Building a bridge between ‘New Ways of Working’ (NWW) and teamwork behavior.

An empirical study

UNIVERSITEIT TWENTE.

Master Thesis
Business Administration
Track: Human Resource Management (HRM)
Date of publication: 11 May 2015

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Acknowledgements

By finalizing this thesis, an end has come to a very exciting period, as this thesis is the last part of the master's program Business Administration with the specialization HRM at the University of Twente.

I would like to thank my professor, Dr. Ir. J. de Leede and second reader Prof. Dr. T. Bondarouk, for the time and effort he and she put into helping me complete this Master Thesis. I would also like to thanks all the respondents for taking the time to participate in this research. And I would like to thank my parents for the support and patience they offered throughout my studies and thesis. Without this support, I surely would have never completed this research.

Joyce Nijland
Enschede, May 2015

Summary

This research focused on different variables. NWW is a variable which consists of four dimensions: teleworking, flexible working places, flexible working hours and IT usage. In this research, the relationship between the four dimensions of NWW with productivity and organizational commitment was examined. Furthermore, the influence of teamwork behavior via face-to-face- and computer mediated communication (virtual) on these relationships was tested.

To test the influences of different variables, a quantitative research was conducted in the form of structured surveys. Surveys were conducted online at twelve Dutch companies (N=347), of which Rabobank Utrecht Operations employees were the biggest group of respondents (N=296).

NWW enable workers to work independently of time, place and technology. This makes it likely that co-workers meet each other less at work this changes the way they informally interact with each other and changes the teamwork behavior. The hypothesis of the relationship between NWW and the outcome variables organizational commitment and productivity can be confirmed, but only with very small influences of NWW on productivity (1,4%). Also, the relationship between NWW and organizational commitment can be confirmed with 2,1%.

To be able to stimulate the outcome variables of NWW via teamwork behavior, it was found that teamwork behavior positively influences the realization of the benefits of NWW. This does not mean that organizations should immediately implement (components of) NWW to increase employees' productivity, because it depends on different factors. Besides that, this Master Thesis strengthens the scientific literature with a confirmation of organizational commitment as a positive outcome of implementing (components of) NWW. However, this does not mean that organizations should directly and only implement (components of) NWW to increase the organizational commitment of its employees. The components flexible workplaces at work, flexible working hours, and IT have proven to contribute to the organizational commitment of employees. This Master Thesis found that teleworking does not significantly contribute to organizational commitment.

The hypotheses stated for teamwork behavior as a moderator were all rejected. Despite the rejections of the hypotheses, the teamwork behaviors do have an influence on productivity and organizational commitment. Therefore, this research is not only interesting for organizations but also for their leaders since it is proven that the teamwork behaviors more strongly correlate with organizational commitment or productivity than NWW with these outcome variables.

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1. Introduction

This thesis researched the influence of teamwork behavior on the relations between NWW and the outcome variables: organizational commitment and individual productivity. In the last decades, the current economy has changed from an agriculture and industrial manufacturing towards a knowledge driven and information society. Knowledge is seen as the driver of economic growth and productivity (OECD, 1996). According to Gates (2005) the economy has moved to being less centralized and more fluid. Blok et al. (2011) adds that through the economic change, organizations need to react more quickly to customer needs and they feel the pressure of becoming more customer centered. “The value of customers and employees is becoming more prominent” (Blok et al., 2011, p.3). In conclusion, because of the (1) knowledge economy, (2) modern technologies and (3) capitalism, the introduction of NWW was a fact (Verbruggen-Letty and Thunnissen, 2010). In essence, “how we work, where we work, when we work, and what we do for work has changed more in the last two decades than at any time in history” (McKinsey, 2007).These developments at the workplaces have emerged to the empowering of employees and allow for extensive freedom in determining the time and place of one´s work (Blok, Groenesteijn, Schelvis & Vink, 2012).

1.1 Problem statement

The sketched phenomenon is better known as ‘New Ways of Working’ (NWW). According to many authors (Baane et al., 2010; De Kok et al., 2014) bricks, bytes and behavior can be seen as the determinant pillars of NWW. De Kok et al. (2014) describes the pillars as follows. (i) Bricks, the physical dimension, addresses all aspects of the physical work environment, (ii) Bytes, the technological dimension, addresses all aspects concerning the use and application of ICT, and (iii) Behavior, the personal dimension, addresses all aspects concerning the manager-employee relationship and the way the employee works and experiences his work.

NWW include a broad portfolio of practices such as teleworking (i.e. doing the work (partly) from home or elsewhere), be able to work in flexible working hours, flexible working places or the access and knowledge sharing with IT. Flexible workplaces and flexible working hours can be assigned into the Bricks dimension. The Bytes dimension are the IT usage possibilities and teleworking can be seen as part of the Behavior dimension. The average of these four dimensions will measure the gradation of NWW implemented in an organization. Therefore these four dimensions will be questioned separately (see appendix II survey questions Dutch version).

In practice, implementing NWW can result in achieving many benefits, such as higher productivity, higher commitment and cost savings (Baane et al., 2010). Meanwhile, a

constantly increasing number of organizations has recognized the benefits of NWW and began implementing various forms and configurations of NWW practices (Blok et al., 2012). For example, the proportion of Dutch organizations that implemented teleworking increased from 49% in 2009 to 59% in 2012 (CBS, 2013). Understanding and implementing NWW has thus become a recurring and increasingly important topic for modern organizations.

Therefore this research will develop behavioral characteristics of the four dimensions of NWW, as many authors state that this is the most important pillar (Baane et al., 2010; De Kok et al., 2014). For example, Blok et al. (2012) and Gates (2005) state that human talent is of greater importance, since it makes it possible to share knowledge, adapt and innovate. Bijl et al. (2011) mentioned that the employee can be seen as an important success factor, as employees have to cope with information overload and have to be accessible anytime, anyplace. Therefore Bijl et al. (2011) states that employees 'have to take their own responsibility for their well being and for the maintenance of its production resources of the employer'. In this research, the influences of teamwork behavior of an individual between NWW and two outcome variables will be investigated. The two outcome variables are organizational commitment and productivity.

Despite the rising popularity of NWW, there is still no research done about the extent to which certain variables influence the relation between NWW and these outcomes. High levels of NWW however, are not necessarily associated with increased productivity or organizational commitment, as this relationship may be moderated by different aspects. In this research we will test the effect of teamwork behavior as moderator between NWW and both outcome variables: organizational commitment and productivity. A moderator variable changes the strength of an effect or relationship between two variables (Butler, 1985). In this research we expect that the moderator variable teamwork behavior will change the strength between NWW and productivity and also the strength between NWW and organizational commitment. This assumption is made, based on a significant interaction between autonomy and productivity and autonomy and teamwork behavior. A moderator variable can be considered when the relationship between a predictor variable and a dependent variable is strong, but most often it is considered when there is an unexpectedly weak or inconsistent relationship between a predictor and a dependent variable. The moderator indicates when or under what conditions a particular effect can be expected. A moderator may increase the strength of a relationship, decrease the strength of a relationship, or change the direction of a relationship. A moderator variable may reduce or enhance the direction of the relationship between a predictor variable and a dependent variable, or it may even change the direction of the relationship between the two variables from positive to negative or vice versa.

In short, the purpose of this research is to indicate which changes are implemented according to flexible working hours, flexible working places, IT or teleworking. Thereby if teamwork behavior moderates the relation between NWW and the effects organizational commitment and productivity. This provides a more thorough understanding of the role of a moderator and the relation between NWW and organizational commitment and NWW and productivity. This research is of importance because insights in this phenomenon can support the positive outcomes and exclude the negative ones. In this research the conditions under which NWW can lead to more productivity and/or organizational commitment with the moderating effect of teamwork behavior will be measured. The information will be useful for organizations and their HR departments to implement NWW successfully.

1.2 Research goal

The goal of this research is to examine if teamwork behavior moderates the relationship between NWW and its outcomes productivity and organizational commitment. The problem statement and the goal of the research therefore lead to the following research question:

'TO WHAT EXTENT DOES TEAMWORK BEHAVIOR INFLUENCE THE REALIZATION OF THE OUTCOMES 'PRODUCTIVITY' AND 'ORGANIZATIONAL COMMITMENT' OF NWW'?

This relationship is expected since the NWW practices separately show a relationship with the outcomes productivity and organizational commitment. As will be comprehensively mentioned in the theoretical framework, the whole concept of NWW consists of four practices in this Master Thesis, namely teleworking, flexible workplaces at work, flexible working hours and IT. The literature contains empirical evidence on the positive relationship between each practice separately and the outcomes productivity and organizational commitment. When these separate, positive practices are integrated as one whole NWW, a larger effect on productivity and organizational commitment is expected. The moderating effect of teamwork behavior is expected in this relationship since the literature contains empirical evidence on the positive relationship between the aspects of leadership on productivity and organizational commitment. This is described in section 2 'theoretical framework'.

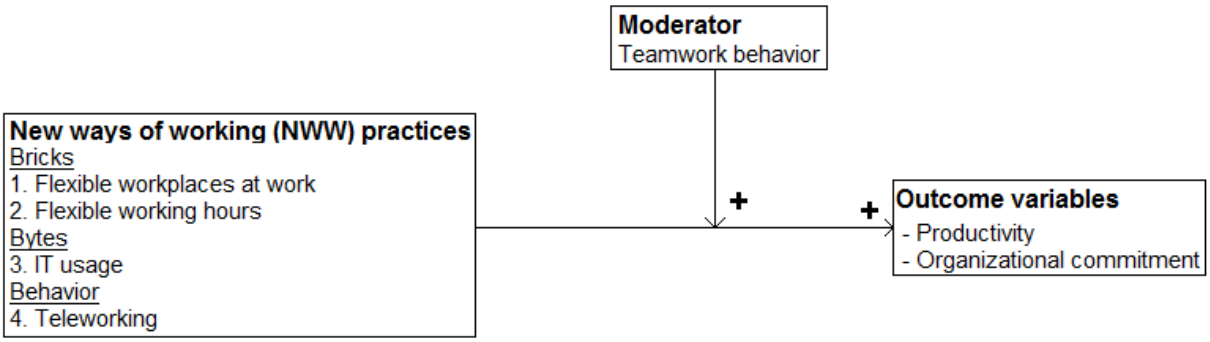

Figure 1 Conceptual model of the effect of teamwork behavior on the relationship of NWW and its outcome variables.

1.3 Scientific contribution

The relationship between the components of NWW and the effects of NWW for organizations has comprehensively been researched in the literature. However, despite the rising popularity of NWW, there is still a fundamental gap in the NWW literature since the effects of NWW can be influenced by many other factors. But what influences these relations and how strong is this influence? In this research, teamwork behavior will be considered as the success of NWW within teams. In this research, the influence of teamwork behavior will therefore be considered as a moderator. According to Shadish, Cook and Campbell (2002) a moderating variable is a variable that affects the direction or size of an observed effect. In previous studies teamwork behavior is often considered as a variable which has a straight outcome on group processes and performance, in other words as a result, not as a moderator. Studying teamwork behavior as a moderating effect on the realization of the effects of NWW can possibly lead to various views and deliver valuable information. Figure 1 shows the conceptual model of this thesis.

1.4 Practical contribution

The practical contribution of this research is to provide insights into the factor teamwork behavior. A main issue is to examine how and the extent to which extent various facets of teamwork behavior are applied in the various organizations. For example, NWW can be applied in many different ways and through different stages in the organization. Providing a clear overview regarding the application and interpretation of the moderator is valuable information for the organizations involved. With this information, organizations get to know how and when the organizations can influence the moderator to influence the success of NWW. In addition, examining how different components contribute to the effects of NWW provides a more thorough understanding of the role of teamwork behavior in NWW. This information will be valuable for organizations and their HR departments to implement NWW successfully and therefore benefit more from the implementation of NWW.

1.5 Structure

The remainder of this thesis is structured as follows. In chapter two, the theoretical framework will be presented. As result of the literature research, testable hypotheses concerning the expected relationships between NWW, the outcomes organizational commitment and productivity and the moderator teamwork behavior will be deduced. In chapter three, the methodology to test the hypotheses will be presented. Chapter four provides the results of the research. In chapter five, a discussion with results and revised model is included. Finally, the conclusion, practical implications, limitations and suggestions for further research are derived from the findings in chapter six.

2. Theoretical framework

This literature study aims to elaborate on the concept of NWW. NWW is an umbrella term which involves the different components: flexible workplaces at work, flexible working hours, teleworking and IT usage. These components are used during the description of NWW. The reason why these components are used, the components of NWW and a literature study of NWW and the two outcome variables are described in section 2.1.

The second part of the literature study elaborates on teamwork behavior. First, an overview will be given regarding the different definitions in section 2.2. 2.2.1 describes the virtual team work behavior. In section 2.3 the outcome variables are described. Subsequently, in 2.4 the observable characteristics of teamwork behavior theory are described which lead to an overview of teamwork behavior components. To conclude the theoretical framework, an overview of literature written about the relation between NWW and teamwork behavior will be described.

2.1 New ways of Working (NWW)

Because of evolving business processes and rapid changes in technology, the way people work is changing. Work has become much more knowledge-intensive, collaborative and immediate (Rice, 2002). Therefore, in recent years, more and more organizations see the potential opportunities in the application of NWW on organizations which has led to a rapidly increased number of organizations with an implemented form of NWW (Blok et al., 2012). Through the implementation of NWW, workplaces are transformed into flexible, adaptable and collaborative learning environments (Greenberg & Antonucci, 2007). While organizations may differ in their motivations to implement NWW, most share the aim of maximizing organizational performance (Kemp, 2013).

2.1.1 Definition of NWW

Over the past decades, scholars have put emphasis on different aspects of NWW (Bijl et al., 2009) and organizations have taken different approaches implementing it (Nagtzaam, 2011; Van Heck, 2010). Therefore although NWW is commonly known, there is still no one common definition of NWW (Baruch, 2004). Bijl (2009) stated that: The ‘new way of working’ is a vision to work more effectively, more efficiently but also to make work more enjoyable for both the organization and the employee. That vision will be realized by focusing on the employee and give him -within certain limits - the space and freedom to determine how he works, where he works, when he works, in which way he works and with whom he works. Recent developments in ICT make the new way of working technically possible, social developments make it desirable. Microsoft (2011) argues that: The New World of Work is a different way of working and cooperating, supported by the latest technology. In the New

World of Work, people and organizations have become more flexible in working hours and working environment. As a result, people feel more comfortable and the organization will be more productive. According to Baane, Houtkamp, & Knotter (2010) there are four principles of 'the new way of working': 1. Anytime, anywhere (working independently of time and place), 2. Manage your own work, 3. Unlimited access and connectivity (free access to knowledge, experiences and information) 4. My size fits me (flexible labor relations). These different authors (e.g. Bijl., 2009, Baane et al., 2010, Microsoft, 2011) mentioned denominators of NWW like time and location free work and the unlimited access and connectivity through IT.

A renewed definition of NWW what will be used in this thesis is:

> *"NWW is working anytime, anyplace and anyhow through the unlimited access of knowledge and information connectivity supported by IT".*

In contemporary organizations, NWW have been embodied in a diverse multitude of practices. An exemplary, non-exhaustive list was assembled by Blok et al. (2011) and is illustrated in table 1.

NWW Practice	**Description**
Teleworking	Doing the work (partly) from home
Flexible Workspaces	Flexible work spaces in the office building that are shared among employees and offer specific environments that correspond to the various tasks to facilitate effective working
Satellite Offices	Offices outside an organization´s office buildings, e.g. at customer´s locations
Mobile Working	Enabling employees to work while commuting
Flexible Working Hours	Allowing to start and end the workday outside of the core time
Social Networks	Using smartphones and other mobile devices to allow employees to stay digitally connected via e.g. work-email at home, Facebook or LinkedIn
Collaborative Tools	Using smartphones and other mobile devices to enable digital collaboration and document sharing (e.g. via work-mail at home, DropBox or GoogleDocs)

Table 1 NWW practices

However, NWW is not equally applicable to every organization and the application is still limited to certain functions. The first group who qualifies for NWW is the office staff because their work consists of administrative tasks that can be carried out with the aid of a computer. The second group are the knowledge workers (Breukelen et al., 2014). A knowledge worker is 'someone who works mostly with his head rather than his hands' (Bijl, 2009, p.37). The looser definition of Bijl (2009) makes it possible to handle more professions and functions which contain tasks with the possibility of working place and time independent.

2.1.2 Components of NWW

As already mentioned, we divided NWW in four components. These components are: 1) Flexible workplaces at work, 2) Flexible working hours, 3) IT usage and 4) Teleworking. Flexible workplaces at work and Flexible working hours can be seen as the bricks dimension of the well known bricks, bytes and behavior theory (e.g Baane et al., 2010; Kok et al., 2014). Bricks include the physical dimension (Kok et al., 2014) and address all aspects of the physical work environment such as premises and facilities. This is characterized by an offices concept aimed at flexible work, work areas furnished according to concept of 'activity-related work', inspiring office environment which are set up as a home base and meeting place, and an open network environment that brings the 'the outside world' inside (Baane et al., 2010).

The third component IT usage can be directed to the second dimension 'bytes'. Bytes include the technological dimension and address all aspects concerning the use and application of IT (Kok et al., 2014). The most important characteristics in this dimension are real-time availability and accessibility of information for all, technology that adjusts to the user, implementing web 2.0 software and the use of smartphones and laptops to empower employees to work together virtually (Baane et al., 2010).

The last component is teleworking and can be classified within the behavior dimension. Behavior includes the personal dimension and addresses all aspects concerning the manager-employee relationship and the way the employee works and experiences work (Kok et al., 2014). Working from home is a way of working an employee can fill in the working day as he wants. As everyone is different, it is expected that a day working at home will be filled in differently for every employee. Therefore it is stated that teleworking is a behavior dimension. Thereby, mentioned Baane et al (2010) the organization, its culture and leadership as elements of the dimension behavior.

2.2 Teamwork behavior

Nowadays teams are used in almost any organization as they are able to respond adequately to the changes from the business environment (Godeanu, 2011). Implementing NWW results in changing working hours, flexible working places and teleworking. Therefore, the focus of this thesis is to analyze teamwork behavior by looking at individual team members behavior in different companies and therefore in different forms of NWW.

Teams as proposed by Zenun et al. (2007) refer to ´a number of people that have complementary skills who are equally committed to a common purpose, goals and working approach for which all members hold themselves equally accountable´. Individuals work in teams to achieve tasks that require collective action (Rousseau et al., 2006). In work team settings, members' behaviors may be divided into two main categories, namely task work behaviors and teamwork behaviors (Rousseau et al., 2006). Task work behaviors are behaviors that contribute directly to the accomplishment of tasks and are related to the technical aspects of the tasks that exist independently of work organization. Teamwork behavior is a multifaceted concept that has been difficult to conceptualize. Teamwork behaviors contribute directly to the accomplishment of tasks and are related to the technical aspects of the tasks that exist independently of work organization (Rousseau et al., 2006). What the effect of teamwork behavior is on NWW will be researched in this thesis.

It is proposed that, to the extent to which team members collectively reflect on the team's objectives, strategies, processes and performance and make changes accordingly (team reflexivity), teams will be more productive, effective and innovative (West, 2009). As teams become more diverse in their constitution and functioning, team members must learn to reflect upon, and intelligently adapt to the constantly changing circumstances in order to be effective (West, 2011). This builds a bridge with NWW as this concept makes is possible to overcome the rapidly changing environment and be more effective. According to Cohen (1991), to be able to achieve an effective outcome, a team needs the following aspects:

- *share the goals:* they want to achieve, share an overall plan that they follow together and to some degree share knowledge of the environment (situation awareness) in which they are operating.
- the team members need to *share the intention* to execute the plan to *reach the common goal*.
- team members must *be aware of their capabilities* and how they can fulfill roles required by the team high level plan.
- team members should be able to *monitor their own progress towards the team goal and monitor team mates* activities and team joint intentions.

Therefore in this thesis the following definition of teamwork behavior will be used:

> *"Teams are collaborative units of people joined together to accomplish a common goal. The output of the whole team should exceed that of the sum of the output of individual members".*

2.2.1 Virtual teamwork

Teams are often composed of people with very different cultural backgrounds, ages, functional expertise and personalities and also may span national boundaries, including members located in several countries (West, 2011). Thereby teamwork can be divided into face-to-face teamwork and virtual teamwork. Virtual teams are more and more used because software is enabling shared workspaces where workers can collaborate far more effectively than in the past (Gates, 2005). People are connected with each other by technical systems and networks. Increasingly, the walls that used to separate employees from information and one another's knowledge will disappear (Hartmans & Kamperman, 2009). Nowadays it is not as common that the team members are located at short distance. In fact in organizations more than 70% of the (project) teams work dispersed (Gartner, 2001). From all the different definitions it can be derived that a team can be defined as a virtual team if it meets four main criteria (Ebrahim et al., 2009):

- The team is geographically dispersed
- The team is driven by a common purpose
- The communication is possible through communication technologies
- The team members are involved in a cross boundary collaboration

The definition of virtual teams, which is used in this thesis, is stated by Powell et al. (2004, p. 2):

> *"Virtual teams (VTs) are groups of geographically, organizationally and/or time dispersed workers brought together by information technologies to accomplish one or more organization tasks".*

There are a variety of factors that led to the rise of VTs, but increasingly sophisticated technology made it possible, and globalization made it necessary. Once VTs began, organizations noticed an unanticipated bonus: VTs were, on average, more productive (Dorr, 2011) which resulted in better organizational and team performance. VTs enable organizations to pool the talents and expertise of employees by eliminating time and space barriers (Ebrahim et al., 2009). It also allows virtual teams to access the most qualified individual for a particular project and perform their functions from around the world". The use of new media technology (e.g., smartphone, e-mail) is suggested to facilitate efficient time use and the coordination of work tasks (Hurme and Rahman, 2005). According to Hurme and

Rahman (2005) relationships between employees are therefore even more positive in teams using electronically mediated communication in contrast to face-to-face teams. Nowadays companies are heavily investing in VTs to enhance their performance and competitiveness (Ebrahim et al., 2009).

In response to the increased decentralization and to the work processes being globalized, virtual teams have become more popular within organizations to handle this dynamic environment (Cascio, 2007). VTs are formed so that temporal and geographical separations can be overcome (Cascio and Shurygailo, 2003). So VTs are comprised of members located in more than one location able to work across boundaries of time and space utilizing modern technologies. The geographical dispersion of the team can vary widely from having each team member in a different location to only one team member in a different location than the rest of the team. Hence that there are several different types of teams. This makes that some components will be more important in certain teams than in others (van Roosmalen, 2012). These different types of teams can engage differently in teamwork. This means that teams do not manifest teamwork processes in the same way, which has to be kept in mind within each team. Because of these differences, it may be favorable to focus on the actual tasks that teams perform in order to understand the process that will lead to team effectiveness. The effectiveness of a team will be dependent on which task is being accomplished, and what is effective in one situation may not be so in another. In sum, there is no one-size fits all-approach to teamwork.

