and effort an individual puts into a task, the more they care about it. Therefore it is important to let people take responsibility and accountability to feel needed and evolve. This tool is effective when the individual does not consider it to be any self-interest in a behavior, the behavior needs to be done over a longer period of time or the behavior happens in smaller groups where they are familiar with each other (Lemoine et al., 2019). This tool can be applied in a WFH setting in several ways. For example, as WFH implies that the employee works independently, physically distant from colleagues, it can be argued that it is important for employees to have high autonomy and that their performance is not dependent on a colleague's.

These nudging tools could be applicable in this study, due to the behavioral mechanisms that implicate people choosing certain actions and behaviors as a result of managerial decisions and influences. There is a possibility to use combinations of nudges as some have benefits within the same areas. Moreover, one needs to be careful when exposing employees to a combination of nudges as making large changes in the learned working behavior can lead to a sense of manipulation (Thaler & Sunstein, 2021). By exploring the different effects of combining nudges in regard to productivity, this study will examine what nudges that are compatible and which are not.

2.3 Nudging applications

Implementation of nudges has previously been studied in project performance using the iron triangle of time, cost, and quality as a framework. The connection between psychological and behavioral concepts in project performance was established when using nudging tools to analyze progress. Both indirect and direct influences from nudging were found, proving that nudges can have an effect on project performance in global firms (Teslim Oyegoke et al., 2022). Studies have also shown that nudging is a subject for the development of new types of management strategies, called *Nudge Management*. It was found that the advantages of nudges are that they are less intrusive and easily scalable, and they do not force employees to make drastic changes to their work routines. However, a disadvantage found was that they are hard to measure, but with fast-paced digital development, there is a bright future for nudges in management (Ebert & Freibichler, 2017).

For the concept of nudging to function, the prerequisites are that there is a decision-maker with the authority to make changes and a receiver that is unaware of the nudge taking place. The decision-maker needs to be fully confident that the nudge does not manipulate the receiver (Thaler & Sunstein, 2021). The definition of manipulation is that an action could be seen as manipulative if it does not respect an individual's capacity for rational decisions (Barnhill, 2014). By this definition, nudges are not a form of manipulation, but merely an alternation of reminders (Sunstein, 2019).

Ebeling and Lotz (2015) conducted a study within the energy consumption market using the nudging tool *Status quo bias*. The study was conducted in Germany, covering almost 42 thousand households. Furthermore, the participants were divided into two samples, providing the first with a predetermined set of a green, sustainable energy agreement and the second with an agreement using conventional energy sources. As the green and sustainable agreement was priced at a higher level than the conventional one, both samples had the option to easily change their energy agreement. The results of the study showed that around 7% of the people in the second sample group (conventional energy agreement) chose to opt into the green alternative, while 69% of the people in the first sample group (green alternative) chose to stay with it. This proves that *Status quo bias* has a major implication on the choice architecture regarding decision-making (Ebeling & Lotz, 2015). Other studies have reached the same results by observing that people have fewer incentives to opt out when the desired behavior is set as default compared to if it was not set as default and the individual had to opt in (Johnson & Goldstein, 2004).

2.4 Affecting factors

As described in previous research there are different factors that might influence if WFH is a productive and well-functioning alternative to working at the office. Factors that have yet to be subjects for studies within productivity when WFH are: *Field*, *Seniority*, and *WFH frequency*. Within *Field*, four relevant sectors were determined by analyzing the content of OMXS30: Finance, Retail, Industry, and Tech. Consulting was added as the fifth field, as none of the largest consulting firms operating in Sweden are publicly traded on the stock market, however, is a common field to work within (NasdaqOMXNordic, 2023). In addition, a sixth option named *Other* was included to capture the professionals who did not relate to any of the other five sectors. The fields were then grouped into *Finance & Consulting*, *Retail & Tech*, and *Industry & Other*. As the characteristics between these three field groups both have differences and similarities, they can be expected to alter the hypothesis results on how nudges will affect WFH productivity.

Seniority was chosen as it could be assumed that experience level affects the way individuals handle changes in their work environment, assignments, and communication. Authority in the workplace could also be an impactful factor that has a relevant effect on the results and therefore this moderator was divided into mid- and senior-level.

The third interesting aspect is *WFH frequency*. As WFH productivity is assumed to be determined by the routines and conditions the employee possesses, this moderator could have an impact on the result. If WFH frequency has an impact on the result, it would provide managers with valuable insights for setting their WFH policies.

2.5 Hypothesis & Research Questions

Previous research has presented that nudging could be beneficial for increasing productivity and by combining this research with the described concept of work-from-home, the background for this study is stated, and the hypothesis is as follows:

H1: The perceived effect of nudging, implemented in a work setting scenario, has a negative relationship with employees' self-assessed productivity when WFH. This implies that the less productive employees assess themselves to be when WFH, the greater effect nudging tools have on their self-assessed productivity.

As a complement to the hypothesis, there are possible moderators affecting the result, on which there is no previous research. Specifically, these moderators are *Field*, *Seniority*, and *WFH frequency*. With the intention to fill this knowledge gap, this thesis addresses the following three (3) research questions:

RQ 1: Does the field in which an employee operates influence their adaptability to nudges when WFH?

RQ 2: Does the seniority level an employee possesses influence their adaptability to nudges when WFH?

RQ 3: Does the number of days a week an employee works from home influence their adaptability to nudges when WFH?

3. Study 1 - Quantitative survey

3.1 Method

The purpose of the quantitative data gathering was to collect broad insights from white-collar employees who have experience of working from home. Ideally, the authors aimed to reach respondents who work in different fields, possess different levels of seniority, and work a varied number of days a week from home. In particular, the respondents were asked questions about how frequently they work from home as well as how productive they assess themselves to be when working from home. Moreover, they were to assess how they think that their productivity would be affected as they were faced with different scenarios where nudging tools had been applied. Furthermore, questions on how important certain nudging tools would be when they work from home, compared to when working at the office, were asked. The nudging tool scenarios for this study were primarily created by adapting main theoretical concepts from nudging (Thaler & Sunstein, 2021) in combination with practical implications of nudging (Lemoine et al., 2019).

3.1.1 Conducting the survey

The survey was constructed using the software Qualtrics and consisted of questions divided into four blocks, specifically *General questions*, *Productivity*, *Nudging*, and *Control*. This section is about how the questionnaire was constructed, including a presentation of the questions that were asked under each block of the survey, followed by a section about the sample answering them. The survey questions can be found in Appendix A.

