The effect of the balance between office and remote work on individual employee performance

A quantitative study on the hybrid work setting in the manufacturing industry in the Netherlands

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Executive Summary

During the COVID-19 pandemic companies adjusted the way they work, by implementing remote work. The pandemic has been a test for large-scale remote work. Based on the success of remote work companies are now looking to implement a form of office and remote work, also known as hybrid work, in the future of work. The support for the hybrid work setting increased during the pandemic, but there a lot of challenges to overcome. In recent literature office work and remote work are primarily studied separate from each other. However, with regard to the hybrid work setting it is important to study both work settings together.

Based on the findings in the existing literature it is found that little research has been done on the effect of the hybrid work setting on individual employee performance, by looking at the balance between office and remote work. In the current research this is investigated by looking at the relationship between the balance between office and remote work and individual employee performance, as well as the influence of six employee behaviors on this relationship. The six employee behaviors are; attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship. In addition, the ideal balance between office and remote work in the hybrid work setting is studied.

To find an answer to the objectives of the study, the following research question is studied *"How is the balance between office and remote work related with individual employee performance in the manufacturing industry?"*. The research question is supported by two sub questions (1) *"How do employee behaviors affect the relationship between the balance of office and remote work and individual employee performance?"* and (2) *"What is the ideal balance between office and remote work in the hybrid work setting?"*.

The research questions are supported by the following two hypotheses (1) *"The percentage of remote work will be positively associated with individual performance of employees working in the manufacturing industry in the Netherlands"* and (2) *"(a) Attitudes towards remote work, (b) work engagement, (c) well-being, (d) job satisfaction, (e) communication, and (f) trust relationship will mediate the relationship between the percentage of remote work and individual employee performance"*. Answers to the hypotheses are found by conducting a quantitative self-administered survey. The conceptual model of the survey is based on a literature review. The model consists of an independent variable – remote work percentage, mediating variables – attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship, and a dependent variable – individual employee performance. The target population of the study consists of employees, with a hybrid office job, working at companies operating in the manufacturing industry in the Netherlands. In the end a total of 105 employees, working for five companies in the manufacturing industry, participated to the survey.

The data of the survey is analyzed with SPSS. Based on the survey data three significant relationships are found. The first relationship is between the percentage an employee is working remote and attitudes towards remote work, the second relationship is between the percentage an employee is working remote and communication in a hybrid work setting, and the third relationship is between work engagement and individual employee performance.

Sub-question one is answered by looking at the findings of hypotheses two. Based on the findings it is clear that the six employee behaviors are based on this study not significantly affecting the relationship between the balance of office and remote work and individual employee performance. For employees working for companies in the manufacturing industry in the Netherlands.

Sub-question two is answered by looking at the preferred balance of the employees with regard to office and remote work. Based on the findings, the preferred balance is two days remote work in a four- or five-day work week and one day remote work in a two- or three-day work week.

The main research question is answered by looking at the findings of hypotheses one and two. Based on the findings it is clear that the balance between office and remote work is not affecting individual employee performance significantly direct or indirect. One possible reason for the hypotheses not being significant is that there is still a lot unknown about the true effect of the hybrid work setting in comparison with the established work settings in the manufacturing industry.

Based on the findings, companies in the manufacturing industry are recommend to start with making new work agreements based on the hybrid work setting. This, because the existing work agreements are based on office work. A good starting point for the agreements could be involving the employees in the decision-making process of the new agreements. By looking not only at their preferred balance of office and remote work, but also taking other insights of the employees with regard to hybrid work into consideration. In addition, the companies should pay attention to the role of communication in the hybrid work setting, because communication is key when employees have to work together remotely with other colleagues.

1. Introduction

1.1. Background

The work life of employees all around the world changed massively due to the sudden outbreak of the COVID-19 virus. It was at the end of 2019, when the first people got infected by the virus. On 30 January 2020 the World Health Organization announced the worldwide outbreak of the virus (Savić, 2020). This was the start of the COVID-19 pandemic that lasted two years, and at the moment it is not sure if the virus will strike back once again this second half of 2022.

During the pandemic almost every country had national lockdowns to reduce the spread of the virus (Pass & Ridgway, 2022). These lockdowns had a massive effect on the world. The pandemic caused a global disruption and hit the business sector hard (Iqbal et al., 2021). This disruption made employers and employees change the way they work (Juchnowicz & Kinowska, 2021; Pass & Ridgway, 2022; Savić, 2020). Many offices had to close and forced employees to work from home (Smite et al., 2022), because remote work was the only possible solution for many companies to keep operating (Mesquita et al., 2020). This was the first time that remote work was implemented on a scale this large.

Remote work can be defined as working outside the physical office either from home or another place (Savić, 2020). Working from home became the standard type of remote work during the pandemic. With the implementation of remote work, work changed from face-to-face and offline to at home and online (Mesquita et al., 2020; Yang et al., 2021). Before the pandemic around 12.5% of the employees worked partially from home in Europe, this number increased to 50% during the pandemic (Pass & Ridgway, 2022). In the USA this number increased from 8.2% to 35.2% during the first lockdown (Yang et al., 2021).

The implementation of large-scale remote work would not have been possible without the technologies developed during the 4th industrial revolution (Mesquita et al., 2020; Savić, 2020). The digital transformation accelerated during the pandemic. Companies had to use new IT-tools and implement them quickly during the early phases of the pandemic (Carroll & Conboy, 2020). To optimize remote work, it is also essential to have the right IT-support from the company. The need for the right software and hardware has pushed the digital transformation to new heights. Applications like Zoom or Microsoft Teams have been essential for companies to keep operating. When in the post-pandemic era companies implement hybrid work on a large scale, technology will play a key role in the so called ‘new normal of working’ (Iqbal et al., 2021).

Currently most nations are easing the lockdown rules, which is possible because new vaccines, against COVID-19, are developed during the pandemic (Subramaniam et al., 2021). People are getting their lives, as it was before the lockdown, back. This also means that companies are getting back to office work. However, after two years of lockdowns companies and employees faced the benefits of remote work. Many companies are allowing people to work remote, primarily, part-time in the post-pandemic era. This combination of office work and remote work is called hybrid work (Iqbal et al., 2021). Hybrid work is a relatively new work setting. Before the pandemic there was little support for hybrid work (Pass & Ridgway, 2022),

but the pandemic changed the opinion about hybrid work and now it is getting more support (Babapour Chafi et al., 2021; Beck & Hensher, 2022; Edelmann et al., 2021; Juchnowicz & Kinowska, 2021). The pandemic caused an increase in support with regard to the hybrid work setting. However, studies focusing on remote work during the pandemic made clear that remote work is not suitable for every job task (Mesquita et al., 2020). Some job tasks are better suitable for the office work setting e.g., working together with colleagues, meetings, social activities and training (Iqbal et al., 2021; Yang et al., 2021). The finding that some tasks are better suitable for office work and some are suitable for remote work is in favor of the hybrid work setting (Mesquita et al., 2020). According to Iqbal et al. (2021) hybrid work will play a major role in the future of work. It could even become the 'new normal' of work (Pass & Ridgway, 2022). How companies will operate in the future of work is a continuously changing process (Chaudhary et al., 2022). What is clear, is that due to the pandemic the opinion about the future of work changed permanently (Iqbal et al., 2021).

The existing literature focused primarily on the office and remote work setting separately, and not on the hybrid work setting combination of office and remote work. In a lot of studies one of both work settings is related to individual employee or team performance outcomes (Rahmadani et al., 2020; Lippe & Lippényi, 2020; Smite et al., 2022; Yang et al., 2021). In these studies, the work setting and performance are often related the multiple employee behavior factors. Another set of studies focused on the benefits and challenges of remote work during the pandemic, as well as, the suitable job tasks for remote work (Iqbal et al., 2021; Juchnowicz & Kinowska, 2021; Mesquita et al., 2020; Savić, 2020). The existing studies on hybrid work focused on the role it will play in the future of work (Babapour Chafi et al., 2021; Iqbal et al., 2021; Wang et al., 2021). The studies did not focus on the core constructs of hybrid work; office work and remote work. These two work settings are the basis of hybrid work and it is therefore important to study the combination of these two work settings. Based on the existing literature it is found that there is a lot of research on individual employee performance and influencing factors in an office or remote work setting separately. However, there is little research on the effect of these two work settings together on individual employee performance in a hybrid work setting, as well as the role of the employee behavior factors on this relationship. This gap in research is the focus of this study. With regard to the hybrid work settings this study is focusing on the balance between office and remote work. The hybrid work setting creates new dynamics within a company, new work habits for employees and asks for a different kind of leadership that have to be investigated to make hybrid work a success with regard to the individual performance of an employee.

The study contributes to the literature by investigating the research gap. First, the study contributes to the literature by studying the main objective. The main objective of the study is investigating the hybrid work setting in relation with individual employee performance. This is studied by looking at the effect between the balance between office and remote work and individual employee performance. This main objective is studied by looking at employees, with a hybrid office job. The employees participating to this study are working for a company that is operating in the manufacturing industry in the Netherlands.

Second, the study contributes to the literature by studying sub objectives that are related to the main objective. The first sub objective of the study is investigating the potential mediating effects of the six employee behaviors found in literature; attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship. These six employee behaviors are potentially mediating the relationship between the balance of office and remote work and individual employee performance. The second sub objective of the study is investigating the preferred balance between office and remote work by employees working in the manufacturing industry in the Netherlands. This preferred balance helps getting insights in the best possible implementation of the hybrid work setting.

To get insights that are supporting the main objective of the study and contribute to the research gap found in the literature the following research question is formulated: *"How is the balance between office and remote work related with individual employee performance in the manufacturing industry?"*

The research question is supported by two sub-questions. The two sub-questions formulated are:

1. *"How do employee behaviors affect the relationship between the balance of office and remote work and individual employee performance?"*
2. *"What is the ideal balance between office and remote work in the hybrid work setting?"*

To answer the research question and the sub-question a quantitative survey is used. The first sub-question used the survey data to find and explain the relationship between the six potential mediating employee behaviors and the balance between office and remote work and individual employee performance. The second sub-question is answered by looking at the preferred balance between office and remote work according to the employees. The insights of these two questions together with the full analysis of the survey data formed an answer to the research question.

1.2. Overview

The study has the following structure. The first chapter introduces the hybrid work setting topic and mentions the problem, objective, and research questions. The second chapter investigates the existing literature by performing an in-depth literature review on the hybrid work setting, individual employee performance in relation with office work and remote work, and the role of the six employee behaviors on this relationship. The second chapter ends with hypotheses development and the conceptual framework for the study. The third chapter discusses the methodology, including the sampling frame and survey design. The fourth chapter discusses the analysis of the survey data with the program SPSS. The fifth chapter discusses the theoretical and practical implications based on the findings in chapter four and provides limitations and recommendations based on the study. The sixth chapter is the concluding chapter.

2. Literature Review

This section discusses the existing literature about the hybrid work setting in relation with several factors. The literature review in this section is divided in four parts. The first part investigates the literature about the hybrid work setting in general. This includes the period before the pandemic, the period during the pandemic, and the period after the pandemic. The second part investigates the literature about performance with regard to the different work settings. The third part investigates the literature about potential mediating factors that could influence the success of the hybrid work setting implementation with regard to the individual performance of an employee. The fourth part investigates the literature about the role of the digital transformation in a hybrid work setting.

2.1. Hybrid Work

The hybrid work setting is a relatively new work setting compared to the well-known office work setting. Hybrid work is a combination of working at the office, office work, and working remote, remote work. An example of remote work is working from home. According to Donati et al. (2021) and Savić (2020) work is called remote work, when employees are not physically working at their normal workplace. The normal workplace is in most cases the office of the company where the employees are working for. According to Xie et al. (2019) and Yang et al. (2021) in a hybrid work setting employees are more flexible in terms of where they work and how they schedule their work.

One part of the hybrid work setting is remote work. Remote work already started being implemented in the work setting decades ago. Although this was on a very small scale. The first known implementation of remote working dates from the 70's, in the period of the oil crisis (Garro-Abarca et al., 2021). In the 80's and 90's the implementation of remote work by companies was still at a small scale (Gifford, 2022). It was at the end of the 90's, when the implementation of remote work rapidly increased. This was possible due to the development of new technologies, like video calls. This new technologies made large-scale implementation of remote work possible (Gifford, 2022). The available technologies that are beneficial for remote work increased in the years before the COVID-19 pandemic. Researchers also started to study the hybrid work setting more and more. However, most studies focused on part-time jobs where the employees were working remote voluntary (Smite et al., 2022). Implementing remote work on a large scale is not easy. In the study by Mesquita et al. (2020) remote work is supported by the employees participating in the study, with the comment that it is not suitable for every task of their jobs. A change in the nature of work creates a lot of challenges and opportunities and it takes years or even decades before this new nature of work is used in its best possible form, which is in this case the hybrid work setting (Xie et al., 2019).

The COVID-19 pandemic forced a lot of employees to work remote, primarily at home. The pandemic not only formed a trigger for faster implementation of hybrid work on a large scale, but also increased the number of studies done on the hybrid work setting. The new work setting will have a different effect on job tasks as; discussions with colleagues, formal meetings, social conversations with colleagues, teleconferencing, difficult tasks that need

concentration, easy tasks, and training (Yang et al. (2021). According to Yang et al. (2021) working together with colleagues, social activities and training are better feasible with the office work setting. Moreover, during the pandemic it became clear that hybrid work is possible for more jobs and job tasks than thought before the pandemic (Mesquita et al., 2020). However, the remote work setting requires a lot of digital support from the company for almost every job task, to make it work (Juchnowicz & Kinowska, (2021). Types of necessary digital support are; online access to the work environment, a digital meeting platform, a mobile phone, etc. Due to this need for digital support the COVID-19 pandemic caused an increase in the development of digital technologies that are beneficial for the hybrid work setting. This development during the pandemic supported the implementation of hybrid work on a large scale. Now, in the post-pandemic era it is clear that hybrid work is here to stay (Gifford, 2022; Savić, 2020). It is important to manage the implementation of hybrid work now and in the future, because a wrong implementation of this work setting can lead to a fragmentation between employees that support working remote and employees that are more willing to work at the office (Pass & Ridgway, 2022). In the period after the COVID-19 pandemic there is an expected increase in hybrid work. This increase in hybrid work will likely keep increasing in the future (Surma et al., 2021). Early studies on the effects on hybrid work showed mixed results when it comes to the benefits of hybrid work in comparison with normal office work (Pass & Ridgway, 2022). In contrast, Iqbal et al. (2021) states that hybrid work combines the benefits of remote work with the benefits of office work. It is clear that there is no single solution on how to implement hybrid work.

In the post-pandemic era companies have different agreements with their employees when it comes to hybrid work. Some companies allow employees to decide when to work remote or at the office, giving the employees a lot of flexibility. Where other companies determine for the employees when to work remote or at the office (Iqbal et al., 2021). This all depends on the formal and informal agreements made between the employees and the company they are working for (De Menezes & Kelliher, 2017). The different agreements with regard to hybrid work will lead to different balances between office and remote work between companies, and even between employees within the same company. The recent literature makes clear that there is no single solution available to the number of days remote work and office work during a work week is desired. The balance between office and remote work on a weekly basis is important to study, because it could affect the attitudes of employees towards remote work. This is related to the fragmentation problem, described in the previous paragraph. In addition, this balance may affect the individual performance of an employee, working in a hybrid work setting, see section 2.2.. Thus far, there is no scale available in literature that studies the impact of the balance between office and remote work, as well as the attitudes towards remote work of the employees. In the existing literature there is one scale developed about hybrid work. This scale is the Hybrid Work Characteristics Scale and is developed by Xie et al. (2019). However, this scale is not suitable for this study. This scale focuses more on the characteristics of hybrid work instead of looking at the impact of the hybrid work setting on other factors. According to Donati et al. (2021) researchers often

consider the number of days working remote related to several outcomes. Therefore, this study will investigate the impact of the balance between office and remote work on multiple relevant factors by measuring the percentage an employee is working remote on a weekly basis. This remote work percentage is calculated as the number of days an employee is working remote compared to the total number of days the employee is working in total during the week.

2.2. Performance of an Employee

The individual performance of an employee is studied a lot, and is of great importance for companies. For companies is the performance of their employees important get a good firm performance. The new hybrid work setting implemented during the pandemic maybe affected the performance of the employees (Babapour Chafi et al., 2021). This also affected firm performance. Recent studies on performance in a remote setting focused primarily on the opinion of employees on their own performance. The studies found mixed results when it comes to the performance of employees in a hybrid work setting. These mixed findings are also found in the study by Smite et al. (2022). The first set of studies found a positive relationship between the remote work setting and employee performance. The studies found an improvement of employee performance when the employees were working remote (Babapour Chafi et al., 2021; Edelmann et al., 2021; Mesquita et al., 2020; Wang et al., 2021). The study by Iqbal et al. (2021) concluded that in a remote work setting the performance increases, due to a decrease in physical stress, which is caused by the improved flexibility in the remote work setting. This is also found in the studies by Smite et al. (2022) and Yang et al. (2021). The second set of studies found no relationship between the remote work setting and employee performance. The studies found that there are no differences in performance of an employee when working remote compared to working at the office (Beck & Hensher, 2022; Topp et al., 2022) The third set of studies found a negative relationship between the remote work setting and employee performance. The studies found a decline in performance when employees were working remote (Gifford, 2022; Juchnowicz & Kinowska, 2021; Lippe & Lippényi, 2020; Yang et al., 2021). According to Yang et al. (2021) the decrease may be explained by the enforced situation of remote work during the pandemic and the interference with family members during work hours. One possible solution to this interference with family members is the creation of a separate office at home. This separate office can increase the performance when working from home (Yang et al., 2021). Based on these findings it is clear that the individual performance of an employee in a hybrid work setting raises challenges.

Thus far the studies focused primarily on remote work and not so much on the combination of office and remote work. The mixed findings with regard to the remote work setting and performance, highlights that for the hybrid work setting more research is needed on the influence of the combination of office work and remote work on employee performance. Therefore, this study is investigating the hybrid work setting by looking at the balance between office and remote work and how this is impacting employee performance. For this study scales are studied that look at the subjective employee performance. This means

that the performance scale is filled in by the employees themselves. This way of measuring performance is looking at the subjective performance of the employee on the day the employee fills in the scale. There are many scales available in literature that measure subjective employee performance. The scales role-based performance scale (RBPS) measures employee performance with a 20-item scale (Welbourne et al., 1998). Using this scale would make the survey too long, because the number of factors included in the study. In the study by Andrade et al. (2020) a 10-item scale to measure employee performance is discussed. The scale is named the short version of the self-assessment scale of job performance. This scale is used in the study to measure employee performance.