According to different authors the following skills are needed:

- Virtual team players should be *self-directed* but willing to take direction and be *result-oriented* (Lockwood, 2010)
- *Communication skills* ; ability to provide frequent feedback (Lockwood, 2010); Leonard, 2011).
- Focus on *relationship building* (Dorr, 2011)
- HR should also ensure that succession planning and promotions are tracked to make sure virtual team members are receiving *recognition and credit* (Leonard, 2011).

2.3 Outcome variables

In the previous section, the dimensions of NWW are described. A logically following question is why organizations should implement NWW. What are the benefits, or in other words, the outcomes of NWW for organizations? There are many potential outcomes that can be achieved by implementing NWW. For example, Baruch (2000) indicated possible outcomes

of teleworking such as better productivity, improved performance, need for autonomy and better work-life balance. This Master Thesis will focus on two potential outcomes of NWW, namely productivity and organizational commitment. The following subparagraphs will examine these positive outcomes of NWW in more detail.

2.3.1 Productivity

An expected outcome of the implementation of NWW in organizations is an increase in productivity (Blok et al., 2012). According to Neufeld & Fang (2005), productivity is defined as the ratio of outputs into inputs which is a very broad definition and can be used for productivity at all levels (e.g. individual productivity and overall business productivity). This study will focus on individual productivity since NWW enables employees to work anytime, anyplace and anyhow. A more specific definition of employee productivity is "the effectiveness with which a worker applies his or her talents and skills to perform work, using available materials, within a specific time" (Neufeld & Fang, 2005, p.1038) and is recognized as an important individual outcome for telecommuters.

The literature provides different empirical evidence about how NWW practices (teleworking, flexible workplaces at work, flexible working hours and IT) can lead to higher productivity. For example, productivity will depend on the technology, but also on the people and tasks involved, and on the structural, managerial, and cultural context in which the work gets done as well (Bailyn,1989). Because of these many possible influences all four dimensions of NWW in relation with productivity will be discussed separately.

2.3.1a Telework and productivity

Telework is not a new concept. However the current concept of homeworkers differs in two major characteristics in comparison with those of earlier centuries: first, teleworkers typically have a communication link to their office and second, more and more of the teleworkers are knowledge workers such as professionals and managers (Belanger, 1999). Hence, a challenge of teleworking is that organizations must learn to value their contribution and to trust their commitment, and must resist the urge to dictate when and how they do the work (Bailyn, 1989).

Bailey & Kurkland (2002) reviewed articles which contain empirical evidence on worker accounts of higher productivity and teleworking (e.g. Bailyn, 1988; Belanger, 1999; Frolick, Wilkes & Urwiler, 1993). According to these studies, there is a positive relation between teleworking and productivity. Reasons for higher productivity when teleworking can be linked to: working at peak efficiency hours, reducing interruptions, providing an environment for work requiring high levels of concentration, reducing time spent telecommuting, and reducing incidental absence (Belanger, 1999; Bailey & Kurkland, 2002). For example, Belanger (1999)

conducted a survey of telecommuters and non-telecommuters working for a high technology organization. The results of the survey showed that productivity was statically different between telecommuters and non-telecommuters at the 0.05 level of significance. Less meetings and interruptions seem to be the most important reason for greater productivity of telecommuters. This is also underlined by Bailey & Kurkland (2002) and Neufeld & Fang (2005). Teleworkers claim that elimination of stress associated with the daily commute, avoidance of interruption, and flexibility to tend to family and personal issues without affecting job related commitments are directly linked to their level of increased productivity (Frolick et al., 1993). In this way, a teleworker is able to optimize his or her motivational periods around a flexible work schedule in an informal setting.

Professional and social isolation are cited as drawbacks (Bailey & Kurkland, 2002). An argument for employees to not telework is the need to share information with colleagues. Most individuals who highlighted this suggested that a large part of their job is attending meetings and exchanging ideas (Bailyn, 1989). The need to socialize with others was mentioned often as being more productive at the office for not telecommuting (Bailyn, 1989). Bailey & Kurkland (2002) mentioned that telework leads to social and professional isolation for teleworkers. They argue that employees become invisible at the workplace, miss out on office gossip, are forgotten in the distribution of more formally constructed information, and receive poor evaluations.

It is important to keep in mind that teleworkers in general work part-time or just a few hours a week. Teleworkers cannot be seen as fulltime teleworkers. Some prior work (e.g., McCloskey & Igbaria, 1998) notes the probably significant impact of teleworking frequency on outcomes (Bailey & Kurkland, 2002). The possibility that frequency is a strong moderator with evidence that frequencies are low across the teleworking population, it becomes clear that a significant amount of attention has been funneled to an inappropriate set of independent variables (Bailey & Kurkland, 2002). For example, if we accept that most employees telework for only a few days each month, it is less likely to suspect that their motivation is to avoid a long commute or to take care of children. Otherwise, they would work away from the office more often (Bailey & Kurkland, 2002).

Productivity is expected to increase because of telework (Frolick et al., 1993). Fewer meeting and less interruptions seem to be the key reasons for a higher productivity of teleworkers (Belanger, 1999). Individual control over the timing of work could also have a significant positive effect on productivity (Bailyn, 1989). Because of the empirical evidence on the significant positive effect of telework on productivity and since drawbacks can be limited by

finding the right balance between teleworking and working at the actual office the following hypothesis is formulated.

Hypothesis 1a: The higher the frequency of teleworking, the significantly higher productivity of teleworkers in comparison to non-teleworkers.

Expected is that there will be an optimal number of days in using telework what will result in significantly higher productivity of teleworkers in comparison to non-teleworkers. What this optimal number is, is stated in the results.

2.3.1b Flexible workplaces at work and productivity

Nowadays workplaces in which everyone had their own fixed workplace are no longer a matter of course (Van der Voordt, 2003). Making use of modern information and communication technology redirected the attention towards the sharing of activity related workplaces in a combi-office (Van der Voordt, 2003). Similarly, Thompson (2011) point out that due to the emergence of the satellite internet networks and its increased affordability, a professional can work anywhere with a laptop and mobile phone given a satisfactory working environment.

The benefits of flexible workplaces at work are the savings which can be utilized by reducing office space for companies through methods like office sharing or abandoning offices entirely (Davenport & Pearlson, 1998). Moreover, flexible workplaces also partly include the concept of flexible working hours as the employee has the discretion to choose the working hours of the day when working from a remote location. Furthermore, the benefits of the concept are striking considering that employees are not dependent on external conditions like commuter traffic or weather conditions anymore (Hill et al., 1998).

However, it seems that flexible workplaces are also not suitable for every organization as they mostly apply to routine information-handling tasks, mobile activities as well as professional and other knowledge related tasks (Robbins & Judge, 2007). As the benefits are mentioned, there are some drawbacks as well. It appears that managers have less direct oversight over employees and thus, are not able to observe the immediate input, which triggers employees to work harder when working outside of the office (Thompson, 2011).

Concentration, distance from colleagues, privacy, workplace dimensions, image and adaptability all correlated significantly with the perceived effect of the office environment on employee productivity (van der Voordt, 2003). This list confirms the great importance of convenient areas where information can be communicated and where concentrated work can

be carried out (Van der Voordt, 2003) and thereby productivity can grow. For example, the study of Voordt (2003) examined the influence of flexible workplaces at work on productivity. The study was conducted at the ABN AMRO Bank in Breda. The results showed a positive increase in the perceived productivity of employees from 14 per cent to 51 per cent since they were able to move to a place reserved for concentrated work and the more efficient creation of archives. However, giving up one's personal desk conflicts with basic human needs for privacy, territoriality, personalization and expressing one's status. But Van der Voordt (2003) suggest that this can be compensated by good architecture and interior design and high-tech gadgets. Nevertheless many studies have identified complaints about the lack of privacy and the fact that employees are unable to personally control the desk settings. Even when objective measurements revealed that the background noise of conversations in the buildings was not unduly loud, it did distract employees (Van der Voordt, 2003). Bruce (2008) point out that workplace distractions cut employee productivity by as much as 40 per cent, and increase errors by 27 per cent. Also, Moloney (2011) citing Loftness study of 2003 confirmed the importance of natural light and air (ventilation) to worker productivity. The study showed a 3-18 per cent gain in productivity in buildings with day-lighting system. Thereby Van der Voordt (2003) mentioned that high level employees in particular are more negative about open-plan offices. The reason may underline the fact that complex tasks require more peace and privacy and the greater need for status in the case of management may also play a role (van der Voordt, 2003).

Reasonable arguments can be constructed suggesting both positive and negative effects on productivity when using flexible workplaces. To find a counterbalance, subdivision of large open spaces into smaller, team oriented compartments, noise-reducing measures and the allocation of concentration cells for long and confidential phone calls may help to reduce this problem (van der Voordt, 2003). For teams, the drawbacks can be overcome by giving a department its own identity by means of a color and personal or collective attributes, thereby creating the feeling of a 'group territory'. In that case, there is a shift from a personal to a group identity. The following hypothesis is proposed;

Hypothesis 1b: Well-constructed flexible workplaces will result in significantly higher productivity levels than using fixed workplaces.

2.3.1c Flexible working hours and productivity

Flexible working hours allow variability in the starting and ending times of a work day and employees may choose times of arrival and departure. In addition, flexible working hours is linked to an increase of productivity because of an increase in employee job satisfaction, organizational commitment, decreased absenteeism, turnover (e.g., Rogier & Padgett, 2004)

and a decrease in the employees work family conflict (Hammer, 1997). Similarly, the results of a meta-analysis revealed that implementing flexible working schedules in work-groups lead to an increase in productivity (Baltes et al, 1999). Shepard, Clifton & Kruse (1996) gathered empirical evidence from the pharmaceutical industry about the effect of flexible working hours on productivity. The result of their study suggests that flexible working hours contribute improve the productivity by 10 per cent. Other studies about the relation of working hours and productivity suggest that there may be positive effects on job attitudes, off-job satisfaction, and work-related stress (e.g., Pierce and Newstrom 1980,1982).

There are several channels whereby flexible schedules might influence productivity, including workers may increase effort, reduce shirking, work harder or work smarter, cooperate more fully in training, assisting, and monitoring other workers, or reduce absenteeism and turnover (Shepard et al., 1996). In addition, with flexible working hours, workers may choose to work during their peak hours, in terms of personal productivity. The following hypothesis is proposed.

Hypothesis 1c: Flexible workings hours result in significantly higher productivity levels.

2.3.1d IT and productivity

IT is used to facilitate communication, to easily store and process information, to automate business processes, or to widen the access to information via the World Wide Web (Hempell et al., 2002). This broad spectrum of applications has helped IT to diffuse in practically all sectors of the economy. Growth of contribution of computerization, software applications, work processes, business organization etcetera, by exploiting the advantages of measurements at the firm level (Black &Lynch, 2001). According to Blok et al. (2011) and Cardona et al. (2013), by in a finer way facilitating the work task with IT and workplace design so that the employees can work anytime and anyplace adjusted to their tasks a higher productivity can be realized. The studies of Black & Lynch (2001) and Brynjolfsson & Hitt (2003) contain empirical evidence about the relationship between IT and productivity. For example, the results of the study of Black & Lynch (2001) (N=638) found that investments in new technology is associated with a significantly higher productivity. The following hypothesis is proposed;

Hypothesis 1d: More usage of IT result in significantly higher productivity levels.

In this Master Thesis, employee productivity is defined as an employees' self-efficacy, work quality and its effectiveness (Staples et al., 1999). It seems that the advantages of NWW outweigh the disadvantages, although before we can conclude this in all certainty, more systematic research needs to be done on the different aspects related to the phenomenon.

Since all four NWW practices have a positive relationship with productivity, the hypothesis for NWW as a whole is as follows:

Hypothesis 1: There is a positive relationship between the deployment of NWW and productivity.

2.3.2 Organizational commitment

Another expected outcome of the implementation of NWW in organizations is organizational commitment which refers to a person's affective reactions to characteristics of his employing organization. It is concerned with feelings of attachment to the goals and values of the organization, one's role in relation to this and attachment to the organization for its own sake rather than for its strictly instrumental value" (Cook & Wall, 1980,p.40). According to Mowday, Steers, & Porter (1979) it is seen as the relative strength to which an employee identifies himself with the organization. Organizational commitment is distinguished by three components; identification, involvement, and loyalty (Buchanan, 1974). Identification involves the pride in the organization. Involvement implies the "willingness to invest personal effort as a member of the organization, for the sake of the organization"(Cook & Wall, 1980,p.40). Loyalty refers to "affection for and attachment to the organization; a sense of belongingness manifesting as 'a wish to stay'"(Cook & Wall, 1980,p.40). Many researchers have suggested that employers who provide work-life benefits, including flexibility policies, reap the rewards of higher employee commitment (Dalton and Mesch 1990; Friedman and Greenhaus 2000; Grover and Crooker 1995; Rodgers 1992; Thompson, Beauvais, and Lyness 1999).

The literature provides different views about how NWW practices (teleworking, flexible workplaces at work, flexible working hours, and IT) can lead to more organizational commitment of employees. Therefore, the four dimension of NWW and outcome variables in relation with organizational commitment will be described separately .

2.3.2a Telework and organizational commitment

The creation of a positive image of the organizations is possible due to that an organization that facilitates telecommuting is perceived positively by the public as modern and progressive, since it makes use of new work methods (Harpaz, 2002). However, employees who choose to telecommute may also find their loyalty and commitment being questioned by managers (Gajendran and Harrison, 2007). For example, the study of Harpaz (2002) stated that teleworking can possibly harm the organizational commitment since from a distance it is harder to control, instill motivation, commitment, and influence.

Organizations that provide employees with the flexibility to work from home are providing a positive signal, visibly demonstrating their trust and support for employees' well-being. This

signal from organizations should, in turn, generate greater psychological commitment and a lowered tendency to quit (Rhoades & Eisenberger, 2002). This is also underlined by the study of Golden & Veiga (2008) who stated that employees who work in an intense virtual work could lead to more or less commitment. The level of commitment was influenced by the quality of the relationship between the manager and the employee, wherein low quality led to a decrease and high quality led to an increase of organizational commitment. Whereas Golden (2006) used a sample of 393 teleworkers in one organization and found that teleworking is positively related to organizational commitment (β=17, p<.001). Therefore the following hypothesis is proposed;

Hypothesis 2a: The higher the frequency of teleworking, the significantly more organizational commitment teleworkers have in comparison to non-teleworkers.

2.3.2b Flexible workplaces at work and organizational commitment

In the past decade, having flexible workplaces at work has received more attention since organizations list workplace flexibility as a potential benefit for both employees and the organization (Pitt-Catsouphes & Matz-Costa, 2008). According to the National Study of Business Strategy and Workforce Development, 50 per cent of employees with access to flexible work arrangements report fewer mental health problems, higher life satisfaction and lower levels of negative spillover from work to home (Pitt-Catsouphes, Smyer, Matz-Costa, & Kane, 2007). Also, The National Study of the Changing Workforce stated that 73 percent of employees with flexible work arrangements stated that there was a high chance that they would stay at their current employer for the next year (Bond et al., 2002,p.34).

Regarding the flexible workplaces at work, the study of Pitt-Catsouphes & Matz-Costa (2008) provides empirical evidence about its positive relationship with organizational commitment. Their study suggests that flexibility is a positive predictor of engagement. Since engagement has evolved from research on organizational commitment (Bernthal, 2004) it can be stated that flexible workplaces at work have a positive influence on organizational commitment. This is also underlined by the study of Lynnes, Gornick, Stone, Grotto (2012), who studied the ability of workers to control their work schedules and hours among industrialized countries and used data for 21 countries.

Most studies on flexible workplaces at work “have examined the availability or utilization of different flexible work options assuming a ‘more is better’ perspective”(Pitt-Catsouphes & Matz-Costa, 2008,p. 220). However, they consider that it is about the concept of fit. For example, an organization offers a broad range of flexible work options, but if these options do not meet the needs of the employees, they are fruitless. The results confirmed their assumptions. “Flexible fit is a powerful positive predictor of engagement for all employees,

and it may be a more powerful predictor of engagement for older workers"(Pitt-Catsouphes & Matz-Costa, 2008,p. 225). Therefore, the hypothesis is as follows:

Hypothesis 2b: Flexible workplaces at work will result in significantly higher levels of organizational commitment

2.3.2c Flexible working hours and organizational commitment

Perceptions of flexible working hours in the workplace may increase employee loyalty and satisfaction due to positive feelings associated with working for an organization that visibly cares about the well-being of its employees. Increased commitment can be caused by several reasons. First, the individual may perceive the organization's offering of flexible working hours as representing the organization's concern for work and family. Employees may see this as an aspect of the psychological contact since their ability to balance multiple responsibilities is congruent with individual values about work and family (i.e. 'this organization cares about people'). Second, flexible working hours allow individuals to feel increased control over their lives due to the opportunity to work during times more suited to personal needs or personal biological clocks (not everyone is most productive from 9.00 a.m. to 5.00 p.m.). Third, having flexible working hours available improves employees´ perceptions about their employer and increases employees´ overall positive feeling toward the employees which impacts organizational commitment. Fourth, employees often engage in social comparison processes (Adams, 1965) and may compare their situation to peers in other jobs and/or organizations that do not offer flexible work programs. Such comparisons should increase the value of the employees psychological contract with their organization. Crooker and Grover (1993) noted that providing family benefits to employees positively influences their attachment to work through the symbolic action of the employer providing policies that are responsive to employees needs. The studies of Scandura & Lankau (1997), and Ng, Butts, Vandenberg, DeJoy & Wilson (2006) provides empirical evidence about the positive relationship between flexible working hours and organizational commitment. For example, Ng et al., (2006) researched 21 retail centers and found that work schedule flexibility had positive main effects on organizational commitment. In response to the offering of flexible working hours, employees may reciprocate with greater loyalty to the employer and better morale. Based upon the idea that flexible working hours represent an aspect of the contract between employees and employers and the previous literature, it is expected that flexible working hours are positively related to organizational commitment (loyalty to the employer). The following hypothesis is proposed.

Hypothesis 2c: Individuals that perceive flexible working hours will report significantly higher levels of organizational commitment than individuals who do not.

2.3.2d IT and organizational commitment

Organizations began to implement forms of NWW since the advances in IT. IT has enabled decentralization of work. Nowadays, it is possible for employees to work together while temporally and spatially decoupled from one another (Wiesenfeld, Raghuram, & Garud, 1999). However, these changes raise new challenges for organizations. For example; IT offers the freedom to work anytime, anyplace and anyhow but this may also lead to a weakening of the ties that bind employees of an organization to each other and to their organization (Wiesenfeld et al., 1999).

The first thing to note is that there is not much found in the scientific literature about the relationship of IT on organizational commitment. However, three studies are found concerning the relationship between IT and organizational commitment. The results of the study of Wiesenfeld et al. (1999) showed that there was a significant relationship ($r=0.48$; $p< 0.001$) between virtual status and face-to-face communication. It can be stated that employees that work according the principle of working anytime, anyplace and anyhow are more likely to use telephone and electronic communication. Electronic communication is established by means of IT. Their results also suggested that organizational commitment was higher among virtual workers than among less virtual workers. IT is of more importance for virtual workers since by IT they create and sustain their organizational identification. This is also underlined by the studies of Meyer & Allen (1997) and Rodwell, Kienzle, & Shadur (1998). Their studies showed that "information-sharing practices favor the internalization of organizational goals and values by employees, enhance feelings of mutual trust, and make individuals feel important to the company"(Paré, & Tremblay, 2007, p.329). Therefore, the following hypothesis is proposed.

Hypothesis 2d: More usage of IT results in significantly higher organizational commitment.

Baane et al. (2010) and Leede & Kraijenbrink (2014) stated that one of the outcomes of implementing NWW in an organization is the increase in organizational commitment of the employees. It can be argued that when NWW is implemented, employees undergo more flexibility and enjoy the new working arrangement. According to Bijl (2009) it might also increase the attractiveness and reputation of the organization, whereby employee become more committed. This Master Thesis will measure organizational commitment according to the three component distinction by Buchanan (1974). The hypothesis for NWW as a whole is as follows:

Hypothesis 2: There is a positive relationship between NWW and organizational commitment.

2.4 Moderator teamwork behavior

During interactions between team members, teamwork behavior takes the form of overt actions and verbal statements that contribute to the coordination demands of the team's task (Rousseau, Aube, & Savoie, 2006). For example, a team member would be engaging in teamwork behavior when they steer their fellow team members toward on-topic conversations, suggest setting time deadlines for completing tasks, or attempt to resolve a conflict within the group.

Teamwork behaviors can take several forms. Stevens and Campion (1994) argued that individual teamwork competencies could be divided into two broad categories, interpersonal and self-management. The interpersonal dimension includes such competencies as conflict resolution and communication, whereas self-management includes task coordination and performance management. To be able to measure teamwork behavior, the concept is divided into five components. In this thesis, communication is the first of the five components in this research. Thereby there are four components of self-management measured, namely: balance of member contribution, mutual support, social cohesion and mutual performance monitoring.

The used definition of teamwork behavior is as following:

''Teams are collaborative units of people joined together to accomplish a common goal. The output of the whole team should exceed that of the sum of the output of individual members".

The five components to measure teamwork behavior and the relevance of the components are described below.

2.4.1 Communication

It is broadly recognized that communication is a fundamental component of teamwork. It provides a mean to exchange information, share ideas among team members, coordinate efforts and provide feedback (Pinto & Pinto, 1990). Not only is the exchange of information important, even more important is that the information is delivered to the right person and interpreted in the way the sender intended to (Pinto & Pinto, 1990; Brodbeck, 2001; He, Butler & King, 2007). Communication provides a basis for other factors that determine team performance. For example, communication is needed to coordinate team member's efforts and knowledge (Han, Lee & Seo, 2008). Furthermore, it is needed for a team to understand the collective missions (O'Connor, 1993), to be sure the team shares the same mental model continuously (Salas, Cannon-Bowers & Johnston, 1997), and to facilitate trust within a team (Jarvenpaa & Leidner, 2006).

Nowadays more and more communication is done via the internet (social media for example). The Internet provides many options and opportunities for interaction and communication while almost bypassing entirely obstacles of physical distance and time. Therefore it is measured how many hours people work in so called virtual teams to measure the productivity and commitment in virtual teams.

Hypothesis 3a: Communication between colleagues will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive.

Hypothesis 4a: Communication between colleagues will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive.