General questions

Starting with the block containing *General questions*, the respondents were asked to answer in what field they are working (*Tech*, *Finance*, *Retail*, *Consulting*, *Industry*, or *Other*) and what seniority level they possess (*Mid-level* or *Senior-level*). Furthermore, they were to answer how many days a week they work from home (less than one, one, two, three, four or five).

Productivity

The second block called *Productivity* requested the respondents to self-assess how productive they consider themselves to be when working from home on a hundred-pointed ratio scale, where 1 was *Not productive at all* and 100 was *Very productive*. The large scale was chosen since that is preferred when asking this type of question where careful reflection and a delicate answer are sought.

Nudging

The third block in the survey was *Nudging*. All blocks and questions in the survey were identical for each respondent except for the nudging block which was split into two parts, *Nudging block 1* and *Nudging block 2*, where each respondent only answered questions in one of the two blocks. What block they answered was randomized by the survey program which automatically generated an equal number of respondents for each nudging block. This was done as a shorter survey was assumed to be beneficial when aiming to obtain a high response rate.

In total, there were six questions related to nudging in the survey, and all were based on the findings and nudging tools brought up in the theoretical framework. Four of the nudging-related questions urged the respondents to answer how they think that the nudging tools *Lead the way* (the first three sub-questions), *Status quo bias*, *Provide feedback*, and *Provide social proof* would affect their productivity. The other two questions, applying the tools *Make the effect visible*, and *Create ownership*, were instead asked in a manner assessing their importance when WFH versus when working at the office. This is because the authors assessed these nudging tools as potentially important prerequisites when working from home. To make it easier for the respondents to recognize the tools and thus answer the questions, the tools have been applied in a scenario context that the respondents could relate to.

In *Nudging block 1*, the respondents were asked three main questions and several subquestions. The three questions were based on three different nudging tools and formulated as scenarios, enabling the respondents to better relate to how the nudge could influence their productivity. Furthermore, they all were to be answered in ratio scales, from 0, implying that they *don't agree at all*, to 10, meaning that they *completely agree* that the nudge would increase their productivity.

The three nudging tools acting as a foundation for this block were *Lead the way (LTW)*, *Status quo bias*, and *Make the effect visible*:

- *Lead the way (LTW)*: Four sub-questions staging scenarios in which leading the way could be a useful nudging tool were described. The first was about if the respondents are more productive while working at a *desk*. The second subquestion regarded whether the respondents are more productive if they *dress* the same at home as they do at the office. Thirdly, the authors asked whether elimination of *distractions* like TV, music, and family members would increase their productivity. Lastly, the respondents were asked to assess if they think that it is harder to stick to *work hours* when working from home, eg. start and end later or earlier, or take shorter or longer lunch breaks (not a direct productivity measure).
- *Status quo bias*: The respondents were asked if a default option to work at the office one specific day a week would benefit their productivity.
- *Make the effect visible*: The respondents were asked to assess how important it is to see what their work contributes to the overall operations when working from home and when working at the office.

Nudging block 2 followed the same structure and was built up on the same basis as *Nudging block 1*, however, focused on three other nudging tools. All questions in this block were similarly formulated as ratio scales, from 0 implying that the respondents *don't agree at all* that the nudge would positively influence their productivity, to 10, suggesting that they *completely agree* that it would.

The three nudging tools tested in this block were *Provide social proof*, *Provide feedback*, and *Create ownership*.

- *Provide social proof*: When the respondents work from home, it was questioned if a website, program, or internal system that shows the progress and performance of their colleagues would have a positive influence on their productivity.

- *Provide feedback*: When working from home, the respondents were asked to reflect upon whether fast responses and feedback from colleagues and managers are important for their productivity.
- *Create ownership*: The respondents were asked to assess how important accountability and ownership (e.g. that they are responsible for the result of the task no matter the outcome) over their job tasks are when they work from home and when they work at the office.

Control block

The first question in this block was a control check question allowing the authors to filter out answers given by respondents who have not been fully engaged in the survey and thus failed to correctly answer the control question. The respondents were given three different options, where one was correct and the other two obviously wrong. The second question was identical in both formulation and scaling to the first question in the *Productivity* block about self-assessed productivity. With a Cronbach's alpha between the two productivity questions of 0,96, it can be ensured that the internal consistency reliability of the productivity questions was high and that they measure the same thing.

3.1.2 Sampling

Since the purpose of the quantitative data gathering was to collect varied insights from a broad range of people in different fields of expertise as well as from different seniority levels, the professional network platform LinkedIn was used as a primary source for distributing the survey. The survey was spread on the platform in a post including a description of the topic, a highlight of the respondents' anonymity, and an encouragement to all full-time workers who have experience working from home to fill it in. By sharing the survey online, the people answering were not necessarily limited to a specific geographical area. However, due to being dependent on the authors' networks, a vast majority can be assumed to come from Sweden or a Nordic country. Important to mention though, is that other social media platforms such as Facebook or Instagram were not used due to their more private areas of usage and thus the great share of, for this study, wrong clientele. In addition to LinkedIn, the authors also shared the survey with relevant people in their private circle of acquaintance. Together the survey resulted in 175 responses between the 10th and 27th of March 2023.

3.1.3 Moderating variables

Since the study focuses on investigating if nudges have a positive influence on productivity among employees who assess themselves to be less productive when working from home, the authors wanted to enable a discussion of whether moderators could affect the outcome and thus the insights given to managers. More specifically, these moderators are the field within which the employees work, what level of seniority they have as well as how frequently they work from home. These moderators were further split into two or three groups and below follows a description of each group. Lastly, a frequency overview of the variable groups is presented in Table 1.

Field

The respondents were asked to fill in if they work within the fields of Finance, Retail, Tech, Consulting, Industry, or Other. The authors of this study decided to group the fields into three grouping variables, where the first group contained Finance and Consulting (N = 54), the second group Retail and Tech (N = 52), and the third Industry and Other (N = 69).

Seniority level

The respondents were also asked to provide their level of seniority, being either mid-level or senior-level. These levels were decided to be directly transferred into the groups mid-level (N = 57) and senior-level (N = 118).

WFH frequency

The respondents were to answer how many days a week the respondents work from home. With answer options ranging from “less than one” up to “five” days a week, these respondents were split into two groups. Individuals working less from home, meaning “less than one” up to and including “two” days a week were grouped together (N = 116) and those who instead work from home more frequently, implying three, four, or five days a week, were combined into another group (N = 59).