2.3. Factors with Regard to Hybrid Work

The COVID-19 pandemic had a massive effect on the way companies had to operate and employees had to work. Companies were forced to implement remote work on a large scale, otherwise it was not possible to keep operating. The implementation of remote work on a scale that large also came along with a set of challenges. The challenges often mentioned in literature are isolation on a social and professional level, communication problems with colleagues and the manager, interferences of family members when working from home, and lack of IT-support and the right tools provided by the company (Babapour Chafi et al., 2021; Beck & Hensher, 2022; Mesquita et al., 2020; Pass & Ridgway, 2022). According to these studies these challenges are often related to multiple employee behaviors. As discussed in section 2.1. hybrid work is here to stay and will play a big role in the future of work. The hybrid work setting will affect the way employees have to work. In addition, as discussed in section 2.2. this new hybrid work setting is likely to have an impact on employee performance. This is based on the studies that found a positive or negative relationship with remote work. This relationship between the hybrid work setting and employee performance is probably affected by other factors that potentially have a mediating role in this relationship. In this section of the literature review potential mediating employee behaviors on the relationship between the hybrid work setting and the individual performance of an employee are studied. The literature on the hybrid work setting with regard to the post-pandemic era is small. Therefore, the employee behavior factors used in the study will primarily be identified from the literature that investigated the remote work setting.

2.3.1. Work Engagement

During the pandemic hybrid work is implemented on a large scale, this large-scale use of hybrid work resulted into new studies that investigated hybrid work and work engagement. In a hybrid work setting work engagement means more than ever something different for each employee. This change asks for flexibility for each employee, but also more engagement during office hours (Pass & Ridgway, 2022; Subramaniam et al., 2021). According to Pass & Ridgway (2022) the first studies that investigated the relationship between hybrid work and work engagement found mixed results. The studies from Chaudhary et al. (2022) and Surma et al. (2021) studied factors influencing work engagement and concluded that the right tools,

adopting the home office, salary, contact with the manager, and number of kids affect work engagement. In addition the well-being of the employees also affects work engagement (Pass & Ridgway, 2022). The study by De Menezes & Kelliher (2017) found a positive impact of the hybrid work setting. In the study is stated that an increase in flexibility leads to an increase in support for the company and this will lead to an increase in engagement to work. Moreover, the study by Rahmadani et al. (2020) found that work engagement can be positively influenced by a good relationship with the manager.

According to Pass & Ridgway (2022) it is important to take the mediating effect of individual work engagement into consideration to maintain the same level of employee performance in a work setting. The effect of work engagement on the relationship between different work settings and employee performance highlights the need to study that potential mediating effect on the balance between office and remote work in the hybrid work setting in relation with individual employee performance. Work engagement is a well-studied factor. The scales studied are focusing on how engaged an employee is feeling, by asking the employee to fill in items about work engagement. One of the most famous scales used to measure work engagement is the Utrecht Work Engagement Scale (UWES) (Schaufeli et al., 2006) . This is a 7-point Likert scale, ranging from never to always. This scale has three forms the UWES-17, the UWES-9, and the UWES-3. In this study the UWES-9 scale is used to measure work engagement. The UWES-17 scale would make the survey too long, because the number of factors included in the study. The UWES-9 scale is a good alternative, because it scores good on internal consistency and test-retest reliability in comparison with the UWES-17 scale (Schaufeli et al., 2006). An alternative to the UWES is the Job Engagement Scale (JES) (Rich et al., 2010). This scale consists of the same type of items as the UWES-9 scale. However, this scale consists of 18 items, which is also too long for this study. A second alternative is the job and organization engagement scale (Saks, 2006). This scale consists of 11 items. This scale is not chosen, because the focus in the scale is more on engagement towards the company instead of engagement towards the work of the employee.

2.3.2. Well-being and Job Satisfaction

Well-being is seen as an employee behavior, that is influenced by the private and work life. In the psychological study field well-being is seen as the subjective opinion of employees about their happiness, this is also known as psychological well-being (Wright & Cropanzano, 2004). According to Wright & Cropanzano (2004) is this related to positive and negative emotions of happiness. It is important to notice that this focus on well-being is on the short-term effect of well-being. So, how is an employee feeling right now. The focus is not on the long-term effect of changes to well-being either positive or negative.

The well-being of employees is affected by the COVID-19 pandemic. This is not only caused pandemic itself, but also by the large-scale implementation of remote work during the pandemic. It is important for companies to pay attention to the well-being of employees (Guest, 2017). This was especially important during the pandemic when the employees had to work from home all of a sudden. Remote work can negatively affect employees well-being,

because of the interference of private and professional life and the type of home office when working from home (Babapour Chafi et al., 2021; Wang et al., 2021; Yang et al., 2021). This is also stated in the study by Mesquita et al. (2020), when working from home, remote work, family members are disturbing your work area when there is no separate home office available. This could be distracting and influence performance in a remote work setting. This negative effect is also mentioned by Xie et al. (2019). The study by Wright & Cropanzano (2004) found that regardless of office or remote work, well-being is affecting employee performance. Another negative aspect of remote work and well-being is the fact that employees feel isolated when working from home (Mesquita et al., 2020.; Iqbal et al., 2021). The feeling of isolation and working alone, can in the long-term affect communication with the team and also the bonding with the team (Iqbal et al., 2021). On the other hand, some positive aspects of remote work and well-being are a measured increase in motivation by employees in the study by Mesquita et al. (2020) and the ability of employees to better focus on their jobs when working remote, because there are less distractions from colleagues (Iqbal et al., 2021; Smite et al., 2022).

In addition to well-being in general, the study by Juchnowicz & Kinowska (2021) describes three dimensions of well-being; work relationship, job satisfaction and work-life balance. According to Wright & Cropanzano (2004) job satisfaction is often mentioned as an important dimension of well-being. Moreover, job satisfaction is an important factor in relation with the remote work setting. According to Pass & Ridgway (2022), Savić (2020), and Wang et al. (2021) job satisfaction increases when employees are working remote. However, according to Yang et al. (2021) job satisfaction does not always increase in a remote work setting. It is dependent on the type of task done during remote work. Although the study by Juchnowicz & Kinowska (2021) mentions job satisfaction as a dimension of well-being, this study will investigate job satisfaction as a factor on its own. This is done because well-being in this study focuses on how an employee is feeling in general and job satisfaction is focusing on employee satisfaction with regard to their current job. This is in line with the study by Wright & Bonett (2007) where job satisfaction is seen as the work part of well-being without the private life aspect of well-being.

The next dimension of well-being is work-life balance. Due to remote work employees have to find a new balance between their private and professional life. The effect on the work-life balance is contradictory, in the survey by Mesquita et al. (2020) participants mention an improved work-life balance, as well as a decrease in work-life balance. An improved work-life balance is also found in the studies by Edelmann et al. (2021), Pass & Ridgway (2022), Smite et al. (2022), and Yang et al. (2021). On the other hand Juchnowicz & Kinowska (2021) and Subramaniam et al. (2021) found a decrease in work-life balance.

Thus far the studies by Mesquita et al. (2020) and Xie et al. (2019) found that well-being affects the performance in a hybrid work setting. This finding highlights the need to investigate the potential mediating role of well-being in the relationship between the balance of office and remote work and individual employee performance. The scales studied are focusing on how the well-being of an employee is at the moment of asking. This is studied, by asking the

employees to fill in items about well-being. The well-being factor is often measured with the WHO's 5-item Well-being Index. This scale is one of the most used well-being scales in literature (Topp et al., 2015). Another benefit of this scale is that it is short, which is useful for this study consisting of several factors. This index is the scale that is used in the study. An alternative is the Well-Being Index (WBI) (Dyrbye et al., 2016). However, this scale is not focusing on well-being in general, but more on the depression aspect of well-being. This is not the focus of this study.

The studies by Pass & Ridgway (2022), Savić (2020), Wang et al. (2021), and Yang et al. (2021) found that job satisfaction increases in a hybrid work setting. This might have a mediating effect on the relationship between the balance of office and remote work and individual employee performance. Therefore, this employee behavior factor is studied. The scales studied are focusing on how satisfied an employee is with the job, by asking the employee to fill in items about job satisfaction. The job satisfaction factor can be measured with the Job Satisfaction Scale (Macdonald & Maclntyre, 1997). This scale consists of ten items. This scale is not chosen, because it would make the survey too long considering the number of factors included in the study. An alternative scale that consists of only three items and scores good on Cronbach's alpha and test-retest reliability is the Michigan Job Satisfaction Scale (Lawler et al., 2013). This scale is used in the study.

2.3.3. Communication

The way employees communicate with each other changed with the large-scale implementation of hybrid work during the pandemic. Hybrid work raised new communication challenges like "*How do you communicate with each other when not everyone is at the office?*" and "*How do you keep the benefits of face-to-face meetings in online meetings?*". These challenges are primarily solved by the new developed technologies, like Zoom, during the pandemic (Madariaga et al., 2021).

Teamwork is a challenging aspect of hybrid work (Smite et al., 2022). When hybrid work is implemented on a large scale it is difficult to keep the team bond compared to fully working at the office (Iqbal et al., 2021). With regard to teamwork, communication is an important factor that affects the performance of the individual employee and the team (Garro-Abarca et al., 2021; Horwitz et al., 2006). Work changed from face-to-face to online, which affected the way colleagues communicate with each other (Gifford, 2022). It is a challenge for hybrid work to find the right way to communicate. To improve the communication in these new work settings new communicative conditions are needed (Edelmann et al., 2021). The difficulties with communication in remote work can negatively influence the performance (Wang et al., 2021). In line with communication is the share of knowledge. In a remote work setting it is difficult to share knowledge between colleagues (Lippe & Lippényi, 2020).

According to Garro-Abarca et al. (2021), Horwitz et al. (2006), and Wang et al. (2021) communication affects performance in a hybrid work setting. These findings highlight the need to investigate the potential mediating role of communication in the relationship between the balance of office and remote work and individual employee performance. In the

existing literature there Is no literature available about scales that measure communication in a hybrid work setting. Therefore, the questions for the potential mediating variable communication are made based upon the literature of this section.

2.3.4. Trust Relationship

The COVID-19 pandemic not only forced employees to adapt to the new work practices, like remote work, but the employees also had to form a new type of relation with their managers (Edelmann et al., 2021; Lippe & Lippényi, 2020). In the remote work setting managers had to implement new forms of communication and management to keep the same individual performance of the employees (Savić, 2020). Managers have a responsible role, when at the end of the year companies look at the performances of teams within the company, the managers are held responsible for the performance. It is therefore important for a manager to track the performance. In a setting in which employees work from their homes it is difficult to measure the performance, due to the decrease in face-to-face interaction (Lippe & Lippényi, 2020). It is important to have regular face-to-face meetings to maintain the relationship with employees and monitor the performance (Horwitz et al., 2006).

Normally the manager monitors and controls by talking to its employees. When it comes to remote work new ways of monitoring and control have to be implemented to get the same results. Managers had to change from paying attention on the activity of the employee to paying attention to the outcomes (Carroll & Conboy, 2020). For a lot of managers' this was difficult, because they associate working from home with a loss in performance, and therefore want to monitor them closely (Iqbal et al., 2021). However, in the study by Mesquita et al. (2020) employees working in a remote setting did not felt more monitoring or control by managers, even though managers expected a loss in performance. In addition according to Smite et al. (2022) employees see the fewer meetings with the managers during the remote work period as a benefit. This benefit mentioned by employee is in contradiction with the conclusion by Chaudhary et al. (2022). That study advices managers to have regular meetings with employees to keep them engaged. Which is also stated by Rahmadani et al. (2020), because meetings have a positive effect on engagement which in the end influences the performance.

The relationship between a manager and its employees is built upon trust (Horwitz et al., 2006). In the remote work setting the trust relationship has become even more important (Babapour Chafi et al., 2021; Bartsch et al., 2020; Garro-Abarca et al., 2021; Juchnowicz & Kinowska, 2021). According to Garro-Abarca et al. (2021) managers have to use a management style that uses the trust relationship as a mediating factor to achieve great performance. The manager has to trust the employee that although the increase in flexibility the employee will have self-discipline to complete the tasks when working from home (Bartsch et al., 2020; Beck & Hensher, 2022; Pass & Ridgway, 2022). When employees do not abuse the given flexibility, it can improve the overall performance (Babapour Chafi et al., 2021). For the manager it is important to find the right balance between monitoring the employee and giving flexibility (Mesquita et al., 2020). As a solution the study by Pass & Ridgway (2022) suggests to increase

autonomy of employees to hold them accountable for their own engagement, instead of making it the responsibility of the manager. In addition it is important to support each employee individually, because it will have a positive effect on the performance of the employee (Yang et al., 2021).

It is clear that managers and employees have to work together in a different way compared to normal office work. The hybrid work setting needs different ways of monitoring and tracking employees, which affect the trust relationship between the manager and employee, which will also impact employee performance. These findings highlight the need to investigate the potential mediating role of trust relationship in the relationship between the balance of office and remote work and individual employee performance. In the existing literature there Is no literature available about scales that measure trust relationship in a hybrid work setting. Therefore, the questions for the potential mediating variable trust relationship are made based upon the literature of this section.

2.3.5. The Mediating Factors in Relation with Hybrid Work and Individual Employee Performance.

Now that the lockdowns are eased in many countries, it is important to look at the future of work in the post-pandemic era. Pass & Ridgway (2022) studied the preferred way of working after the pandemic. According to the study there are mixed opinions about the future of work. There are supporters of office work, remote work and hybrid work. This is in line with the study by Mesquita et al. (2020) that states that about 50% is positive about a form of remote work. The main reasons for this are an increase in work-life balance and employee performance. Moreover, it is important to find the right balance between office and remote work to optimize performance (Babapour Chafi et al., 2021). Although already some research has been done on hybrid work, the focus so far has been on remote work during the pandemic, with only a few papers taking hybrid work into consideration (Babapour Chafi et al., 2021; Beck & Hensher, 2022; Edelmann et al., 2021; Juchnowicz & Kinowska, 2021). The study by Wang et al. (2021) focuses on hybrid work and finds higher performance and job satisfaction amongst the participants of the survey compared to remote work. Hybrid work is a relatively new work setting and will have to face some challenges during the implementation on large scale. The challenges it has to face are: changing people's opinion about remote work, keeping employees engaged when working remote, taking care of employees' well-being and job satisfaction, make sure that the communication in a hybrid work setting works fine (Iqbal et al., 2021), and that the trust relationship between employees and the manager is good. These challenges can be related to the six employee behaviors described in this section. These employee behaviors potentially have a mediating effect on the employee performance in a hybrid work setting. It is therefore important to not only investigate the direct relationship between the balance of office and remote work and individual employee performance, but also the potential mediating relationships.

2.4. Digital Transformation and the Influence on New Work Types

The 4th industrial revolution started years ago, but due to the COVID-19 pandemic technologies, developed during this revolution, had to be implemented at a rapid pace to keep the economy running (Subramaniam et al., 2021). Without the new technologies it would not have been possible to switch to remote work on such a large scale (Mesquita et al., 2020). Daily job tasks in a remote work setting use a lot of new developed technologies (Juchnowicz & Kinowska, 2021). In general companies have been slow with the implementation of new IT-tools, but the pandemic accelerated the pace of implementation (Savić, 2020).

The capability of employees to implement these new technologies in their job plays an important role. Already in 2006 the study by Horwitz et al. (2006) highlighted the importance of the right IT-support and IT-tools provided by the companies, which are key for the success of virtual work. During the pandemic there has been fragmentation between employees who were positive about the use of the new technologies for remote work and employees who had difficulties with the implementation of the new technologies in their daily work (Pass & Ridgway, 2022). It is not only about the role of the employees with regard to the new technologies. Companies also play an important role by providing employees the skills, knowledge and IT-tools to work with, necessary for remote and hybrid work (Iqbal et al., 2021; Pass & Ridgway, 2022). Most important technologies implemented by companies are applications to provide good communication when working remote (Mesquita et al., 2020; Wang et al., 2021). A lot of companies did not make extra equipment available for employees to use in their home offices during the pandemic and there was lack of technical support by the companies (Babapour Chafi et al., 2021); (Edelmann et al., 2021). However, in the study by Mesquita et al. (2020) employees felt not negatively affected by this.

The new technologies will not only affect the pandemic era, but also the way companies operate and employees work in the future of work (Pass & Ridgway, 2022). It is therefore important that companies normalize the use of the new technologies (Carroll & Conboy, 2020). The companies that successfully implemented the new technologies in their work routine will benefit from it in the future of work (Iqbal et al., 2021). The future of work will likely be a form of hybrid work in which the digital transformation, especially the IT-tools, will play an important role to align office and remote work (Savić, 2020).

It is clear that the digital transformation played a key role in the development of the hybrid work setting. In a company that allows to work hybrid it is important that the IT part of the company is up-to-date, because this could affect the success of hybrid work, especially in terms of communication. The importance of the digital transformation is not directly studied in this study. However, it is partly implemented in the questions about attitudes towards remote work and communication.

2.5. Conclusion

To conclude, in the pre-pandemic era hybrid work started being used on a larger scale, because of the development of new technologies. During the pandemic hybrid work is implemented on a large scale, because it was the only option for a lot of companies. This

implementation of large-scale hybrid work resulted in a lot of new research into the hybrid work setting. However, most studies executed before the pandemic and during the pandemic focused on remote work on its own. There are not so many studies about the effect of the hybrid work setting on multiple factors and the role of hybrid work in the future of work.

Based on the recent studies it is clear that hybrid work is here to stay and will play an important role in the future of work. It is therefore important to study the hybrid work setting in more detail. This study is investigating the role of the hybrid work setting in relation with individual employee performance and how this relationship is potentially mediated. The potential mediating factors are attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship. The factors studied in this study are self-administered by employees, by filling in subjective scales. The scales used are focusing on the short-term effects. The role of the digital transformation is noted as important and is implemented in the questions about communication.

2.6. Hypotheses Development

The hypotheses described in this section are formed based on evidence found and theories found in the literature review. The hypotheses are tested in section 4. and the conclusions from the analysis with regard to the hypotheses are discussed in section 5..

The first hypothesis is about the effect of the balance between office and remote work on individual performance of an employee. The employees are working at companies operating in the manufacturing industry in the Netherlands. This effect is important to study, because hybrid work is here to stay, and according to Babapour Chafi et al. (2021) is the hybrid work setting maybe affecting performance of employees. Most of the studies on this effect are done before or during the COVID-19 pandemic. According to Babapour Chafi et al. (2021), Edelmann et al. (2021), Iqbal et al. (2021), Mesquita et al. (2020), and Wang et al. (2021) is remote work positively associated with the performance of an individual employee. The studies found that employees working remote improved their performance. This might be due to an increase in flexibility for the employees (Yang et al., 2021). However, remote work is not suitable for every job task (Mesquita et al., 2020). In contrast to the positive findings is remote work according to Gifford (2022), Juchnowicz & Kinowska (2021), Lippe & Lippényi (2020), and Yang et al. (2021) negatively associated with the performance of an individual employee. In these studies employees working remote performed worse compared to working at the office. In contrast to the positive and negative findings is remote work according to Beck & Hensher (2022), and Topp et al. (2022) not significant associated with the performance of an individual employee. In these studies, the employees performed the same when working remote, compared to working at the office. The three different findings about the effect indicate that there are different findings. This is in line with the study by Smite et al. (2022). According to that study there is most of the times an effect, but is it not clear to say if that effect is positively or negatively affecting the performance of an individual employee. However, the studies investigated in this literature review found five out of eleven times a positive effect, compared to four times a negative effect, and two times no effect. Therefore, based on the findings in

the literature it is expected that the balance between office and remote work is having a positive effect on the individual performance of an employee. In other words, the percentage of remote work will be positively affecting individual employee performance. Based on the findings in the literature the following directional hypotheses is formulated.