2.4.2 Balance of member contribution

It is important to the quality of teamwork that every team member is able to contribute all task-relevant knowledge and experience to the team (Hackman 1987, Seers et al. 1995). While not everyone must bring in, for instance, the exact same number of ideas, no one should be limited in presenting and contributing relevant knowledge to the team.

Hypothesis 3b: Balance of member contribution will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive.

Hypothesis 4b: Balance of member contribution will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive.

2.4.3 Mutual support

The idea of teamwork, namely, is based on the idea of mutual support of the team members rather than the competition between them (Hoegl & Gemuenden, 2001). Competition between people can exert a positive influence on the motivation and performance of individual tasks. For interdependent tasks such as software development, however, cooperation or mutual support amongst team members is more important. Team members working on a shared goal should try to support instead of trying to outdo each other. They should show respect, give help and support when needed, and stimulate ideas of other team members and develop them further. If, on the other hand, team members demonstrate competitive behaviors, this can lead to distrust and frustration within the team (Tjosvold, 1995). Both quality and acceptance of ideas generated by members of the team increase when members cooperate (Cooke & Szumal, 1994). Mutual support, therefore, is an

important element of teamwork and is needed to be able to reach team goals. The better team members support each other, the more effective and efficient these goals can be reached.

Hypothesis 3c: Mutual support between colleagues will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive.

Hypothesis 4c: Mutual support between colleagues will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive.

2.4.4 Social team cohesion

According to Bijl (2009) social cohesion, which is a part of organizational culture, is expected to decrease when NWW is implemented. With teleworking, the contact with the office decreases and therefore it can be expected that NWW negatively influences the social cohesion in a team. Maynard & Gilson (2004) found that a shared understanding is more difficult to reach in a virtual team than in a team who experience face-to-face contact.

Mullen and Copper (1994) also stated that social cohesion is an important determinant of team performance. Based on this literature it can be assumed that social cohesion is an important issue, but besides its influences on team performance, it is also expected to positively influence organizational performance. According to Mullen & Copper (1994) and Gully et al. (1995) there is a moderate but positive relationship between cohesion and organizational performance. For this research, the definition used for social cohesion is a stable, sustainable team and close relations between team members (Raub, 1997).

Hypothesis 3d: Social team cohesion will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive.

Hypothesis 4d: Social team cohesion will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive.

2.4.5 Mutual performance monitoring

Mutual performance monitoring can be defined as “the ability to keep track of fellow team members work while carrying out own work to ensure that everything is running as expected and to ensure that others are following procedures correctly” (Salas et al., 2005, p. 575). Team members engaging in mutual performance monitoring will be aware of how their team

is functioning as a whole, and enable them to initiate backup behavior if needed (Salas et al., 2005). Furthermore, team members need to be situational aware in order to know when to initiate backup behavior (Salas et al., 2000). However, as people have a limited overview of their complex environment, situational awareness should preferably be shared amongst team members (Salas et al., 2000). Thus, a prerequisite for mutual performance monitoring is well developed shared mental models, so that team members have a common understanding of other team member tasks, and how the team should reach their goals.

Hypothesis 3e: Mutual performance monitoring will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive.

Hypothesis 4e: Mutual performance monitoring will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive.

2.4.6 Teamwork behavior

The evolution and growth of digital and mobile technologies has radically changed the way we work and the way we think about business. The new technologies inspired innovative platforms that allow project teams to work anytime, anywhere. Therefore teams will change; a new team for a new world. The new teams are ***externally*** oriented teams in which team members reach across their boundaries from day one, forging dense networks of contacts inside and outside the firm. These connections enable members to keep pace with shifts in markets, technologies, cultures, and competitors. They enable team members to learn about complex problems and find innovative solutions. These connections can enable players inside and outside the firm to share expertise and create new synergies that take advantage of emergent opportunities. These external connections enable innovation and adaptation. With the information that was presented in this chapter leads to the following, overall hypotheses.

Hypothesis 3: Teamwork behavior will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive.

Hypothesis 4: Teamwork behavior will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive.

3. Methodology

This chapter includes information about the methodology of the study. Chapter 3.1 describes the sample description. In chapter 3.2 the sample selection is described. The way the data is collected and which analyses are used will be presented in chapter 3.3. The operationalization with the Cronbach's alpha's are described in chapter 3.4. The reliability of the research will be addressed in chapter 3.5. Chapter 3.6 will report the data analysis with the validity.

3.1 Sample description

The data for this study is collected from Rabobank Operations Utrecht, Rabobank Hengelo, BIZZdesign, InnoVolar, Interactive Blueprints, O&I management consultants and three organizations which wanted to be anonymous. All of the above organizations implemented NWW to a certain degree. Therefore we chose these organizations for this research. The research population consists of 347 employees, which means that not all of the employees of each company were part of the sample. According to Van aken, Berends, and Bij (2009) the unit of analysis can also be an organizational unit such as teams, individuals and departments if this is more natural. 296 employees of Rabobank Operations Utrecht participated and 51 respondents were from the remaining organizations. Only the middle management, subordinates and office workers are taken into account in this study since NWW is more applicable to these functions (Breukelen et al., 2014). It is of importance to take construct validity into consideration since the hypotheses used in this study are deduced from relevant theory (Bryman and Bell, 2011). Sampling error may occur since only a subcategories of all employees are actually surveyed (Dillman, 2007). However, it is acceptable that errors can't be covered as this research is the first in validating this survey as an instrument.

3.2 Sample selection

Organizations which had already been willing to participate in prior studies were first approached. This resulted in three participated organizations: two organizations which want to be anonymous and Rabobank Operations Utrecht. Other organizations which participated: Rabobank Hengelo, BIZZdesign etcetera were participating because an employee was in our network. The organizations were selected to create varying degrees into the four dimensions of NWW.

This study assigned some employees within the organizations who match the following criteria to participate: 1) a white collar- or knowledge-worker and 2) a first line supervisor or employee. We did send the online survey to as many employees in an organization which

met the above criteria. Employees participated on a voluntary basis to ensure that the respondents are willing to give a truthful answer on all the questions.

The decision has been made to distribute the survey online. Due to the relatively large sample size and the geographic dispersion of the companies it is a quicker way of distributing the survey. The advantage of an online survey is that respondents have the freedom to complete the survey when they want and at the speed they want. Moreover, it is also quicker to administer and the researchers have the possibility of sending reminders (Bryman and Bell, 2011). The disadvantage of online research is there is no help for respondents when they have difficulties with answering a question. Also, it is of importance that the survey is easy to complete; "otherwise questions will be inadvertently omitted if instructions are unclear" (Bryman and Bell, 2011, p.233). Another disadvantage is the greater risk of missing data through partially answered surveys (Bryman and Bell, 2011). But to reduce this risk we informed the respondent about the procedure and time needed for filling in the survey. Besides, to ensure the response rate we sent a reminder to the employees of the organizations twice. The first time was after one week, the other after three weeks which was already one week before the stated deadline. With these actions we have tried to get as many completed surveys as possible.

A sample description was made for the largest sample; Rabobank Operations Nederland. The Rabobank Operations Nederland consisted of 296 respondents with 258 completed surveys. The biggest part (37,07%) of the respondents' is born between 1965 and 1974. Whereas 61,82% of the respondents are male, and 38,18% are female. 76,69% of the respondents works more than 35 hours per week. The tenure of the sample is very diverse; 28,38% works between 4 and 9 years at the organization whereas 27,70% works between 25 and 40 years at Rabobank Operations Nederland. This is relatively long as the average years are usually between 6 and 8 years (CBS, 2013). The smallest percentage (7,77%) of the sample is working between 0 and 3 years at Rabobank Operations Nederland.

At Rabobank Operations Nederland around 2500 employees received an email to participate into the research. This means that 12,00% of the employees filled in the questionnaire. These 296 respondents are of four departments which are reported in table 1.

For which department at Rabobank Operations Nederland do you work?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1. Betalen en Sparen**	169	55,0	57,3	57,3
	2. **Financieren en Verzekeren derden**	23	6,8	7,1	64,4
	3. Beleggen	43	14,0	14,6	79,0
	4. Facilities	62	20,2	21,0	100,0
Total		297	100,0		

Table 1 Respondents of different departments

The results are, next to the already mentioned control variables of age and gender, analyzed with other control variables as the number of years working at the current organization, the amount of hours working per week and the function.

Also, an overall sample description was made which includes all organizations that participated in this research. The overall sample consisted of 347 respondents with 300 completed surveys. The biggest part (36,05%) of the respondents' is born between 1965 and 1974. This means between the ages of 41 and 50 years. Whereas 62,82% of the respondents are male, and 37,18% are female. 76,88% of the respondents works more than 35 hours per week. The tenure of the sample is very diverse; 26,59% works between 4 and 9 years at their organization whereas 25,43% works between 25 and 40 years at their organization. The smallest percentage (13,01%) of the sample is working between 0 and 3 years at their employer.

3.3 Research method

Quantitative research is used in this thesis. The aim of quantitative research is to make an assessment of the current situation and to get insights in the influence of teamwork behavior in relation to NWW and the effects of NWW in different organizations.

Quantitative research is often performed by means of a survey (Bryman and Bell, 2011), whereby the subcomponents of the theoretical framework are used to operationalize the constructs to a level whereby they can be measured. All concepts used in this research are well known and measurable via validated surveys, except for NWW. This study will gather quantitative data necessary to answer the research question via a survey consisting of four separate parts, the level of NWW, the level manner of teamwork behavior, the level of productivity and the level of organizational commitment.

In order to successfully collect the data, the following procedures were followed. The online survey was sent to as many employees in the organizations that met the criteria. The respondents participated on a voluntary basis to ensure that they were willing to give a truthful answer on all questions. They were informed about the study via a digital cover letter which explains the goal, procedure and confidentiality of the study. This letter also included the link via which the survey was filled in and the respondents were able to complete it in one month. When the response rate was low, a polite reminder was sent two weeks before the deadline. If it remained low, a polite and slightly more urgent reminder was sent by the organization's management one week before the deadline.

The online survey (see appendix II) started with indication questions about NWW. This information provided a picture of the availability of the NWW practices from which the employees of the respective organizations could choose. Various aspects of NWW were measured and answered on ratio scales by the employees themselves. A different likert rating scale with anchor points for each question is used since an own measurement scale was created with ordinal and nominal questions. When analyzing this data, the answers will be bend in a way that they are comparable to different questions. The results can be found in chapter 5 results.

For the components of teamwork behavior, commitment and productivity a 5 point likert rating scale is used (1="to a little degree" to 5 "to an extreme degree). With the variable teamwork behavior we suggested that participants keep in mind their latest and most time consuming team experience when answering the questionnaire, to avoid the possible prevalence of bias when participants choose which team to answer from.

3.4 Reliability

According to Dooley (2009) reliability "refers to the degree to which observes scores are free from errors of measurement" (p.76). Reliability is measured by the consistency of the scores. According to Babbie (2004), using established measures is a method to ensure reliability. A reliability coefficient is Cronbach's alpha. In this Master Thesis, only existing datasets are used. However, since sometimes the formulation of the statements is changed, the Cronbach's alpha will be calculated.

3.5 Operationalization

Several scales are used to measure the different constructs. Most of the scales are existing scales; however some scales are adapted to measure the construct well. Appendix II contains all items of the survey. The survey will also track the respondents tenure, age, gender, function and department to provide a richer analysis. Thereby, functional or departmental peculiarities can be examined. To not confuse the respondents we have

chosen to change the scales for almost every component in likert scales to 1 till 5. Thereby, respondents were are able to estimate the right value to an question and to answer the questions quickly.

The survey consists of eleven variables which are; NWW with four components: teleworking, flexible workplaces at work, flexible working hours and IT. The outcome variables: productivity and organizational commitment. The five components of teamwork behavior: communication, mutual support, mutual performance monitoring, balance of member contribution and social team cohesion. All variables will be defined and described whereby the Cronbach's alpha will be stated if relevant. A Cronbach's alpha of 0,70 or higher is seen as satisfactory (Nunnally,1978). Exploratory factor analysis is also used to determine whether items can be removed to make the scale more homogeneous and to increase the Cronbach's alpha.

Teleworking was the first component of the survey and it "is a form of organizing and/or performing work, using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis" (EFILWC, 2010, p.2). Teleworking is part of the NWW dimensions behavior since this component is about how the employees work and experiences work. This component consists of two items and is self-developed based on the checklist developed by Van Breukelen et al. (2014). The checklist of Van Breukelen et al. (2014) is used because it measures the four core aspects of NWW, namely teleworking, flexible workplaces at work, flexible working hours and IT and provides detailed information about the working situation of the employees. The answers of the items are based on an ordinal scale. The two stated questions were: 'How many hours (in percentage) per week do you work from home?'' and 'How many hours (in percentage) per week do you work from another location (nor office or home)?''. However, it appeared that the Cronbach's Alpha was very low 0,28 and the index showed a correlation of r= 0.238. By looking deeper into the questions, it was possible that the questions could be summed up as one: ''To the extent of not working at the offices workplaces". Therefore, the mean of both outcomes was summed up and divided by two. It was divided by two since 1) the results are shown in a relative sense and 2) because the four components are merged into one ten point scale (NWW). It was tested if this method differed from only summing up both outcomes which was not the case. Since both questions can be summed up, the following question can be stated: How many hours do you not work at the office workplaces? By doing this, one question was created whereby the Cronbach's Alpha is not of relevance for this component since only one question is stated.

Flexible workplaces at work is the second component of the survey and are defined as a "continuum of discretion concerning how frequently employees conduct their work away from the main work site (Thompson, 2011, p. 6). It involves flexibility in the location where work is conducted. In this Master Thesis, the focus will be on the flexible workplaces *within* an organization to overcome the agreements with teleworking. Flexible workplaces at work is part of the NWW dimensions bricks because it concerns the physical work environment. This component consists of three items and is based on the checklist developed by Breukelen et al. (2014). The answers of the items are based on an ordinal scale. To measure this we initially had three questions, but calculated an Cronbach's alpha of only 0,35. Therefore we looked deeper at the questions and so we discovered that the first two questions indicated if flexible working places are available. However we want to know if employees uses these flexible working places. To make sure we analyze the actual level of usage in NWW we excluded the first two questions: 'Does your department have flexible workplaces?'' And 'Compared to the number of workplaces, how many flexible workplaces (in percentage) are available in your organization?''. The question we used to indicate the usage was based on the following question: ''How many hour (in percentage) per week do you make use of flexible working places?'. The Cronbach's alpha for this component is not of relevance because just one question is stated.

Flexible working hours is defined as ''having the ability to schedule flexible starting and quitting times, sometimes with a core-hours requirement (Eaton, 2003, p. 146)''. This construct is part of the NWW dimensions bricks since this component is about the physical work environment. This component consists of two items and is based on the checklist developed by Breukelen et al. (2014). The answers of the items are based on an ordinal scale. The third component flexible working hours were indicated by only two questions with freedom in time and freedom in days. We looked at the index which showed a high correlation r = 0,735. Kendall-tau b shows 0,657, a number which lies nearby -1 and +1 the questions correlate and are dependent of each other. We state that there is a relatively positive cohesion (Kendall's tau-b: 0,66; p<0,001; n=289) between how many freedom in days and how many hour these days are filled in with own selection. For the overall sample there is also a relatively positive cohesion (Kendall's tau-b: 0,63; p<0,001; n=334).

IT is the fourth component of the survey. IT stands for "Information Technology" and "encompass a broad array of communication media and devices which link information systems and people including voice mail, e-mail, voice conferencing, video conferencing, the internet, groupware, and corporate intranets, car phones, fax machines, personal digital assistants and so on" (Dewett & Jones, 2001, p.314). IT is part of the NWW dimensions bytes because it concerns the technological dimension and addresses aspects such as the

use and the application of IT. This component consists of seven items and is self-developed which was based on the checklist developed by Breukelen et al. (2014) with α= 0,69. The answers of the items are based on a nominal scale. The dataset of Rabobank Operations Utrecht showed a Cronbach's Alpha of 0,69. The overall sample showed a Cronbach's Alpha of 0,68. As mentioned in section 3.4 operationalization, a Cronbach's Alpha of 0,70 is enough. However the level of significance for the overall sample is not high enough. A deeper analysis of the questions showed that if the question "Do you have the IT resources at home to be able to work at home" was deleted in the Rabobank Operations Nederland sample, the Cronbach's Alpha changes to 0,75. The Cronbach's alpha is 0,73 for the overall sample. Therefore, this question was excluded in the overall sample to conclude that there is enough internal consistency. However, Cortina (1993) stated that general guidelines need to be used with caution since the value of alpha depends on the number of items on the scale. IT was measured with the use of 7 items, which will be enough to measure this component correctly.

NWW. The data of all organizations shows a Cronbach's alpha of 0,73. When Scaling them into 10 scales the Cronbach's alpha even changes into 0,77. This was also the case for the overall sample. It showed a Cronbach's Alpha of 0,67, after it was scaled into 10 point scales α= 0,71. The 10 point scales were used to compare the various components of NWW and to be able to use it as one.

Productivity. The overall productivity of employees is measured with six items from an existing questionnaire of Staples et al. (1999). "Productivity is the effectiveness with which a worker applies his or her talents and skills to perform work, using available materials, within a specific time" (Neufeld and Fang, 2005, p.1038). Examples of items regarding this component are; 'I believe I am an effective employee', 'I work very efficiently', 'My manager believes I am an efficient worker' and 'I am happy with the quality of my work output'. The answers of the items are based on a five-point Likert-scale *(1="strongly disagree", 5="strongly agree")*. The Cronbach's alpha for the data of Rabobank Operations Utrecht is 0,90. For the overall sample the Cronbach's alpha was 0,90. So also for this instrument there were no actions or changes needed.

Organizational commitment is the second outcome variable of NWW and is defined as "a person's affective reactions to characteristics of his employing organization" (Cook and Wall, 1980, p.40). It is operationalized with the use of the article Cook and Wall (1980). The construct is operationalized with eight items whereas the original construct of Cook and Wall (1980) consists of nine items. The question "I'm not willing to put myself out to help the organization" has been omitted because it overlaps with the question "In my work I like to feel

I am making some effort, not just for myself but for the organization as well". Originally the answers of the items are based on a seven-point Likert-scale. However in this survey the items are based on a five-point Likert-scale *(1="strongly disagree", 5="strongly agree")* to have a consistent answering scale which facilitates filling in the survey. 2 of these 8 items were reversed stated questions, respectively question 2 and 7. The questions were: '2, I sometimes feel that it is better for me to leave this organization and 7, I would not recommend a good friend to come and work for this organization'. For that question 2 and question 7 are recoded. This was necessary because outcomes will be affected by reverse scored items. After that factor analysis revealed a clear factor solution for each variable. The Cronbach's alpha for commitment by the data of Rabobank Operations Utrecht is 0,81. At the overall data the Cronbach's alpha is 0,81. So no further actions or changes are needed.

Communication is the first component of the moderator variable teamwork behavior. In this thesis we use the definition of Welch and Jackson (2007), he defines internal communication as following: "The communications transactions between individuals and/or groups at various levels and in different areas of specialization that are intended to design and redesign organizations to implement designs, and to co-ordinate day-to-day activities". Internal communication is the communication that exists within a company, between and among employees. It can take many forms, such as face-to-face casual conversations, formal meetings, phone calls, emails, memorandums, and internal wikis. Communication is measured with four items. In this survey the items are based on a five-point Likert-scale *(1="strongly disagree", 5="strongly agree")* to have a consistent answering scale which facilitates filling in the survey. The Cronbach's alpha for Rabobank Operations Utrecht is 0,80. For the overall sample is the Cronbach's alpha 0,81.

Mutual support is defined as: ''Team members help and support each other in carrying out their tasks'' (Weimar, 2013). Mutual support considers the degree to which team members supported each other, suggestions and contributions of other team members were respected and further developed, and the team was able to reach consensus regarding important issues. Coordination was measured with the 6 items of mutual support of Weimar (2013). The Cronbach's alpha for Rabobank Operations Utrecht is 0,88. For the overall sample it is 0,89.

Mutual performance monitoring can be defined as "the ability to keep track of fellow team members work while carrying out own work to ensure that everything is running as expected and to ensure that others are following procedures correctly" (Salas et al., 2005, p. 575). Team members engaging in mutual performance monitoring will be aware of how their team is functioning as a whole, and enable them to initiate backup behavior if needed (Salas et al.,

2005). The construct is operationalized with four items. The Cronbach's alpha for Rabobank Operations Utrecht is 0,84. For the overall sample is it 0,84.

Balance of member contribution. Hoegl and Gemuenden (2001) state the importance of the following question: are all team members able to bring in their expertise to their full potential? It is important to the quality of teamwork that every team member is able to contribute all task-relevant knowledge and experience to the team (Seers et al., 1995). This is especially critical for teams with innovative tasks, which is the case in an changing environment when implementing the different aspects of NWW. While not everyone must bring in, for instance, the exact same number of ideas, no one should be limited in presenting and contributing relevant knowledge to the team (Hoegl and Gemuenden, 2001). The construct is operationalized with three items. Analyzing the data reveals a very low Cronbach's alpha, namely 0,19. Question 3: imbalance in the contributions of the team members caused conflicts in our teams correlation with the other two questions is very low. This means that this question does not correlate with the others. Therefore this question will not be used when analyzing member contribution. The effect is reported in table 2, the Cronbach's alpha rises 0,73 when question 3 is deleted. For the overall sample the Cronbach's alpha is 0,74. Because this is such a difference caused it was decided to remove this question from the test. Therefore, two questions remain.

Social team cohesion can be seen as ''a phenomenon that allows citizen's willingness to cooperate and support each other under existing social norms'' (Koonce, 2011, p 145). According to Weimar (2013) team members are motivated to maintain the team and there is team spirit. The construct is operationalized with five items. To get a high Cronbach's alpha question 4: 'There are many personal conflicts in my team' is deleted. This because we think the question is most likely too personal. Thereby, respondents might answer the question in different ways, which results in a low Cronbach's alpha. When deleting this question, the Cronbach's alpha for Rabobank Operations Utrecht becomes 0,89. For the overall sample it is 0,89 as well.

Teamwork behavior is the moderating component which includes all five components. The definition we use in this thesis is according to Rousseau (2006) and states that teamwork behavior contribute directly to the accomplishment of tasks and is related to the technical aspects of the tasks that exist independently of work organization. Figure 2 reports the mean, std. deviation and N=number of respondents of teamwork behavior on the Rabobank Utrecht operations, figure 3 shows the same information for the overall sample.