Field	N	Seniority	N	WFH frequency	N
Finance & Consulting	54	Mid-level	57	Infrequent	116
Retail & Tech	52	Senior-level	118	Frequent	59
Industry & Other	69				

Table 1: Sample groups frequency of moderators

3.1.4 Significance level

According to Miller and Ulrich (2019), a significance level of 0.05 has traditionally been used as a standard. A higher p-value would allow a higher number of significant results, but would also increase the risk of Type I errors, implying that a null hypothesis is rejected although it is true. In contrast, lowering the alpha increases the risk of a null hypothesis being wrongly accepted, also called a Type II error. As a result of these risks, it was decided to use an alpha of 5%.

3.1.5 Statistical Methods

In order to analyze the quantitative data different statistical methods were used. First, to test the hypothesis, a reliability test between the two productivity questions was made in order to ensure that the two could be set into an index. As the Chronbach Alpha was 0,96, the *Productivity index* was created and thereafter it was set in a correlation test with all nudges. The significant correlations, indicating what nudges that are shown to have an impact on productivity, were then reliability tested to assess whether the nudges in *Nudging block 1* could be combined into an index. As Cronbach's alpha was 0,7, they were merged into the index called *Index Nudging block 1*. Even though all variables did not load on the same factor, they were combined to an index due to their relevance to each other in the aspect of Nudging. The regression analysis results and factor analysis results can be found in Appendix B. Thereafter, a correlation test between the two indexes was made in order to be able to accept or deny the hypothesis (H1).

For analyzing and assessing whether nudging tools' impact on productivity is moderated by *Field*, *Seniority*, and *WFH frequency*, descriptives and frequencies were made to make mean comparisons. In order to statistically prove the noteworthy mean differences and find interesting moderator effects, correlation tests between the nudges themselves as well as the *Productivity Index* were performed. With regards to the nudging tools assessed to be important prerequisites when working from home, a paired sample t-test was performed to find if their importance significantly differed when working at the office compared to when working from home. In addition, each group consisted of more than 30 respondents, enabling the authors to assume an approximately normal distribution with statistical power. Furthermore, a significance level of 5% ($p < 0,05$) was used since it is considered statistically acceptable (Miller and Ulrich, 2019).

3.1.6 Quality of Study 1

As the survey has not been conducted by more people than the authors of this report and their identities have been public when sharing the survey on LinkedIn, it can have impacted what persons decided to answer the survey. This is because the people that the survey reached on LinkedIn depend on the network of the authors. Holding the investigators anonymous or sending out the study on a platform where the targeted respondents were not dependable on the authors' contacts, could have improved the replicability of the quantitative study. Furthermore, the survey has not been conducted several times, but was open for a period of 17 days, implying that the results of the survey are assumed to be affected by time to a small extent. What however possibly could affect the replicability of the survey is that WFH was a hot topic when the study was conducted and that responses potentially therefore could be different if conducted at another point in time when WFH commonality is different. With regards to the measurements used in the survey, the self-assessment productivity question was asked twice during the survey and the Cronbach's alpha of 0,96 ensured a high scale reliability. Furthermore, Cronbach's alpha of the *Index Nudging block 1* was 0,7, meaning that those questions all address nudging. As a consequence of the rather low participation rate, the validity suffers, making the findings less transferable to the population. In addition, as the respondents can be assumed to be from Sweden or Nordic countries, the findings from the paper are less generalizable to other geographical areas or cultures.

3.2 Result

In this section, results from the quantitative study are presented. Further, these results lay the foundation for the qualitative interviews, which will be described in the following section. For the sake of structure, the result section has been divided into two parts. First, the tests required to answer the hypothesis (H1) are described. Second, the results analyzing the impact of the moderators are stated. The latter section is consequently divided into three sub-headings named by the moderators; *Field*, *Seniority*, and *WFH frequency*. In this section a description of the results of required prerequisites when working from home will follow.

3.2.1 Hypothesis result

Hypothesis 1 suggests that nudging, implemented in a work setting scenario, has a negative relationship with employees' self-assessed productivity when WFH. Since the questions of self-assessing one's productivity were asked twice, these two were merged into an index after ensuring a Cronbach's alpha $> 0,7$. With a Cronbach's alpha of 0,96, the index was created and was named *Productivity index*. To test the relationship stated in the hypothesis, a correlation between the nudging tools and the *Productivity index* was performed. The correlations can be examined below in Table 2.

Nudging tool	Sig. (2-tailed), <i>Productivity index</i>	Correlation, <i>Productivity index</i>
<i>LTW desk</i>	0,026	-0,239
<i>LTW dress</i>	0,003	-0,310
<i>LTW distractions</i>	<0,001	-0,405
<i>LTW Work hours</i>	0,169	-0,149
<i>Status quo bias</i>	0,011	-0,272
<i>Provide feedback</i>	0,023	-0,241
<i>Create Ownership</i>	0,951	0,007
<i>Visibility</i>	0,347	0,102
<i>Social Proof</i>	0,719	-0,039

Table 2: Correlations between Nudging Tools and Productivity Index

Thereafter, an index of the nudges having a significant correlation to the *Productivity index*, was created. *Lead the way; desk, dress, and distractions* as well as *Status quo bias* belong to *Nudging block 1* and the fourth nudging tool, *Feedback*, is the only significant tool in *Nudging block 2*. Therefore, only an index for the nudging tools in *Nudging block 1* was required. To create the index, Cronbach's Alpha was computed once again. As the alpha was 0,7, an index called *Index Nudging block 1* was created.

The last step in investigating the hypothesis was to see if the *Index Nudging block 1* and *Feedback* significantly correlate with the *Productivity index*. In Table 3, one can see that both correlations with the *Productivity index* are significant and that the correlation with *Index Nudging block 1* is stronger (-0,435) than the correlation with *Feedback* (-0,241).

Variables	Sig. (2-tailed), <i>Productivity index</i>	Correlation, <i>Productivity index</i>
<i>Index Nudging block 1</i>	<0,001	-0,435
<i>Feedback</i>	0,023	-0,241

Table 3: Correlation between *Index Nudging block 1*, *Feedback* with *Productivity index*.

The hypothesis (H1) is accepted when nudging is defined by the nudging tools *Lead the way; desk, dress, and distractions*, and *Status quo bias* (further merged into *Index Nudging block 1*) as well as *Feedback* since they have a negative relationship with the *Productivity index*. However, as not all tools show a significant negative correlation with the *Productivity index*, the hypothesis can not be accepted when nudging is defined by all presented nudging tools in this thesis. As a result, the hypothesis (H1) is *partly* accepted.