> H1: The percentage of remote work will be positively associated with individual performance of employees working in the manufacturing industry in the Netherlands.

The second hypothesis is about the potential effects of employee behaviors on the relationship of the balance between office and remote work and individual performance of an employee. These potential effects are mediating effects. The employee behaviors are attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship.

The first mediator is attitudes towards remote work. According to Pass & Ridgway (2022) there are mixed results on the opinion of employees towards remote work. The study by Donati et al. (2021) used the Technology Acceptance Model (TAM) to investigate how different employees experienced and performed in a remote work setting. The study found that employees 'accepting' remote work are also performing better. This is important, because some employees like working remote, where others prefer working at the office. In the study by Mesquita et al. (2020) it is stated that 50 percent preferred a form of remote work in the future of work. Overall, based on the findings in the literature it is expected that attitudes towards remote work is mediating the relationship between remote work percentage and individual employee performance.

The second mediator is work engagement. Work engagement is considered as a mediator between individual or organizational factors and individual employee performance according to Kahn's theory (Rich et al., 2010). In addition according to Saks (2006) the social exchange theory (SET) can explain the relationship. The SET states that there is an interplay between the employees and the company based on a cost-benefit analysis. In terms of work engagement, employees are willing to exchange their work engagement for resources provided by the company they are working for (Saks, 2006). So, when employees are working remote and feel not supported by the company their engagement decreases. According to Pass & Ridgway (2022) is it difficult to keep the same level of work engagement when employees are working remote. Employees are having less contact with the managers and are disturbed by other people at home (Chaudhary et al., 2022; Surma et al., 2021). This could not only affect the work engagement of the employee, but also how the employee is performing in a remote work setting. Overall, based on the findings in the literature it is expected that work engagement is mediating the relationship between remote work percentage and individual employee performance.

The third mediator is well-being, which is in this study based on the psychological well-being, also known as the positive and negative emotions of happiness (Wright & Cropanzano, 2004). According to Babapour Chafi et al. (2021), Mesquita et al. (2020), Wang et al. (2021),

Xie et al. (2019), and Yang et al. (2021) is remote work associated with a negative effect on well-being. This is mostly because of the interference between the work life and private life, not having a separate office at home, and the feeling of isolation. Because of these negative effects employees will have difficulties to concentrate on their work. This lack of concentration is according to the JD-R model in the study by Galanti et al. (2021) and Kwon & Kim (2020) a reason for a decrease in well-being and leading to a decrease in performance. This is in line with the finding that the negative effect of remote work on well-being could have a negative effect on individual performance of an employee (Mesquita et al., 2020; Xie et al., 2019). On the other hand a positive effect of remote work on well-being found, is a better focus on the job tasks. (Iqbal et al., 2021; Smite et al., 2022). This positive effect is caused by a decrease in disturbance. Overall, based on the findings in the literature it is expected that well-being is mediating the relationship between remote work percentage and individual employee performance.

The fourth mediator is job satisfaction. Job satisfaction in a flexible working arrangement, like the hybrid work setting, can affect individual employee performance positively according to the job characteristics model in the study by De Menezes & Kelliher (2017). In addition to this is an increase in job satisfaction related to an increase in performance according to Topp et al. (2022). In line to these findings are the studies by Pass & Ridgway (2022), Savić (2020), and Wang et al. (2021). These studies found a positive relationship between remote work and job satisfaction. This, because the employees can focus better on their job. Moreover, the study by Yang et al. (2021) found, that job satisfaction is dependent on the job tasks done when working remote. Overall, based on the findings in the literature it is expected that job satisfaction is mediating the relationship between remote work percentage and individual employee performance.

The fifth mediator is communication. It is often mentioned that remote work makes it more difficult to communicate with team members. (Babapour Chafi et al., 2021; Iqbal et al., 2021). However, this is related to the quality of communication resources and not remote work itself. Communication is affecting the performance of an individual employee according to Garro-Abarca et al. (2021) and Horwitz et al. (2006). In the hybrid work setting it is important to overcome the communication challenges, because otherwise it will negatively affect the individual employee performance (Wang et al., 2021). Overall, it can be stated that remote work itself is not the problem with regard to communication, but that the quality of the communication resources is affecting the individual performance of an employee. Overall, based on the findings in the literature it is expected that communication is mediating the relationship between remote work percentage and individual employee performance.

The sixth mediator is trust relationship. In the hybrid work setting the trust relationship between an employee and a manager changed. The managers had to alter their way of managing and keeping to bond with their employees to maintain the same level of performance (Savić, 2020). In general, managers associated remote work with a loss in performance of the employees (Iqbal et al., 2021). This, because it is difficult to see the results of employees when they are working remote. According to Garro-Abarca et al. (2021) is the

trust relationship in the hybrid work setting an important mediating factor for managers to keep the employees motivated and achieve good performance. It is therefore, important that employees do not abuse the increased flexibility and that managers not over monitor the employees, because this can damage the trust relationship and in the end impact performance (Babapour Chafi et al., 2021). When an employee is abusing the flexibility or the manager is over monitoring the employee, this can lead to asymmetry between the demands of the employee and the manager. According to the social exchange theory used in the study by De Menezes & Kelliher (2017) can individual employee performance might be affected by this asymmetry. The goal is to mitigate this asymmetry to get the best possible trust relationship and performance. Overall, based on the literature it is expected that trust relationship is mediating the relationship between remote work percentage and individual employee performance.

Based on the six mediators and the findings in the literature the following six hypotheses are formulated.

> H2: (H2a) Attitudes towards remote work, (H2b) work engagement, (H2c) well-being, (H2d) job satisfaction, (H2e) communication, and (H2f) trust relationship will mediate the relationship between the percentage of remote work and individual employee performance.

2.7. Conceptual Framework

The findings in the literature review form the foundation of the conceptual framework. The links between the hybrid work setting, found in section 2.1., individual employee performance, found in section 2.2. and the employee behaviors, found in section 2.3. are the building blocks of the model of the conceptual framework. The model is shown in *Figure 1.*

The model consists of three main blocks; the work setting, the employee behaviors, and the performance outcome. The work setting block contains the variable remote work percentage. This variable measures the balance between working at the office and working remote. This is expressed as the percentage of remote work on a weekly basis. The employee behavior block contains the attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship variables. These variables are all focusing on the behavior of the employees. The performance outcome block contains the variable individual employee performance. This variable measures subjectively the individual performance of the employees. In addition to the three main blocks, there is also a control variable block. This block contains the variables gender, age, and company size.

These building blocks have potential relationships with each other. First remote work percentage has a potential direct effect on individual employee performance. Second the relationship between remote work percentage and individual employee performance is potentially mediated by the six employee behaviors; attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship. The six mediators are parallel to each other. According to Hayes (2022) this is also known as parallel

mediation process analysis. Third the three control variables; gender, age, and company size are not of direct interest, and are not expected to be related to one of the other variables. However, it might be possible that one of the control variables is influencing the relationship between remote work percentage and individual employee performance. Therefore, these three variables are controlled in the model.

Based on these potential relationships it can be stated that in the model remote work percentage is the independent variable, the six employee behaviors; attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship are the potential mediating variables, and individual employee performance is the dependent variable.

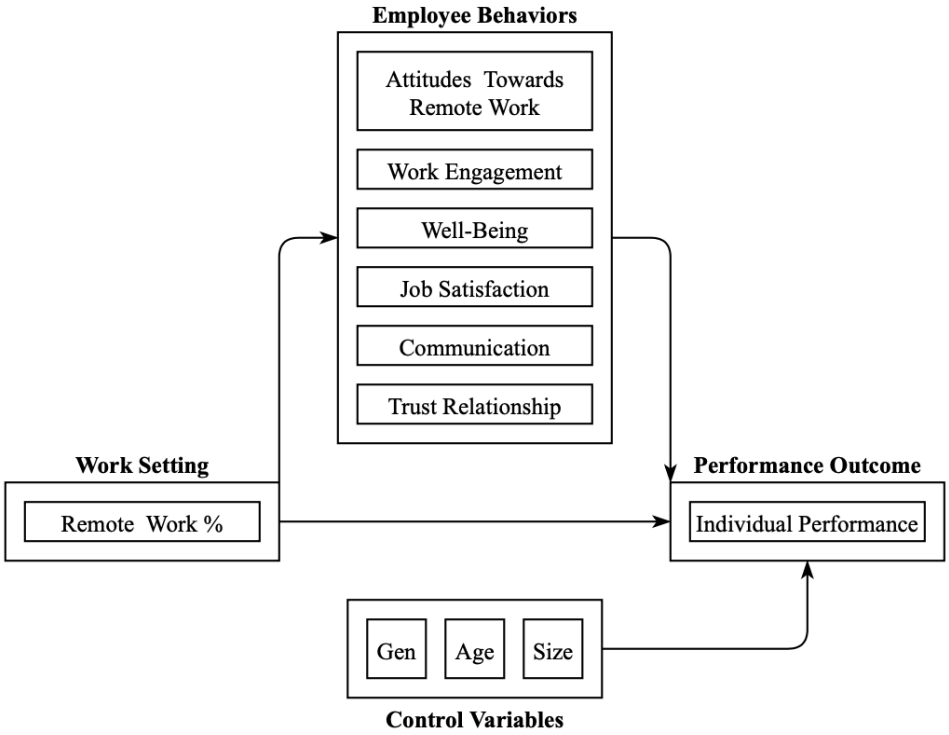

Figure 1 - Conceptual framework of the model

3. Methodology

In order to answer the research question *"How is the balance between office and remote work related with individual employee performance in the manufacturing industry?"* and sub-questions "*How do employee behaviors affect the relationship between the balance of office and remote work and individual employee performance?*" and "*What is the ideal balance between office and remote work in the hybrid work setting?"*, exploratory research is performed. The research strategy used, is a quantitative study. This strategy is chosen, because the hypotheses about the variables found in the literature review have to be tested. Hypothesis testing is a type of theory testing. The insights obtained from the quantitative study will help to find answers to the hypotheses and this together with the other insights will help to answer the research questions of the study. In this study the quantitative study is an online survey. The survey is performed by employees working for five different companies that are operating in the manufacturing industry. The survey provides insights on the effect of the balance between work at the office and work at a remote location on individual employee performance at the five companies. In addition, the survey provides insights about the potential mediating effect on that relationship by the employee behavior variables; attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship. Important to mention is that this survey only studied the individual employee performance at the five companies and not the team level performance.

The study has the following structure. First a literature review is performed and this is described in a theoretical chapter. The literature review studied the current state of the hybrid work setting, the importance of individual employee performance in relation with the hybrid work setting, employee behavior factors that may play a role in the hybrid work setting, and digitalization with regard to the hybrid work setting. Second hypotheses are formed. These hypotheses are formed by looking at the findings and theories found in the literature review. Third a conceptual framework is made. This framework is made by looking at the hypotheses and literature review. Fourth the theoretical chapter is used to perform empirical research. In this study the empirical research is a quantitative survey to collect data. The survey provides insights to answer hypothesis one and two. The answers for sub-questions one and two support the answer for the research question. Fifth the insights let to implications, limitations, and recommendations for future research.

3.1. The Sampling Process

When doing a quantitative survey, a target population must be defined. Based on this target population a sampling frame is defined. From this sampling frame a sample is drawn. The way this sample is drawn from the sampling frame is defined by a chosen sampling technique.

3.1.1. The Target Population

The target population of the study consists of individual employees, with a hybrid office job, working at companies that are operating in the manufacturing industry in the Netherlands.

The unit of analysis of this study are the individual employees. The companies are operating in different disciplines within the manufacturing industry. A requirement is, that the companies are at the moment using a form of the hybrid work setting in their daily operations. This means that employees have to opportunity to work a number of days at the office and a number of days remote on a weekly basis.

3.1.2. The Sampling Frame

A sampling frame is constructed that consists of individual employees within the target population. The individual employees of the sampling frame are accessible to participate in the study. Companies that fulfill the requirements of the target population are contacted to participate in the survey of the study. This is done by contacting the HRM departments of the companies and explain the goal of the study and how participating in the study could be beneficial for the companies themselves. The companies that are contacted vary from companies that were familiar by the researcher, to companies that were found online by searching at manufacturing companies within the province of South-Holland. In the end five companies were willing to participate in the survey.

The companies have in common that they are operating in the manufacturing industry, that they are located in the Netherlands, that they all implemented the hybrid work setting, and that the employees at the office are doing similar kind of job tasks. The difference is that each company is operating within a different discipline in the manufacturing industry. The first company is operating in the yacht industry. The company is making shaft installations for yachts across the world. The second company is operating in the oil industry. The company is making products for patrol stations. The third company is operating in the machine fabrication industry. The company is making coffee machines for offices across the world. The fourth company is operating in the metal industry. The company is recycling aluminum and coating different types of metal. The fifth company is operating in the house building industry. They are making prefabricated houses.

The employees working at the office for one of the five companies have in common that they are all allowed to work hybrid on a weekly basis and that their job tasks are very similar. The difference is that the companies have different arrangements with their employees with regard to remote work. Three of the five companies have an arrangement that describes the number of days an employee may work remote. This is based on the total number of days an employee is working. One company has the following arrangement when working four or five days in a week the employee is allowed to work two days remote and when working two or three days a week that employee is allowed to work one day remote. In contrast to this do the other two companies have a more flexible arrangement with their employees. The employees can decide when they are working remote, with the condition that if required the employee is coming to the office.

The main focus of the study is the potential effect of the independent variable on the dependent variable, and the potential mediating effects. The study is not focusing on the role of different job tasks on these variables. Therefore, it is important that the employees for the

five companies have similar main job tasks, otherwise differences between their job tasks, at the office or remote, could influence the variables being studied. Insights in the main job tasks of the employees are obtained by contacting the HRM managers of the companies. The main tasks of the employees can be divided in office tasks and remote tasks. When working at the office the employees are working on their daily tasks; mailing clients, meetings at the office with clients, discussing topics with the employees at the workplace, and working together with colleagues at the office e.g., employees of the design team. Most of these tasks can be done when working remote. However, walking to the workplace and discuss topics with employees at the workplace is not possible, as well as, having meetings with clients at the office. When working remote the employees are working together with the clients and other colleagues via online meeting tools, like Microsoft Teams.

The five companies have three communalities; the companies have in common that the overall industry is the same, the employees all have the possibility to work in the hybrid work setting, and the employees have very similar job tasks for each of the five companies. These three communalities made it possible to draw a good sample of individual employees from these five companies. However, it may be possible that this sampling frame is not representing the target population as a whole, resulting in conclusions that may not be generalizable, a.k.a. external validity, to the entire target population (Bhattacherjee, 2012). It can be concluded that the sampling frame consists of accessible individual employees, with a hybrid office job, that are working for one of the five companies operating within the manufacturing industry in South-Holland in the Netherlands.

3.1.3. The Sample

The sample is drawn from the sampling frame with the use of a non-probability sampling technique. When conducting non-probability sampling there is no equal chance of being selected form the target population. This can cause a sampling bias in the study and therefore, the sample is maybe not generalizable to the target population (Bhattacherjee, 2012). However, it was not possible to use the preferred probability sampling technique, because it is known that the employees are from one of the five companies and not from the entire target population. Therefore, it was not possible to draw a random sample of employees from the sampling frame.

To select a non-probability sample from the sampling frame the sampling type convenience sampling is used for this study. Convenience sampling is selecting the sample from a known part of the target population. In this study this went as follows; the survey is sent to the HR managers of the participating companies. Then the HRM managers forwarded the mail with the link to the online survey to the employees of the companies that met the requirements of office workers that are allowed to work in a hybrid work setting. These employees formed the sample.

3.2. Measures

The variables described in section 2.7. are measured with a survey. The survey contains scales and items for each variable. The scales and items used in the survey are found in the literature or self-created based on the literature. The survey also contains an informed consent. The informed consent is placed at the start of the survey. For a complete overview of the survey, see appendix A.

3.2.1. Dependent Variable

The dependent variable studied with the survey is individual employee performance. Individual employee performance is potentially explained by the independent and mediating variables (Bhattacherjee, 2012). Individual employee performance is measured with the short version of the self-assessment scale of job performance. This scale originally had twenty items, but Andrade et al. (2020) used confirmatory factor analysis to show that the scale is valid and can be reduced to ten items with the highest factor loadings. The items of the scale have a 5-point Likert scale, ranging from never to always. The individual employee performance scale is constructed by summing up the items of the short version of the self-assessment scale of job performance. The items of the scale are: (1) *"I perform hard tasks properly",* (2) "*I try to update my technical knowledge to do my job",* (3) *"I do my job according to what the organization expects from me",* (4) *"I plan the execution of my job by defining actions, deadlines and priorities",* (5) *"I plan actions according to my tasks and organizational routines",* (6) *"I take initiatives to improve my results at work",* (7) *"I seek new solutions for problems that may come up in my job",* (8) *"I work hard to do the tasks designated to me",* (9) *I execute my tasks foreseeing their results"* and (10) *"I seize the opportunities that can improve my results at work".* The ten items of the dependent variable are placed at the bottom of the survey and grouped together, see appendix A.

3.2.2. Independent Variable

The independent variable studied with the survey is remote work percentage. Remote work percentage is potentially explaining the dependent variable (Bhattacherjee, 2012). This variable determines which percentage of a work week an employee is working remote. This is done by asking the respondents, the self-created item: "*In the organization that I am working for, I work … days per week (a) remote / (b) at the office on average*". Part a and b are then added together and part a is then divided by the total score of a and b to determine the percentage of remote work in a week. The single item of the independent variable is placed after the demographic items in the survey, see appendix A.

3.2.3. Employee behavior variables

The employee behavior variables studied with the survey are attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship. The six employee behavior variables are potentially explaining the dependent variable, while at the

same time the six employee behavior variables are potentially explained by the independent variable; this is also known as a potential mediation relationship (Bhattacherjee, 2012). The first employee behavior variable studied with the survey is attitudes towards remote work. The items of the attitudes towards remote work scale are made based upon the insights from the existing literature discussed in section 2.1. Because the items of the scale are new, exploratory factor analysis and Cronbach's alpha tests are conducted in section 4.3. and 4.4.. The items of the self-created scale have a 5-point Likert scale, ranging from strongly disagree to strongly agree. The attitudes towards remote work scale is constructed by summing up the items. The items of the self-created scale are: (1) "*I have positive experiences with hybrid work*", (2) *"Hybrid work makes me feel more isolated"*, (3) *"Hybrid work is more cost efficient for me compared to office work"*, (4) *"Working in a hybrid setting gives me the chance to spend more time with family/friends"*, and (5) *"In a hybrid work setting I experience a better work-life balance"*.