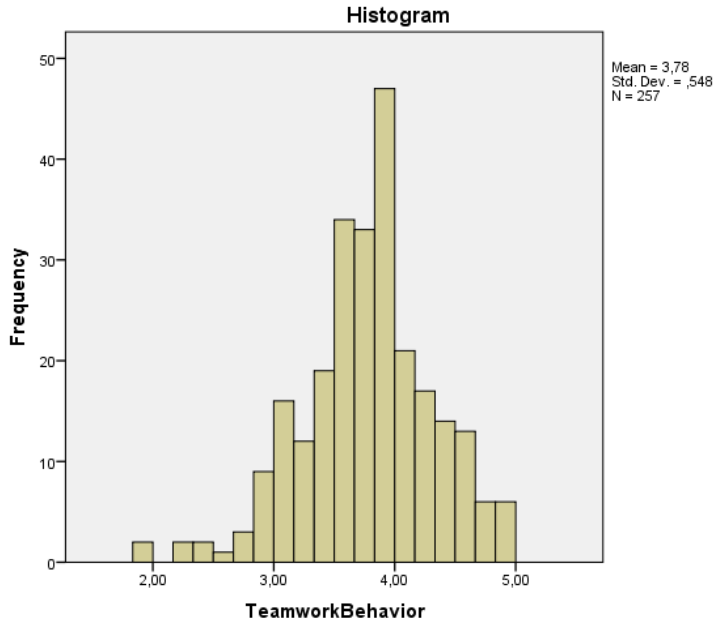

Figure 2 Teamwork behavior Rabobank Utrecht Operations

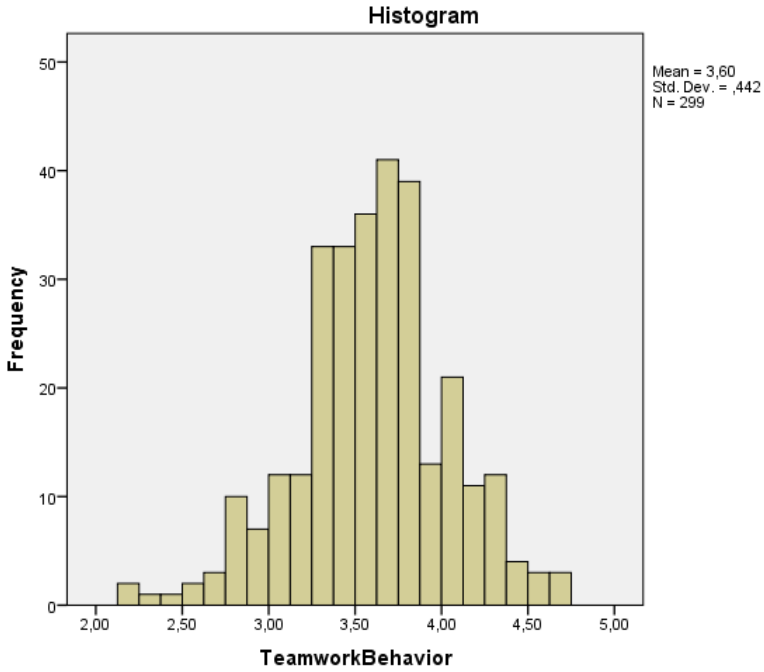

Figure 3 Teamwork behavior overall sample

Table 2 reports the definitions, Cronbach's alpha (α), means and standard deviation of the overall results and the results of Rabobank Utrecht Operations. Because the Cronbach's alpha does not differ much between the Rabobank Operations sample and the overall sample we will go further to just look deeper into the data of Rabobank Operations Utrecht.

Component **Component**	**Description**	**Items**	**α**	**Mean**	**SD**	**α**	**Mean**	**SD**
Telework	*"A form of organizing and/or performing work, using IT, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular* basis" *(EFILWC, 2010,p. 2).*	1	-	7,79	2,26	-	4,20	3,77
Flexible workplaces at work	*" Continuum of discretion concerning how frequently employees conduct their work away from the main work site" (Thompson, 2011, p. 6).*	1	-	7,95	3,56	-	7,50	3.87
Flexible working hours	*''Having the ability to schedule flexible starting and quitting times, sometimes with a core-hours requirement"(Eaton, 2003, p.146).*	2	Kendall-tau b 0,66	6,11	3,92	Kendall-tau b 0.63	6,15	3,82
IT	*"Encompass a broad array of communication media and devices which link information systems and people including voice mail, e-mail, voice conferencing, video conferencing, the internet, groupware, and corporate intranets, car phones, fax machines, personal digital assistants and so on" (Dewett & Jones, 2001, p.314).*	7	0,75	6,11	3,92	0,68	3,58	2,16
Productivity	*"Productivity is the effectiveness with which a worker applies his or her talents and skills to perform work, using available materials, within a specific time" (Neufeld & Fang, 2005, p.1038).*	6	0,90	4,22	0,55	0,90	4,21	0,56

Organizational Commitment	*"A person's affective reactions to characteristics of his employing organization" (Cook & Wall, 1980, p.40).*	8	0,80	3,87	0,65	0,81	3,91	0,64
Communication	*"The communications transactions between individuals and/or groups at various levels and in different areas of specialization that are intended to design and redesign organizations to implement designs, and to co-ordinate day-to-day activities" (*Welch and Jackson, 2007, p.5).	4	0,80	3,61	0,65	0,81	3,66	0,66
Mutual Support	*''Team members help and support each other in carrying out their tasks'' (Weimar, 2013, p.12).*	6	0,88	3,91	0,62	0,89	3,96	0,62
Mutual performance monitoring	*"The ability to keep track of fellow team members work while carrying out own work to ensure that everything is running as expected and to ensure that others are following procedures correctly" (Salas et al., 2005, p. 575).*	4	0,84	3,89	0,66	0,84	3,92	0,66
Balance of Member Contribution	*"Every team member is able to contribute all task-relevant knowledge and experience to the team" (Hackman ,1987, p.7;Seers et al., 1995, p.19).*	3	0,73	3,83	0,69	0,74	3,86	0,70

Social team cohesion	*"A stable, sustainable team, and close relation between team members" (Raub, 1997, p.8).*	4	0,89	3,65	0,76	0,89	3,68	0,75
Teamwork Behavior	*"Teams are collaborative units of people joined together to accomplish a common goal. The output of the whole team should exceed that of the sum of the output of individual members".*	5	0,87	3,78	0,55	0,87	3,81	0,55

Table 2 Merged tables of the components of both samples (Rabobank Operations Nederland; n=289, for teamwork behavior n=257) and overall (n=299).

3.6 Data analysis

In this chapter how the data is analyzed is described. The elaboration of the quantitative analysis consists of three parts; 1) univariate analysis, 2) bivariate analysis, and 3) multivariate analysis. Univariate analysis is the simplest form of analysis. It describes only one variable. Statistical tests which are used are descriptive statistics such as mean, median, mode, minimum, maximum, standard deviation, kurtosis, and skewness. Univariate analysis is about the normal distribution. Therefore, the aim of univariate analysis is to analyze whether there is a normal distribution. A normal distribution includes symmetrical data and a bell-shaped curve. Univariate analysis has two rules 1) 68% of the data lies in one standard deviation, and 2) 95% of the data lies in two standard deviations.

The bivariate analysis is used for two variable relationships. This method is used if each individual has scores on two various variables. In this Master Thesis it involves if NWW leads to a higher productivity, and more organizational commitment. The regressions are binary since the relationship is tested for all organizations and whether the relationship holds for a specific organization. The correlation of the above mentioned relationships is measured if the test is significant. In this Master Thesis the measurement scales are ordinal which means that Cronbach's alpha is used to measure the correlation or indexes are analyzed.

Multivariate analysis is based on tests with more than two variables. It tests whether distinct variables of leadership lead to a higher productivity and more organizational commitment. In addition, it tests whether the moderator leadership has an effect on the relationship between NWW and productivity and on the relationship between NWW and organizational commitment (Dooley, 2009).

3.7 Validity

According to Dooley (2009) validity "refers to the appropriateness, meaningfulness, and usefulness of the specific inferences made from the measures" (p.76). It depends on a fit between the measure and its label. Cook and Campbell (1979) divided validity into four types; internal validity, external validity, construct validity, and statistical inference validity. The four types of validity are elaborated in the next sections. The threats of each validity type are also appointed. A threat is defined as "a specific reason why a partly or completely wrong inferences is made about the covariance, causation, constructs or about whether the causal relationship holds over variations in persons, settings, treatments, and outcomes"(Shadish, Cook and Campbell, 2002, p.39).

Internal validity. According to Dooley (2009) internal validity "refers to the truthfulness of the claim that one variables causes another" (p.163). Regarding this Master Thesis a attempt was made to minimize the impact of the threats. However, in some occasions this was complex to realize. A threat to the internal validity in this Master Thesis could be the history. "History refers to the threat that some coincidental event outside the study caused the observed change" (Dooley, 2009, p.166). That is why the perceived productivity of the employees is measured and not the productivity by looking at historical data of the organization. Another threat of internal validity is the instrumentation. This threat appears when observed changes result in variety in the way measures are gathered (Dooley, 2009). It is tried to reduce this threat to the minimum by standardizing for example the survey.

External validity. External validity is based on generalization (Shadish et al., 2002). It "consists of the extent to which research findings generalize to other populations, other times, and other settings" (Dooley, 2009, p.197). Since twelve organizations from various sectors participate in this research, this research can be generalized to other organizations as well. Also, researchers researched the component leadership in the context of NWW and it is proven that it is of importance in this context.

Construct validity. According to Bryman and Bell (2011) it consists of deducing hypotheses from theory that is relevant to the concepts. In this Master Thesis, the constructs that are intended to measure are; teleworking, flexible workplaces at work, flexible working hours and IT which together form NWW. Also, trust, empowerment and steering on output together form the leadership dimension. A threat of construct validity can be either that the theory or the deduction might be misguided (Bryman and Bell, 2011). In this Master Thesis, this is avoided as much as possible by strengthening the theory by using multiple sources.

Statistical inference validity. The last validity type is statistical conclusion validity. It refers to wrong inferences regarding the co-variation between two variables. This type is more applicable for quantitative research methods than for qualitative research methods. Preventive measures for statistical inference validity are sample size, and reliability (Dooley, 2009). This research was conducted among various organizations. However, in no case an entire organization participated in this research. The sample size is 347 and can be regarded as 300 completely filled questionnaires within different organization, whereof Rabobank Operations Utrecht filled in the most questionnaires with 296. The second threat involves the reliability of the measures. This threat is reduced by using existing validated survey items. In general, all questions of the survey are based on used validated survey items with a high Cronbach's alpha.

4. Results

This chapter will discuss the results of the study. In chapter 4.1 the responses will be addressed. The reliability of the constructs will be elaborated in chapter 4.2. Results on components of NWW, outcome variables and teamwork behavior are presented in chapter 4.3. In chapter 4.4 the conceptual model will be tested, followed by a final model in chapter 4.5.

4.1 Response

This research is conducted in the Netherlands and has 347 respondents, whereof 300 (86%) respondents have filled in the questionnaire completely. All returned questionnaires are used. 296 (85%) are filled in by employees of Rabobank Operations Utrecht, whereof 258 (87%) filled it in completely. 51 (15%) of the respondents were from the remaining organizations such as Rabobank Centraal Twente, InnoVolar, BIZZdesign, Interactive Blueprints, O&I management consultants, Gemeente ‘s Hertogenbosch, Organisatieadviesbureau, De Groot & Kolman, Spellenlabs, Flexwhere and organizations which will not be mentioned by name. Of these twelve organizations, 42 (82%) questionnaires were filled in completely. This remaining group will be used to verify the outcomes. If there are other outcomes between the two different datasets. Because of other influences we explain these differences to compare this with the Rabobank Operations Utrecht case. We chose to do this to overcome as many possible disruptive factors as possible. This because there will be less disruption within one organization than among different organizations, with different environments and influences. But because we do so we have to keep in mind that the external validity will be weaker when only using data of one organization. By using the result of the remaining organizations we are able to extend the external validity. However, because the remaining organizations only filled in 51 questionnaires the results will still not be generalizable.

4.2 Results of components of NWW, outcome variables and the expected moderator teamwork behavior

Before presenting the results of the study, a clear explanation is given on the statistical terms that are used. The mean score for each variable (e.g., NWW, organizational commitment, productivity and teamwork behavior) is measured by taking the scores of all respondents and dividing them by the number of respondents. The average score per variable is converted from the five-point likert scale. An average score between 1 and 2 means that the respondents answers on the questions were „disagree‟ and „strongly disagree‟. This mean score is valued as insufficiently. A mean score of 3 means that the respondents neither agree nor disagree with the statements. This mean score is valued as insufficiently to sufficiently. A mean score between 4 and 5 means that the respondents‟ answers on the

questions were „agree" and „strongly agree". This mean score is valued as sufficiently to good. A significant difference means that the difference in mean scores is not likely to have occurred by chance. The standard deviation indicates the dispersion of the answers around the mean score. A relatively small standard deviation means that the answers of the respondents vary rather close around the mean score, while a large standard deviation means that the answers deviate considerably from the mean score. In case of the latter, the mean score does not represent the answers of the respondents well. The expected value of the standard deviation is 1 in case of a five-point response format. A standard deviation that is smaller than 1 indicates little dispersion of the answers around the mean score. This means that the respondents did not have much differences in opinions, and that they are therefore quite homogeneously. A standard deviation which is greater than 1 indicates reasonable to great dispersion of the answers around the mean score. In that case, interpretation of the mean score should be taken with care.

4.2.1 Correlations

In this subsection the correlations of all components of the survey are given. First, all correlations are analyzed. Since it was expected that all relationships are positive, one-tailed significance was tested. Multiple linear regression analysis was used to analyze how the dependent variables, i.e. productivity and organizational commitment, are influenced by the independent and moderating variables as stated in the theoretical model. This method is used for two reasons: multiple linear regression analysis is suitable for establishing significant directional relationships, and multiple linear regression analysis is able to control for potential interdependencies by considering multiple variables simultaneously (Hair et al. 2006). Van Dalen & De Leede (2009, pg. 471) state that "regression analysis is often an iterative process. Models are estimated, refined and re-estimated, until a more or less satisfying result is achieved". The direct effect of all independent variables is analyzed. The results of the analysis allows for testing of the hypotheses made previously. For model validation tests for multicollinearity are conducted. Multicollinearity is a strong mutual dependence between variables in the model. With a multicollinearity problem, the separate contributions of the independent variables on the explanation of the model cannot be determined accurately. In order to determine the presence of such a problem tolerance values and VIF values have been examined. Prior to performing the regression analysis all variables are standardized, without this it would not be possible to compare regression coefficients due to the different units in which the variables are measured (Van Dalen & De Leede, 2009).

NWW components and productivity. For telework a positive correlation with productivity is found, and significant at the 5% level ($r_s=0.11$; $p<0.05$, one-tailed). The optimal number,

when teleworking shows the highest productivity is when employees work only one day somewhere else than at the office. Also for IT and productivity there appears to be a strong, positive relationship between IT and the productivity levels, this relationship is even significant at the 1% level. ($r_s=0.15$; $p<0.01$, one-tailed).

Between flexible working places at work and productivity appears to be a positive relationship. However, this relationship is not significant . This also counts for the relationship between flexible working hours and productivity.

Hypothesis 1a The higher the optimal use of teleworking, the significantly higher productivity of teleworkers in comparison to non-teleworkers is **confirmed**.

Hypothesis 1b Using flexible workplaces will result in significantly higher productivity levels than using fixed workplaces is **rejected**.

Hypothesis 1c Flexible workings hours will result significantly in higher productivity levels is **rejected**.

Hypothesis 1d More usage of IT result in significantly higher productivity levels is **confirmed**.

Hypothesis 1: There is a positive relationship between deployment of NWW and productivity can be confirmed.

Two out of four components are confirmed and two out of four are rejected. We found a positive relation which influences productivity with 1,4% when using NWW. Therefore we confirm hypothesis 1. Note, that the influence of NWW on productivity is not much.

NWW components and organizational commitment. There appears to be a strong, positive relationship between using flexible workplaces and the levels of organizational commitment are significant at the 5% level ($r_s=0.13$; $p<0.05$, one-tailed). There also appears to be a strong, positive relationship between individuals that perceive flexible working hours and the levels of organizational commitment, which is significant at the 1% level ($r_s=0.16$; $p<0.01$, one-tailed). Even a third component appears to be a strong and positive relationship between better usage of IT and organizational commitment, which is significant at the 5% level ($r_s=0.11$; $p<0.05$, one-tailed). For the fourth component telework, there appears to be a positive relationship. However, there is no significant relationship between telework and organizational commitment.

Hypothesis 2a The higher the frequency of teleworking, the significantly more organizational commitment of teleworkers in comparison to non-teleworkers is **rejected**.

Hypothesis 2b Flexible workplaces at work will result in significantly higher levels of organizational commitment is **confirmed**.

Hypothesis 2c Individuals that perceive flexible working hours will report significantly higher levels of organizational commitment than individuals who do not is **confirmed**.

Hypothesis 2d More usage of IT result in significantly higher organizational commitment is **confirmed**.

Hypothesis 2: There is a positive relationship between NWW and organizational commitment can be confirmed.

Because three out of four components are confirmed and one component is rejected, this means that hypothesis 2 can be confirmed.

Multicollinearity between NWW components. It was tested if a multicollinearity problem existed regarding the components of NWW. When the four components were tested on multicollinearity on the sample of Rabobank Operations Nederland, it showed a low VIF score and a low score of tolerance which indicates no multicollinearity. This was the same for the overall sample. Therefore, there is no multicollinearity problem. However, this is less relevant in this case since when merging the components it might be possible that the combined effect is clearer and/or stronger. Table 6 shows there is a relatively high correlation between the NWW components (whereby FWW is flexible working places. TW is teleworking, FWH is flexible working hours and IT is usage of IT). Teleworking shows the lowest correlation of all. However, if this component was deleted the Cronbach's Alpha would be lower. Therefore we decide to maintain this component to examine NWW.

Inter-Item Correlation Matrix

	FWW	TW	FWH	IT
FWW	1,000	0,303	0,401	0,412
TW	0,303	1,000	0,529	0,517
FWH	0,401	0,529	1,000	0,591
IT	0,412	0,517	0,591	1,000

Table 6 Correlation between NWW components in sample Rabobank Operations Nederland

4.3 NWW, productivity, and the moderating effect teamwork behavior.

The results show that relation between NWW and productivity is significant (1,4%). Figure 4 shows that there is dispersion and the perception of employees of productivity is answered with high productivity. Where the possibility was to answer on likert scale between 1 and 5, whereby the majority choose between 3,90 and 5,00.

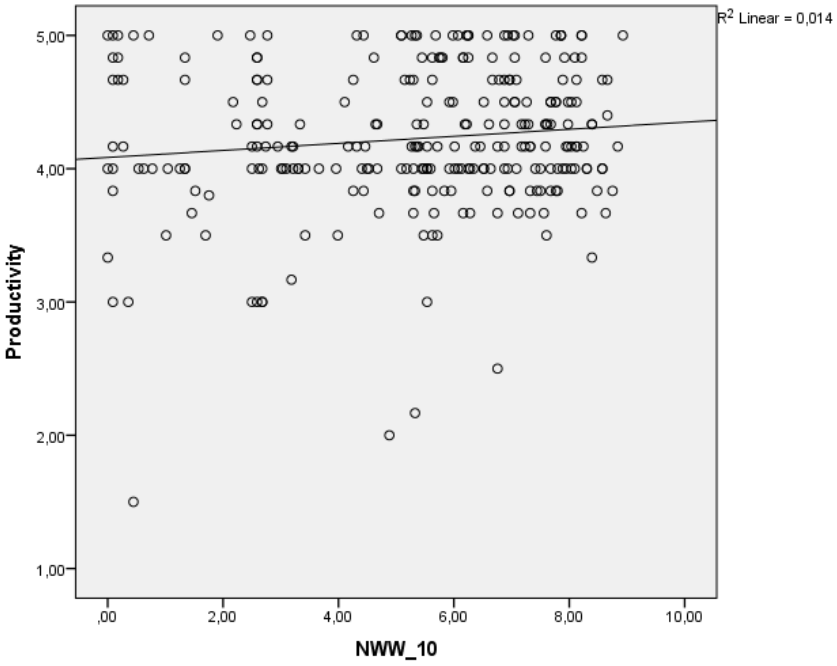

Figure 4 The relation between NWW and productivity

Multicollinearity between teamwork behavior components. It was tested if a multicollinearity problem existed regarding the components of teamwork behavior. When the five components were tested on multicollinearity on the sample of Rabobank Operations Nederland, it showed a high VIF score and a high score of tolerance which indicates multicollinearity. This was the same for the overall sample. For both samples the Cronbach's alpha is 0,87.

The relationship between teamwork behavior and productivity is significant. But NWW and the interaction between NWW and teamwork behavior on productivity are not significant. The explained variance is R=0.191. This means 19,10% can be explained by the mentioned variables on productivity. Thereof is 15,5% *(*12,141/78,325*100) explained by teamwork behavior, 1,85% (1,451/78,325*100) is explained by NWW and 1,42% (1,111/78,325*100) is explained by the interaction between NWW and teamwork behavior. This shows that NWW and teamwork behavior has a very small influence on productivity. This shows that teamwork behavior in not a moderator between NWW and productivity. But again what we have to keep in mind is that the effect of NWW on productivity is already limited, 1.4%, this makes that what we notice is only of very little influence.

When looking further into the pattern of the graphic (Figure 5) of teamwork behavior and NWW on productivity we discover that the highest productivity is realized when teamwork behavior is on a high level (3) and NWW is at a only implemented at a medium level (2), according to the perception of employees. The expectation was that productivity would be at the highest level when NWW and teamwork behavior was both at the highest level (3). When NWW is implemented at a high level (3), the best solution would be a medium level (2) of teamwork behavior to realize the highest commitment. The graph shows that everyone stated a high form of commitment (Y-axis) between just about 3,70 and 4,62. Whereby the employees were able to choose between 1 and 5. To conclude, we found an effect, but a different one than expected and a very small one (see appendix IV).