3.2.2 Moderators

The tables below describe how frequently each group within the moderators *Field* and *Seniority* work from home. The percentage and count of the samples in each group working from home is presented below in Table 4:

	Infrequent	Frequent
Finance & Consulting	34 (63%)	20 (37%)
Retail & Tech	34 (65,4%)	18 (34,6%)
Industry & Other	48 (69,6%)	21 (30,4)

	Infrequent	Frequent
Mid-level	37 (64,9%)	20 (35,1%)
Senior-level	79 (66,9%)	39 (33,1%)

Table 4: WFH frequency within moderators *Field* and *Seniority*

Field

To identify whether *Field* could be a potential moderator for the results, the data was split into three field groups (*Finance & Consulting*, *Retail & Tech*, and *Industry & Other*), and a descriptive analysis was performed. Thereafter, the means for each nudge question were compared and the most noteworthy differences between the groups were selected since those are the variables that will be interesting to further investigate. These means are presented together with the means of the *Productivity index* in Table 5.

Nudge	Finance & Consulting	Retail & Tech	Industry & Other
<i>Productivity index</i>	8,58	8,38	8,26
<i>LTW desk</i>	6,07	6,00	5,24
<i>LTW dress</i>	3,75	3,58	2,88
<i>LTW distractions</i>	5,43	5,23	4,70
<i>LTW work hours</i>	4,71	6,38	5,55
<i>Status quo bias</i>	4,32	6,04	5,12
<i>Social proof</i>	4,12	2,92	3,75
<i>Feedback</i>	6,62	6,46	7,83

Table 5: Moderator group Field, Descriptive mean results

The presented nudging tools above were then included in a correlation test with the *Productivity index*, and the following significant correlations are presented in Table 6.

Variable 1	Variable 2	Group	Significance (2-tailed)	Pearson Correlation
<i>Productivity index</i>	<i>Status quo bias</i>	Industry & Other	0,014	-0,425
<i>Productivity index</i>	<i>Feedback</i>	Finance & Consulting	0,015	-0,473
<i>Productivity index</i>	<i>LTW distractions</i>	Finance & Consulting; Industry & Other	0,002 ; 0,008	-0,561 ; -0,451
<i>Productivity index</i>	<i>LTW dress</i>	Industry & Other	0,014	-0,451
<i>LTW work hours</i>	<i>Status quo bias</i>	Finance & Consulting	<0,001	0,613
<i>Social proof</i>	<i>Feedback</i>	Retail & Tech	0,025	0,438
<i>LTW desk</i>	<i>LTW dress</i>	Finance & Consult	0,002	0,569
<i>LTW desk</i>	<i>LTW distraction</i>	Finance & Consulting	<0,001	0,732
<i>LTW dress</i>	<i>LTW distraction</i>	Retail & Tech; Industry & Other	0,004 ; 0,037	0,543 ; 0,365

Table 6: Moderator group Field, Correlations

Seniority

To analyze if the seniority moderator has an impact on the results, the data was split based on the two seniority groups (*Mid-level* and *Senior-level*). Thereafter, the nudging variables with the most remarkable mean differences between the sample groups were selected. These means are presented together with the means of *Productivity index* in Table 7.

Nudge	Mid-level	Senior-level
<i>Productivity index</i>	7,85	8,66
<i>LTW desk</i>	7,25	5,16
<i>LTW distractions</i>	5,92	4,78
<i>LTW dress</i>	4,0	3,13
<i>LTW work hours</i>	5,83	5,41
<i>Status quo bias</i>	5,33	5,06

Table 7: Moderator group Seniority, Descriptive mean results

To find the significant correlations between these selected variables and productivity, correlation tests were performed. The significant results are presented in Table 8.

Variable 1	Variable 2	Group	Significance (2-tailed)	Pearson Correlation
<i>Productivity index</i>	<i>LTW distractions</i>	Mid-level; Senior-level	0,008 ; 0,011	-0,527 ; -0,318
<i>Productivity index</i>	<i>LTW desk</i>	Senior-level	0,023	-0,287
<i>LTW desk</i>	<i>LTW distractions</i>	Mid-level; Senior-level	0,010 ; 0,003	0,513 ; 0,369
<i>LTW dress</i>	<i>Status quo bias</i>	Mid-level	0,022	0,465
<i>LTW work hours</i>	<i>Status quo bias</i>	Mid-level	<0,001	0,655

Table 8: Moderator group Seniority, Correlations

WFH frequency

The third and final potential moderator to impact the results is WFH frequency. Similar to the two first moderators, the data was first split into two groups (*Infrequent* and *Frequent*). Thereafter, the nudge variables with the most noticeable mean differences between the groups were sorted out. These means are presented together with the means of the *Productivity index* in Table 9.

Nudge	Infrequent	Frequent
<i>Productivity index</i>	8,15	8,87
<i>LTW dress</i>	3,83	2,65
<i>LTW distractions</i>	5,83	3,94
<i>LTW work hours</i>	6,13	4,59
<i>Status quo bias</i>	5,64	4,35
<i>Feedback</i>	7,29	6,52

Table 9: Moderator group WFH frequency, Descriptive mean results

To examine whether the correlations between the groups are significant, correlation tests were conducted and the significant results are presented below in Table 10.

Variable 1	Variable 2	Group	Significance (2-tailed)	Pearson Correlation
<i>Productivity index</i>	<i>LTW dress</i>	Infrequent	0,011	-0,345
<i>Productivity index</i>	<i>LTW distractions</i>	Infrequent; Frequent	0,014 ; 0,004	-0,335 ; -0,476
<i>Productivity index</i>	<i>Status quo bias</i>	Frequent	0,040	-0,355
<i>LTW dress</i>	<i>LTW distraction</i>	Infrequent; Frequent	<0,001 ; <0,001	0,449 ; 0,683
<i>LTW distraction</i>	<i>LTW work hours</i>	Frequent	0,017	0,406
<i>LTW work hours</i>	<i>Status quo bias</i>	Infrequent	0,010	0,349
<i>Social proof</i>	<i>Feedback</i>	Frequent	0,036	0,421

Table 10: Moderator group WFH frequency, Correlations

The nudging tools *Create ownership* and *Make the effect visible* are not measuring productivity directly, but are assumed to act as potential prerequisites for employees when WFH. Since this is interesting to investigate, the following paired sample t-test was performed. However, the t-test shows that none of these nudging tools are significant in terms of their importance when working from home compared to at the office, meaning that they will not further be discussed. These results are presented in Table 11.