The second employee behavior variable studied with the survey is work engagement. Work engagement is measured with the Utrecht Work Engagement Scale (UWES) (Schaufeli et al., 2006). The UWES used in this study is the UWES-9. The original UWES scale had seventeen items, but Schaufeli et al. (2006) used confirmatory factor analysis to show that the scale is valid and can be reduced to the UWES-9. In addition, the UWES-9 scale is tested on internal consistency. The items of the scale have a 7-point Likert scale, ranging from never to always. The work engagement scale is constructed by summing up the items of the UWES-9. The items of the scale are: (1) *"At my work, I feel bursting with energy",* (2) "*At my job, I feel strong and vigorous",* (3) *"I am enthusiastic about my job",* (4) *"My job inspires me",* (5) *"When I get up in the morning, I feel like going to work",* (6) *"I feel happy when I am working intensely",* (7) *"I am proud of the work that I do",* (8) *"I am immersed in my work",* and (9) *"I get carried away when I'm working".*

The third employee behavior variable studied with the survey is well-being. Well-being is measured with the WHO's 5-item well-being index (Topp et al., 2015). This scale is chosen, because it is the most used well-being scale in numerous study fields and it scores good on validity and internal consistency. The items of the scale have a 7-point Likert scale, ranging from never to always. The well-being scale is constructed by summing up the items of the WHO's 5-item well-being index. The items of the scale are: (1) *"I have felt cheerful and in good spirits",* (2) *"I have felt calm and relaxed",* (3) *"I have felt active and vigorous"*, (4) *"I woke up feeling fresh and rested",* and (5) *My daily life has been filled with things that interest me"*.

The fourth employee behavior variable studied with the survey is job satisfaction. Job satisfaction is measured with the Michigan Job Satisfaction Scale (Lawler et al., 2013). The items of the scale have a 5-point Likert scale, ranging from strongly disagree to strongly agree. The job satisfaction scale is constructed by summing up the items of the Michigan Job Satisfaction Scale. The items of the scale are: (1) *"All in all, I am satisfied, with my job,* (2) *"In general, I don't like my job",* and (3) *"In general, I like working here"*.

The fifth employee behavior variable studied with the survey is communication. The items of the communication scale are made based upon the insights from the existing literature

discussed in section 2.3.3. Because the items of the scale are new, exploratory factor analysis and Cronbach's alpha tests are conducted in section 4.3. and 4.4.. The items of the self-created scale have a 5-point Likert scale, ranging from strongly disagree to strongly agree. The communication scale is constructed by summing up the items. The items of the self-created scale are: (1) "*Hybrid meetings do work well"*, (2) *"Communication with colleagues has become more difficult in a hybrid work setting"*, (3) *"When working at the office I can communicate properly with colleagues working at the office or remotely"*, and (4) *"When working remotely I can communicate properly with colleagues working at the office or remotely".*

The sixth employee behavior variable studied with the survey is trust relationship. The items of the trust relationship scale are made based upon the insights from the existing literature discussed in section 2.3.4.. Because the items of the self-created scale are new, exploratory factor analysis and Cronbach's alpha tests are conducted in section 4.3. and 4.4.. The items of the self-created scale have a 5-point Likert scale, ranging from strongly disagree to strongly agree. The trust relationship scale is constructed by summing up the items. The items of the self-created scale are: (1) "*I experience a good trust relationship between me and the manager when working remotely"*, (2) *"I allow the manager to track my progress when I work remotely via IT systems"*, (3) *"I feel more monitored by the manager when working remotely compared to working at the office"*, and (4) *"The manager is giving me the flexibility to decide when to work remotely".*

The items of the employee behavior variables are placed after the independent variable in the survey. The items of the six employee behavior variables are placed in random order in the survey except the items of attitudes towards remote work. The items of attitudes towards remote work are placed right after the independent variable and grouped together, see appendix A.

3.2.4. Demographics

In the survey six demographic items are studied. These demographics potentially have a controlling effect on the dependent variable (Bhattacherjee, 2012). The survey has six demographic items. The demographic items are: (1) *"What is your gender?",* (2) *"What is your age?",* (3) *"Indicate how many years you studied after the elementary school",* (4) *"Indicate how many hours a week you work for the organization",* (5) *"Indicate your working experience in the current organization in number of years"*, and (6) *"Indicate the number of employees in the organization that you currently work for".* The six demographic items are placed after the informed consent in the survey, see appendix A.

3.2.5. Future of Hybrid Work

The survey has one item in the hybrid work section of the survey that asks the respondents: *"In a hybrid work setting, I prefer the following balance"*. The respondents could answer 100% remote, 75% remote, 50% remote, 25% remote, and 0% remote. This item is made to get insights in the preferences of employees when it comes to the balance between office and

remote work on a weekly basis. The single item about preferred working place balance, office and remote, is placed after the attitudes towards remote work items, see appendix A.

3.3. The Survey

A survey is often used in a quantitative study when the unit of analysis exists of individuals (Bhattacherjee, 2012). In this study the unit of analysis are individual employees. The survey is used to collect data about individual employees working for one of the five companies in the manufacturing industry in the Netherlands. The variables in the survey measured the relationship of the hybrid work setting, in this case the balance between office and remote work on a weekly basis, and individual employee performance. In addition, the variables measured how that relationship is potentially mediated by six employee behaviors. The survey type in this study is a structured online questionnaire that is self-administered by the individual employees. The employees got a mail from one of the HRM managers working at one of the five companies. In the mail was a link to the online survey platform. This survey platform was Microsoft Forms. Due to the time limit of the study, it was not possible to perform the survey two times for a longitudinal survey. Because of this time limit a cross-sectional survey is performed.

An advantage of a survey is, that in a relatively short time period data from a large group can be collected and analyzed (Bhattacherjee, 2012). The survey was open for respondents for two weeks. However, after two weeks the response rate was very low. The decision was then made to extent the survey period with another two weeks, to increase the response rate and try to find additional companies to participate in the study. The low response rate is a well-known bias of a survey. This bias, called non-response bias, is identified as a disadvantage of a survey by Bhattacherjee (2012). It is tried to address this problem by making the importance of the survey / study clear in the mail, as well as in the informed consent of the survey. In addition, reminders were sent to the employees about the survey and the period the survey was open.

In the end a total of 105 respondents participated in the survey. It is not possible to determine an exact response rate. The survey is sent to the employees via the HRM managers of the participating companies and the HRM managers did not communicate the number of employees the survey is sent to.

3.4. Research Ethics

In this study the participants of the survey are informed about the privacy and anonymity of the survey and the data collection method via an informed consent, see appendix A, at the start of the survey. Each participant got the choice to accept or decline the informed consent. Only the participants that accepted the informed consent are forwarded to the survey questions.

The survey platform used, Microsoft Forms, is in line with the general data protection regulation (GDPR). This regulation is about the privacy and protection of data. Therefore, it was necessary that the survey platform complied with the GDPR.

3.5. Pilot Test

The draft design of the survey is tested two times by an employee of each company and an expert on survey design. This small sample is called the pilot sample. This pilot testing is done to find potential problems within the survey, before the survey is filled in by the entire sample. The pilot test checked the content validity, terminology used in the survey and the duration of the survey. After each of the pilot tests the respondents gave feedback. The most important feedback was about the length of the survey and the understandability of the self-created scales. First, based on the feedback shorter scales are chosen, to get the survey length around 15 minutes. The shortened scales are the work engagement, job satisfaction, and individual employee performance scale. Second, based on the feedback the items of the self-created scales are altered to make them better understandable. After implementing this feedback, the final version of the survey is sent to the HRM managers of the five companies. Hereafter the survey was open for four weeks.

3.6. Software Used

The data from the survey is analyzed with four software packages. The first program is Microsoft Excel for Mac, version 16.63.1. Excel is used to transfer the data from the survey platform to a data sheet and to do the first data preparation steps. The second program used is IBM SPSS Statistics, version 28.0.1.1 (14). SPSS is used for the statistical analysis of the data from the survey. The third program is G*Power for Mac, version 3.1. G*Power is used to do a power analysis. The fourth program is Microsoft Word for Mac, version 16.65. Word is used to write the entire report and make the survey, before it was made in Microsoft Forms.

3.7. Data Collection

The survey itself is made in Microsoft Word. This is then transferred to Microsoft Forms, which is an online survey platform. This platform is chosen, because in the first place it is an easy-to-use survey platform. Second, it has the possibility to make a mail link of the online survey, which could be mailed to the HRM managers of the participating companies. This made it easy to spread the mail across the employees of the companies. Third, it is in line with the general data protection regulation of the EU. After the completion of the survey, it was possible in Microsoft Forms to put all the data of the respondents in one spreadsheet. This spreadsheet is downloaded and opened in the spreadsheet program Excel.

The companies will not get access to this raw spreadsheet with all the data of the survey. They will only get access to the final report with the insights, that are based on the data.

3.8. Preparing the Data

3.8.1. Preparation in Excel

After four weeks the survey closed, which made it no longer possible, for the employees working at the five manufacturing companies, to fill in the survey. After the closing of the

survey on Microsoft Forms the data is transferred from Microsoft Forms to an Excel data file. In Excel the data is prepared for statistical analysis in SPSS.

The first step after transferring the data to Excel, was to change the names of the columns. Some columns had a very long variable name. It is recommended to make variable names not longer than eight characters when using SPSS. Therefore, the item names in the survey changed to an abbreviated item name, based on the survey item list, see appendix B.

The second step in Excel was, to check the data on input errors from the respondents of the survey. This is an important step, because it is possible that respondents of the survey made errors when filling in the answers in the demographic section, for items with an open answer e.g., too high values in the demographic item about the age of the respondents or a string input instead of a number. Every item of the survey is checked on these input errors, but no errors were found in the data set.

3.8.2. Preparation in SPSS

After the two data preparation steps in Excel the next step was to import the data from Excel into the statistical analysis program SPSS and prepare the data set. To work with SPSS, data preparation steps are required to make the data set ready for statistical analysis.

The first step in SPSS was, reordering the items in the SPSS data set. The items of the hybrid work and individual employee performance scales were asked in the correct order in the survey. Therefore, it was not necessary to reorder them in SPSS. However, the items of the work engagement, well-being, job satisfaction, communication, and trust relationship scales were not in the correct order in the survey. In the survey the items of these five scales were randomly ordered to prevent biases. Therefore, to make working with the data set in SPSS more straightforward the order of these items is changed to the order as it is in appendix A.

The second step in SPSS was, to determine the measurement level for all the items used in the survey. The items in the survey have nominal, ordinal, and ratio measurement levels. An overview of the measurement level for each item in the survey is shown in appendix C.

The third step in SPSS was, looking for respondents that have to be excluded from the data set, because of distinct reasons. In total 2 of the 105 respondents are excluded from the data set. The first respondent is excluded, because the respondent answered “no” at the informed consent item. Answering this question with no, stopped the survey. Therefore, this respondent was not relevant in the analysis of the data. The second respondent is excluded, because the respondent only answered “yes” at the informed consent item and left all the other items blank. Therefore, this respondent was also not relevant in the analysis of the data.

The fourth step in SPSS was, controlling the data set for missing values. Missing values can be defined as items for which a respondent did not fill in an answer. Throughout the data set multiple respondents left an item blank. The respondents left primarily one or two items blank. In SPSS item responses with missing values are indicated with “-“ in SPSS. The missing values in the data set are seen as system missing by SPSS in the further part of the analysis.

The fifth step in SPSS was, creating dummy variables for the gender item that has a nominal measurement level. The 3-level categorical item gender (D1) contains the genders male, female, and other. In the data set only one of the 105 respondents filled in other, for item D1. After doing the analysis in section 4. it became clear that the 'other' category of D1 is not significant, because the number of respondents answering 'other' was too low. Because of this non-significance of the 'other' category the respondent that filled in 'other' is removed from the data set. Consequently, the dummy variables are created for the 2-level categorical item D1, instead of the 3-level categorical item D1. Item D1 has a nominal measurement level and to make statistical analysis possible with an item that has a nominal measurement level it is required to make dummy variables for the item. For item D1 a dummy variable for the female category is made. The dummy variable is named D1F. The male category of item D1 is used as the reference category as shown in *Table 1*.

Gender	Original – D1	Dummy – D1F
Male	1	0
Female	2	1

Table 1 - Recoding gender into dummy variables

The sixth step in SPSS was, reverse coding the items that are asked in a negative way in the survey e.g., *"Hybrid work makes me feel more isolated"*. For Items that are asked in a negative way it is better to give a low score and worse to give a high score. This is in contrast with items that are not asked in a negative way, because there a high score is better than a low score. Therefore, the scores of the items that are asked in a negative way are reversed coded to be in line with the scores of the other items of the scales in the survey. The reverse coded items are named with _REV in SPSS e.g., HW3 -> HW3_REV. The reverse coding for item HW3 is done like: 1 = strongly disagree -> 1 = strongly agree, 2 = disagree -> 2 = agree, 3 = undecided -> 3 = undecided, 4 = agree -> 4 = disagree, and 5 = strongly agree -> 5 = strongly disagree. The reverse coded items are HW3 *"Hybrid work makes me feel more isolated*", JS2 *"In general, I don't like my job", CM2 "Communication with colleagues has become more difficult in a hybrid work setting"*, and TR3 *"I feel more monitored by the manager when working remotely compared to working at the office".*

The seventh step in SPSS was, combing two items to make one item for the analysis. Item HW1a *"In the organization that I am working for, I work … days per week remotely on average"* and HW1b *"In the organization that I am working for, I work … days per week at the office on average"* are combined into one item, which is named HW1. HW1 describes the percentage an employee is working remote on an average weekly basis. In item HW1 working 100% remote is similar to the value 1.00 and working 0% remote is similar to the value 0.00. This item is calculated by taking the total score of items HW1a and HW1b and divide HW1a by that total score. The benefit of item HW1 is, that it is not taking into consideration the number of days a respondent is working. It is only looking at the percentage that the respondent is working remote compared to office work e.g., a respondent working 1 day remote, HW1a,

and 1 day at the office, HW1b gives a HW1 of 0.50 which is similar to a respondent who is working 2 days remote and 2 days at the office.

The last step in SPSS was, checking for outliers in the data set. The survey items that have a Likert scale are not tested on outliers, because for these items the respondents had to choose between a fixed number of possible answers. This makes it impossible to have an outlier in these items. For the other items in the survey three types of outliers are tested. The first type of outliers is looking at the maximum and minimum values of the items. This is done for the items D2 *"What is your age?",* D3 *"Indicate how many years you studied after the elementary school"*, and D5 "*Indicate your working experience in the current organization in number of years"*. According to SPSS a value can be seen as an outlier when the value is more than 1.5 times the interquartile range and less than 3 times the interquartile range. With the interquartile range being the length of the box in the box plot. For items D2 and D3 no outliers are found after analyzing the box plots. However, for item D5 three possible outliers are found. The possible outliers are respondents that have a working experience of 29 and 30 years for the company. Although the boxplot indicated 29 and 30 years as possible outliers, the outliers are kept in the data set, because 29 and 30 years are within the possible range of answers for item D5. The second type of outliers had to do with a mismatch between item D4 *"Indicate how many hours a week you work for the organization"* and HW1a/b *"In the organization that I am working for, I work … days per week remotely / at the office on average"*. When a respondent answered for item D4 that the respondent is working 33-40 hours a week, then the total number of days this respondent is working has to match five in item HW1a/b and when a respondent answered 25-32 hours a week, then the total number of days this respondent is working has to match four in item HW1a/b, etc. However, multiple respondents had a mismatch between the values of D4 and HW1a/b, where the total hours worked during the week were not matching the total number of days the respondent worked. Therefore, the decision is made to left item D4 out of the analysis and only use item HW1a/b. Also, because the combination of HW1a/b, HW1, is the independent variable of the model. The last type of outliers are answers on items that are not logic within a scale e.g., giving a high score on a reversed negative item and giving a low score on non-reversed items within the same scale. In this example the reversed negative item also has to have a low score to be in line with the non-reversed low scored items. Although, in the data set no outliers like this are found.

4. Results

This section describes how the survey data is analyzed. The data of the survey is analyzed with the use of the software package SPSS and the extension for SPSS, called PROCESS. In section 4.1. to 4.9. different tests are done to check the descriptive statistics, validity and reliability of the data. In section 4.10., the model is run to see if there are significant relationships and mediating effects.

4.1. Demographics

The demographic items in the survey are analyzed by looking at the statistics of the items. The statistics that are analyzed, are the percentage for the items gender (D1) and number of employees (D6) and the mean, minimum, maximum, and standard deviation for the items age (D2), years studied (D3), and working experience (D5). The descriptive statistics for each of the demographic items are shown in *Table 2*. For item D1 it is found that 68 of the respondents were male (66.70%) and 34 female (33.30%); for item D2 it is found that the average age of the respondents was 40.49 years old (SD = 12.46), with a minimum value of 20 years old and a maximum value of 66 years old; for item D3 it is found that the average years studied after the elementary school was 8.62 (SD = 2.83), with a minimum value of 1 year and a maximum value of 14 years; for item D5 it is found that the average years working experience in the current company was 8.36 years (SD = 7.79) with a minimum value of 1 year and a maximum value of 30 years; and for item D6 it is found that 5 of the respondents worked at a company with < 10 employees (4.90%), 7 with 10 – 25 employees (6.90%), 31 with 26 – 100 employees (30.40%), and 59 with > 100 employees (57.80%).

Sample Characteristics	n	$n_{missing}$	%	Mean	Min	Max	SD
D1 – Gender							
Male	68		66.70%				
Female	34		33.30%				
Total	102		100%				
D2 – Age	102			40.49	20	66	12.46
D3 – Years studied	99	3		8.62	1	14	2.83
D5 – Working Experience	100	2		8.36	1	30	7.79
D6 – Number of Employees							
< 10	5		4.90%				
10 – 25	7		6.90%				
26 – 100	31		30.40%				
> 100	59		57.80%				
Total	102		100%				

Note: sample size n=102

Table 2 - Demographic Characteristics of the Respondents

4.2. Reliability testing for Scales from Literature

When doing statistical analysis, it is important to the reliability of the scales used in the model. This is important because, the scales have to measure the same every time the scale is used.

In this study the reliability is tested with the use of the Cronbach's alpha test. This test is testing whether a scale scores good on internal consistency or not. Testing the internal consistency of the scale is done by looking at the positive correlation between the different items in a scale. The higher the value of Cronbach's alpha, the better the correlation between the items in the scale. The Cronbach's alpha test uses a threshold value so that can be stated that the calculated alpha value is high enough to indicate that the scale is reliable. The Cronbach's alpha threshold value for reliability is often discussed in literature. According to Cho & Kim (2015) Nunnally stated in the first edition of psychometric theory that a Cronbach's alpha value of 0.60 is the threshold value to say that a scale is reliable or not. This value has changed in studies conducted after the first edition of psychometric theory. In the second edition of psychometric theory Nunnally stated that an alpha value of 0.70 is the threshold value for Cronbach's alpha to say that a scale is reliable or not (Nunnally, 1978). When Nunnally determined these threshold values he did not take the number of items into consideration. However, according to Cortina (1993) do the number of items in a scale influence the height of the calculated Cronbach's alpha value, which makes it important to take this into consideration when calculating Cronbach's alpha values. From these studies it is clear that there are different ideas about the best way to calculate the Cronbach's alpha value and the determination of the threshold value. These mixed ideas are also found in the studies by Pallant (2020) and Schmitt (1996). For this reliability test the Cronbach's alpha threshold value is set to at least 0.60, and preferably above 0.70. The Cronbach's alpha test is done for the scales work engagement, well-being, job satisfaction, and individual employee performance. The results of the analysis are shown in *Table 3*. All the scales are completely filled in by 101 of the 102 respondents. The 9-item work engagement scale is reliable with a Cronbach's alpha value of 0.808, the 5-item well-being scale is reliable with a Cronbach's alpha value of 0.791, the 3-item job satisfaction scale is reliable with a Cronbach's alpha value of 0.688, and last the 10-item individual employee performance scale is reliable with a Cronbach's alpha value of 0.852. For detailed information on the Cronbach's alpha test per scale, see *Table 8* to *Table 11 in* appendix E. These tables provide information about the corrected item-total correlation for each item of the scales and the Cronbach's alpha value if an item in a scale is deleted for each of the scales.