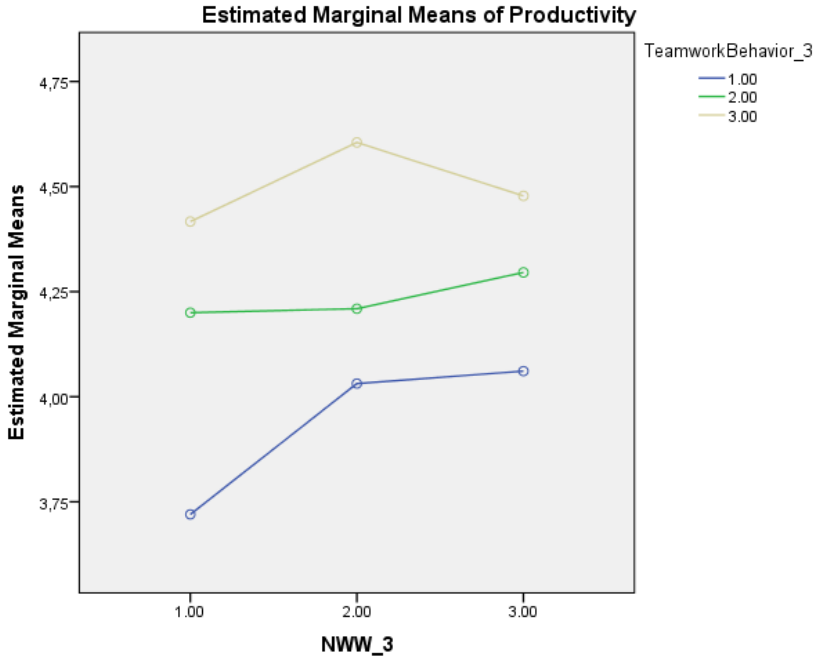

Figure 5 Teamwork behavior interaction with NWW and productivity

To be able to discuss which components are of influence and in what way the relation is influenced between NWW and organizational commitment and productivity the components are analyzed separately in the following paragraphs.

First the moderating variable will be further explained according to the relation between NWW and productivity. It is already stated that the effect of NWW on productivity is limited (only 1.4%). In figure 6 we can see the influence of NWW on productivity.

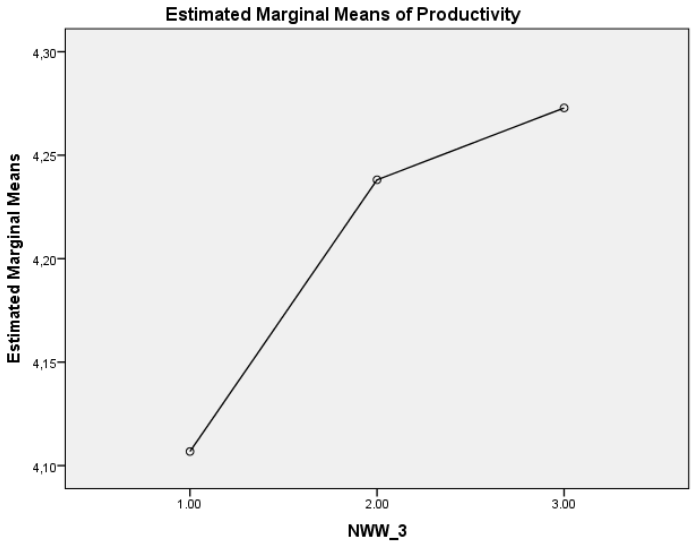

Figure 6 The relation between NWW and productivity

Appendix V reports all the tables and figures of the stated figures. The table reports that NWW (p=0.126) and the interaction NWW and communication on productivity are not significant (p=0.134). Communication on productivity is significant. It can be stated that when communication is taken into account, NWW is no longer of interest. Communication appeared to be significant (p=.0.0). The explained variance is R=0.139. This means 13,90% can be explained. Thereof is 1,05% *(*1,141/108,397*100) explained by NWW, 6,32% (6,856/108,397*100) is explained by communication and 1,79% (1,941/108,397*100) is explained by the interaction between NWW and communication. This shows that NWW is of the highest importance. Figure 13 (appendix V) shows productivity is the highest when communication is implemented on the highest level (3) and NWW practices is implemented at an medium level (2). Therefore we can reject the following hypothesis (F=6,856, df=2,247,P=0,00):

Hypothesis 3a Communication between colleagues will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive can be **rejected.**

The second component balance of member contribution shows that NWW and the interaction NWW and balance of member contribution is not significant (p>.05). It can be stated that when balance of member contribution is taken into account, NWW is less of importance than balance of member contribution is. Balance of member contribution appeared to be significant (p=.0.00). The explained variance is R=0.146. This means 14,60% can be explained. Thereof is 1,49% *(*1,169/78,326*100) explained by NWW, 8,98% (7,034/78,326*100) is explained by balanced member contribution and 1,22% (2,178/178,326*100) is explained by the interaction between NWW and balanced member contribution. This shows that the balanced member contribution is of the highest importance. Figure 14 (appendix V) shows productivity is the highest when balanced member contribution is well implemented on the highest level (3) and NWW practices is implemented at an low level (1). Therefore we can reject the following hypothesis (F=7,034, df=2,247,P=0,00):

Hypothesis 3b Balance of member contribution will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive can be **rejected** (p=0.085).

The third component mutual support shows that NWW and the interaction NWW and mutual support on productivity are not significant (p>.05). It can be stated that when mutual support is taken into account on productivity, NWW is of no importance anymore. Mutual support appeared to be significant (p=<0.00). The explained variance is R=0.124. This means 12,40% can be explained. Thereof is 1,30% *(*1,019/78,326*100) explained by NWW, 8,38% (6,563/78,326*100) is explained by mutual support and 1,46% (1,144/78,326*100) is explained by the interaction between NWW and mutual support on productivity. This shows that NWW is of the highest importance on productivity. As we stated that this influence was very low above, this means that the influence of the rest is even of even less importance. Figure 15 (appendix V) shows productivity is the highest when mutual support is implemented on the highest level (3) and NWW practices is implemented at an medium level (2). Therefore we can reject the following hypothesis (F=6,563, df=2,247,P=0,00):

Hypothesis 3c Mutual support between colleagues will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive can be **rejected** (p=0.392).

The fourth component, mutual performance monitoring, shows that NWW and the interaction NWW and mutual performance monitoring are significant (p<0.05). It can be stated that when mutual performance monitoring is taken into account, NWW is of less importance. Mutual performance monitoring appeared to be significant (p=0.00). The explained variance is

R=0.151. This means 15,10% can be explained. Thereof is 2,50% *(*1,959/78,326*100) explained by NWW, 9,87% (7,732/78,326*100) is explained by mutual performance monitoring and 3,88% (3,042/78,326*100) is explained by the interaction between NWW and mutual performance monitoring on productivity. This shows that the NWW is of the highest importance on productivity. As we stated that this influences was very low above, this means that the influence of the rest is even of even less importance. Figure 16 (appendix V) shows productivity is the highest when mutual support is implemented on the highest level (3) and NWW practices is implemented at an medium level (2). Therefore we can reject the following hypothesis (F=7,372, df=2,247, P=0,00):

Hypothesis 3d Mutual performance monitoring will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive can be **rejected** (p= 0.026).

The fifth component social team cohesion shows that NWW and the interaction between NWW and social team cohesion is not significant (p>.05). It can be stated that when social team cohesion is taken into account, NWW is of no importance. Social team cohesion appeared to be significant (p=.000). The explained variance is R=0.188. This means 18,80% can be explained. Thereof is 2,84% (2,228/78,326*100) explained by NWW, 15,02% (11,762/78,326*100) is explained by social team cohesion and 1,66% (1,302/78,326*100) is explained by the interaction between NWW and social team cohesion on productivity. This shows that the NWW is of the highest importance on productivity. As we stated that this influences was very low above, this means that the influence of the rest is even of even less importance. Figure 17 (appendix V) shows productivity is the highest when mutual support is implemented on the highest level (3) and NWW practices is implemented at an medium level (2). Therefore we can reject the following hypothesis (F=11,762, df=2,247,P=0,00):

Hypothesis 3e Social team cohesion will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and productivity will be more positive can be **rejected** (p=0.284).

Table 7 reports the influences of the different components. The results show that social team cohesion have the biggest influences. The other components have almost the same influences on the relation between NWW and productivity.

Hypothesis 3: Teamwork behavior will moderate the relationship between NWW and productivity in such a way that the relationship between NWW and organizational commitment will be more positive can be rejected.

Components teamwork behavior	F	df	P
Communication	6,856	2,247	0,00
Balance of member contribution	7,034	2,247	0,00
Mutual support	6,563	2,247	0,00
Mutual performance monitoring	7,372	2,247	0,00
Social team cohesion	11,762	2,247	0,00

Table 7 Influences of different components of teamwork behavior

Teamwork behavior components and productivity. For all components of teamwork behavior a positive correlation with productivity is found at the 1% level. Communication is significant at the 1% level ($r_s=0.31$; $p<0.01$, one-tailed). Mutual support ($r_s=0.31$; $p<0.01$, one-tailed). Balance of member contribution ($r_s=0.32$; $p<0.01$, one-tailed). Mutual performance monitoring ($r_s=0.32$; $p<0.01$, one-tailed). Social team cohesion ($r_s=0.38$; $p<0.01$, one-tailed). And the components merged as teamwork behavior ($r_s=0.40$; $p<0.01$, one-tailed).

After looking in the data there emerged a striking similarity between different components. For the interaction between NWW, productivity and teamwork behavior by the highest level (3) of teamwork behavior there is a u-shape visible. In most cases after implementing more than medium level of NWW the productivity is getting lower. Therefore it is advisable if steering on productivity that NWW should not be implemented entirely.

4.4 NWW and organizational commitment, and the moderating effect teamwork behavior.

The results show that the relationship between NWW and organizational commitment is significant (2,1%). This means that there is a positive relationship between NWW and organizational commitment. Figure 7 shows that is that there is dispersion in the answers and that the perception of employees on commitment is high.

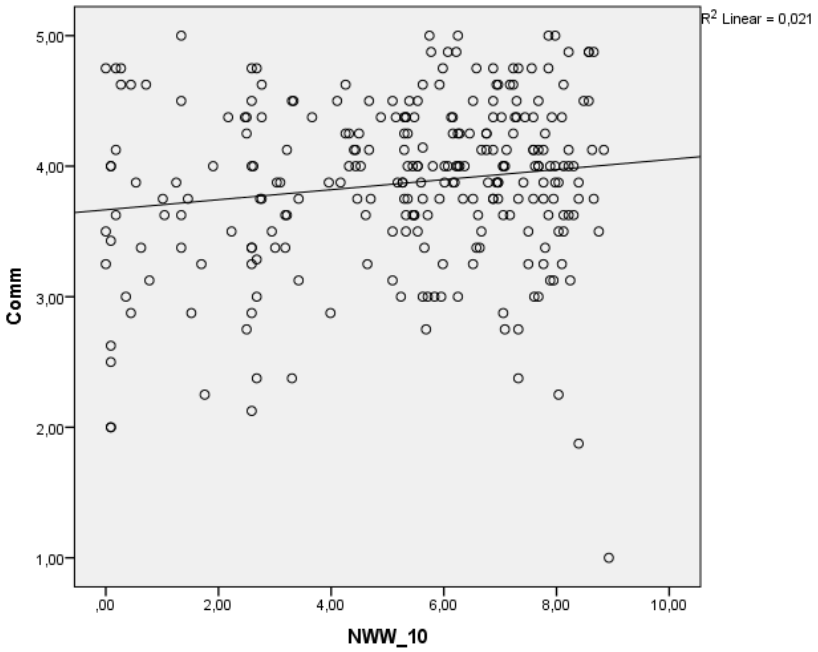

Figure 7 The relation between NWW and organizational commitment.

Because the relationship between NWW (independent variable) and organizational commitment (dependent variable) can be explained with a low percentage, this means that the effect of moderating variable is difficult to explain as the direct relation is explained with a low percentage. To determine if the relationship between NWW and organizational commitment is influenced by moderating variables, multivariate analysis was conducted. Table 29 shows that the relationship of the variables NWW and teamwork behavior on organizational commitment are significant. Also the interaction NWW and teamwork behavior is significant. The explained variance is R=0.158. This means 15,80% can be explained by the mentioned variables on organizational commitment. Thereof is 7,42% *(*8,048/108,397*100) explained by teamwork behavior on organizational commitment, 2,14% (8,048/108,397*100) is explained by NWW on organizational commitment and 6,41% (2,320/108,397*100) is explained by the interaction between NWW and teamwork behavior on organizational commitment. This shows that teamwork behavior has the biggest influence on organizational commitment, followed by the interaction between NWW and teamwork behavior. What we have to keep in mind is that the effect of NWW on commitment is already limited, 2,1%. Thus, what we notice is only of very little influence. The influence of the interaction between NWW and teamwork behavior on organizational commitment is also of very limited influences, this shows that teamwork behavior cannot be seen as an influencing moderator. When looking further into the pattern of the graphic of teamwork behaviors interaction with NWW and organizational commitment we discover results we did not expect (see figure 8). According to the perception of Rabobank Utrecht employees, the highest

organizational commitment is realized when teamwork behavior is on a high level (3) and NWW is implemented at a low level (1). When NWW is implemented at a high level (3), the best solution would be a medium level (2) of teamwork behavior to realize the highest commitment. We expected that the teamwork behavior has to be at a high level (3). Figure 10 shows that everyone stated a high form of organizational commitment (Y-as) between just about 3,18 and 4,22. Whereby the employees were able to choose between 1 and 5. To conclude, we found an effect, but a contrary one and a very small one.

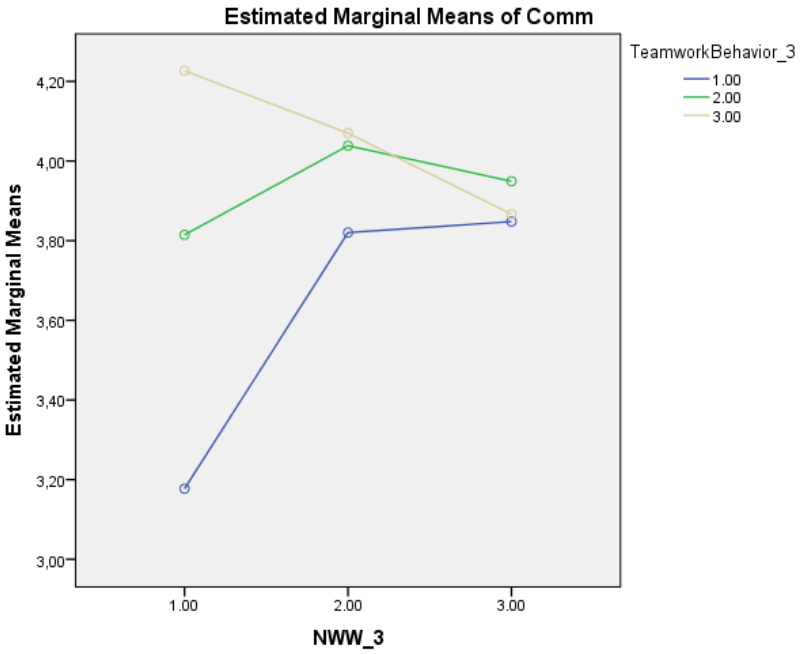

Figure 8 Teamwork behavior interaction with NWW and organizational commitment

It is stated that the effect of NWW on organizational commitment is limited (only 2,1%). Because this percentage is low, the ability to explain is small. But by looking further into the different components of teamwork behavior individually the influences of different components become visible.

The first moderating component of the teamwork behavior on organizational commitment variable which is tested is communication. Table 45 (appendix VI) shows that the interaction NWW and communication are not significant (p=0.07). NWW (p=0.05) and communication (p=0.00) appeared to be significant. Communication explains 7,12% (7,717/108,397*100), NWW explains 2,16% (2,340/108,397*100) and the interaction between NWW and communication on organizational commitment is 3,07% (3,331/108,397*100). This shows that communication is more of influence than NWW is. The relationship between communication and organizational commitment is strong. Appendix VI reports the graphics of the different components. Figure 18 (appendix VI) shows that the mean of good

communication (level 3) by implementing a few NWW practices (level 1) results in the highest commitment and will get lower when NWW practices are implemented more and more. In other words this is a declining line. When communication is not good between employees (level 1), the better it is to implement NWW at a medium level (2). In figure 18 (appendix VI) the line increases enormously when implementing more practices of NWW (level 2, medium), but when implementing even more NWW practices results in a decrease of commitment. With this information the following hypothesis is rejected (F=7,717, df=2,248,P<0,01):

Hypothesis 4a Communication between colleagues will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive can be **rejected**.

The second component of teamwork behavior is balance of member contribution, the results show that NWW is not significant (p=0.170), whereby balance of member contribution appeared to be significant (p=0.01). The interaction between NWW and balance of member contribution are significant (p=0.002). The explained variance is R=0.145. This means 14,50% can be explained. Thereof is 1,23% *(*1,336/108,397*100) explained by NWW, 5,01% (5,432/108,397*100) is explained by balance of member contribution and 5,93% (6,431/108,397*100) is explained by the interaction between NWW and balance of member contribution. What we have to keep in mind is that the effect of NWW on commitment is already limited, 2,1%. This makes that what we notice is only of very little influence. Figure 19 (appendix VI) shows that our hypothesis can be rejected. This was because the highest organizational commitment is at the lowest level of implemented NWW practices (1) and the highest balance of member contribution (3). The most important result is that when NWW practices are implemented more than medium (level 2), the lines cross each other. Balance of member contribution at the best form will decrease enormously, whereas balance of member contribution at the lowest level (1) increases when NWW practices are implemented more and more. Therefore we state the following conclusion (F=5,432, df=2,248,P=0,01):

Hypothesis 4b Balance of member contribution will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive can be **rejected**.

The third component is mutual support. Table 48 (appendix VI) shows that NWW or mutual support is not significant. But the interaction between NWW and mutual support is significant (p<.05). It can be stated that when mutual support is taken into account, NWW and mutual

support is of even importance and influences each other. The explained variance is R=0.127. This means 12,70% can be explained. Thereof is 1,72% *(*1,865/108,397*100) explained by NWW, 1,80% (1,950/108,397*100) is explained by mutual support and 8,08% (8,759/108,397*100) is explained by the interaction between NWW and mutual support. This shows that the interaction is of more influence than the two variables separated from each other. Looking further at figure 20 (appendix VI) , the highest organizational commitment is created when mutual support is at the highest level and NWW is implemented with only an amount of medium practices. Therefore we can reject the following hypothesis (F=1,950, df=2,248,P=0,08):

Hypothesis 4c Mutual support between colleagues will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive can be **rejected.**

The fourth component mutual performance monitoring shows that NWW, mutual performance monitoring and the interaction NWW and mutual performance monitoring are all significant (p<.05). The explained variance is R=0.136. This means 13,60% can be explained. Thereof is 2,46% *(*2,662/108,397*100) explained by NWW, 3,22% (3,490/108,397*100) is explained by mutual support and 8,32% (9,024/108,397*100) is explained by the interaction between NWW and mutual support. This shows that the interaction is of more influence that the two variables separated of each other. Looking further into the figure 21, the highest organizational commitment is created when mutual performance monitoring is at the highest level and NWW is implemented with only a few practices. Notable is when NWW is implemented around a medium level the three levels of mutual support is of no importance. All lines are at the same point. Therefore we can reject the following hypothesis (F=3,490, df=2,248,P=0,00):

Hypothesis 4d Mutual performance monitoring will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive can be **rejected**.

The fifth component social team cohesion shows that NWW and social team cohesion are significant (p<.05). The interaction between NWW and social team cohesion is not significant. The explained variance is R=0.107. This means 10,70% can be explained. Thereof is 2,91% *(*3,151/108,397*100) explained by NWW, 7,34% (7,952/108,397*100) is explained by social team cohesion and 0,70% (0,762/108,397*100) is explained by the interaction between NWW and social team cohesion. This shows that the interaction is of

less influence than the separate variables. There is almost no interaction between NWW and social team cohesion. Looking further into the figure 22, the highest organizational commitment is created when social team cohesion is at the highest level and NWW is implemented at a medium level. When NWW is implemented at medium level the social team cohesion is high for every level. Therefore we can reject the following hypothesis (F=7,952, df=2,248,P=0,00):

Hypothesis 4e Social team cohesion will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive can be **rejected.**

All stated hypothesis are rejected and thereby the overall component teamwork behavior as a moderator between NWW and organizational commitment is rejected, too.

Components teamwork behavior	**F**	**df**	**P**
Communication	7,717	2,248	0,00
Balance of member contribution	5,432	2,248	0,01
Mutual support	1,950	2,248	0,08
Mutual performance monitoring	3,490	2,248	0,00
Social team cohesion	7,952	2,248	0,00

Table 8 Influences of different components of teamwork behavior on organizational commitment

Table 8 reports the influences of the different components. The results show that social team cohesion and communication have the biggest influences. Mutual support has the least influences.

Hypothesis 4: Teamwork behavior will moderate the relationship between NWW and organizational commitment in such a way that the relationship between NWW and organizational commitment will be more positive can be rejected.

Teamwork behavior components and organizational commitment. Communication is significant at the 1% level (rs=0.26; p<0.01, one-tailed). Mutual support is not significant. Balance of member contribution is significant at the level 1% (rs=0.20; p<0.01, one-tailed). Mutual performance monitoring is significant at the level 1% (rs=0.15; p<0.01, one-tailed). Social team cohesion is significant at the level 1% (rs=0.26; p<0.01, one-tailed). And the

components merged as teamwork behavior is also significant at the level 1%(rs=0.24; p<0.01, one-tailed).

After looking in the data there emerged a striking similarity between different components. Figure 8t Teamwork behavior interaction with NWW and organizational commitment reports a kind of U-shape. This implies that when NWW is implemented more than a medium level (2) the influences on organizational commitment with teamwork behavior strongly declines at all three levels.

4.5 Virtual teamwork and outcome variables

Nowadays more and more communication is done via the internet (social media for example). The Internet provides many options and opportunities for interaction and communication while almost bypassing entirely obstacles of physical distance and time. Therefore it is measured how many hours people work in so called virtual teams to measure the productivity and commitment in virtual teams.

How many hours per week do you work in virtual teams?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 12	202	68,01	74,2	74,2
	12 - 20	47	15,82	14,6	88,8
	21 - 35	26	8,75	6,9	95,8
	> 35	22	7,41	4,2	100,0
Total		297	100,0		

Table 9 Working in virtual teams Rabobank Utrecht Operations

According to the results employees of Rabobank Utrecht Operations do not work many hours in virtual teams. The cohesion between virtual teams and productivity is R = 0,023. This shows that virtual teams support productivity with 2,30%. This is a little influence. The cohesion between virtual teams and organizational commitment is R= 0,002. This shows that virtual teams support organizational commitment with 0,20%. This is even less influence than on productivity.

When combining the two stated questions: ‘Are you working in teams with people who are not working in your establishment?’ And ‘How much time (in percentage) do you use for these types of teams?’. There is researched if employees who are working within virtual teams are different responding than employees who doesn’t work in virtual teams and if the many hours influences the productivity. Combining the two question results in a explained variance which influence virtual teams on productivity with 2,70%. And the explained variance between virtual teams on organizational commitment is only 0,90%. The relation

between NWW and virtual teams is a positive one with influence of 18,6%. This shows that NWW stimulates virtual teams very much. Which is not unexpected because virtual teams are using flexible hours, places, use more IT and do some teleworking.