Variable 1	Variable 2	Paired Sample t-test significance
<i>Make the effect visible WFH</i>	<i>Make the effect visible at the office</i>	0,065
<i>Create ownership WFH</i>	<i>Create ownership at the office</i>	0,118

Table 11: Non-significant prerequisites

4. Study 2 - Qualitative interviews

4.1 Method

For this study, five qualitative interviews were conducted between the 14th of February and the 22nd of March 2023. Five managers, considered to have substantial experience within their respective fields, were hand-picked from the authors' personal and professional networks. With an interest to gather insights within different industries, the interviewees respectively work within *Retail*, *Finance*, *Consulting*, *Tech/Consulting*, and *Industry*. They were requested to anonymously be interviewed around the topic of working from home and the interviews were conducted in a semi-structured fashion. To establish the direction of the interviews, questions aiming to gather information about the topic of WFH based on the findings in the quantitative survey were prepared. For example, how the interviewee handles the concept of working from home and what strategies are implemented with regard to the topic in their respective organization. Furthermore, questions about what nudging tools, consciously or unconsciously, are used at the workplace and what results they have given in terms of productivity, were asked. In addition, they were asked to share their general perspective on working from home. The questions were however not sent in advance to the interviewees in order to enable the interviewers to elaborate and ask further questions as personal opinions, experiences, and suggestions were encouraged to shape the interviews and create a semi-formal environment. Four of the interviews were held online, while one was held offline as the authors were invited to the office of the interviewee. The interviews were all held in Swedish and varied in length between 40-60 minutes.

4.1.1 Quality of Study 2

As the findings from the qualitative interviews were held with several managers in different industries, with different work tasks and experiences, they provided the thesis with nuanced insights and thoughts on the topic of WFH. However, it could be that they do not cover all possible aspects of the topic or that there are contradicting explanations for the results found, and that the qualitative interviews therefore not can be generalized to a full extent.

4.2 Result

In this section, the result from the qualitative data will be presented. As described in the method section, the qualitative data was collected through five semi-formal interviews with managers in different fields. The interviewees and their respective fields are presented below in Table 12:

Name	Field
P1	Retail
P2	Finance
P3	Consulting
P4	Tech/Consulting
P5	Industry

Table 12: Interviewee descriptions

4.2.1 Working from home

The interviewees were asked to describe the policies regarding WFH and how the concept has impacted their work behavior and culture. P1 had a policy that urged employees to be present at the office 50% on a monthly basis, whereas P2 had decided that Wednesdays were a mandatory day for being at the office, which did not always work. P3 and P5 had similar policies in which WFH opportunities depended greatly on the role and tasks of an individual as well as on what was included in their work description. Some were able to work from home full time, whilst others had to be at the office five days a week. P4 presented no policy, resulting in a vast majority of employees and managers working from home consistently. All interviewees except P5, agreed that a beneficial outcome from WFH was the opportunity to engage in private obligations such as picking up or leaving kids at daycare or school. As

meeting and conversing with colleagues is a valuable culture contributor according to P1, P2, and P3, it was encouraged to inform colleagues when an employee plans to work at the office or from home. P4 and P5 present that working at the office is not specifically encouraged for certain positions as their contributions are effective when working remotely. According to P5, one argument for this policy is that some roles have always been traveling out of the office and therefore presence at the office is not mandatory for creating inclusiveness and a stable corporate culture. What all interviewees who occasionally worked from home had in common was that work-life balance was considered to have been improved. However, at the same time, it had become harder to stick with the predicted work hours, especially breaks. The interviewees explained that this is a result of it being easier to work whilst having lunch when working from home, and spontaneous breaks do not happen as frequently as at the office.

4.2.2 Productivity

P3 describes that one productivity measurement used is how many hours are invoiced for customer projects. Within consulting, it is the customer that determines when the consultant can work from home as they need to be representable at the firm. Both P1 and P3 determine and track the performance of employees on a project basis, which can be seen through met deadlines and the number of hours delivered. P3 explained that it took time to get a sense of control, as it was harder to make sure that employees reported the correct time on each project, leading up to P3 being forced to make daily calls to all employees to ensure that everyone stayed on track. P1, P2, P3, and P4 believe in individual responsibility regarding work assignments when working from home, and thus have more loose policies. P5 tracks performance in different ways since some employees work at home full-time, while some individuals require office resources and therefore do not possess the possibility to work remotely.

All interviewees expressed issues with employees not being productive at home at the beginning of the pandemic. Due to the fact that some employees planned exercise or private meetings during work hours, they were not available during regular work hours, and this in some cases led to suffering on a company level. P3 and P5 expressed the importance of managers being at the office as much as possible to motivate employees and be role models. P5 expresses the importance of leadership in these situations, and that employees should be

evaluated on an individual level regarding their capabilities of working from home. This is because creating policies for the entire workforce based on individuals' productivity when WFH is poor leadership.

4.2.3 Nudging

The interviewees were asked to answer questions regarding strategies that can be considered as nudging tools. All interviewees were, consciously or not, being exposed to, or exposing employees, with various levels of nudging. P1, P2, and P3 clearly expressed the importance of feedback, with the goal to have all questions answered at the end of each day. They also presented issues with digital feedback, one of them being that they were resistant to sending fast responses with emojis. Another negative factor with digital feedback was that it opens the possibility to ask questions more frequently. This is time-consuming as many employees ask questions whose answers could be apparent after a while with some thought. P4 expressed the importance of feedback as well but primarily highlighted that digital feedback is a positive thing as they enable and enhance a fast pace feedback process.

Another nudging-inspired factor that some interviewees, especially P3 and P4, describe was how online meetings are performed. P3 answered that some employees prefer sitting "underdressed" on their couches while having meetings, but when meetings with customers were held it was important to look representable. P4 works in an environment where all meetings are conducted in an online setting. P4's employer operates in the Nordic market, describing differences in how to conduct meetings depending on what country one had a meeting with, as people from some countries always had their cameras turned off, while some always had their cameras on.

P1 highlighted that the main objective to create a well-working environment for employees is to ensure that the work conditions for working at home are either equal or better than at the office. Furthermore, P1 strongly insinuated that it is the employer's main responsibility to provide enough effort and equipment to enable well-functioning working conditions from home.