Variable	Number of Items	Cronbach's Alpha
Work Engagement (WE)	9	0.808
Well-Being (WB)	5	0.791
Job Satisfaction (JS)	3	0.688
Individual Employee Performance (IP)	10	0.852

Table 3 - Reliability statistics for the scales from literature

4.3. Validity testing for Self-Created Scales

When doing statistical analysis, it is important to check the new scales in the model on validity. This is important, because the scales have to measure wat it is intended to measure. In this study the validity is tested with the use of exploratory factors analysis (EFA). This test is testing

whether the items of the new, self-created, scales are loading together as theorized. Testing this loading of items is done by separating items that are highly correlated from items that correlate less strongly into different factors. The EFA is done for the, self-created, scales attitudes towards remote work, communication, and trust relationship. The EFA used the principal component analysis and the varimax rotation. Missing values in the data set are excluded with the use of pairwise exclusion in the EFA. The value for the minimum factor loading is set to 0.40. Values below 0.40 are not displayed in the EFA. Minimum factor loading values above 0.40 can be considered as 'good' for the analysis (Ford et al., 1986; Hinkin, 1995; Howard, 2016). The minimum value for Kaiser-Meyer Olkin (KMO) is to 0.60 for the analysis, because according to Howard (2016) the KMO value has to be above 0.60 for the data being appropriate in the EFA. The Bartlett's test of sphericity value is set to below 0.05, because according to Williams et al. (2010) the Bartlett's test value has to be below 0.05 for the data being significant in the EFA.

The aim of the EFA is to find the three scales attitudes towards remote work, communication, and trust relationship. In the first EFA the KMO test value was 0.708, which indicated that the data for the EFA was appropriate. The Bartlett's test of sphericity value was < 0.001, which indicated that the data was significant for EFA. In the EFA four different factors are found. The four factors accounted for 61.24 percent of the variance of the items included in the EFA. Based on the analysis of the EFA data it is found that items HW4 *"Hybrid work is more cost efficient for me compared to office work"* and TR2 *"I allow the manager to track my progress when I work remotely via IT systems"* were not loading with the desired factors of attitudes towards remote work and trust relationship. Therefore, these two items are removed from the scales attitudes towards remote work and trust relationship. For detailed information on the EFA, see *Table 12 in* appendix E. This table provides information about each item in the EFA. For each item the factor loading value is displayed. This table makes clear that HW4 and TR2 were not loading the desired factors.

After removing the two items a second EFA was performed. The KMO test value was 0.724, which indicated that the data for the EFA was appropriate. The Bartlett's test value was < 0.001, which indicated that the data was significant for EFA. In the EFA three different factors are found. The three factors found in the EFA accounted for 59.84 percent of the variance of the items included in the EFA. Based on the analysis of the EFA data three factors are found. The first factor is the scale attitudes towards remote work, consisting of the items HW2, HW3_REV, HW5, and HW6, the second factor is the scale communication, consisting of the items CM1, CM2_REV, CM3, and CM4, and the third factor is the scale trust relationship, consisting of the items TR1, TR3_REV, and TR4. The finding of these three scales is the desired outcome of the EFA. Therefore, these three factors are based on the exploratory factor analysis kept in the model. For more detailed information on the EFA, see *Table 13* in appendix E.. This tables provides information about each item in the EFA. For each item the factor loading is displayed. This tables makes clear that the items were loading the desired factors.

4.4. Reliability testing for Self-Created Scales

When doing statistical analysis, it is important to check the, self-created, scales in the model on reliability after the exploratory factor analysis. The reliability test used in this analysis is the Cronbach's alpha test, which measures the internal consistency of a scale. This test, tests the positive correlation between the different items in a scale. The higher the value of Cronbach's alpha, the better the correlation between the items in the scale. This results in a high internal consistency. For this analysis the Cronbach's alpha threshold value is set to at least 0.60, and preferably above 0.70. A detailed explanation of the threshold value choice is provided in section 4.2.. The Cronbach's alpha test is done for the scales attitudes towards remote work, communication, and trust relationship. The results of the analysis are shown in *Table 4*. The scales attitudes towards remote work and trust relationship are completely filled in by 101 of the 102 respondents and the scale communication is completely filled in by 100 of the 102 respondents. The 4-item attitudes towards remote work scale is reliable with a Cronbach's alpha value of 0.739, the 4-item communication scale is reliable with a Cronbach's alpha value of 0.753, and last the 3-item trust relationship scale is not reliable with a Cronbach's alpha value of 0.585. The Cronbach's alpha value of the trust relationship scale is below the threshold value of 0.60. Therefore, the trust relationship scale is not included in the further analysis of the model. For detailed information on the Cronbach's alpha test per scale, see *Table 14* to *Table 16 in* appendix E. These tables provide information about the corrected item-total correlation for each item of the scales and the Cronbach's alpha value if an item in a scale is deleted for each of the scales.

Variable	Number of Items	Cronbach's Alpha
Attitudes Towards Remote Work (ATRW)	4	0.739
Communication (CM)	4	0.753
Trust Relationship (TR)	3	0.585

Table 4 - Reliability statistics for the scales that are self-created

4.5. Descriptive Statistics for the (Multi)-Item Scales

The scales in the model are analyzed by looking at the statistics of the mean values of the scales. The mean values of the scales are determined by combining all the items of each scale in a total scale score and divide that by the number of items in each scale. The statistics that are analyzed are the mean, minimum, maximum, and standard deviation for remote work percentage, attitudes towards remote work mean, work engagement mean, well-being mean, job satisfaction mean, communication mean, and individual employee performance mean. The descriptive statistics for each of the scales are shown in *Table 5*. For the remote work percentage scale it is found that the average value was 0.27 percent remote work (SD = 0.26), with a minimum value of 0.00 and a maximum value of 1.00; for the attitudes towards remote work scale it is found that the average value was 3.49 (SD = 0.91), with a minimum value of 1.00 and a maximum value of 5.00; for the work engagement scale it is found that the average value was 5.27 (SD = 0.70), with a minimum value of 2.89 and a maximum value of 6.89; for

the well-being scale it is found that the average value was 5.35 (SD = 0.77), with a minimum value of 2.80 and a maximum value of 6.80; for the job satisfaction scale it is found that the average value was 4.50 (SD = 0.56), with a minimum value of 2.33 and a maximum value of 5.00; for the communication scale it is found that the average value was 3.68 (SD = 0.73), with a minimum value of 1.75 and a maximum value of 5.00; and for the individual employee performance scale it is found that the average value was 4.17 (SD = 0.44), with a minimum value of 3.00 and a maximum value of 5.00.

	n	Mean	Min	Max	SD
Remote Work % (HW1)	102	0.27	0.00	1.00	0.26
Attitudes Towards Remote Work Mean (ATRW_M)	102	3.49	1.00	5.00	0.91
Work Engagement Mean (WE_M)	102	5.27	2.89	6.89	0.70
Well-Being Mean (WB_M)	102	5.35	2.80	6.80	0.77
Job Satisfaction Mean (JS_M)	102	4.50	2.33	5.00	0.56
Communication Mean (CM_M)	102	3.68	1.75	5.00	0.74
Individual Employee Performance Mean (IP_M)	102	4.17	3.00	5.00	0.44

Note: sample size n=102

Table 5 - Descriptive statistics for scale total scores

4.6. Correlation (Pearson & Spearman)

The variables used in the model are checked on reliability with the Cronbach's alpha test and the, self-created, variables are in addition tested on validity with an exploratory factor analysis before the Cronbach's alpha test. The next step was testing the correlation of the variables used in the model. This is important, because a correlation matrix gives an indication of the relationships between variables. In this study the correlation is tested with the use of two correlation tests. The first test is the Pearson's correlation and the second test is the Spearman's correlation. These tests measure the existence of a co-relationship between two variables. What the tests do not measure is the existence of a causal relationship between the variables. It is because of this not a problem if the correlation matrix shows non-significant correlations between two variables in the model e.g., the independent and dependent variable can have a non-significant correlation and still have a significant causal relationship (Hayes, 2022; Zhao et al., 2010). According to Sekaran & Bougie (2016) a p-value of 0.05 and lower indicates that a correlation is significant. This p-value threshold is used in both tests to indicate whether or not the correlation is significant (two-tailed). Missing values in the data set are excluded with the use of pairwise exclusion for the correlation tests. The correlation values obtained from the correlation test have a value between 0.00 and 1.00. Correlation values, r, between 0.10 and 0.29 can be considered as 'weak', between 0.30 and 0.49 can be considered as 'moderate', and between 0.50 and 1.00 can be considered as 'strong' for the analysis (Cohen, 1988).

The correlation tests investigated all the possible correlations between the variables of the conceptual framework, except the trust relationship variable, see *Figure 1*. The trust

relationship variable is not included in the correlation analysis, because the scale had a too low Cronbach's alpha value, see section 4.4.. The other values of the conceptual framework used the two tests to analyze the correlations. The Pearson correlation is used for the variables with an interval or ratio scale. The variables are remote work percentage (HW1), attitudes towards remote work (ATRW_M), work engagement (WE_M), well-being (WB_M), job satisfaction (JS_M), communication (CM_M), and individual employee performance (IP_M), as well as the control variable age (D2). The Spearman's correlation is used for the control variables gender (D1) and company size (D6), because these variables have a nominal or ordinal scale, see appendix C. A detailed overview of the correlation matrix is shown in *Table 6*. In the subsequent paragraphs the significant correlations are discussed.

Remote work percentage had a moderate, positive, and significant correlation with attitudes towards remote work ($r = 0.46$; $p = <0.001$; $N = 102$). The effect size for remote work percentage ($r^2 = 0.21$) indicated that remote work percentage accounted for 21 percent of the variability in attitudes towards remote work; remote work percentage had a weak, positive, and significant correlation with communication ($r = 0.22$; $p = 0.024$; $N = 102$). The effect size for remote work percentage ($r^2 = 0.05$) indicated that remote work percentage accounted for 5 percent of the variability in communication; and remote work percentage had a weak, negative, and significant correlation with company size ($r = -0.20$; $p = 0.047$; $N = 102$). The effect size for remote work percentage ($r^2 = 0.04$) indicated that remote work percentage accounted for 4 percent of the variability in company size.

Attitudes towards remote work had a moderate, positive, and significant correlation with communication ($r = 0.41$; $p = <0.001$; $N = 102$). The effect size for attitudes towards remote work ($r^2 = 0.17$) indicated that attitudes towards remote work accounted for 17 percent of the variability in communication.

Work engagement had a strong, positive, and significant correlation with well-being ($r = 0.54$; $p = <0.001$; $N = 102$). The effect size for work engagement ($r^2 = 0.29$) indicated that work engagement accounted for 29 percent of the variability in well-being; work engagement had a strong, positive, and significant correlation with job satisfaction ($r = 0.65$; $p = <0.001$; $N = 102$). The effect size for work engagement ($r^2 = 0.42$) indicated that work engagement accounted for 42 percent of the variability in job satisfaction; work engagement had a moderate, positive, and significant correlation with individual employee performance ($r = 0.45$; $p = <0.001$; $N = 102$). The effect size for work engagement ($r^2 = 0.20$) indicated that work engagement accounted for 20 percent of the variability in individual employee performance; and work engagement had a moderate, positive, and significant correlation with age ($r = 0.33$; $p = <0.001$; $N = 102$). The effect size for work engagement ($r^2 = 0.11$) indicated that work engagement accounted for 11 percent of the variability in age.

Well-being had a moderate, positive, and significant correlation with job satisfaction ($r = 0.38$; $p = <0.001$; $N = 102$). The effect size for well-being ($r^2 = 0.14$) indicated that well-being accounted for 14 percent of the variability in job satisfaction. Well-being had a weak, positive, and significant correlation with communication ($r = 0.21$; $p = 0.035$; $N = 102$). The effect size for well-being ($r^2 = 0.04$) indicated that well-being accounted for 4 percent of the variability in

communication; and well-being had a weak, positive, and significant correlation with individual employee performance (r = 0.20; p = 0.043; N = 102). The effect size for well-being (r^2 = 0.04) indicated that well-being accounted for 4 percent of the variability in individual employee performance.

Job satisfaction had a moderate, positive, and significant correlation with individual employee performance (r = 0.39; p = <0.001; N = 102). The effect size for job satisfaction (r^2 = 0.15) indicated that job satisfaction accounted for 15 percent of the variability in individual employee performance; job satisfaction had a weak, positive, and significant correlation with age (r = 0.27; p = <0.001; N = 102). The effect size for job satisfaction (r^2 = 0.07) indicated that job satisfaction accounted for 7 percent of the variability in age.

Individual employee performance had a weak, positive, and significant correlation with age (r = 0.23; p = 0.020; N = 102). The effect size for individual employee performance (r^2 = 0.05) indicated that individual employee performance accounted for 7 percent of the variability in age.

		HW1	ATRW_M	WE_M	WB_M	JS_M	CM_M	IP_M	D2	D1	D6
HW1	Pearson's r	-									
	p-value	-									
ATRW_M	Pearson's r	.46**	-								
	p-value	<.001	-								
WE_M	Pearson's r	-.19	-.16	-							
	p-value	.059	.110	-							
WB_M	Pearson's r	.01	.02	.54**	-						
	p-value	.910	.875	<.001	-						
JS_M	Pearson's r	-.16	-.14	.65**	.38**	-					
	p-value	.101	.157	<.001	<.001	-					
CM_M	Pearson's r	.22*	.41**	.06	.21*	.01	-				
	p-value	.024	<.001	.557	.035	.887	-				
IP_M	Pearson's r	-.04	-.02	.45**	.20*	.39**	.11	-			
	p-value	.683	.833	<.001	.043	<.001	.254	-			
D2	Pearson's r	-.13	-.19	.33**	.13	.27**	-.16	.23*	-		
	p-value	.212	.051	<.001	.193	.006	.102	.020	-		
D1	Spearman's r_s	.02	.16	.13	.10	.05	.15	.13	-.10	-	
	p-value	.862	.104	.201	.315	.637	.135	.192	.314	-	
D6	Spearman's r_s	-.20*	.03	.05	-.07	.12	.00	.06	.16	-.03	-
	p-value	.047	.779	.648	.514	.249	.990	.579	.100	.804	-

*Note. **. Correlation is significant at the 0.01 level (2-tailed).*
*Note. *. Correlation is significant at the 0.05 level (2-tailed).*
Note. Row D1 and D6 are estimated with Spearman's correlation.
Note. N=102 for all correlation pairs.

Table 6 – Correlations (Pearson & Spearman)

4.7. Multicollinearity Check

Before a regression model is performed, it is important to check the independent variables of the model for multicollinearity. This is important, because multicollinearity impacts the accuracy of the findings in the model. The desired outcome is that there is no multicollinearity. In this study the independent variables are checked for the existence of multicollinearity with the use of the variance inflation factor (VIF) test. This test is testing whether the VIF values of

the variables are below the threshold value or not. According to Sekaran & Bougie (2016) and Pallant (2020) a VIF value of 10 is the desired threshold value for the variables. Values below 10 are good and values above 10 indicate that there is multicollinearity. The results of the analysis are shown in *Table 7*. For all the independent variables the VIF value was below 10. It can be concluded that there was no multicollinearity for the independent variables in the model of the study.

	Statistics VIF
Remote Work % (HW1)	1.31
Attitudes towards Remote Work (ATRW_M)	1.48
Work Engagement (WE_M)	2.18
Well-Being (WB_M)	1.49
Job Satisfaction (JS_M)	1.75
Communication (CM_M)	1.27

Note. Dependent variable: individual employee performance (IP_M).

Table 7 - Multicollinearity check

4.8. Common Method Bias

Before a regression model is performed, it is important to check for the existence of a common method bias. This is important, because it indicates if a bias occurred due to the measurement instrument of the study. In this study the variables are checked for common method bias with the use of the Harman's single factor test. According to Aguirre-Urreta & Hu (2019) a Harman's test value of 50 percent is the threshold value. This indicates that 50 percent of the variance or less is explained by the single factor. The test is conducted via exploratory factor analysis by setting the extracted factors to a fixed value of 1. The variance found with the Hartman's single factor test was 34.49 percent. The value is below the threshold value of 50 percent. It can be concluded that there does not exist a common method bias in the model of this study.

4.9. Power Analysis Post Hoc

Before a regression model is performed, it is important to perform a power analysis. This is important, because with the power analysis the right sample size can be determined. To perform this test the effect size is required. However, because there is little research on this topic it was not possible to determine the effect size for the power analysis. Therefore, a post hoc power analysis is conducted. This test determined if there was enough power in the model. The statistical power is the probability that SPSS will indicate statistical significance when there is indeed statistical significance. The desired power is a value of 0.80 or higher (Cohen, 1988). With G*Power the statistical power is calculated based on the significance level alpha (α), the effect size, the sample size and the number of predictors. For this analysis an alpha value of 5 percent is used (Cohen, 1988). The effect size used for this analysis is 0.39, and is determined with the use of R^2. This R^2 value is 0.25 and is obtained from the analysis of the model. The sample size used for this analysis is 102. The number of predictors for this analysis is 10. Putting these values in G*Power led to a statistical power of 0.99. The value is

above the threshold value of 0.80. This means that the regression model had enough power to indicate that there is statistical significance, when there is indeed statistical significance.

4.10. Model Analysis

This section analyzes the relationships between the variables of the conceptual framework, see *Figure 1*. The individual variables are test on reliability and validity. The variables together are tested on correlation, multicollinearity, common method bias and sample power. These analyzes can be found in section 4.1. to 4.9.. The sample for the data set of the model consist of 102 respondents working at five different companies in the manufacturing industry in the Netherlands. The model tested three potential relationships. The first potential relationship is the direct effect of remote work percentage (X) on individual employee performance (Y). This is indicated by the black line in the statistical model, shown in *Figure 2*. The second potential relationship is the indirect effect of remote work percentage (X) on individual employee performance (Y) via the five potential mediators; attitudes towards remote work (M1), work engagement (M2), well-being (M3), job satisfaction (M4), and communication (M5). This is indicated by the blue lines in the statistical model, shown in *Figure 2*. The third potential relationship is the effect of the covariables; gender (C1), age (C2), and company size (C3) on individual employee performance (Y). This is indicated by the red lines in the statistical model, shown in *Figure 2*.