We have not enough information to include teamwork balance in relation within virtual teams, therefore we need more information. This is a point for further research.

5. Discussion

In this chapter, the most important findings concerning significant and insignificant results are discussed. To conclude, a model is given of the important significant findings.

5.1 Significant results

Teleworking and productivity

There is a small positive relation between teleworking and productivity. This means that hypothesis 1a: The higher the optimal use of teleworking, the significantly higher productivity of teleworkers in comparison to non-teleworkers is confirmed. According to Bailey & Kurland (2002) and Bélanger (1999) there are various reasons for the positive relationship between teleworking and productivity. The first possible reason is the flexibility in work since teleworkers can choose where and when to work. Thereby, teleworkers are able to work at peak efficiency hours. Also, less interruptions, less time spent telecommuting and reducing incidental absence can be regarded as reasons.

IT and productivity

There is a small positive relation between IT and productivity. Therefore, hypothesis 1d: Better usage of IT result in significantly higher productivity levels is confirmed. A plausible explanation can be that IT investments are often complemented by time-consuming organizational changes (Brynjolfsson & Hitt, 2003). This means that higher productivity is derived from IT investments and organizational changes. According to Cardona et al. (2013), the productivity effect is therefore not of short-term nature but even increases over time.

NWW and productivity

A small positive relationship between NWW and productivity is the outcome of the regression analysis. This means that hypothesis 1: There is a positive relationship between NWW and productivity is confirmed. However, only 1.4% of the variance of productivity can be explained by NWW. This is very small but explainable since productivity can be increased by the means of various things. For example, productivity can also be increased by lean thinking (Santos, Wysk, & Torres, 2014) or social preferences (Carpenter & Seki, 2011).

Flexible workplaces at work and organizational commitment

There is a small positive relationship flexible workplaces at work and organizational commitment. Therefore, hypothesis 2b: Flexible workplaces at work will result in significantly higher levels of organizational commitment is confirmed. According to Pitt-Catsouphes & Matz-Costa (2008), having the flexibility in where to work leads to for example higher life satisfaction. Being more committed to the organization is also a result of higher life satisfaction. They also stated the importance of the concept of fit, which is a powerful positive

predictor of organizational commitment. This Master Thesis did not include the concept of fit. Flexibility fit provides organizations with guidance with ways to maintain the organizational commitment of their employees. Managers need a tool to enhance organizational commitment when employees have access to flexibility. This is especially important for older workers since they expressed a preference for flexibility. Flexibility in workplaces at work augments organizational commitment. However, it would be interesting to include the concept of fit.

Flexible working hours and organizational commitment

A small positive relationship is noticed between flexible working hours and organizational commitment. Hypothesis 2c: Individuals that perceive flexible working hours will report significantly higher levels of organizational commitment than individuals who do not is confirmed. According to Ng et al. (2006) features of the work environment, including the provision of flexible working hours, play an important role concerning organizational commitment. Organizations that are able to modify the work environment to add features which are aimed at support for employees and enhancing perceptions of membership are likely to succeed in increasing employees' organizational commitment.

IT and organizational commitment

A small positive relationship between IT and organizational commitment is analyzed. This means that hypothesis 2d: Better usage of IT result in significantly higher organizational commitment is confirmed. According to Wiesenfeld et al. (1999) it is mainly the creation and sustaining of organizational identification by IT which increases the organizational commitment. Also, IT makes employees feel more important to the organization whereby it increases their organizational commitment (Paré & Tremblay, 2007).

NWW and organizational commitment

A small positive relationship between NWW and organizational commitment is the outcome of the regression analysis. This means that hypothesis 2: There is a positive relationship between NWW and organizational commitment is confirmed. However, only 2.1% of the variance of organizational commitment can be explained by NWW. This is very small but explainable since organizational commitment is influenced by different antecedents (Moon & Jonson, 2012). First, organizational commitment can be influenced by personal factors, such as gender and education level. However, organizational commitment can also be influenced by organizational- or job-level characteristics.

Communication and productivity

A positive relationship between communication and productivity is analyzed. The explained variance by productivity is 9,60%. This is more explained variance than NWW has on productivity. An possible explanation for this result is that communication plays a significant role in helping staff feel valued. Clampitt &Downs (1993) reports that it is important that people feel valued when opinions, expertise and experience are recognized through an open two-way channel of communication between management and staff.

Mutual support and productivity

A positive relationship between mutual support and productivity is analyzed. The explained variance by productivity is 9,50%.Developing productive working relationships with colleagues requires support and thereby coaching. With support is meant directing and supervising closely but explaining decisions, asking for suggestions and supporting progress. Thereby facilitating and supporting the team to get the task done, sharing responsibility for decision making and problem solving. Working in such an environment helps build high staff morale and improved work performance. McKnight, Ahmad and Schroeder (2001) describe it as “the degree to which an employee feels good about his/her work and work environment” (p.467). This leads to higher productivity.

Balance of member contribution and productivity

A positive relationship between valance of member contribution and productivity is analyzed. The explained variance by productivity is 10,30%. This number can be referred to the needed recognition in a team. To create this recognition it is important that every team member can contribute his/her contribution. If this is not the case, the team member will feel excluded of the team and will not contribute expertise or experiences. Therefore it is not a unexpected result.

Mutual performance monitoring and productivity

A positive relationship between mutual performance monitoring and productivity is analyzed. The explained variance by productivity is 9,00%. This can be explained by the following reason: the information gathered through mutual performance monitoring that affects team performance by identifying errors or lapses, and this information, expressed through feedback and backup behavior (discussed in the next section), boosts the team from the sum of individual performance to the synergy of teamwork and ultimately to team effectiveness (Salas et al, 2004).

Social team cohesion and productivity

A positive relationship between social team cohesion and productivity is analyzed. The explained variance by productivity is 14,30%. Stogdill (1972) proposed that productivity norms are the key factor influencing the cohesion–performance relationship. This is based on the supposition that the greater the cohesiveness of the group, the greater the amount of pressure that can be brought to bear on the individual member to conform to group norms.

Teamwork behavior and productivity

All components of teamwork behavior have a positive relationship with productivity. Then it will not be surprisingly that there is a positive relationship between teamwork behavior and productivity as well. The explained variance by productivity is 15,90%. This is a high explained variance.

Communication and organizational commitment

A positive relationship between communication and organizational commitment is analyzed. The explained variance by organizational commitment is 6,50%. Van den Hoff and de Ridder (2004) explored the influence of the communication climate on knowledge sharing. It was found that the constructive communication climate positively influence knowledge donating, knowledge collecting and affective commitment.

Balance of member contribution and organizational commitment

A positive relationship between balance of member contribution and organizational commitment is analyzed. The explained variance by organizational commitment is 4,10%. Allen and Meyer (1990) team members contributing needs to feel comfortable in their relationship with the organization and those to feel competent in the work-role" (p.8-9). Be able to decide what a team member contributes influences their commitment.

Mutual performance monitoring and organizational commitment

A positive relationship between mutual performance monitoring and organizational commitment is analyzed. The explained variance by organizational commitment is 2,40%. This can be explained by coaching and helping each other.

Social team cohesion and organizational commitment

A positive relationship between social team cohesion and organizational commitment is analyzed. The explained variance by organizational commitment is 6,60%. Valuing the strengths of teammates, while minimizing their weaknesses, promotes team cohesion.

Teamwork behavior and organizational commitment

A positive relationship between teamwork behavior and organizational commitment is not surprisingly as 4 out of 5 components shows this positive relationship. The explained variance by organizational commitment is 6,00%.

5.2 Insignificant results

Flexible workplaces at work and productivity

There was a very small positive relation between flexible workplaces at work and productivity. However, this relation was not significant. Therefore, hypothesis 1b: Using flexible workplaces will result in significantly higher productivity levels than using fixed workplaces is rejected. A possible explanation for this rejection is in line with the explanation of the increase of organizational commitment by flexible workplaces at work. The given flexibility may not correspond with the flexibility fit of the employees. When there is no fit, employees may not feel to be more productive by the flexible workplaces at work. Another possible explanation is stated in the study of Wolf and Beblo (2004) regarding the benefits of flexible working hours are said to increase productivity, job satisfaction and commitment of the employees.

Flexible workings hours and productivity

There was also a very small positive relation between flexible working hours and productivity. However, this relation was not significant. This means that hypothesis 1c: Flexible workings hours will result significantly in higher productivity levels is rejected. A possible explanation for this rejection is in line with the explanation of the insignificant relation between flexible workplaces at work and productivity. Since the concept of fit may not be optimal at their organization, employees do not feel more productive. Another possible explanation is stated in the study of Wolf and Beblo (2004) in which the benefits of flexible working hours are said to increase productivity, job satisfaction and commitment of the employees.

Teleworking and organizational commitment

For the relation between teleworking and organizational commitment, the hypothesis 2a: The higher the frequency of teleworking, the significantly more organizational commitment of teleworkers in comparison to non-teleworkers is rejected. A possible explanation may be derived from the studies of Harpaz (2002) and Golden & Veiga (2008). The first possible explanation is the negative effect of the distance which can harm motivation, control, influence, and commitment. A second possible explanation is the quality of the relationship between the manager and the employee. The study of Golden & Veiga (2008) stated that the quality of that relationship influences organizational commitment.

Mutual support and organizational commitment

The relationship between mutual support and organizational commitment seems to be insignificant. In paragraph 4.2 is stated that team members working on a shared goal should try to support instead of trying to outdo each other. They should show respect, give help and support when needed, and stimulate ideas of other team members and develop them further. If, on the other hand, team members demonstrate competitive behaviors, this can lead to distrust and frustration within the team (Tjosvold, 1995). In the organization this can be the case than employees do not share all goals or try to outdo each other, which leads to less commitment. This has to be researched further.

Teamwork behavior as moderator

All ten hypotheses regarding teamwork behaviors (communication, balance of member contribution, mutual support, mutual performance monitoring and social team cohesion) are rejected. Interesting is that R (correlations) between NWW and teamwork behavior is 0,002. This means that is influence each other with only 0,2%. R between teamwork behavior and productivity is 0,160, which means 16%. R between teamwork behavior and organizational commitment is 0,064, which means 6,4%. This shows that teamwork behavior has a big influence on productivity. But because NWW and productivity influence each other with just 1,4% we can state that this is not a moderator. This is the same for the relationship between NWW and organizational commitment with 2,1%.

With productivity, only mutual performance monitoring is significant and the other four components are insignificant. With organizational commitment, balance of member contribution and mutual performance monitoring are significant and the other three components are insignificant.

The stated eight hypotheses are rejected. The fact that teamwork behaviors are not a moderator may be due the fact the teamwork behaviors may actually be mediators. The first study that refers to the mediating role is the study of Kowalski and Swanson (2005) this by stating that communication is the critical success factor for teleworking. The study of Dahlstrom (2013) wherein cognitive-psychological dimensions of leadership play a key role in organizational commitment in the teleworking environment.

5.3 Revised model

The results show that teamwork behavior can't be seen as a moderator between NWW and the outcome variables productivity or organizational commitment. The bridge between NWW and the outcome variables are very small and unstable. The influences of NWW on organizational commitment is only 2,1% and the influences of NWW on productivity is even less with 1,4%. Therefore revised models are stated. In these models (see figure 9 and 10) is visible that the interaction between (components of) teamwork behavior and both outcome variables, especially productivity is high. Therefore it is advisable to research if teamwork behavior is a mediating factor between NWW and the outcome variables.

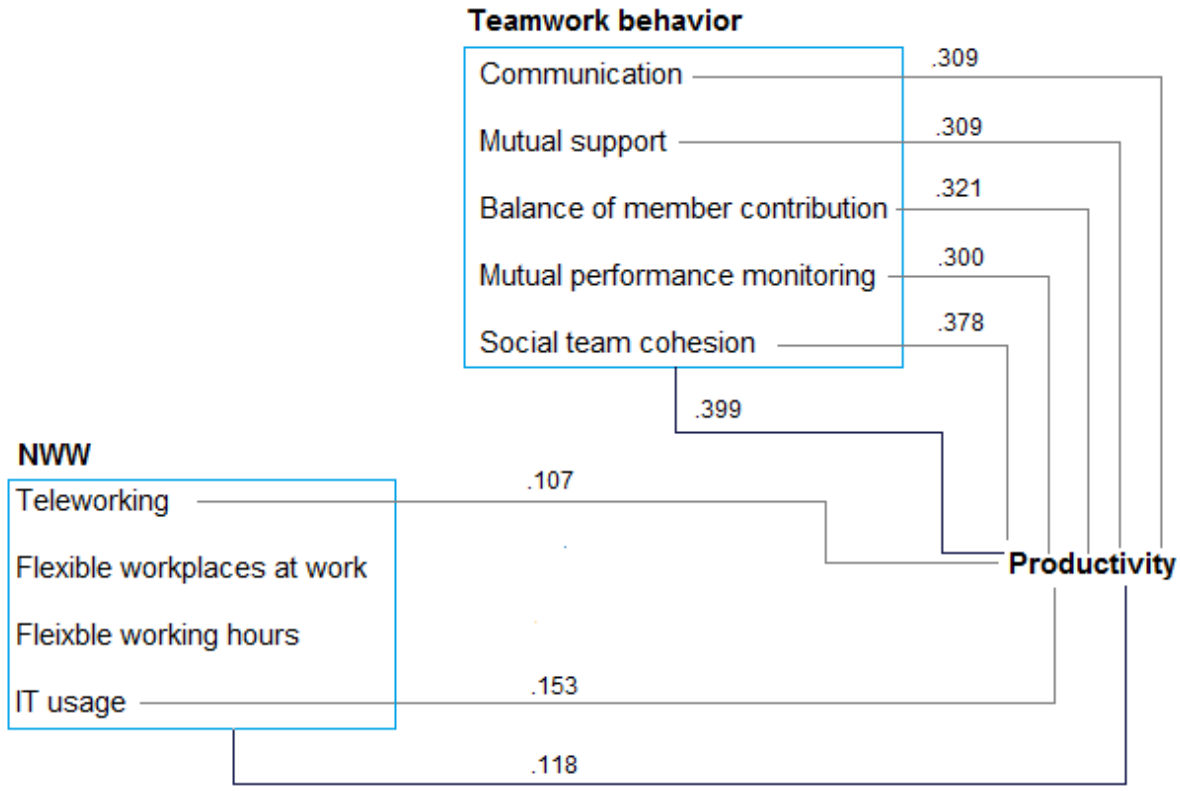

Figure 9 Revised model interactions with productivity

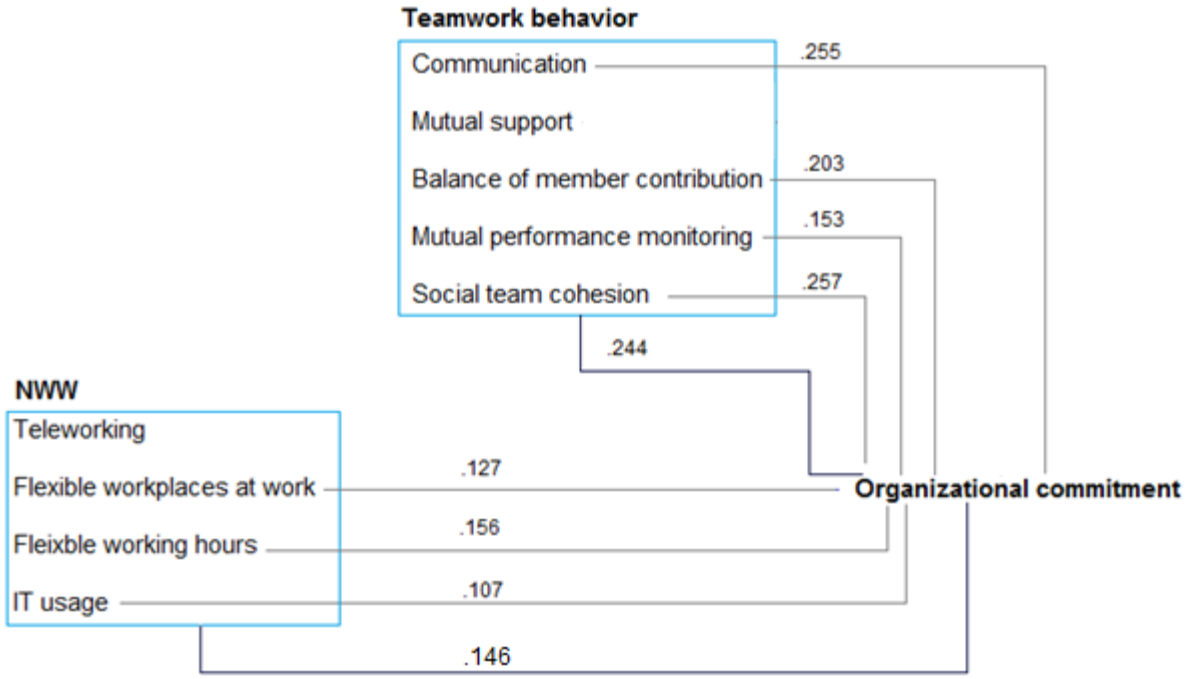

Figure 9 Revised model interactions with organizational commitment

6. Conclusion

The last chapter of this Master Thesis involves the conclusions, the implications, limitations and the suggestions for further research. The conclusion and the implications are based on key findings of this research; the influence of (the components of) NWW, and teamwork behavior on the outcome variables productivity and organizational commitment. Then the limitations of the research will be mentioned. To conclude, suggestions for further research are given.

6.1 Conclusion

In this Master Thesis, it was researched whether the various components of NWW have an influence on productivity and organizational commitment. Also, it was researched if different components of teamwork behavior played a moderating role in this relationship. The objective of this Master Thesis was to examine if the HR factor teamwork behavior moderates the relationship between NWW and its outcomes productivity and organizational commitment in different organizations. The need to fulfill this objective was derived from the found gap in the scientific literature.

The research question of this Master Thesis was as follows:

> ***'To what extent does teamwork behavior influence the realization of the outcomes 'productivity' and 'organizational commitment' of NWW'?***

First, NWW had to be defined to elaborate on the outcomes of NWW. Since there is still no universal definition of NWW (Baruch, 2001), the common denominators of most definitions were analyzed. For most definitions the common denominators are; the core of NWW, the time and location free work, and the unlimited access and connectivity through IT. Based on these denominators, a new definition has been formulated which is also used in this Master Thesis. According to this Master Thesis NWW is '*working anytime, anyplace and anyhow through the unlimited access of knowledge and information and connectivity supported by IT'.* Subsequently, NWW was unraveled in four components; teleworking, flexible workplaces at work, flexible working hours, and IT. This Master Thesis analyzed both the four components separately and the combined effect of the four components as NWW on the outcome variables.

Then the benefits of implementing NWW were presented. According to the literature, NWW has many potential outcomes that can be achieved by implementing it. The two potential outcomes which were discussed in this Master Thesis are productivity and organizational commitment. In the last phase of the literature research, teamwork behavior as a moderator has been studied. Five components derived from suggested behavioral dimensions of

teamwork behavior, namely communication, mutual support, balance of member contribution, mutual performance monitoring and social team cohesion. Also, the relationship between the five components and the outcome variables is discussed.

Based on the accumulated knowledge, an online survey was developed and completed by the middle management of the participating organizations. However, it appeared that sometimes only one employee of an organization participated which is not representative. Rabobank Operations Nederland provided the largest sample. After analyzing all the results, it was concluded that the overall sample showed no significant differences compared with the sample of Rabobank Operations Nederland. Therefore, analysis was conducted only on the sample of Rabobank Operations Nederland.

Based on the empirical research, it became clear that of all four components of NWW, only the relationship between teleworking and productivity, and IT and productivity are significant. NWW as a whole also shows a significant relationship with productivity. However, this relationship is very small. Regarding the relationship with organizational commitment, only flexible workplaces at work, flexible working hours and IT are significant. NWW as a whole also shows a significant relationship with organizational commitment, but the explained variance is very small.

All eight hypotheses of teamwork behavior as a moderator were rejected. Despite the rejections of the hypotheses, teamwork behaviors have an influence on productivity and organizational commitment. With productivity, only mutual performance monitoring is significant and the other four components are insignificant. Organizational commitment, balance of member contribution and mutual performance monitoring is significant and the other three components are insignificant. In general, the teamwork behaviors have a stronger influence on organizational commitment than on productivity.

Some hypotheses were rejected in this Master Thesis, whereas some hypotheses were accepted. However, this Master Thesis created some new insights into NWW, its outcomes, and the role of teamwork behavior. To answer the main question; the components of teamwork behavior as a moderator are not significant. Therefore, teamwork behavior does not contribute to the relationship between NWW and its outcomes as a moderator. However, a relationship is found between the components of teamwork behavior separately and productivity and organizational commitment. This shows that the components of teamwork behavior do contribute to the outcomes of NWW. However, not as moderator but perhaps as mediator.

6.2 Practical Implications

To write practical implications based on quantitative research is difficult, since quantitative research is about the amount and not about personal opinions and culture. However, since this Master Thesis created some new insights into NWW, its outcomes, and the role of teamwork behavior, a few practical implications could be derived from it.

First, this Master Thesis strengthens the scientific literature with a confirmation of employees' productivity as a positive outcome of implementing (components of) NWW. This does not mean that organizations should immediately implement (components of) NWW to increase employees' productivity, because it depends on different factors in an organization. In other words, increase in productivity can be achieved by several things (Carpenter & Seki, 2011; Santos et al., 2014). The components teleworking and IT have proven to contribute to employees' productivity. However, based on the data, it can also be concluded that flexible workplaces and flexible working hours do not significantly contribute to employees' productivity.

Second, this Master Thesis also strengthens the scientific literature with a confirmation of organizational commitment as a positive outcome of implementing (components of) NWW. However, this does not mean that organizations should directly and only implement (components of) NWW to increase the organizational commitment of its employees. Moon & Johnson (2012) stated that organizational commitment is influenced by various antecedents. The components flexible workplaces at work, flexible working hours, and IT have proven to contribute to the organizational commitment of employees. This Master Thesis stated that teleworking does not significantly contribute to organizational commitment.

Finally, all eight hypotheses of teamwork behavior as a moderator were rejected. Despite the rejections of the hypotheses, teamwork behaviors do have an influence on productivity and organizational commitment. Therefore, this research is not only interesting for organizations but also for its leaders since it is proven that teamwork behaviors more strongly correlate with organizational commitment or productivity than with (components of) NWW. This means that the different components of teamwork behavior which were used in this research does influence productivity or organizational commitment in a positive way more than NWW does. To be specific of the total influence see the revised model in paragraph 5.3.