5. Discussion

5.1 Reconnecting to purpose

The purpose of this thesis is to investigate whether employees who work from home believe that nudging tools, presented in scenarios, would affect their productivity. This is followed by whether the impact of nudges is moderated by the field of business, level of seniority, or the WFH frequency that the individual possesses. The primary purpose of this thesis has, through the results of Study 1 and Study 2, been fulfilled by partially accepting the hypothesis. The results of Study 1 and Study 2, presented that the moderators alter the hypothesis result, answering the stated research questions. Due to the outcome of the result, nudging has been shown to have an impact on working-from-home productivity, and therefore, the results are contributing aspects to the research areas.

5.2 Hypothesis

The results presented reveal that the hypothesis of this thesis, H1, is partly accepted. H1 is only accepted when nudging is defined by the nudging tools *LTW desk*, *dress*, and *distractions* as well as *Status quo bias* (further merged into *Index Nudging block 1*) and *Feedback* since those correlations are significant. The correlations are negative because the less productive the respondents assess themselves to be, the greater the positive effect nudges have on their self-assessed productivity. This also indicates that the more productive an employee assesses themselves to be, the less impact each nudge will have on their assessed productivity.

The stand-alone nudging tool that has the most significant and strongest negative correlation with the *Productivity index* is *LTW distractions*. This implies, ensuring that employees sit in a calm environment with little distraction is the most efficient nudging tool to increase assessed productivity among those who assess themselves to be less productive when WFH. The nudging tool with the second strongest correlation is *LTW dress*, suggesting that individuals who assess themselves to be less productive when working from home potentially could increase their assessed productivity by dressing in office attire when WFH. The three remaining nudging tools, *LTW desk*, *Status quo bias*, and *Feedback*, have weaker correlations with the *Productivity index* implying that their impacts on employees' self-assessed

productivity level are moderate. As a result, working at a desk, having a default day each week where everyone works at the office, and ensuring managers provide the employees with fast feedback, are nudges that would have a smaller impact on the productivity of employees with lower self-assessed productivity when WFH.

The results present a strong correlation between *Index Nudging block 1* and the *Productivity index*. The correlation between the *Index Nudging block 1* and the *Productivity index* is stronger than the nudging tools' respective correlations with *Productivity Index*. This suggests that the nudging tools *LTW desk*, *dress*, and *distractions* as well as *Status quo bias*, advantageously, can be simultaneously used to increase perceived productivity among employees who lack a strong assessment of productivity when WFH. Although these nudging tools are shown to be effective when combined, it does not provide proof that the more nudging tools managers implement, the greater impact they have on employees' assessed productivity when WFH. The risk of diminishing returns for each nudge one implements makes it more beneficial to implement them on a small scale. In addition, the definition of a nudge is that one should not feel manipulated. When applying many nudges simultaneously, the risk of this feeling increases, which in turn could create a reluctance towards the nudges, as well as diminish the benefits that nudges potentially could have.

5.3 Moderating factors

5.3.1 Field

When applying the moderator *Field*, four significant correlations between nudging tools and productivity are found. These are *Status Quo Bias*, *LTW distractions* and *dress* for *Industry & Other*; and *Feedback* and *LTW distractions* for *Finance & Consulting*.

The correlation between *Status Quo Bias* and the *Productivity index* is noticeably stronger for *Industry & Other* than the hypothesis correlation. This means that the less productive an individual working within either industry or another field assesses themselves to be, the more they believe that a default option of being at the office a specific day in the week would benefit their productivity. This result indicates that those in these fields who assess their productivity to be lower when WFH will benefit from having a determined day to be at the office. One reason for this result could be that the field *Industry* likely includes companies

that are highly involved in R&D activities, indicating that more companies are less compatible with WFH and therefore many employees feel that working at the office is preferred (Monteiro et al., 2019). This was confirmed by P5, who highlighted that working within the industry, for many employees, including those who mainly work by the desk, implies a lot of work at the office because communication and social contact are of high importance to ensure that the products are well-functioning.

Finance & Consulting shows a strong negative correlation between *Feedback* and the *Productivity index* compared to the hypothesis correlation. The result suggests that the less productive employees assess themselves to be, the greater impact feedback has on their productivity. However, the result is also reversible, implying that if an individual assesses themselves to be very productive, feedback has a less crucial impact. A potential explanation for this is that P2 and P3, both working in Finance & Consulting, expressed that the majority of their time is devoted to their customers. Working much B2B means that a majority of the work produced will be presented to a client, and thus feedback from superiors could have an impact on the quality of the work done.

Finance & Consulting has a strong negative correlation between *LTW distractions* and the *Productivity index*, compared to the hypothesis correlation, while *Industry & Other* has a similar one. The correlation indicates that the less productive an individual assesses themselves to be, the more a distraction-free environment when working at home will increase their productivity. For *Industry & Other*, there is a strong correlation between the *Productivity index* and *LTW dress*, indicating that less productive workers within *Industry & Other* believe that dressing in a similar manner as they do at the office when WFH has a positive influence on productivity.

What can be discussed in this section is the absence of significant correlations of *Retail & Tech*. One possible explanation could be that Retail was the group with the smallest number of participants, and Tech is commonly associated with positions that have independent data-heavy job descriptions. This could indicate that these types of workers to a great extent are used to perform deep work and therefore less receptive towards factors such as nudges.

Beyond the correlations that nudging tools have with the *Productivity index*, the result shows correlations among themselves, indicating that nudges can beneficially be used in combinations and even if a certain tool does not have a direct effect on productivity assessment, it can generate positive effects on other tools that have.

The results show that there is a strong correlation within *Finance & Consulting* between *LTW work hours* and *Status quo bias*. This indicates that if an employee has issues with sticking to recommended work hours when working from home, a default day where everyone works at the office would improve their productivity substantially. This can be reasoned as *Finance & Consulting* are typically high-performance fields where work hours are usually prolonged by the common eight hours. When not being at the office and seeing when people go home, it can be assumed that it is possible that these individuals tend to work longer hours than they would typically do at the office. As the interviewed managers in *Industry & Other*, P2 and P3 state, individual responsibility is the reason for their looser WFH policies. This finding is interesting and reveals that WFH restrictions might increase the assessed productivity. One thing that potentially could have a similar effect as a default day at the office, is to have a policy where the employees, in advance, inform their colleagues of where they are planning to work each day of the week. This is something that P2 and P3 express is important for them as it facilitates meeting planning and communication. This relates to another strong correlation between *LTW desk* and *LTW distraction*, showing that if an employee within *Finance & Consulting* believes that sitting at a desk increases their productivity, they also believe that a distraction-free environment is beneficial.