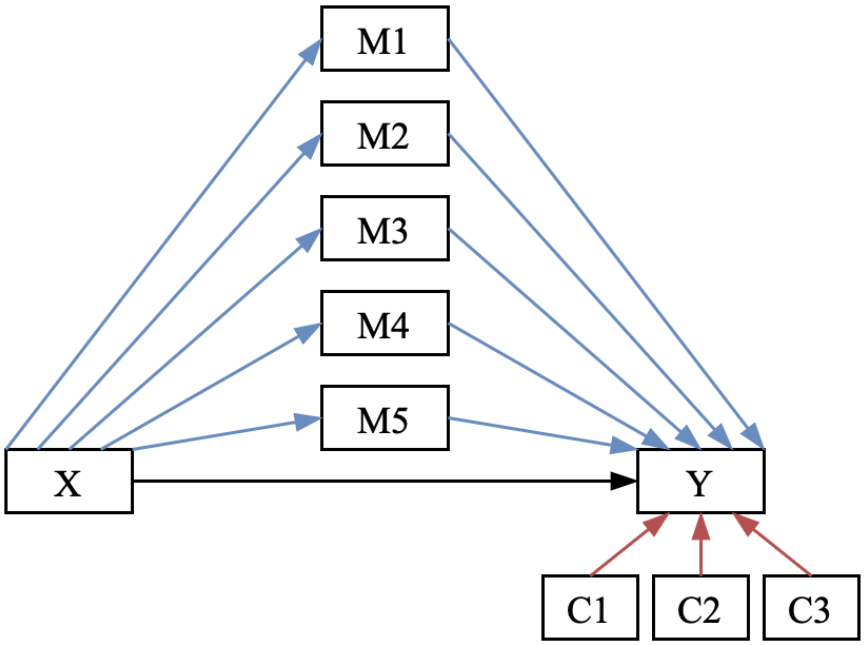

Figure 2 - Statistical diagram of the model

This type of analysis is also known as parallel mediation process analysis (Hayes, 2022). The statistical model is executed with an extension of SPSS, called PROCESS. The model is executed in PROCESS with the use of model four (Hayes, 2022). Template model four tells PROCESS how the independent variable (X), the potential mediating variables (M1-M5), the

covariates (C1-C3), and the dependent variable (Y) potentially relate with each other. In the model a bootstrap set of 5000 samples is used and the confidence interval is set to 95 percent. The analysis for the model is done with the outcome data set created by PROCESS. The outcome data set that is generated by PROCESS is shown in appendix D. Not all the information in the outcome data set is used in the analysis. The PROCESS extension creates a lot of data which was not needed for this analysis. In section 4.10.1. to section 4.10.4. the analysis of the model is described in detail, by looking at the sub-models, the direct effect, and the indirect effect.

4.10.1. Analysis of the Sub-Models

The model consists of six sub-models, see *Figure 2*. Sub-model one to sub-model five describe the relationship between the independent variable remote work percentage (X) and the five potential mediating variables attitudes towards remote work (M1), work engagement (M2), well-being (M3), job satisfaction (M4), and communication (M5). These relationships are shown in *Figure 3.* The sixth sub-model describes the relationship between the independent variable, the potential mediating variables, and the dependent variable individual employee performance (Y). These relationships are shown in *Figure 4.*

Sub-model one involves the relationship of the independent variable remote work percentage (X) on attitudes towards remote work (M1). The relationship is shown in *Figure 3.* The model consists of regressing attitudes towards remote work (M1) onto remote work percentage (X). The independent variable remote work percentage (X) in sub-model one explained for statistically significant variation in attitudes towards remote work (M1), R^2 = 0.21, F(1, 100) = 26.95, p = <0.001. In this model there was evidence that remote work percentage (X) was a statistically significant positive (b = 1.60, s.e. = 0.31, t(100) = 5.19, and p = <0.001) independent variable of attitudes towards remote work (M1).

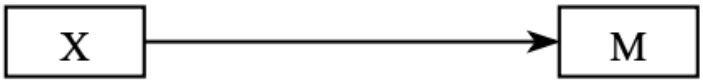

Figure 3 - Statistical diagram of sub-model 1 to 5

Sub-model two involves the relationship of the independent variable remote work percentage (X) on work engagement (M2). The relationship is shown in *Figure 3.* The model consists of regressing work engagement (M2) onto remote work percentage (X). The independent variable remote work percentage (X) in sub-model two explained for not statistically significant variation in work engagement (M2), R^2 = 0.04, F(1, 100) = 3.65, p = 0.059. In this model there was evidence that remote work percentage (X) was a not statistically significant negative (b = -0.50, s.e. = 0.26, t(100) = -1.91, and p = 0.059) independent variable of work engagement (M2).

Sub-model three involves the relationship of the independent variable remote work percentage (X) on well-being (M3). The relationship is shown in *Figure 3.* The model consists of regressing well-being (M3) onto remote work percentage (X). The independent variable

remote work percentage (X) in sub-model three explained for not statistically significant variation in well-being (M3), R^2 = 0.00, F(1, 100) = 0.01, p = 0.910. In this model there was evidence that remote work percentage (X) was a not statistically significant positive (b = 0.03, s.e. = 0.29, t(100) = 0.11, and p = 0.910) independent variable of well-being (M3).

Sub-model four involves the relationship of the independent variable remote work percentage (X) on job satisfaction (M4). The relationship is shown in *Figure 3.* The model consists of regressing job satisfaction (M4) onto remote work percentage (X). The independent variable remote work percentage (X) in sub-model four explained for not statistically significant variation in work engagement (M2), R^2 = 0.03, F(1, 100) = 2.74, p = 0.101. In this model there was evidence that remote work percentage (X) was a not statistically significant negative (b = -0.35, s.e. = 0.21, t(100) = -1.65, and p = 0.101) independent variable of job satisfaction (M4).

Sub-model five involves the relationship of the independent variable remote work percentage (X) on communication (M5). The relationship is shown in *Figure 3.* The model consists of regressing communication (M5) onto remote work percentage (X). The independent variable remote work percentage (X) in sub-model five explained for statistically significant variation in communication (M5), R^2 = 0.05, F(1, 100) = 5.23, p = 0.024. In this model there was evidence that remote work percentage (X) was a statistically significant positive (b = 0.62, s.e. = 0.27, t(100) = 2.29, and p = 0.024) independent variable of communication (M5).

Sub-model six involves the relationships of the independent variables remote work percentage (X), attitudes towards remote work (M1), work engagement (M2), well-being (M3), job satisfaction (M4), communication (M5), gender (C1), age (C2), and company size (C3) on individual employee performance (Y). The relationships are shown in *Figure 4*. The model consists of regressing individual employee performance (Y) onto remote work percentage (X), attitudes towards remote work (M1), work engagement (M2), well-being (M3), job satisfaction (M4), communication (M5), and the covariations from gender (C1), age (C2), and company size (C3). The independent variables remote work percentage (X), attitudes towards remote work (M1), work engagement (M2), well-being (M3), job satisfaction (M4), communication (M5), gender (C1), age (C2), and company size (C3) in sub-model six explained for statistically significant variation in individual employee performance, R^2 = 0.25, F(9, 92) = 3.45, p = 0.001. In this model there was evidence that remote work percentage (X) was a not statistically significant positive (b = 0.06, s.e. = 0.17, t(92) = 0.32, and p = 0.748) independent variable of individual employee performance (Y); in this model there was evidence that attitudes towards remote work (M1) was a not statistically significant positive (b = 0.01, s.e. = 0.05, t(92) = 0.14, and p = 0.888) independent variable of individual employee performance (Y); in this model there was evidence that work engagement (M2) was a statistically significant positive (b = 0.22, s.e. = 0.09, t(92) = 2.52, and p = 0.013) independent variable of individual employee performance (Y); in this model there was evidence that well-being (M3) was a not statistically significant negative (b = -0.06, s.e. = 0.06, t(92) = -0.89, and p = 0.376) independent variable of individual employee performance (Y); in this model there was evidence that job satisfaction (M4) was a not statistically significant positive (b = 0.14, s.e. = 0.09, t(92) = 1.44,

and p = 0.152) independent variable of individual employee performance (Y); in this model there was evidence that communication (M5) was a not statistically significant positive (b = 0.06, s.e. = 0.06, t(92) = 1.00, and p = 0.322) independent variable of individual employee performance (Y); in this model there was evidence that female gender (C1) was a not statistically significant positive (b = 0.08, s.e. = 0.09, t(92) = 0.97, and p = 0.332) independent variable of individual employee performance (Y); in this model there was evidence that age (C2) was a not statistically significant positive (b = 0.00, s.e. = 0.00, t(92) = 1.20, and p = 0.233) independent variable of individual employee performance (Y); and in this model there was evidence that company size (C3) was a not statistically significant negative (b = -0.01, s.e. = 0.05, t(92) = -0.25, and p = 0.801) independent variable of individual employee performance (Y).

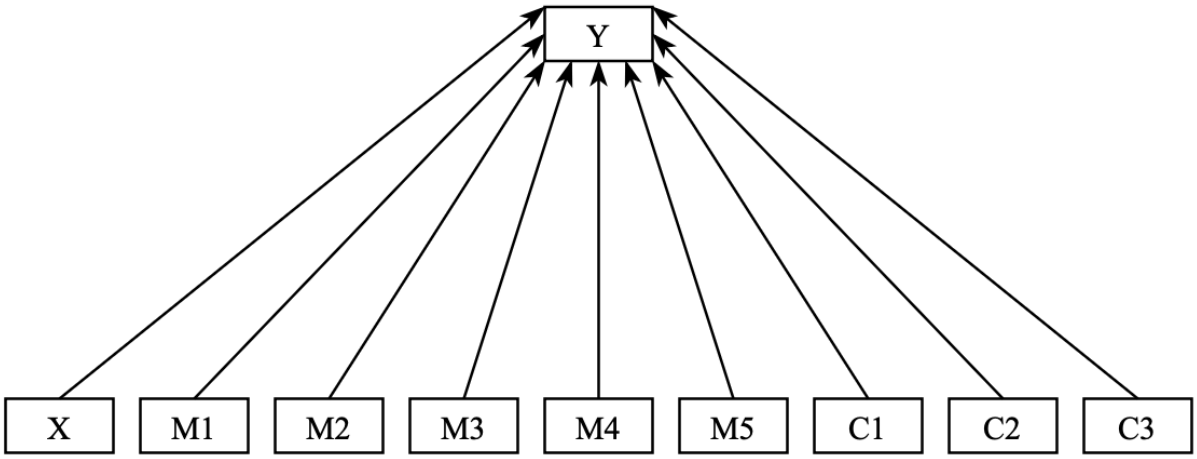

Figure 4 - Statistical diagram of sub-model 6

4.10.2. Direct Effect

In this model there was evidence that the direct effect variable remote work percentage (X) was a not statistically significant positive (b = 0.06, s.e. = 0.17, t(92) = 0.32, and p = 0.748) independent variable of individual employee performance (Y).

4.10.3. Indirect Effect

In this model there was evidence that the indirect effect of remote work percentage (X) was a not statistically significant positive (b = 0.01, s.e. = 0.09, and 95% CI = [-0.15, 0.21]) independent variable of individual employee performance (Y), with no mediation from attitudes towards remote work (M1); in this model there was evidence that the indirect effect of remote work percentage (X) was a statistically significant negative (b = -0.11, s.e. = 0.07, and 95% CI = [-0.27, -0.00]) independent variable of individual employee performance (Y), with mediation from work engagement (M2). However, when looking at section 4.10.1. it is clear that the path between remote work percentage (X) and work engagement (M2) is not significant. Only the path between work engagement (M2) and individual employee performance (Y) is significant. According to Baron & Kenny (1986) both paths need to be

significant for mediation. Therefore, although the indirect effect indicated mediation there is no evidence for mediation of work engagement (M2) in this model; in this model there was evidence that the indirect effect of remote work percentage (X) was a not statistically significant negative (b = -0.00, s.e. = 0.02, and 95% CI = [-0.04, 0.06]) independent variable of individual employee performance (Y), with no mediation from well-being (M3); in this model there was evidence that the indirect effect of remote work percentage (X) was a not statistically significant negative (b = -0.05, s.e. = 0.06, and 95% CI = [-0.18, 0.04]) independent variable of individual employee performance (Y), with no mediation from job satisfaction (M4); and in this model there was evidence that the indirect effect of remote work percentage (X) was a not statistically significant positive (b = 0.04, s.e. = 0.05, and 95% CI = [-0.05, 0.13]) independent variable of individual employee performance (Y), with no mediation from communication (M5).

4.10.4. Conclusion of the Analysis

From the analysis of the model, see *Figure 2*, it is clear that only three significant relationships are found. The first significant relationship is the positive relationship between remote work percentage (X) and attitudes towards remote work (M1). The second significant relationship is the positive relationship between remote work percentage (X) and communication (M5). The third significant relationship is the positive relationship between work engagement (M2) and individual employee performance (Y). All the other potential mediating relationships in the model are not significant. There was one mediating effect that had a significant bootstrap interval. However, only the path work engagement (M2) to individual employee performance (Y) was significant and not the path remote work percentage (X) to work engagement (M2). Therefore, there is no evidence for a mediating effect of work engagement (M2). Also, the covariates, gender (C1), age (C2), and company size (C3) did not have a significant impact on individual employee performance (Y).

4.11. T-test for Remote Workers and Non-Remote Workers

In this study an independent T-test is used to further investigate the relation between remote work and individual employee performance. This is done, because no significant direct or indirect effect of remote work percentage on individual employee performance is found in section 4.10.. The finding of the T-test is descriptive and not related to the hypotheses. In the T-test the means are compared and analyzed, to see if there was a difference between the groups. The T-test investigated if there was a difference in individual employee performance between remote workers and non-remote workers. The significance level used in the T-test is the 95 percent confidence interval. The difference in individual employee performance between the 68 remote workers (Mean = 4.12; SD = 0.46) and the 34 non-remote workers (Mean = 4.19; SD = 0.43) was not significant (t(100) = -0.81; p = 0.418). It can be concluded that it can be assumed that there is no difference in individual employee performance between remote workers and non-remote workers.

5. Discussion

Based on the analysis of the survey data the hypotheses are answered. These hypotheses together with the other findings make it possible to answer the research question and the two sub-questions. In this section the findings are discussed by first looking at the theoretical implications, followed by the practical implications. The section ends with the limitations of the study and recommendations for future research.

5.1. Theoretical Implications

The aim of the study was to find the effect of the balance between office and remote work, in a hybrid work setting, on individual employee performance in the manufacturing industry in the Netherlands. This is studied by looking at the relationship between remote work percentage and individual employee performance. This effect is the direct relationship between X and Y in *Figure 2* - Statistical diagram of the model. Moreover, the study also aimed to find the indirect effect of remote work percentage and individual employee performance potentially mediated by the six employee behaviors attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and trust relationship, as well as the preferred balance between office and remote work according to the employees working for the companies in the manufacturing industry in the Netherlands. The answers to these three objectives are obtained by performing a quantitative self-administered survey. The results of this survey are analyzed with SPSS leading to the relevant findings that support the objective of the study.

In *Figure 5* all the potential relationships between the variables are shown, by the black and green lines between the blocks. The potential direct and indirect relationships of remote work percentage and individual employee performance are discussed in section 5.1.1. and 5.1.3.. In addition, to these potential direct and indirect relationships, three significant relationships between variables are found. The significant relationships that are found, after analyzing the survey data with SPSS, are displayed with the green lines in *Figure 5*. The first significant relationship is the relationship between remote work percentage and attitudes towards remote work. The significant relationship between the two variables is positive. In other words, there is evidence that when there is an increase in remote work percentage for an employee; there is also an increase in the attitude of the employee towards remote work in the hybrid work setting. The second significant relationship is the relationship between remote work percentage and communication. The significant relationship between the two variables is positive. In other words, there is evidence that when there is an increase in remote work percentage for an employee; there is also an increase in the perception of the employee with regard to communication in a hybrid work setting. The third significant relationship is the relationship between work engagement and individual employee performance. The significant relationship between the two variables is positive. In other words, there is evidence that when an employee feels more engaged to work; there is also an increase in the performance of the employee at work.

In addition to the three significant relationships is it based on the SPSS analysis clear that there is no significant relationship between the control variables and individual employee performance. The three control variables are the gender of the employee, the age of the employee, and the company size of the company the employee is working for.

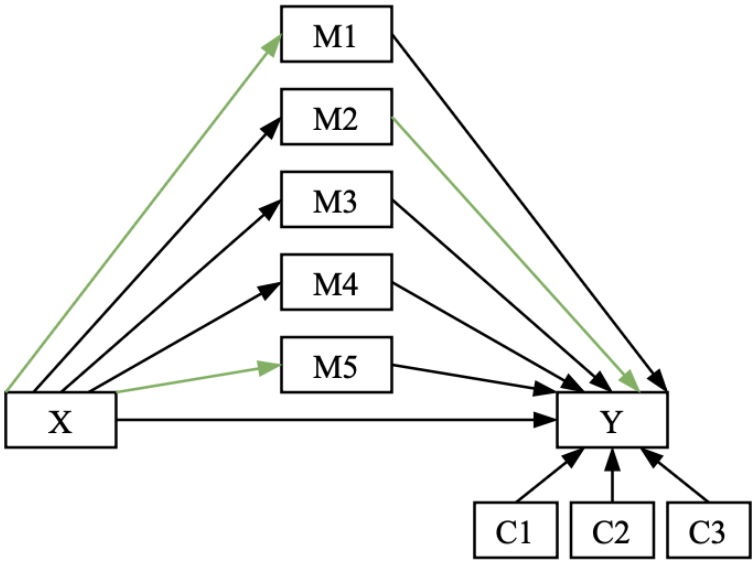

Figure 5 - Significant relationships

5.1.1. Mediating Effects on the Direct Relationship (sub-question 1)

The first sub-question of the study is "*How do employee behaviors affect the relationship between the balance of office and remote work and individual employee performance?*". An answer to this question is found by looking at the potential mediating effects of the six employee behaviors on the relationship between remote work percentage and individual employee performance in the manufacturing industry in the Netherlands. These potential mediating effects are studied by hypothesis two *"(H2a) Attitudes towards remote work, (H2b) work engagement, (H2c) well-being, (H2d) job satisfaction, (H2e) communication, and (H2f) trust relationship will mediate the relationship between the percentage of remote work and individual employee performance".* Based on the SPSS analysis no evidence is found that there are significant mediating effects of the six employee behaviors on the relationship between remote work percentage and individual employee performance.

The finding of the SPSS analysis is not in line with hypothesis 2a, because according to hypothesis 2a a mediating effect of attitudes towards remote work on the relationship between remote work percentage and individual employee performance was expected. Therefore, hypothesis 2a is rejected. The finding that there is no significant mediating effect of attitudes towards remote work is in contrast with the technology acceptance model (TAM) used by Donati et al. (2021). Based on the TAM model used in that study with regard to employee's perception of remote work was a mediating effect expected.