6.3 Limitations

This research has some limitations because of the used methods and the limitations in time and resources.

First of all, contextual factors must be taken into consideration. With regard to the quantitative analysis, even though the sample of 347 respondents was heterogeneous, the majority of the participants proved to be males, which possibly created biases regarding the outcomes.

Furthermore, the generalization of the results is somewhat limited as data has been collected within a single country, industry and company, which might have had an effect on the outcomes. The sample of Rabobank Operations Nederland appeared to be the largest in this study whereas from other organizations only one employee participated. This makes it harder to generalize this study to organizations in other sectors such as the public sector. The research question of this Master Thesis was as follows: '*To what extent does Teamwork behavior influence the realization of the outcomes 'productivity' and 'organizational commitment' of NWW'.* The analyses were mainly based on the sample of Rabobank Operations Nederland. Therefore, the research question cannot be fully answered.

The third limitation is that this research used a survey. Every research method has its own limitations. Efforts have been made to reduce the limitations to the minimum by 'testing' if respondents would have difficulties with answering some of the questions. Also, the survey was designed in a way that respondents had to fill in the questions before they could go to the next section. This has prevented that surveys were sent largely unanswered. However, it is impossible to say that everything is filled out truthfully. Stanton (1998) also stated that the mental state (focus and attention) of the respondents is also unknown.

Fourth limitation is also based on the research design, namely performing a survey on only one moment in time. It is known that productivity, the amount of perceived flexibility, and trust are dynamic phenomena. Therefore, this Master Thesis may not display the actual relationship between (components of) NWW, teamwork behaviors and the outcome variables productivity and organizational commitment.

The fifth limitation is the difficulty of measuring various effects. For example, productivity is not always the direct result of for example teleworking, but also may be a result of the IT resources which enables teleworking. This is sought to be prevented by analyzing the components of NWW separately on the outcome variables as well as measuring NWW as a whole.

A sixth limitation is the sample size. If your sample size is too small, it will be difficult to find significant relationships from the data, as statistical tests normally require a larger sample size to ensure a representative distribution of the population and to be considered representative of groups of people to whom results will be generalized or transferred. In this research the sample size is 347, which is not too small but also not very big. To be able to test the relationship appropriately the sample size should be higher.

A seventh limitation is that there is assumed that every employee is working in an team. But there isn't researched if this is the case and how many hours they worked in teams. This makes is impossible for this research to look if there is a different in productivity, organizational commitment or teamwork behavior between employees working in teams or not working in teams (more and less hours). In further research it is better to first indicate how many time employees are working in teams. This to make a distinction between different type of 'team member' with less or more experience.

The last limitation can be the translation waves that had to be made to get a Dutch questionnaire. During the different translation waves, a change in content could have occurred. However, the translated questionnaire was checked by ourselves and our professor at the University of Twente in order to reduce any change in content by comparing the original version and the Dutch version.

6.4 Suggestions for further research

A few suggestions for future research can be indicated regarding the discussion, conclusion, and limitations of this research.

A suggestion for further research is the measurement of productivity. In this Master Thesis, productivity was measured, based on the perception of the respondents. It would be interesting to measure productivity objectively for instance by using financial outcomes of the organization(s). All organizations that participated in this research implemented forms of NWW for quite some time. Therefore, employees may not feel that they are more productive, since for them 'new ways of working' became 'normal ways of working'. However, if employees actually became more productive after implementing (forms of) NWW, this could be derived from the financial outcomes over time.

Another suggestion for further research is to take into account if employees have a facilitated home workstation or not. This is not taken into account in this Master Thesis. However, this would be interesting since it is thereby possible to see if having a facilitated workstation or not makes a difference, for example, on the relation between teleworking and productivity.

This is plausible because when employees have access to all the needed documents and suchlike they can actually ‘finish’ their work tasks (at home).

Another suggestion is the use of a longitudinal research design ,where different points in time will be looked at the different influences. This because concepts like communication, productivity and perceived flexibility are dynamic phenomena. A longitudinal research design offers the possibility to see how components like communication, productivity, and perceived flexibility relate over time. For example, it is known that higher productivity is derived from organizational changes and IT investments and this effect increases over time.

As stated in the limitations in this research there is assumed that every employee is working in an team. But there isn’t researched if this is the case and how many hours they worked in teams. This makes is impossible for this research to look if there is a different in productivity, organizational commitment or teamwork behavior between employees working in teams or not working in teams (more and less hours). In further research it is better to first indicate how many time employees are working in teams. This to make a distinction between different type of ‘team member’ with less or more experience.

Thereby the question arises if the used survey questions are applicable for virtual teamwork as well or if these questions should have been changed. In this research standard teamwork questions are used, but are there other questions needed when investigating virtual teams? This has to be researched further.

We have not enough information to include teamwork balance in relation within virtual teams, therefore we need more information. More questions have to be stated to be able to do some specific statements.

Next to that there are a few statements which have to be discussed. Firstly, what can be expected is that there will be an optimal number of days in using telework which will result in significant higher productivity of teleworkers in comparison to non-teleworkers. This optimal number in our research appears to be 1 day a week. However, this is not fully researched. Secondly, well-constructed flexible workplaces will result in significantly higher productivity levels than using fixed workplaces. But what are well-constructed flexible workplaces? This has to be researched as well. Thirdly, better usage of IT results in significantly higher productivity levels. When can we speak of better usage? We did not test this but we expect that IT is a satisfier and not a motivator. To be able to confirm or reject this, it has to be researched.

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Appendix I Information form NWW Dutch version

Onderzoek 'De condities voor effectief HNW'

Het Nieuwe Werken - Het Nieuwe Werken (HNW) is belangrijk voor veel organisaties om de kosten te drukken, de productiviteit te vergroten en de werk-privébalans te vergroten. De hype rond HNW is misschien voorbij, maar het belang van HNW is daarmee niet weg. De mogelijke opbrengsten van HNW zijn veelbesproken, maar onder welke condities is HNW daadwerkelijk effectief? Met dit onderzoek willen wij gefundeerd inzicht verwerven over de condities waaronder HNW effectief is. Hier kan uw bedrijf aan bijdragen!

In dit onderzoek wordt HNW gedefinieerd als "tijd- en plaatsonafhankelijk werken door onbegrensde toegang tot kennis en informatie en connectiviteit via ICT". Het doel is om organisaties in staat te stellen om bewust en doelgericht de configuratie van HNW in te richten zodat deze perfect aansluit bij de behoeften en bijdraagt aan het succes van de organisatie.

Wie - Het onderzoeksteam bestaat uit een interdisciplinair team van drie masterstudenten Business Administration onder begeleiding van dr. ir. Jan de Leede en prof. dr. Tanya Bondarouk.

Wat - Wij zullen een empirisch onderzoek uitvoeren om de volgende vragen te onderzoeken:

- Welke leiderschapsstijl en competenties zijn het meest effectief in het faciliteren en managen van "HNW organisaties"?
- Welke rol speelt team gedrag in de realisatie van de voordelen van HNW?
- Wat is de invloed van HNW op het innovatief werkgedrag van de medewerkers?

Eind 2015 zullen de resultaten van het onderzoek worden gepubliceerd in een Engelstalig boek bij Emerald in de Advanced Series in Management, onder redactie van Jan de Leede.

Wat zit erin het voor uw organisatie? - Bij 50 of meer medewerkers die meewerken aan het onderzoek zullen wij een specifieke bedrijfsanalyse creëren met inzichten over uw bedrijf. Mochten er minder medewerkers meewerken dan krijgt u uiteraard als eerste gratis toegang tot de resultaten van het onderzoek in de vorm van drie gespecialiseerde Master Scripties en het uiteindelijke HNW boek. Met uw medewerking kunt u deelnemen aan een fundamenteel onderzoek op het gebied van moderne vormen van werken en helpt u de academische en praktische kennis.

Hoe - Wij vragen ongeveer 15-20 minuten de tijd om een online enquête in te vullen aan eerstelijns leidinggevenden en medewerkers. Het invullen vereist geen voorbereiding van de deelnemers en de enquête is digitaal toegankelijk vanaf elk apparaat met een werkende internetverbinding. Anonimiteit en vertrouwelijke behandeling van de gegevens zijn uiteraard gewaarborgd.

Contact - Wij stellen uw medewerking zeer op prijs! Mocht u nog vragen of opmerkingen hebben over de opzet dan kunt u contact opnemen met:

Dr. Ir. Jan de Leede
053 489 3508 / 4512
06 46012830
Email: j.deleede@utwente.nl

Appendix II Survey questions Dutch & English version

Geslacht	CTRL01	Wat is uw geslacht?
Bedrijf	CTRL02	Voor welke organisatie/gemeente bent u werkzaam?
Geboortejaar	CTRL03	Wat is uw geboortejaar
Functie	CTRL04	Wat is uw functie?
Afdeling	CTRL05	Op welke afdeling werkt u?
Uur p.w.	CTRL06	Hoeveel uur werkt u per week?
Aantal dienstjaren	CTRL07	Hoelang werkt u bij deze organisatie?
NWW- flexible workplaces at work	FWW01	Heeft de afdeling waar u werkt flexibele werkplekken?
	FWW02	Ten opzichte van het aantal werkplekken, hoeveel flexibele werkplekken (in percentage) zijn in uw organisatie beschikbaar?
	FWW03	Hoeveel uur (in percentage) per week maakt u gemiddeld gebruik van werkplekken?
NWW- telework	TW01	Hoeveel uur (in percentage) per week werkt u vanuit huis?
	TW02	Hoeveel uur (in percentage) per week werkt u vanuit een andere locatie (niet kantoor of thuis)
NWW- flexible working hours	FWH01	Hoeveel vrijheid krijgt u in het zelf bepalen op welke dagen u werkt (in percentage) per week?
	FWH02	Hoeveel uur (in percentage) heeft u de vrijheid om uw tijd in te vullen per week?
NWW - IT	IT01	Heeft u thuis de middelen (computer, snel internet etc.) om te kunnen werken voor uw werk?
	IT02	Hoe vaak maakt u gebruik van digitale bedrijfssystemen thuis?
	IT03	Hoe vaak maakt u gebruik van digitale bedrijfssystemen elders (niet thuis of op kantoor)?
	IT04	Hoe vaak maakt u voor uw werk gebruik van cloud computing (dropbox, google drive, etc.)
	IT05	Hoe vaak maakt u gebruik van Videoconferencing? (met beeld)
	IT06	Hoe vaak maakt u gebruik van Conference calls? (zonder beeld)
	IT07	Hoeveel uur (in percentage) per week bent u met werkgerelateerde taken bezig terwijl u onderweg bent naar werk of een afspraak (mailen, bellen of documenten aan het schrijven etc.)?

Productivity	PRO01	Ik vind dat ik een effectieve werknemer ben
	PRO02	Ik zou mijn prestaties waarderen in het bovenste kwart van mijn team/afdeling
	PRO03	Ik ben blij met de kwaliteit van mijn uitgevoerde werk
	PRO04	Ik werk zeer efficiënt
	PRO05	Ik ben een zeer productieve werknemer
	PRO06	Mijn leidinggevende is van mening dat ik een efficiënte werknemer ben
Organizational commitment	ORCO01	Ik ben er heel trots op om mensen te kunnen vertellen voor welke organisatie ik werk.
	ORCO02	Ik heb soms het gevoel dat het beter voor me is om deze organisatie te verlaten (R).
	ORCO03	Zelfs als het de organisatie financieel niet al te goed gaat, zou ik terughoudend zijn in het veranderen van werkgever
	ORCO04	Ik voel me deel van de organisatie
	ORCO05	In mijn werk heb ik graag het gevoel dat ik mij moet inspannen, niet alleen voor mezelf maar ook voor de organisatie.
	ORCO06	Het aanbod van een beetje meer salaris bij een andere werkgever zal mij niet doen overwegen om van baan te veranderen.
	ORCO07	Ik zou een goede vriend niet aanraden om bij deze organisatie te komen werken (R).
	ORCO08	Wetende dat mijn werk een bijdrage levert aan het welzijn van de organisatie doet mij goed.

Teamwork - Communicatie	TWC1	Ik en mijn teamleden communiceren vaak door middel van spontane bijeenkomsten, telefoongesprekken,enz.
	TWC2	Ik ben blij met de tijdigheid waarin ik informatie van andere teamleden ontvang.
	TWC3	Ik ben blij met de precisie van de informatie die ik van andere teamleden ontvang
	TWC4	Ik ben blij met de toegevoegde waarde van de informatie die teamleden van elkaar ontvangen.
Teamwork - Wederzijdse ondersteuning	TWMS1	De leden van het team helpen en ondersteunen elkaar zo goed als ze kunnen
	TWMS2	Als er conflicten zijn, dan worden deze eenvoudig en snel opgelost
	TWMS3	Discussies en controverses worden opbouwend (op een positieve manier) uitgevoerd
	TWMS4	Discussies en meedenken van de teamleden wordt gerespecteerd.
	TWMS5	Suggesties en meedenken van de leden van het team wordtbesproken en verder ontwikkeld.
	TWMS6	Ons team is in staat om overeenstemming te bereiken over belangrijke kwesties.
Teamwork - Wederzijdse prestatie aansturing	TWMPM1	Ik ben bereid om feedback te geven aan de andere leden van het team.
	TWMPM2	Fouten worden binnen het team besproken.
	TWMPM3	Er is ruimte om opmerkingen te maken over verantwoordelijkheden van andere teamleden
	TWMPM4	Er wordt feedback op elkaars werk gegeven.
Teamwork - Evenwichtige bijdrage	TWBMC1	Het team herkent de specifieke mogelijkheden (sterke en zwakke punten) van de individuele teamleden.
	TWBMC2	De teamleden dragen bij aan de verwezenlijking van de doelstellingen van het team in overeenstemming met hun specifieke mogelijkheden.
	TWBMC3	Onbalans in de bijdragen van de teamleden veroorzaakt conflicten in ons team.
Teamwork- Social team cohesion	TWSTC1	Teamleden in mijn team hebben onderling een sterke band
	TWSTC2	Teamleden zijn trots om deel van ons team uit te maken
	TWSTC3	Wij zijn een hecht team
	TWSTC4	Er zijn veel persoonlijke conflicten in mijn team
	TWSTC5	Elk teamlid voelt zich verantwoordelijk voor het behouden en beschermen van ons team

Twee vragen over virtueel teamwerk gedrag:

1. Werkt u in teams met mensen die niet werkzaam zijn op uw vestiging?
2. Hoeveel tijd in uren per week besteedt u aan het werken in dit soort teams?

Construct	Code	Item	Source
Gender	CTRL01	What is your gender?	
Organizational commitment	CTRL02	For which organization do you work?	
Age	CTRL03	What is your year of birth?	
Function	CTRL04	What is your function?	
Department	CTRL05	At which department do you work?	
Hours per week	CTRL06	How many hours do you work per week?	
Tenure	CTRL07	How long do you work at this organization?	
NWW- flexible workplaces at work	FWW01	Does the organization you work have flexible workplaces?	Self-developed based on Breukelen et al., (2014)
	FWW02	Relative to the number of workplaces, how many flexible workplaces (in percentage) are available in your organization?	Self-developed based on Breukelen et al., (2014)
	FWW03	How many hours per week(in percentage) do you use workplaces on average?	Self-developed based on Breukelen et al., (2014)
NWW- teleworking	TW01	How many hours per week (in percentage) do you work from home?	Self-developed based on Breukelen et al., (2014)
	TW02	How many hours per week (in percentage) do you work from another location (no office or home)?	Self-developed based on Breukelen et al., (2014)
NWW- flexible working hours	FWH01	How many hours (in percentage) do you have the freedom to spend your time in a week?	Self-developed based on Breukelen et al., (2014)
	FWH02	If not, would you like to be able to determine your days?	Self-developed based on Breukelen et al., (2014)
NWW - IT	IT01	Do you have the resources at home (computer, fast internet etc.) to work for your work?	Self-developed based on Breukelen et al., (2014)
	IT02	How often do you use digital business systems at home?	Self-developed based on Breukelen et al., (2014)
	IT03	How often do you use digital business systems from another location (no office or home)?	Self-developed based on Breukelen et al., (2014)
	IT04	How often do you use cloud computing for your work?	Self-developed based on Breukelen et al., (2014)
	IT05	How often do you use video conferencing (with image)?	Self-developed based on Breukelen et al., (2014)
	IT06	How often do you use conference calls (without image)?	Self-developed based on Breukelen et al., (2014)
	IT07	How many hours per week (in percentage) are you busy with work related tasks while on the go for work or an appointment (mail, calls, writing documents)?	Self-developed based on Breukelen et al., (2014)
Productivity	PRO01	I believe I am an effective employee	Staples et al., (1999)
	PRO02	Among my work group, I would rate my performance in the top quarter	Staples et al., (1999)
	PRO03	I am happy with the quality of my work output	Staples et al., (1999)
	PRO04	I work very efficiently	Staples et al., (1999)
	PRO05	I am a highly productive employee	Staples et al., (1999)
	PRO06	My manager believes I am an efficient worker	Staples et al., (1999)
Organizational commitment	ORCO01	I am quite proud to be able to tell people who it is I work for	Cook & Wall (1980)
	ORCO02	I sometimes feel like leaving this employment for good (R)	Cook & Wall (1980)
	ORCO03	Even if the firm were not doing too well financially, I would be reluctant to change to another employer	Cook & Wall (1980)
	ORCO04	I feel myself to be part of the organization	Cook & Wall (1980)
	ORCO05	In my work I like to feel I am making some effort, not just for myself but for the organization as well	Cook & Wall (1980)
	ORCO06	The offer of a bit more money with another employer would not seriously make me think of changing my job	Cook & Wall (1980)
	ORCO07	I would not recommend a close friend to join our staff (R).	Cook & Wall (1980)
	ORCO08	To know that my work had made a contribution to the good of the organization would please me	Cook & Wall (1980)
Empowerment	EMP01	I have significant autonomy in determining how I do my job	Spreitzer (1995)
	EMP02	I can decide on my own how to go about doing my work	Spreitzer (1995)
	EMP03	I have considerable opportunity for independence and freedom in how I do my job	Spreitzer (1995)
	EMP04	My impact on what happens in my department is large	Spreitzer (1995)

Trust	TRU01	If got into difficulties at work I know my workmates would try and help me out.	Cook & Wall (1980)
	TRU02	If got into difficulties at work I know my workmates would try and help me out.	Cook & Wall (1980)
	TRU03	Most of my workmates can be relied upon to do as they say they will do	Cook & Wall (1980)
	TRU04	I have full confidence in the skills of my workmates.	Cook & Wall (1980)
	TRU05	I can rely on other workers not to make my job more difficult by careless work.	Cook & Wall (1980)
	TRU06	Management at my firm is sincere in its attempts to meet the workers' point of view.	Cook & Wall (1980)
	TRU07	Our firm has a poor future unless it can attract better managers	Cook & Wall (1980)
	TRU08	Management can be trusted to make sensible decisions for the firm's future	Cook & Wall (1980)
	TRU09	Management at work seems to do an efficient job.	Cook & Wall (1980)
	TRU10	I feel quite confident that the firm will always try to treat me fairly	Cook & Wall (1980)
Steering on output	STO01	In some departments, records are kept for each employee which show his or her output – for example, sales, volume, selling, cost, number of parcels handled etc. Doe	Ouchi (1978)
	STO02	If yes, When you are being evaluated for a raise or promotion, how much weight does your supervisor give to the records of your output?	Ouchi (1978)
	STO03	How often does your immediate supervisor check to see what you are doing on the job?	Ouchi (1978)
IWB - Opportunity Exploration	IWB-OE01	… look for opportunities to improve an existing process, technology, product, service or work relationship?	Kleysen & Street (2001)
	IWB-OE02	… recognize opportunities to make a positive difference in your work, department, organization or with customers?	Kleysen & Street (2001)
	IWB-OE03	… pay attention to non-routine issues in your work, department, organization or the market place?	Kleysen & Street (2001)
IWB - Idea Generation	IWB-IG01	… search out new working methods, techniques or instruments?	De Jong & den Hartog (2010)
	IWB-IG02	… generate original solutions to problems?	De Jong & den Hartog (2010)
	IWB-IG03	… find new approaches to execute tasks?	De Jong & den Hartog (2010)
IWB - Championing	IWB-CH01	… make important organizational members enthusiastic for innovative ideas?	De Jong & den Hartog (2010)
	IWB-CH02	… attempt to convince people to support an innovative idea?	De Jong & den Hartog (2010)
IWB - Application	IWB-AP01	… systematically introduce innovative ideas into work practices?	De Jong & den Hartog (2010)
	IWB-AP02	… contribute to the implementation of new ideas?	De Jong & den Hartog (2010)
	IWB-AP03	… put effort in the development of new things?	De Jong & den Hartog (2010)
Teamwork - Communication	TW-C1	There is frequent communication within the team	Weimar (2013)
	TW-C2	Team members communicate often in spontaneous meeting, phone conversations, etc.	Weimar (2013)
	TW-C3	Team members are happy with the timeliness in which they received information from other team members	Weimar (2013)
	TW-C4	Team members are happy with the precision in which they received information from other team members	Weimar (2013)
	TW-C5	Team members are happy with the usefulness in which they received information from other team members	Weimar (2013)
Teamwork - Mutual support	TW-MS1	The team members help and supported each other as best as they can	Weimar (2013)
	TW-MS2	If conflicts come up, they are easily and quickly resolved	Weimar (2013)
	TW-MS3	Discussions and controversies are conducted constructively	Weimar (2013)
	TW-MS4	Suggestions and contributions of team members are respected	Weimar (2013)
	TW-MS5	Suggestions and contributions of team members are discussed and further developed	Weimar (2013)
	TW-MS6	Our team is able to reach consensus regarding important issues	Weimar (2013)
Teamwork - Mutual perfomance monitor	TW-MPM1	I am willing to give feedback to the other members of the team.	Van Roosmalen (2012)
	TW-MPM2	Errors in the tasks of other members are specified in the team.	Van Roosmalen (2012)
	TW-MPM3	There is room to comment on the responsibilities of other team members.	Van Roosmalen (2012)
	TW-MPM4	We give feedback on each other's work.	Van Roosmalen (2012)
Teamwork - Balance of Member Contribu	TW-BMC1	The team recognized the specific potentials (strengths and weaknesses) of individual team members	Hoegl & Gemuenden (2001)
	TW-BMC2	The team members were contributing to the achievement of the team's goals in accordance with their specific potential.	Hoegl & Gemuenden (2001)
	TW-BMC3	Imbalance of member contributions caused conflicts in our team	Hoegl & Gemuenden (2001)
Teamwork- Social team cohesion	TW-STC1	Team members in my team have a strong bond	Pierik (2011)
	TW-STC2	Team members are proud to be part of our team	Pierik (2011)
	TW-STC3	We are a strong team	Pierik (2011)
	TW-STC4	There are many personal conflicts in my team	Pierik (2011)
	TW-STC5	Each team member feels responsible for preserving and protecting our team	Pierik (2011)
Virtual teams	VT1	Are you working in teams with people who are not working in your establishment?	Self-developed
	VT2	How much time (in percentage) do you use for these types of teams?	Self-developed

Appendix III Graphics and tables NWW and outcome variables

Correlations

		Productivity	NIETWERK_4
Productivity	Pearson Correlation	1	,107*
	Sig. (1-tailed)		,041
	N	265	265
NIETWERK_4	Pearson Correlation	,107*	1
	Sig. (1-tailed)	,041	
	N	265	289

*. Correlation is significant at the 0.05 level (1-tailed).