In addition, the results present a strong correlation for *Retail & Tech* between *Social proof* and *Feedback*. The relationship indicates that individuals within *Retail & Tech* believe that a program or software enabling them to see the progress of their colleagues would be beneficial for their own productivity. The same group expressed that feedback from managers when working from home would have a positive impact on their productivity. P1, working in Retail, expresses that feedback is important and a reason for this correlation could be that if colleagues are able to see each others' progress, they want to perform well, and therefore quick responses could improve task efficiency.

5.3.2 Seniority

The second moderator examining potential differences is *Seniority*. The results show a difference in the self-assessment of productivity between the two groups, where *Mid-level* have a mean of 7,85 and *Senior-level* 8,66. Even though the difference is not vast, this result could suggest that experience creates a higher assessed productivity. When examining the correlations conducted between the nudging tools and the *Productivity Index*, seniority resulted in two significant correlations. The first correlation is with *LTW distractions*, where *Mid-level* generates a strong correlation, while *Senior-level* has a much weaker correlation compared to the hypothesis correlation for this nudge. This means that *Mid-level* expresses that the less productive they assess themselves to be, the more important it is to have a distraction-free environment at home. As *Mid-level* employees have less experience than *Senior-level* employees, this result also signals that the less work experience an employee has, the more important it is to have a distraction-free environment at home. Further, it shows that the more senior an individual is, the less receptive one is toward distractions when working from home. When looking at the descriptive mean results, the mean for all relevant nudging tools is lower for *Senior-level*, which strengthens the argument of seniority being a potential factor determining how susceptible one is towards nudges used to increase productivity. The second significant correlation is between the *Productivity index* and *LTW desk* for *Senior-level* and is almost in line with the hypothesis correlation. This shows that *Senior-level* has a similar attitude towards *LTW desk* being a beneficial factor to increase productivity when having low-assessed productivity.

Similar to the past discussion about the moderator *Field*, complementary correlations between nudging tools were performed. The result shows a strong correlation between the nudging tool *LTW work hours* and *Status quo bias* for *Mid-level*. This correlation indicates a relationship between *Mid-level* employees and the hardship of keeping recommended work hours. For the less senior employees, it is more common to work more or less, irregularly, or without breaks when working from home, compared to the more senior employees who believe that a default day at the office would be an improvement for their productivity. One explanation for this could be that experience leads to better routines and discipline when working from home, making it easier to prevent overworking. The result can also be contributed by the attributes of the difference in work description the different seniority levels hold, assuming that senior individuals have shorter working hours in general. By this

analysis, it can further be assumed that *Mid-level* employees benefit from the social connection provided at the office, and by having a default day when being there, these employees can focus on asking questions and coordinating their work during these days. The last correlation is between *LTW dress* and *Status quo bias* indicating a strong relationship that *Mid-level* believes that both office attire when working from home and a default day at the office each week would increase their productivity. This correlation could be built on the assumption that employees in *Mid-level* appreciate attributes that exist in the office and want to apply them also when working from home.

5.3.3 WFH frequency

The final moderator that answers the last research question is *WFH frequency*, dividing the sample group into two groups depending on the frequency they work from home. The *Productivity index* shows a difference in assessed productivity depending on the frequency of WFH, as *Infrequent* has a mean of 8,15 while *Frequent* has a mean of 8,87, implying that individuals working more frequently from home perceive themselves to be more productive.

The analysis resulted in three significant correlations between nudging tools and the *Productivity index*. The first correlation to discuss is a moderate correlation between the *Productivity index* and *LTW dress* for *Infrequent*. This shows a similar result as the hypothesis nudging correlation, meaning that individuals working two or fewer days at home consider themselves to be more productive if dressing in similar attire as when working at the office. This could be explained by the fact that employees that wear office attire the majority of their work days and therefore associate that type of dressing with work, have easier to focus on the work when WFH as well. This shows that the perception of attire when WFH differs on how frequently one works from home.

The second significant correlation is between the *Productivity index* and *LTW distractions*. For this test, both *Frequent* and *Infrequent* provided different results and differed compared to the hypothesis nudging correlation. This result shows that *Infrequent* has a weaker correlation than the hypothesis correlation, meanwhile *Frequent* has a stronger correlation. This indicates that individuals that work less frequently from home are less susceptible to distractions than the overall sample, while individuals working from home more frequently consider this to have a stronger impact on productivity than the overall sample. When working from home

less frequently, one might not be as sensitive toward distraction as one is aware of it being a temporary work environment and that one can go back to the office if distractions appear. In contrast, individuals that have their home as their primary work environment might be more sensitive towards distractions as they know that they can not escape to the office in case of distraction. Furthermore, employees working more frequently at the office can be assumed to be less sensitive toward distractions as they are more used to working in environments with many employees sharing the same work environment.

The third significant correlation is between *Productivity index* and *Status quo bias*. This correlation is moderate for *Infrequent*. Compared to the hypothesis correlation it can be seen that the correlation is stronger for *Infrequent* than for the entire sample group. This means that individuals working from home two days or less a week from home would consider a default day each week to be at the office as beneficial for their productivity. Ensuring that all colleagues are at the office simultaneously is beneficial because it facilitates reconciliation, and feedback, and provides social contact that is good for the well-being and culture.

Another result that is of relevance is that *Frequent* has a positive strong correlation between *LTW distraction* and *LTW work hours*. This indicates that the more one considers that a distraction-free environment benefits one's productivity, one also considers it to be a struggle to stick to work hours when working from home. This could be because as the distractions are few, one does not get interrupted, and it becomes easier to overwork.