The finding of the SPSS analysis is not in line with hypothesis 2b, because according to hypothesis 2b a mediating effect of work engagement on the relationship between remote

work percentage and individual employee performance was expected. In SPSS a significant mediating effect is found. However, the path between remote work percentage and work engagement was not significant and for mediation both paths have to be significant (Baron & Kenny, 1986). Therefore, hypothesis 2b is rejected. The finding that there is no significant mediating effect of work engagement is in contrast with the social exchange theory used in the study by Saks (2006) and the study by Pass & Ridgway (2022). According to both studies is work engagement related to remote work and individual employee performance. Based on both studies a mediating effect was expected.

The finding of the SPSS analysis is not in line with hypothesis 2c, because according to hypothesis 2c a mediating effect of well-being on the relationship between remote work percentage and individual employee performance was expected. There hypothesis 2c is rejected. The finding that there is no significant mediating effect of well-being is in contrast with the JD-R model used in the studies by Galanti et al. (2021) and Kwon & Kim (2020). Both studies found that the negative effects of well-being in a remote work setting could affect individual employee performance. This was also found in the studies by Mesquita et al. (2020) and Xie et al. (2019). Based on these findings a mediating effect was expected.

The finding of the SPSS analysis is not in line with hypothesis 2d, because according to hypothesis 2d a mediating effect of job satisfaction on the relationship between remote work percentage and individual employee performance was expected. Therefore, hypothesis 2d is rejected. The finding that there is no significant mediating effect of job satisfaction is in contrast with the job characteristics model used in the study by De Menezes & Kelliher (2017) and the study by Topp et al. (2022). Based on both studies a mediating effect was expected.

The finding of the SPSS analysis is not in line with hypothesis 2e, because according to hypothesis 2e a mediating effect of communication on the relationship between remote work percentage and individual employee performance was expected. Therefore, hypothesis 2e is rejected. With regard to communication, there were no studies that investigated the mediating effect of communication. However, the studies by Garro-Abarca et al. (2021), Horwitz et al. (2006), and Wang et al. (2021) found that communication affects individual employee performance. Based on that finding it was expected that there was a mediating effect.

Hypothesis 2f is no longer relevant in this study, because the trust relationship scale is left out of the model. The scale did not pass the Cronbach's alpha test.

Based on the findings from hypothesis two it can be concluded that all six employee behaviors investigated in the relation with remote work percentage and individual employee performance, do not have a significant mediating effect. Based on these findings the answer to sub-question one is, that the six employee behaviors are based on this study not affecting the relationship between the balance of office and remote work and individual employee performance in the manufacturing industry in the Netherlands. This finding is partly in line with the findings by Pass & Ridgway (2022). In that study mixed results with regard to the employee behaviors and the relationship between remote work and individual employee performance were found. However, this finding is not in line with the existing literature as

explained in the paragraphs about each employee behavior (Babapour Chafi et al, 2021; De Menezes & Kelliher, 2017; Donati et al., 2021;, Galanti et al., 2021; Garro-Abarca et al., 2021; Horwitz et al., 2006; Kwon & Kim, 2020; Mesquita et al., 2020; Saks, 2006; Topp et al., 2022; Wang et al., 2021; Xie et al., 2019; Yang et al., 2021). According to these studies the employee behaviors studied had a mediating effect on the relationship between remote work and individual employee performance.

5.1.2. The Ideal Balance between Office and Remote Work (sub-question 2)

The second sub-question of the study is "*What is the ideal balance between office and remote work in the hybrid work setting?"*. An answer to this question is found by looking at the preferred balance of the employees working in the manufacturing industry in the Netherlands with regard to office and remote work. This preferred balance is studied by item HW7 "*In a hybrid work setting, I prefer the following balance"*. The results of item HW7 are shown in *Table 17* in appendix E. The item indicates that only 15 of the 102 respondents is willing to work 100 percent at the office and that almost 85 percent of the respondents is willing to work at least 1 day a week remote in the hybrid work setting. The most preferred balance between office work and remote work is somewhere between 25 and 50 percent remote work. This is based on the fact that 34 employees of the sample prefer to work 50 percent remote, and 39 employees prefer to work 25 percent remote.

The ideal balance between office work and remote work in the hybrid work setting is not suitable for a "one size fits all" solution for all the companies, in the manufacturing industry in the Netherlands, willing to use the hybrid work setting. However, based on the results of item HW7 a good starting point to find the ideal balance between office and remote work will be somewhere between 25 and 50 percent remote work. In terms of a four- and five-day work week this will be rounded to two days remote work and based on a three- and two-day work week, which are the most used part-time days, this will be rounded to one day of remote work. A one-day work week is not taken into consideration, because for one day work week no balance between office and remote work can be made. This finding is a big difference compared to the current balance between office and remote work. In the sample of this study 68 employees were working remote, a part of their work week, and 34 employees were working the entire week at the office.

Based on the findings on item HW7 the answer to sub-question two is, that the preferred balance between office and remote work is different for each employee. Item HW7 indicates that the preferred balance based on the preference of the majority is; two days remote work in a four- or five-day work week and one day remote in a two- or three-day work week are recommended. Moreover, in a recent study by Pass & Ridgway (2022) it is found that a wrong implementation of hybrid work can lead to fragmentation between employees that are liking remote work and employees that prefer office work. Moreover, IT-support by the company also plays an important role with regard to fragmentation, because some employees are having difficulties with all the new technologies and this has a negative effect on their opinion about working remote. These findings indicate that it is important to have clear working

agreements with regard to office and remote work in the hybrid work setting, because not all employees like working remote and vice versa. This is in line with de study by De Menezes & Kelliher (2017) that states that agreements have to be made about the flexibility to choose to work remote or at the office, as well as the maximum number of days that an employee is allowed to work remote during the week. In addition to these agreements, it is important to notice that according to Mesquita et al. (2020) remote work is not suitable for every job task and that his has to be taken into consideration when determining the ideal balance between office and remote work. However, the different job tasks are not taken into consideration in this study.

5.1.3. The Research Question

The research question of the study is "*How is the balance between office and remote work related with individual employee performance in the manufacturing industry?"*. An answer to this question is found by looking at the direct effect between remote work percentage and individual employee performance in the manufacturing industry in the Netherlands, as well as the indirect effect of remote work percentage and individual employee performance. The indirect effect is studied with hypothesis two and answered in sub-question one. It became clear that there is no significant indirect effect between remote work percentage and individual employee performance, through mediation by the five employee behaviors attitudes towards remote work, work engagement, well-being, job satisfaction, and communication. The direct effect is studied by hypothesis one *"The percentage of remote work will be positively associated with individual performance of employees working in the manufacturing industry in the Netherlands"*. Based on the SPSS analysis no evidence is found that there is a significant positive direct effect between remote work percentage and individual employee performance.

The finding of the SPSS analysis is not in line with hypothesis one, because according to hypothesis one a positive direct effect between remote work percentage and individual employee performance was expected. Therefore, hypothesis one is rejected. The finding that there is no significant positive direct effect is in line with the findings by Beck & Hensher (2022), Gifford (2022), Juchnowicz & Kinowska (2021), Lippe & Lippényi (2020), Topp et al. (2022) and Yang et al. (2021). These studies found a significant negative or a non-significant effect of the relation between office work and remote work and individual employee performance. In addition, the finding can be linked to the mixed results found with regard to the direct effect in the study by Smite et al. (2022). Moreover, according to Pass & Ridgway (2022) early studies showed mixed results when it comes to the benefits of hybrid work with regard to, normal office work. This is in line with the findings by Mesquita et al. (2020) and Smite et al. (2022). This can be one of the reasons why no significant positive effect is found between the balance of office and remote work and individual employee performance. When there are mixed opinions about a topic it is possible that the relationships are too scattered to form a significant effect with a specific direction. However, the finding is not in line with

the studies that found a positive relationship between remote work and individual employee performance (Babapour Chafi et al., 2021; Edelmann et al., 2021; Mesquita et al., 2020).

Based on the main findings from hypothesis one and two the answer to research question is, that the balance between office and remote work does not have a significant positive direct effect on the performance of an employee working in the manufacturing industry in the Netherlands, as well as a significant indirect effect. One possible reason for the hypotheses not being significant is that there is still a lot unknown about the true effect of the hybrid work setting in comparison with the established work settings in the manufacturing industry. As an extra test a T-test is performed, to further investigate the hybrid work setting in relation with individual employee performance. This T-test analyzed if there was a difference between remote and non-remote workers with regard to individual employee performance. However, based on the analysis it can be concluded that there is no significant difference between the 68 remote workers and 34 non-remote works. This additional finding supports the main finding of hypothesis one and two that there is no significant positive direct and indirect effect between remote work percentage and individual employee performance in the manufacturing industry in the Netherlands.

Based on these findings the ideal balance between office and remote work is not taking into consideration individual employee performance, because the significant effect of the work setting on individual employee performance is not known. Therefore, in this study the ideal balance will exclusively be based on the preferred balance of the employees working in the manufacturing industry in the Netherlands. The ideal balance suggested for the majority of the sample group is; two days remote work in a four- or five-day work week and one day remote in a two- or three-day work week, and is not influenced by the performance outcomes in the study. If this suggested balance is also the ideal balance with regard to individual employee performance has to be studied in the future.

5.2. Practical Implications

The findings found, by analyzing the survey data, in the theoretical implications section can be related to practical implications. These practical implications give advice to the companies in the manufacturing industry in the Netherlands, with regard to the hybrid work setting and individual employee performance. The focus of the study is about the effect of the balance between office and remote work on individual employee performance. Based the answer to the research question, in section 5.1.3., it is clear that there is no significant effect of the work setting balance on individual employee performance in the manufacturing industry in the Netherlands. For example, an employee who is working one day remote and four days at the office is not significantly performing different compared to an employee working three days remote and two days at the office. This finding indicates that in the manufacturing industry, the HRM departments of the companies should not redesign the existing work setting by focusing primarily on the individual employee performance in a hybrid work setting, but by looking at other aspects of the hybrid work setting. The performance will still play a key role, as it does in every work setting, but it is not the main focus of the redesigning process.

One important aspect is the ideal balance between office and remote work in the hybrid work setting. In the study this balance is investigated by asking the participating employees about their preferred balance between office and remote work in a hybrid work setting. Based on the answers of the employees is the following preferred balance determined; two days remote work in a four- or five-day work week and one day remote work in a two- or three-day work week. The HRM departments of the companies should adapt the design of the hybrid work setting in their company based on this finding. A starting point could be the managers and the HRM department actively involving the employees in the decision-making process about the implementation of the 'new' work setting with regard to this balance. The employees are the ones in the company working in the hybrid work setting, so their preferred balance between office and remote work is important to take into consideration. The balance found based on the opinion of the employees is not the only possible solution for companies, but it is a good starting point when redesigning to existing work setting into the hybrid work setting. From there on the HRM departments designing the new work setting should adapt the ideal balance by looking at the changes in preferences of the employees in the course of time and the impact of the chosen balance on several company and employee outcomes. The employee outcomes can be related to the six employee behaviors studied in this study. Based on this practical implication it is recommended for the companies in the manufacturing industry to study the preferred balance between office and remote work based on the opinion of the employees. This study will study the preference of the employees by letting them work in different balances of one to five days office or remote work; with a total maximum of five days. Based on the results new insights might be found with regard to the preferred balance. This finding can then be compared to the finding of this current research and implemented in the design of the hybrid work setting.

A second important aspect is that the companies should adapt their work agreements with regard to the hybrid work setting. The existing work agreements are based on office work and not on the new work setting. The hybrid work setting exists of working at the office and remote, and needs new work agreements that sets the rules of this work setting for both the company and the employees. These agreements have to describe how flexible the employees are in determining the days the work remote, as well as how many days they are allowed to work remote on a weekly basis. This is related to the balance described in the last paragraph. In addition, the new work agreements should include topics like monitoring by the manager when working remote, rules with regard to online meetings, flexibility of the daily work schedule when working remote, etc. The new agreement is not a "one size fit all' solution, because especially in the hybrid work setting there are employees willing to work remote and employees who prefer the office. The HRM department of the companies should not try to make a "one size fits all" solution in this work setting, because this may lead to an increased fragmentation between both employee groups (Pass & Ridgway, 2022). The goal of the agreement should take both groups of employees into consideration. One solution could be that employees willing to work remote get the chance to work remote, either a fixed number of days or getting the flexibility to decide it by themselves. However, especially in this industry

the employees should be at the office at least one day a week, because in the manufacturing industry there is a lot of contact between the office and the workplace. The employees at the office often have discussions with, and questions for, the employees at the workplace with regard to the products. When working too much remote this direct contact between the office and workplace will decrease, and this may have a negative effect on multiple company outcomes. So, especially in the manufacturing industry working at the company multiple days a week stays important for the employees with the hybrid office job. Overall, the new agreements should focus on both employees positive and negative towards remote work, as well as taking into consideration the importance of the relationship between the office and the workplace. When doing this the new agreements might eventually lead to an increased individual employee performance (Babapour Chafi et al., 2021), as well as an increased average score on the five employee behaviors attitudes towards remote work, work engagement, well-being, job satisfaction, and communication. This is in line with the findings in the studies by Beck & Hensher (2022), Mesquita et al. (2020), and Pass & Ridgway (2022). For the HRM departments of the companies it is recommended that the new work agreements are revisited regularly, by the HRM department together with the employees, to adapt to the rapid changes with regard to the hybrid work setting.

A third important aspect is that companies should adapt the communication tools provided based on the finding that employees working more remote compared to other colleagues are experiencing communication in a hybrid work setting better. It is important for the companies to get insight in this relation and discuss with the employees what and how improvements to communication tools should be made. This can be related to the finding in the study by (Iqbal et al., 2021) that the right technologies are needed to optimize the hybrid work setting for the company, especially with regard to communication. It is important that companies adapt to the new available technologies to stay up-to-date and provide the employees with the best available tools to make them able to communicate and work together with each other either remote or at the office. In particular, the IT departments of the companies in the manufacturing industry can think of solutions that make it possible for employees working remote to work properly together with employees at the workplace. Therefore, it is recommended that the employees work together with the IT department of the company, by investigating the reason behind the increased score on communication when remote work percentage increases. In the end, this might lead to an increased score on communication for all employees in the company.

Overall, the companies should notice that the hybrid work setting and its implementation is relatively new. They should understand that making the hybrid work setting a success is a long-term plan that will evolve over time. Therefore, it is important that the agreements are adapted over time, based on new developments for the hybrid work setting and by listening to the preferences of their employees.

5.3. Limitations and Future Research

The current research has multiple limitations. These limitations are related to the variables of the study used in the analysis, and the framework of the study. The most important limitations are discussed and recommendations for future research are provided.

The first limitation of the study is that a cross-sectional study is performed. The survey is filled in a single, short, time period of four weeks, and based on that everything is analyzed. However, the research field on hybrid work is relatively new compared to research on office or remote work. Moreover, during the pandemic most employees were forced to work remote. This can may still have influence on the opinion of employees about remote work, and hybrid work. In the near future, when hybrid work is a more common work setting the opinion of employees can change. This longitudinal change cannot be measured in a cross-sectional study. If the time period would have been longer, a longitudinal study was recommended. Therefore, for future research it is recommended to study the impact of the hybrid work setting on individual employee performance again, by looking at the opinion of employees at two points in time e.g., performing the survey for the first time and for a second time six months later, to see if there are changes.

The second limitation of the study is that the scales attitudes towards remote work, work engagement, well-being, job satisfaction, communication, and individual employee performance are self-rated and based on the subjective answers of the employees. This may lead to biased results, because with subjective scales there is change of a social desirability bias. According to this bias are people, in general, often avoiding negative opinions about themselves (Bhattacherjee, 2012) e.g., for the individual employee performance scale this could result in employees not being honest about their real performance score, because they are not are not willing to give themselves a low score on individual employee performance. This bias, maybe is one of the reasons that there are no significant effects found between different work setting balances and individual employee performance. Therefore, for future research it is recommended to look at this topic again by measuring individual employee performance objective, maybe with performance measurement methods of the company, instead with the use of the subjective individual employee performance scale.

The third limitation of the study is that that there was a low response rate at the first two weeks of the survey. Low response rates are often found with regard to surveys, and is also known as the non-response bias (Bhattacherjee, 2012). The non-response bias resulted in a sample that was not sufficient for analysis. Due to this the survey was open for another two weeks and new companies were contacted to participate in the study. This delayed the study with two weeks. Therefore, in future research it is recommended to make sure that there are enough companies participating in the survey. To make sure that when one company decides to no longer participate in the study, the sample size is still high enough.

The fourth limitation of the study is that non-probability sampling is used. The sample for the study is self-selected by contacting multiple companies in the manufacturing industry in the Netherlands. This sampling type may have an effect one the generalizability of the sample with regard to the entire target population. This is also stated in the study by Bhattacherjee

(2012). Therefore, in future research it is recommended to use probability sampling to increase the generalizability of the study with regard to the target population.

The sixth limitation of the study is that the role of different job tasks on the relationship between office and remote work and individual employee performance is not taking into consideration. According to the literature different job tasks are suitable for office or remote work and this may have an effect on individual employee performance with regard to the work settings. Therefore, in future research it is recommended to study the effect of different job tasks, by comparing the different job tasks in relation with individual employee performance in office and remote work.

The last limitation is about the power analysis. It is important to find the right sample size before starting with the survey. The right sample size is important, because the wrong sample size leads to the power being, either too high or too low. The wrong power can cause measuring only very small or very big effects. For this study determining the right sample size with an a priori power analysis was not possible, because the effect size needed for an a priori power analysis was not known. In general, the effect size is based on existing studies that are similar to the current study or based on a pilot study. For this study there were no studies that are similar to this study. Therefore, the effect size could not be determined. Due to this only a post hoc power analysis is performed to determine if the model had enough power.

6. Conclusion

The current study used a quantitative survey with employees, with a hybrid office job, working at the manufacturing industry in the Netherlands to get insights in the hybrid work setting with regard to the effect of office and remote work on individual employee performance. This study adds to the hybrid work setting literature, by indicating that the balance between office and remote work is based on this study not having a significant direct effect or indirect effects, through mediation, on individual employee performance in the manufacturing industry in the Netherlands.

The study used two hypotheses to investigate the direct effect of the balance between office and remote work on individual employee performance, as well as the indirect effect of this relationship, through mediation by five employee behaviors; attitudes towards remote work, work engagement, well-being, job satisfaction, and communication. The findings of the hypotheses support the research questions of the study. For both hypotheses an effect was expected based on the findings in the literature. However, based on the analysis of the survey data it can be concluded that no significant positive direct effect or indirect effects, through mediation, are found. However, the testing of the hypotheses, the preferred balance item, and the literature let to the multiple findings.

First, the findings indicate that different balances between office and remote work are not affecting individual employee performance significantly. In other words, the HRM departments of the companies should not design and implement the hybrid work setting, by having the main focus on the work balance with regard to individual employee performance. The main focus should be on multiple aspects of the hybrid work setting. A good starting point could be the making of new formal and informal agreements that set the rules and boundaries with regard to employees working in a hybrid work setting e.g., rules with regard to monitoring of employees, meetings between office and remote workers, and flexibility to decide when to work; when working remote. It is important to involve the employees, that are going to work or are already working hybrid, in the decision-making process of the new agreements. Doing this makes sure that the desires of employees positive about hybrid work, as well as negative are taken into consideration.

In particular, the new agreements should describe the flexibility in terms of remote working days. The findings indicate that the preferred balance between office and remote work in a hybrid work setting is not suitable for a “one size fits all solution”, because of the big differences between the preferences of employees, as well as the feasibility of job tasks in a remote work setting. However, based on the majority of the employees a preferred balance between office and remote work is determined. This balance is two days remote work in a four- or five-day work week and one day remote work in a two- or three-day work week. The HRM departments of the companies are advised to use this indicated balance as a starting point when determining how many days an employee is allowed to work remote.

Second, the findings indicate that employees who worked more remote; experienced communication in the hybrid work setting better compared to employees working less

remote. By using the experience of those employees together with the IT department of the companies, improvements can be made to communication within the hybrid work setting.

Finally, from the current study, it may be concluded that the implementation is a long-term process that will change over time. Based on the findings, companies in the manufacturing industry in the Netherlands are advised to start with implementing the new work agreements taking into consideration the preferred work balance. Whether the impact of these new agreements and preferred balance of office and remote work leads to an increase in individual employee performance and the multiple employee behaviors; has to be studied in the future. This time it has to be studied not only from the subjective employee perspective, but also from the objective company perspective.

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Appendix

Appendix A – Survey

Informed Consent	**Item Answers**
You are being invited to participate in a research study titled "*Individual performance outcomes in a hybrid work setting*". This study is being done by Vince Bezemer from the TU Delft. The purpose of this research is to look into the impact of hybrid work on the individual performance of an employee, who is an office worker. This direct relation between hybrid work and performance will be measured by taking several variables into consideration. These variables can have a positive or negative effect on the relation between hybrid work and individual performance. The survey will take you approximately 10 minutes to complete. The data of the survey will be used in the research and will be published online as a MSc Thesis. I will start with asking demographic questions, the next part of the survey I will ask closed question for each variable. As with any online activity the risk of a breach is always possible. To the best of my ability your answers in this study will remain confidential. I will minimize any risks by having a completely anonymous survey and making sure that IP addresses or other personal data will not be collected. The data collected will only be used for the thesis and will not be archived after completion of the thesis. Your participation in this study is entirely voluntary and you can withdraw at any time. You are free to omit any questions. The data of the surveys will not be removed, because it is anonymous. In case of questions or concerns with regard to the survey contact: *Researcher* Name: Vince Bezemer Mail: - *Responsible researcher* Name: Dr. N. Pachos Mail: - By answering the question with yes, you agree with the informed consent given above. The survey starts on the next page, thanks in advance for participating to the research.	
I agree with the informed consent.	Yes or no
Demographics	**Item Answers**
What is your gender?	Male, female, and other
What is your age?	-
Indicate how many years you studied after the elementary school.	-
Indicate how many hours a week you work for the organization.	0-8, 9-16, 17-24, 25-32, and 33-40

Indicate your working experience in the current organization in number of years.	-
Indicate the number of employees in the organization that you currently work for.	<10, 10-25, 26-100, and >100
Hybrid Work	**Item Answers**
In the organization that I am working for, I work … days per week remotely on average.	-
In the organization that I am working for, I work … days per week at the office on average.	-
I have positive experiences with hybrid work.	Strongly disagree – strongly agree (1-5)
Hybrid work makes me feel more isolated.	Strongly disagree – strongly agree (1-5)
Hybrid work is more cost efficient for me compared to office work.	Strongly disagree – strongly agree (1-5)
Hybrid work gives me the chance to spend more time with family / friends.	Strongly disagree – strongly agree (1-5)
In a hybrid work setting I experience a better work-life balance.	Strongly disagree – strongly agree (1-5)
In a hybrid work setting, I prefer the following balance.	100% remote, 75% remote, 50% remote, 25% remote, and 0% remote
Work Engagement	**Item Answers**
At my work, I feel bursting with energy.	Never – always (1-7)
At my job, I feel strong and vigorous.	Never – always (1-7)
I am enthusiastic about my job.	Never – always (1-7)
My job inspires me.	Never – always (1-7)
When I get up in the morning, I feel like going to work.	Never – always (1-7)
I feel happy when I am working intensely.	Never – always (1-7)
I am proud of the work that I do.	Never – always (1-7)
I am immersed in my work.	Never – always (1-7)
I get carried away when I am working.	Never – always (1-7)
Well-Being	**Item Answers**
I feel cheerful and in good spirits.	Never – always (1-7)
I feel calm and relaxed.	Never – always (1-7)
I feel active and vigorous.	Never – always (1-7)
I wake up feeling fresh and rested.	Never – always (1-7)
My daily life is filled with things that interest me.	Never – always (1-7)
Job Satisfaction	**Item Answers**
All in all, I am satisfied with my job.	Strongly disagree – strongly agree (1-5)
In general, I don’t like my job.	Strongly disagree – strongly agree (1-5)
In general, I like working here.	Strongly disagree – strongly agree (1-5)
Communication	**Item Answers**
Hybrid meetings do work well.	Strongly disagree – strongly agree (1-5)

Communication with colleagues has become more difficult in a hybrid work setting.	Strongly disagree – strongly agree (1-5)
When working at the office I can communicate properly with colleagues working at the office or remotely.	Strongly disagree – strongly agree (1-5)
When working remotely I can communicate properly with colleagues working at the office or remotely.	Strongly disagree – strongly agree (1-5)
Trust Relationship	**Item Answers**
I experience a good trust relationship between me and the manager when working remotely.	Strongly disagree – strongly agree (1-5)
I allow the manager to track my progress when I work remotely via IT systems.	Strongly disagree – strongly agree (1-5)
I feel more monitored by the manager when working remotely compared to working at the office.	Strongly disagree – strongly agree (1-5)
The manager is giving me the flexibility to decide when to work remotely.	Strongly disagree – strongly agree (1-5)
Individual Performance	**Item Answers**
I perform hard tasks properly.	Never – always (1-5)
I try to update my technical knowledge to do my job.	Never – always (1-5)
I do my job according to what the organization expects from me.	Never – always (1-5)
I plan the execution of my job by defining actions, deadlines and priorities.	Never – always (1-5)
I plan actions according to my tasks and organizational routines.	Never – always (1-5)
I take initiatives to improve my results at work.	Never – always (1-5)
I seek new solutions for problems that may come up in my job.	Never – always (1-5)
I work hard to do the tasks designated to me.	Never – always (1-5)
I execute my tasks foreseeing their results.	Never – always (1-5)
I seize opportunities that can improve mu results at work.	Never – always (1-5)

Appendix B – Abbreviated Item Names

Item Names	Abbreviated Item Name
I agree with the informed consent.	IC
What is your gender?	D1
What is your age?	D2
Indicate how many years you studied after the elementary school.	D3
Indicate how many hours a week you work for the organization.	D4
Indicate your working experience in the current organization in number of years.	D5
Indicate the number of employees in the organization that you currently work for.	D6
In the organization that I am working for, I work … days per week remotely on average.	HW1a
In the organization that I am working for, I work … days per week at the office on average.	HW1b
I have positive experiences with hybrid work.	HW2
Hybrid work makes me feel more isolated.	HW3
Hybrid work is more cost efficient for me compared to office work.	HW4
Hybrid work gives me the chance to spend more time with family / friends.	HW5
In a hybrid work setting I experience a better work-life balance.	HW6
In a hybrid work setting, I prefer the following balance.	HW7
At my work, I feel bursting with energy.	WE1
At my job, I feel strong and vigorous.	WE2
I am enthusiastic about my job.	WE3
My job inspires me.	WE4
When I get up in the morning, I feel like going to work.	WE5
I feel happy when I am working intensely.	WE6
I am proud of the work that I do.	WE7
I am immersed in my work.	WE8
I get carried away when I am working.	WE9
I feel cheerful and in good spirits.	WB1
I feel calm and relaxed.	WB2
I feel active and vigorous.	WB3
I wake up feeling fresh and rested.	WB4
My daily life is filled with things that interest me.	WB5
All in all, I am satisfied with my job.	JS1
In general, I don’t like my job.	JS2
In general, I like working here.	JS3
Hybrid meetings do work well.	CM1
Communication with colleagues has become more difficult in a hybrid work setting.	CM2
When working at the office I can communicate properly with colleagues working at the office or remotely.	CM3
When working remotely I can communicate properly with colleagues working at the office or remotely.	CM4
I experience a good trust relationship between me and the manager when working remotely.	TR1
I allow the manager to track my progress when I work remotely via IT systems.	TR2

I feel more monitored by the manager when working remotely compared to working at the office.	TR3
The manager is giving me the flexibility to decide when to work remotely.	TR4
I perform hard tasks properly.	IP1
I try to update my technical knowledge to do my job.	IP2
I do my job according to what the organization expects from me.	IP3
I plan the execution of my job by defining actions, deadlines and priorities.	IP4
I plan actions according to my tasks and organizational routines.	IP5
I take initiatives to improve my results at work.	IP6
I seek new solutions for problems that may come up in my job.	IP7
I work hard to do the tasks designated to me.	IP8
I execute my tasks foreseeing their results.	IP9
I seize opportunities that can improve mu results at work.	IP10

Appendix C – Measurement Level of Each Item in the Survey

Item Name	Measurement Level
IC	Nominal
D1	Nominal
D2	Ratio
D3	Ratio
D4	Ordinal
D5	Ratio
D6	Ordinal
HW1a	Ratio
HW1b	Ratio
HW2	Ordinal
HW3	Ordinal
HW4	Ordinal
HW5	Ordinal
HW6	Ordinal
HW7	Ordinal
WE1	Ordinal
WE2	Ordinal
WE3	Ordinal
WE4	Ordinal
WE5	Ordinal
WE6	Ordinal
WE7	Ordinal
WE8	Ordinal
WE9	Ordinal
WB1	Ordinal
WB2	Ordinal
WB3	Ordinal
WB4	Ordinal
WB5	Ordinal
JS1	Ordinal
JS2	Ordinal
JS3	Ordinal
CM1	Ordinal
CM2	Ordinal
CM3	Ordinal
CM4	Ordinal
TR1	Ordinal
TR2	Ordinal
TR3	Ordinal
TR4	Ordinal
IP1	Ordinal
IP2	Ordinal
IP3	Ordinal
IP4	Ordinal
IP5	Ordinal
IP6	Ordinal
IP7	Ordinal

IP8	Ordinal
IP9	Ordinal
IP10	Ordinal

Appendix D – PROCESS Model Analysis Data Set

Matrix

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.1 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : CUSTOM
    Y  : IP_M
    X  : HW1
   M1  : ATRW_M
   M2  : WE_M
   M3  : WB_M
   M4  : JS_M
   M5  : CM_M

Covariates:
 D1F      D2       D6

Sample
Size:  102

Custom
Seed:     12345

**************************************************************************
OUTCOME VARIABLE:
 ATRW_M

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4608      .2123      .6654    26.9514     1.0000   100.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     3.0521      .1161    26.2807      .0000     2.8217     3.2825
HW1          1.5964      .3075     5.1915      .0000      .9863     2.2064

**************************************************************************
OUTCOME VARIABLE:
 WE_M

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1876      .0352      .4775     3.6485     1.0000   100.0000      .0590

Model
              coeff         se          t          p       LLCI       ULCI
constant     5.4129      .0984    55.0222      .0000     5.2178     5.6081
HW1          -.4975      .2605    -1.9101      .0590    -1.0143      .0192

**************************************************************************
OUTCOME VARIABLE:
 WB_M

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0114      .0001      .6054      .0129     1.0000   100.0000      .9099

Model
              coeff         se          t          p       LLCI       ULCI
```

```
constant     5.3459      .1108    48.2584      .0000     5.1261     5.5656
HW1           .0333      .2933      .1135      .9099     -.5486      .6152

**************************************************************************
OUTCOME VARIABLE:
 JS_M

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1632      .0266      .3109     2.7356     1.0000   100.0000      .1013

Model
             coeff         se          t          p       LLCI       ULCI
constant     4.5943      .0794    57.8735      .0000     4.4368     4.7518
HW1          -.3477      .2102    -1.6540      .1013     -.7647      .0694

**************************************************************************
OUTCOME VARIABLE:
 CM_M

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2230      .0497      .5207     5.2328     1.0000   100.0000      .0243

Model
             coeff         se          t          p       LLCI       ULCI
constant     3.5117      .1027    34.1841      .0000     3.3079     3.7155
HW1           .6222      .2720     2.2875      .0243      .0826     1.1619

**************************************************************************
OUTCOME VARIABLE:
 IP_M

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5024      .2524      .1593     3.4520     9.0000    92.0000      .0010

Model
             coeff         se          t          p       LLCI       ULCI
constant     2.2814      .4505     5.0642      .0000     1.3867     3.1761
HW1           .0560      .1742      .3217      .7484     -.2899      .4020
ATRW_M        .0075      .0535      .1407      .8884     -.0988      .1139
WE_M          .2180      .0865     2.5204      .0134      .0462      .3899
WB_M         -.0560      .0630     -.8898      .3759     -.1811      .0690
JS_M          .1359      .0942     1.4432      .1524     -.0511      .3230
CM_M          .0615      .0618      .9952      .3223     -.0613      .1844
D1F           .0847      .0869      .9747      .3323     -.0879      .2574
D2            .0042      .0035     1.2017      .2326     -.0028      .0112
D6           -.0126      .0500     -.2530      .8009     -.1119      .0866

***************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0560      .1742      .3217      .7484     -.2899      .4020

Indirect effect(s) of X on Y:
           Effect     BootSE   BootLLCI   BootULCI
TOTAL      -.1073      .1086     -.3113      .1172
ATRW_M      .0120      .0874     -.1492      .2058
WE_M       -.1085      .0675     -.2676     -.0017
WB_M       -.0019      .0249     -.0426      .0640
JS_M       -.0473      .0550     -.1809      .0352
CM_M        .0383      .0454     -.0540      .1270
(C1)        .1205      .1167     -.0819      .3870
(C2)        .0139      .0923     -.1660      .2077
(C3)        .0593      .1043     -.1319      .2909
(C4)       -.0263      .1108     -.2266      .2180
```

```
(C5)       -.1066      .0766     -.2883      .0105
(C6)       -.0612      .0908     -.2669      .1029
(C7)       -.1468      .0854     -.3361      .0027
(C8)        .0454      .0624     -.0479      .2002
(C9)       -.0402      .0504     -.1353      .0709
(C10)      -.0855      .0678     -.2325      .0363

Specific indirect effect contrast definition(s):
(C1)           ATRW_M    minus   WE_M
(C2)           ATRW_M    minus   WB_M
(C3)           ATRW_M    minus   JS_M
(C4)           ATRW_M    minus   CM_M
(C5)           WE_M      minus   WB_M
(C6)           WE_M      minus   JS_M
(C7)           WE_M      minus   CM_M
(C8)           WB_M      minus   JS_M
(C9)           WB_M      minus   CM_M
(C10)          JS_M      minus   CM_M

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

------ END MATRIX -----
```

Appendix E – Tables with Extra Information about the Analysis

Item-Total Statistics – Work Engagement	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
WE1	0.617	0.775
WE2	0.535	0.786
WE3	0.678	0.770
WE4	0.668	0.767
WE5	0.422	0.804
WE6	0.523	0.790
WE7	0.655	0.773
WE8	0.243	0.824
WE9	0.402	0.808

Table 8 - Item-total statistics for work engagement

Item-Total Statistics – Well-Being	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
WB1	0.692	0.716
WB2	0.671	0.716
WB3	0.385	0.802
WB4	0.593	0.751
WB5	0.549	0.760

Table 9 - Item-total statistics for well-being

Item-Total Statistics – Job Satisfaction	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
JS1	0.605	0.461
JS2_REV	0.375	0.762
JS3	0.546	0.542

Table 10 - Item-total statistics for job satisfaction

Item-Total Statistics – Individual Performance	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
IP1	0.413	0.850
IP2	0.425	0.851
IP3	0.547	0.840
IP4	0.554	0.840
IP5	0.571	0837
IP6	0.552	0.839
IP7	0.477	0.846
IP8	0.728	0.824
IP9	0.672	0.828
IP10	0.654	0.832

Table 11 - Item-total statistics for individual employee performance

Items	1	2	3	4
Attitudes Towards Remote Work (ATRW)				
HW2	0.788			
HW3_REV	0.634			
HW4				-0.426
HW5	0.637			
HW6	0.832			
Communication (CM)				
CM1		0.679		
CM2_REV	0.421	0.644		
CM3		0.805		
CM4		0.788		
Trust Relationship (TR)				
TR1			0.809	
TR2				0.820
TR3_REV			0.627	
TR4			0.774	
KMO	0.708			
Bartlett's Test	< 0.001			

Table 12 - Exploratory factor analysis (all items included)

Items	1	2	3
Attitudes Towards Remote Work (ATRW)			
HW2	0.808		
HW3_REV	0.629		
HW5	0.628		
HW6	0.843		
Communication (CM)			
CM1		0.698	
CM2_REV	0.445	0.657	
CM3		0.777	
CM4		0.779	
Trust Relationship (TR)			
TR1			0.822
TR3_REV			0.622
TR4			0.771
KMO	0.724		
Bartlett's Test	< 0.001		

Table 13 - Exploratory factor analysis (without HW4 and TR2)

Item-Total Statistics – Attitudes Towards Remote Work	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
HW2	0.603	0.648
HW3_REV	0.418	0.742
HW5	0.429	0.743
HW6	0.714	0.565

Table 14 - Item-total statistics for attitudes towards remote work

Item-Total Statistics – Communication	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CM1	0.525	0.709
CM2_REV	0.572	0.692
CM3	0.464	0.739
CM4	0.672	0.636

Table 15 - Item-total statistics for communication

Item-Total Statistics – Trust Relationship	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
TR1	0.538	0.333
TR3_REV	0.331	0.575
TR4	0.367	0.562

Table 16 - Item-total statistics for trust relationship

		n	$n_{missing}$	%
HW4				
	Strongly disagree	14		13.70%
	Disagree	15		14.70%
	Undecided	39		38.20%
	Agree	18		17.60%
	Strongly agree	16		15.70%
	Total	102		100.00%
HW7				
	100% Remote	0		0.00%
	75% Remote	13		12.70%
	50% Remote	34		33.30%
	25% Remote	39		38.20%
	0% Remote	15		14.70%
	Total	101	1	100.00%
TR1				
	Strongly disagree	3		2.90%
	Disagree	0		2.90%
	Undecided	12		11.80%
	Agree	43		42.20%
	Strongly agree	43		42.20%
	Total	101	1	100.00%
TR2				
	Strongly disagree	18		17.60%
	Disagree	17		16.70%
	Undecided	28		27.50%
	Agree	24		23.50%
	Strongly agree	14		13.70%
	Total	101	1	100.00%
TR3_REV				
	Strongly agree	5		4.90%
	Agree	3		2.90%
	Undecided	16		15.70%
	Disagree	35		34.30%

	Strongly disagree	43	42.20%
	Total	102	100.00%
TR4			
	Strongly disagree	8	7.80%
	Disagree	9	8.80%
	Undecided	13	12.70%
	Agree	24	23.50%
	Strongly agree	48	47.10%
	Total	102	100.00%

Table 17 - Descriptive statistics for items left out of the final model