5.4 Managerial implications

As presented in the result and the previous section of the discussion, it can be established that when nudging as a concept is defined by the tools *Lead the way*, *Status quo bias*, and *Feedback*, this study shows that nudging is statistically proven to increase productivity among those employees who assess themselves to be less productive when working from home. However, to achieve more accuracy when implementing nudges, this study shows that the effectiveness of each nudge differs depending on what field they are to be implemented in, what level of seniority the respective employee possesses, and how often the employee is to work from home. Consequently, managers advantageously could take the moderators into account when judging their usage areas, as all tools are not efficient by combinations or for all moderating groups. Therefore, when applying strategies influenced by the result presented in this thesis, managers are urged to categorize their targeted employees by the moderators and adjust the chosen nudging tool to the respective employee. A factor relevant for reflection when implementing nudges is that nudging already productive employees might cause undesired effects. As the correlation between nudging and the *Productivity index* is negative, the study shows that the more productive an employee is, the less effect the nudges have on their productivity. Furthermore, when implementing the nudging tools for less productive employees it is important to note that the result of this thesis does not suggest that the more nudges that are implemented, the better the collective outcome on their productivity gets. This is a result of the fact that too many nudges might make the employee feel controlled. Rather, the nudges implemented should be carefully selected and followed up. To summarize, the insights gathered from this research are useful to managers who experience some employees having productivity issues when working from home.

5.5 Further research

As stated in the limitations, this study is not sufficiently extensive to cover the whole scope of the area between nudging and WFH productivity but aims to provide valuable insights for practitioners. As the limitations concretize what research not yet has covered, they also give origin for further research areas. First of all, this study has revealed that the moderators: *Field*, *Seniority*, and *WFH frequency* impact the different nudging tools' relation to productivity. However, it does not provide an answer to *why* the differences emerged, both due to the scope of this thesis being limited, and due to the sample groups being too small to

conduct a deeper analysis within each moderator. This is therefore a topic for further research and could be conducted by looking deeper at specific industries or managerial levels. Second of all, other nudging tools than the ones used in this study could be examined further. Both in terms of their variety in applicable areas, but also other potential nudging tools that could be used, either in a work environment or other settings. Third of all, this study proves that the nudging tools *Lead the way*, and *Status quo bias* works well together. However, it would be interesting to further investigate if other nudges benefit from being used simultaneously in a WFH setting with regard to productivity. In addition, this study measures the effects of the nudges in terms of how the respondents *believe* that they would affect their productivity, however, instead the effects could be measured by assessing *actual* productivity or other performance metrics such as turnover, WLB, or stress level. Lastly, it would be interesting to investigate how nudges would impact productivity when working from home in countries other than Sweden or the Nordic countries where the culture is different as it can be assumed that living conditions, financial wealth, and family norms could have an impact on how the nudges are perceived.

In addition, since the survey randomized respondents' assignment of either *Nudging block 1* and *Nudging block 2*, the opportunities of the analysis is limited due to the fact that all the nudging scenarios were not answered by the entire sample group. This disables *Nudging block 1* and *Nudging block 2* scenarios to be compared in certain statistical tests, resulting in a possible effect on the result. Therefore, further research could be conducted using alternative measures.

6. Conclusion

This study can be concluded by stating that the hypothesis, H1, is partially accepted. One can not conclude that nudging per definition has a negative correlation with productivity among employees who WFH. However, some nudging tools are proven to increase self-assessed productivity among less productive employees that work from home. Furthermore, the results of the research questions show that the moderators; *Field*, *Seniority*, and *WFH frequency*, have an impact on the hypothesis result and therefore should be carefully contemplated when implementing nudges. In conclusion, managers can use the presented information in this thesis to develop new strategies that involve nudging as a tool to increase productivity for less productive employees working from home.

7. References

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Appendix A

Survey

General questions

In what field are you currently working?

- Finance
- Retail
- Tech
- Consulting
- Industry
- Other

What level of seniority do you hold in your current position?

- Mid-level
- Senior-level

How many days a week on average do you work from home?

- Less than day one
- One day
- Two days
- Three days
- Four days
- Five days

Productivity block

On average, how productive do you consider yourself to be when working from home? (Not productive at all (0) - Very productive (100))

Nudging block 1

Lead the way

How well do the following scenarios describe you when working from home? (Not agree at all (0) - Agree completely (10))

- I am more productive when I have a desk to work at compared to sitting at my dining room table or on my couch. (LTW desk)
- I am more productive when I dress like I typically do at the office. (LTW dress)
- I am more productive when I am free from distractions like music, TV, family members, or pets. (LTW distractions)
- Do you find it harder to stick with the recommended work hours when you work from home? For instance, start or end later or earlier, longer or shorter lunch breaks. (LTW Work-hours)

Status Quo Bias

Would a policy stating that all employees need to be at the office a specific day a week benefit your productivity? (Not agree at all (0) - Agree completely (10))

Make the effect visible

When I work from home it is important for me to see what my work contributes to the overall operations (e.g. noticing that your work actually matters). (Not agree at all (0) - Agree completely (10))

Nudging block 2**Provide social proof**

When I work from home, a website/program/internal system that shows the progress and performance of my colleagues has a positive influence on my productivity. (Not agree at all (0) - Agree completely (10))

Provide feedback

When I work from home, fast responses and/or feedback from colleagues are important for my productivity. (Not agree at all (0) - Agree completely (10))

Create ownership

When I work from home, accountability and ownership (e.g. that you are accountable for the result of your task no matter the outcome) over my job tasks are important. (Not agree at all (0) - Agree completely (10))

Control block**Control question**

What is this survey about? (Mark the correct answer)

- The fact that asparagus grows directly from the ground.
- Productivity when working from home.
- The best coffee places in Sundsvall.

Productivity question

On average, how productive do you consider yourself to be when working from home? (Not productive at all (0) - Very Productive (100))

Appendix B

Regression analysis

Nudging block 1

Variable	Unstandardized B	Coefficients std. error	Standardized Coefficient Beta	Significance
<i>LTW Desk</i>	-0.014	0.035	-0.044	0.693
<i>LTW Dress</i>	-0.045	0.047	-0.114	0.346
<i>LTW Distractions</i>	-0.094	0.042	-0.297	0.027
<i>LTW Work hours</i>	0.008	0.039	0.024	0.829
<i>Status Quo Bias</i>	-0.073	0.040	-0.192	0.075
<i>Visibility</i>	0.085	0.058	0.147	0.974

Nudging Block 2

Variable	Unstandardized B	Coefficients std. error	Standardized Coefficient Beta	Significance
<i>Social Proof</i>	0.009	0.068	0.015	0.890
<i>Create Ownership</i>	0.008	0.112	0.007	0.944
<i>Feedback</i>	-0.181	0.080	-0.245	0.027

Factor Analysis

Variable	Component 1	Component 2
<i>LTW Distractions</i>	0.0811	
<i>LTW Dress</i>	0.800	
<i>LTW Dress</i>	0.724	
<i>LTW Work hours</i>		0.773
<i>Status Quo Bias</i>		0.642
<i>Visibility</i>		0.544