Table 10 Telework and Productivity

Correlations

		Productivity	FWW
Productivity	Pearson Correlation	1	,057
	Sig. (1-tailed)		,177
	N	265	265
FWW	Pearson Correlation	,057	1
	Sig. (1-tailed)	,177	
	N	265	289

Table 11 Flexible working places at work and Productivity

Correlations

		Productivity	FWH
Productivity	Pearson Correlation	1	,077
	Sig. (1-tailed)		,106
	N	265	265
FWH	Pearson Correlation	,077	1
	Sig. (1-tailed)	,106	
	N	265	289

Table 12 Flexible working hours and Productivity

Correlations

		IT	Productivity
IT	Pearson Correlation	1	,153**
	Sig. (1-tailed)		,006
	N	289	265
Productivity	Pearson Correlation	,153**	1
	Sig. (1-tailed)	,006	
	N	265	265

**. Correlation is significant at the 0.01 level (1-tailed).

Table 13 IT and Productivity

Correlations

		Comm	NIETWERK_4
Comm	Pearson Correlation	1	,053
	Sig. (1-tailed)		,195
	N	265	265
NIETWERK_4	Pearson Correlation	,053	1
	Sig. (1-tailed)	,195	
	N	265	289

Table 14 Telework and organizational commitment

Correlations

		Comm	FWW
Comm	Pearson Correlation	1	,127*
	Sig. (1-tailed)		,019
	N	265	265
FWW	Pearson Correlation	,127*	1
	Sig. (1-tailed)	,019	
	N	265	289

*. Correlation is significant at the 0.05 level (1-tailed).

Table 15 Flexible working places at work and organizational commitment

Correlations

		Comm	FWH
Comm	Pearson Correlation	1	,156**
	Sig. (1-tailed)		,006
	N	265	265
FWH	Pearson Correlation	,156**	1
	Sig. (1-tailed)	,006	
	N	265	289

**. Correlation is significant at the 0.01 level (1-tailed).

Table 16 Flexible working hours and organizational commitment

Correlations

		Comm	IT
Comm	Pearson Correlation	1	,107*
	Sig. (1-tailed)		,040
	N	265	265
IT	Pearson Correlation	,107*	1
	Sig. (1-tailed)	,040	
	N	265	289

*. Correlation is significant at the 0.05 level (1-tailed).

Table 17 IT and organizational commitment

Inter-Item Correlation Matrix

	FWW	TW	FWH	IT
FWW	1,000	0,303	0,401	0,412
TW	0,303	1,000	0,529	0,517
FWH	0,401	0,529	1,000	0,591
IT	0,412	0,517	0,591	1,000

Table 18 Correlation between NWW components in sample Rabobank Operations Nederland

Inter-Item Correlation Matrix

	FWW	TW	FWH	IT
FWW	1,000	0,210	0,323	0,277
TW	0,210	1,000	0,505	0,553
FWH	0,323	0,505	1,000	0,555
IT	0,277	0,553	0,555	1,000

Table 19 Correlation between NWW components in overall sample.

Correlations

		NWW_10	Productivity
NWW_10	Pearson Correlation	1	,092
	Sig. (1-tailed)		,054
	N	334	307
Productivity	Pearson Correlation	,092	1
	Sig. (1-tailed)	,054	
	N	307	307

Table 20 NWW and productivity

Correlations

		Productivity	NWW_10
Productivity	Pearson Correlation	1	,118*
	Sig. (1-tailed)		,028
	N	265	265
NWW_10	Pearson Correlation	,118*	1
	Sig. (1-tailed)	,028	
	N	265	289

*. Correlation is significant at the 0.05 level (1-tailed).

Table 21 Productivity and NWW

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,118[a]	,014	,010	,55051

a. Predictors: (Constant), NWW_10

Table 22 NWW and productivity

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,120	1	1,120	3,697	,056[b]
	Residual	79,705	263	,303		
	Total	80,826	264			

a. Dependent Variable: Productivity

b. Predictors: (Constant), NWW_10

Table 23 Regression NWW on productivity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,084	,080		50,753	,000
	NWW_10	,026	,014	,118	1,923	,056

a. Dependent Variable: Productivity

Table 24 Coefficient between NWW and productivity

Organizational commitment

Correlations

		NWW_10	Comm
NWW_10	Pearson Correlation	1	,146**
	Sig. (1-tailed)		,009
	N	289	265
Comm	Pearson Correlation	,146**	1
	Sig. (1-tailed)	,009	
	N	265	265

**. Correlation is significant at the 0.01 level (1-tailed).

Table 25 NWW and organizational commitment

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,146[a]	,021	,018	,64693

a. Predictors: (Constant), NWW_10

b. Dependent Variable: Comm

Table 26 NWW and organizational commitment

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,387	1	2,387	5,704	,018[b]
	Residual	110,071	263	,419		
	Total	112,458	264			

a. Dependent Variable: Comm

b. Predictors: (Constant), NWW_10

Table 27 Regression NWW on organizational commitment

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,666	,095		38,765	,000
	NWW_10	,039	,016	,146	2,388	,018

a. Dependent Variable: Comm

Table 28 Coefficient between NWW and organizational commitment

Appendix IV Graphics and tables of teamwork behavior.

Tests of Between-Subjects Effects

Dependent Variable: Productivity

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14,928[a]	8	1,866	7,270	,000
Intercept	4413,277	1	4413,277	17194,395	,000
NWW_3	1,451	2	,725	2,826	,061
Teamwork Behavior_3	12,141	2	6,071	23,652	,000
NWW_3 * Teamwork Behavior_3	1,111	4	,278	1,082	,366
Error	63,397	247	,257		
Total	4647,522	256			
Corrected Total	78,326	255			

a. R Squared = ,191 (Adjusted R Squared = ,164)

Table 29 NWW, productivity and teamwork behavior

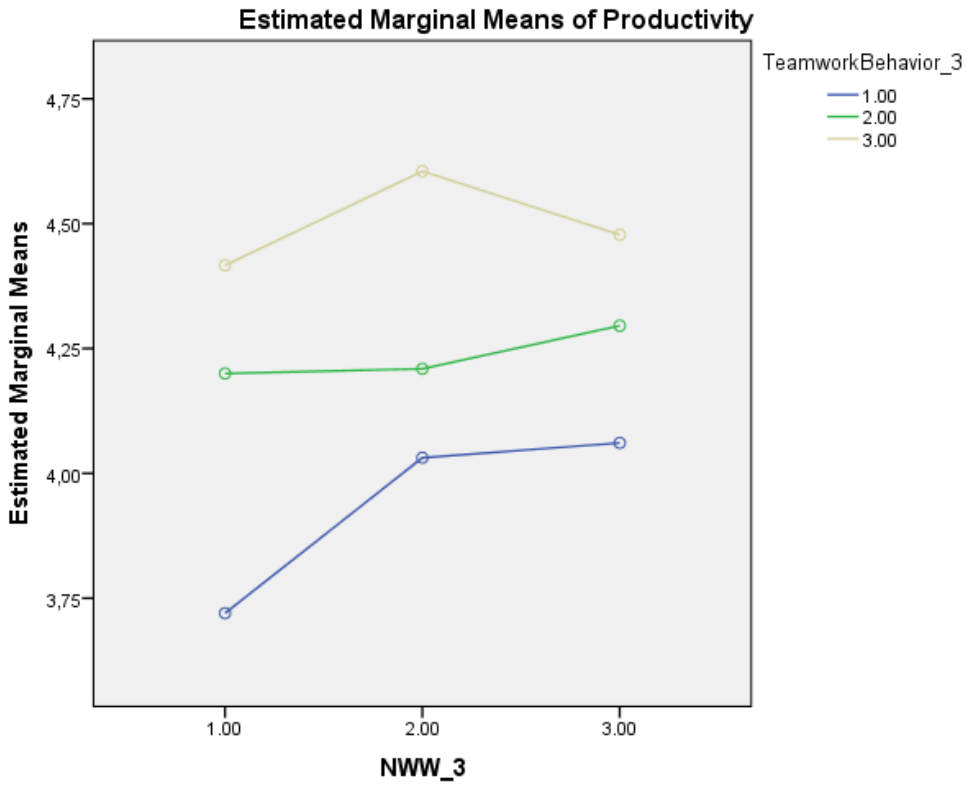

Figure 12 NWW, productivity and teamwork behavior.

Tests of Between-Subjects Effects

Dependent Variable: Organizational commitment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	17,114[a]	8	2,139	5,812	,000
Intercept	3711,854	1	3711,854	10084,474	,000
NWW_3	2,320	2	1,160	3,152	,045
Teamwork Behavior_3	8,048	2	4,024	10,932	,000
NWW_3 * Teamwork Behavior_3	6,950	4	1,737	4,720	,001
Error	91,283	248	,368		
Total	3961,464	257			
Corrected Total	108,397	256			

a. R Squared = ,158 (Adjusted R Squared = ,131)

Table 29 NWW, organizational commitment and teamwork behavior

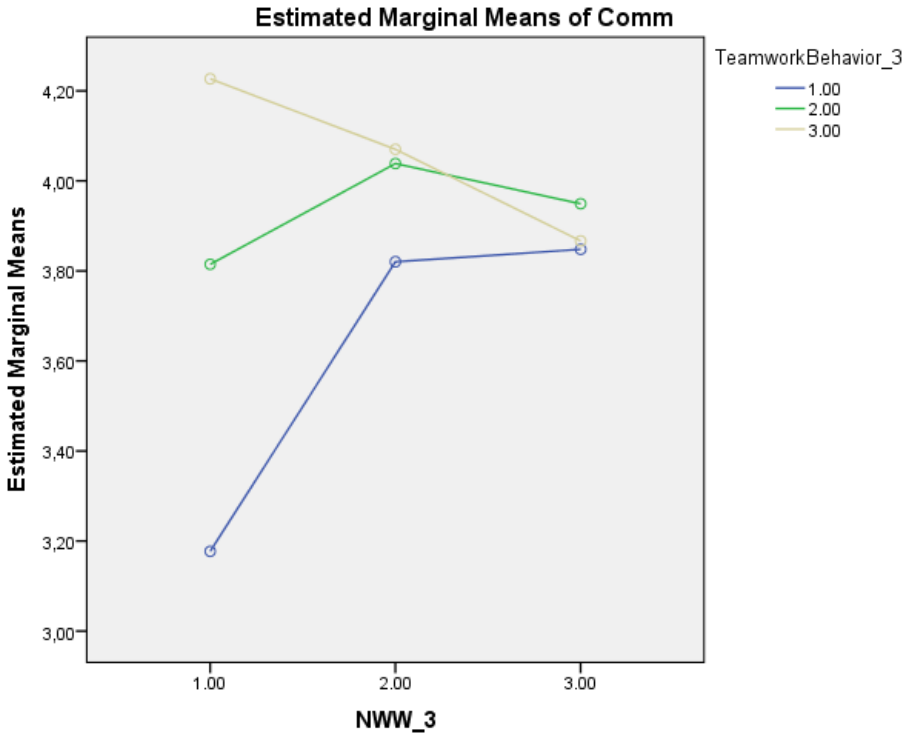

Figure 13 NWW, organizational commitment and teamwork behavior

Cronbach's alpha's

Before leveling in 3 levels

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,868	,871	5

Table 30 Cronbach's alpha before

After leveling into low, medium, high

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,793	,798	5

Table 31 Cronbach's alpa in 3 levels

Item Statistics

	Mean	Std. Deviation	N
Communication_3	2,0856	,82943	257
Balanced Member Contribution_3	2,2374	,97332	257
Mutual Support_3	1,9494	,76634	257
Mutual Performance Monitoring_3	2,0039	,76800	257
Social Team Cohesion_3	1,8794	,77374	257

Table 32 Figures of teamwork behavior components

Inter-Item Correlation Matrix

	Communication_3	BalancedMemberContribution_3	MutualSupport_3	MutualPerformanceMonitoring_3	SocialTeamCohesion_3
Communication_3	1,000	,342	,400	,398	,375
Balanced Member Contribution_3	,342	1,000	,451	,485	,438
Mutual Support_3	,400	,451	1,000	,598	,477
Mutual Performance Monitoring_3	,398	,485	,598	1,000	,454
Social Team Cohesion_3	,375	,438	,477	,454	1,000

Table 33 Figures of teamwork behavior components correlated

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Communication_3	8,0700	6,589	,482	,236	,782
Balanced Member Contribution_3	7,9183	5,771	,558	,321	,764
Mutual Support_3	8,2062	6,289	,638	,438	,735
Mutual Performance Monitoring_3	8,1518	6,262	,644	,443	,733
Social Team Cohesion_3	8,2763	6,482	,570	,328	,755

Table 34 Figures of teamwork behavior components

Appendix V Graphics and tables of components of teamwork behavior on productivity

1. Communication

Descriptive Statistics

Dependent Variable: Productivity

Communication_3	Mean	Std. Deviation	N
1,00	4,0201	,64455	78
2,00	4,1705	,47845	79
3,00	4,4293	,46113	99
Total	4,2247	,55422	256

Table 35 communication and productivity

Tests of Between-Subjects Effects

Dependent Variable: Productivity

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10,874[a]	8	1,359	4,978	,000
Intercept	4285,418	1	4285,418	15692,832	,000
NWW_3	1,141	2	,571	2,089	,126
Communication_3	6,856	2	3,428	12,553	,000
NWW_3 * Communication_3	1,941	4	,485	1,777	,134
Error	67,451	247	,273		
Total	4647,522	256			
Corrected Total	78,326	255			

a. R Squared = ,139 (Adjusted R Squared = ,111)

Table 36 Interactions between communication and productivity

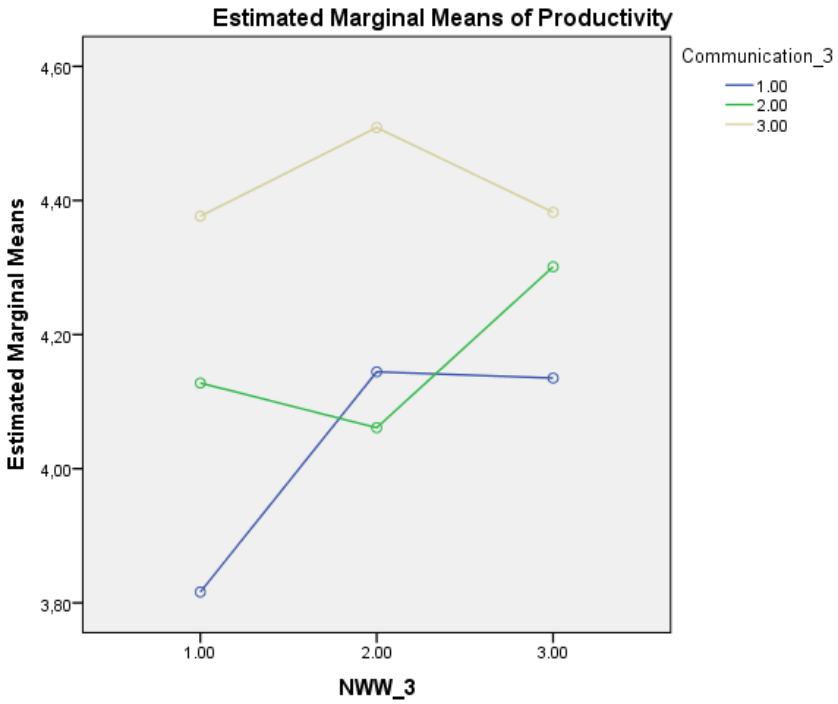

Figure 14 NWW, productivity and communication

2. Balance of member contribution

Tests of Between-Subjects Effects

Dependent Variable: Productivity

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	11,474[a]	8	1,434	5,299	,000
Intercept	3301,684	1	3301,684	12198,925	,000
NWW_3	1,169	2	,584	2,159	,118
Balanced Member Contribution_3	7,034	2	3,517	12,995	,000
NWW_3 * Balanced Member Contribution_3	2,178	4	,545	2,012	,093
Error	66,851	247	,271		
Total	4647,522	256			
Corrected Total	78,326	255			

a. R Squared = ,146 (Adjusted R Squared = ,119)

Table 37 Interactions between balance of member contribution and productivity

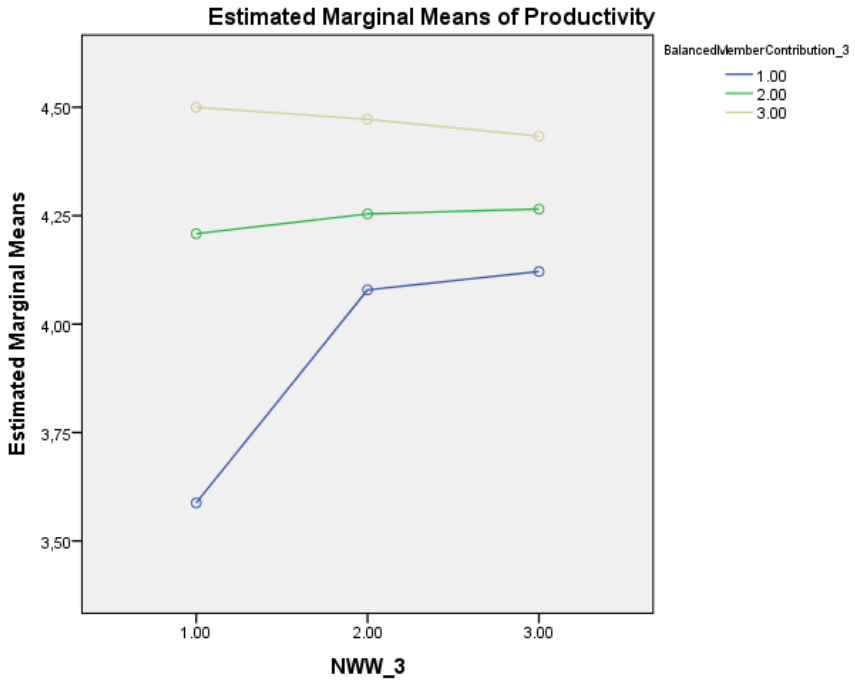

Figure 15 NWW, productivity and balance of member contribution

3. Mutual support

Descriptive Statistics

Dependent Variable: Productivity

Mutual Support_3	Mean	Std. Deviation	N
1,00	4,0293	,57772	82
2,00	4,2108	,53346	105
3,00	4,4783	,45546	69
Total	4,2247	,55422	256

Table 38 mutual support and productivity

Tests of Between-Subjects Effects

Dependent Variable: Productivity

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9,725[a]	8	1,216	4,377	,000
Intercept	4154,654	1	4154,654	14959,088	,000
NWW_3	1,019	2	,509	1,834	,162
Mutual Support_3	6,563	2	3,281	11,815	,000
NWW_3 * Mutual Support_3	1,144	4	,286	1,030	,392
Error	68,600	247	,278		
Total	4647,522	256			
Corrected Total	78,326	255			

a. R Squared = ,124 (Adjusted R Squared = ,096)

Table 39 Interactions between mutual support and productivity

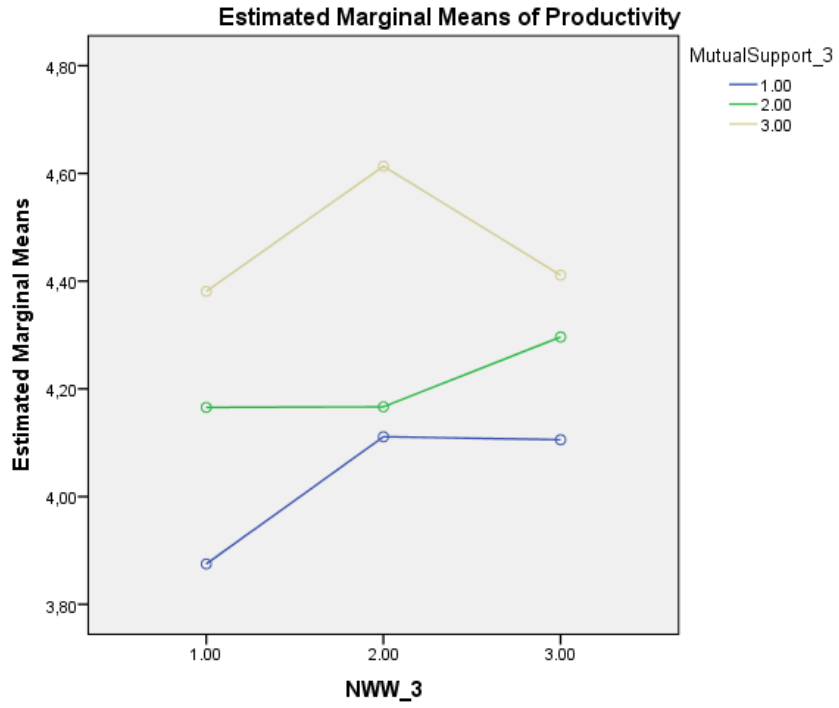

Figure 16 NWW, productivity and mutual support

4. Mutual performance monitoring

Descriptive Statistics

Dependent Variable: Productivity

Mutual Performance Monitoring_3	Mean	Std. Deviation	N
1,00	4,0253	,56653	75
2,00	4,1984	,51686	105
3,00	4,4579	,51128	76
Total	4,2247	,55422	256

Table 40 Mutual performance monitoring and productivity

Tests of Between-Subjects Effects

Dependent Variable: Productivity

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	11,836[a]	8	1,479	5,496	,000
Intercept	4341,216	1	4341,216	16127,017	,000
NWW_3	1,959	2	,980	3,639	,028
Mutual Performance Monitoring_3	7,372	2	3,686	13,693	,000
NWW_3 * Mutual Performance Monitoring_3	3,042	4	,761	2,825	,026
Error	66,490	247	,269		
Total	4647,522	256			
Corrected Total	78,326	255			

a. R Squared = ,151 (Adjusted R Squared = ,124)

Table 41 Interactions between mutual performance monitoring and productivity

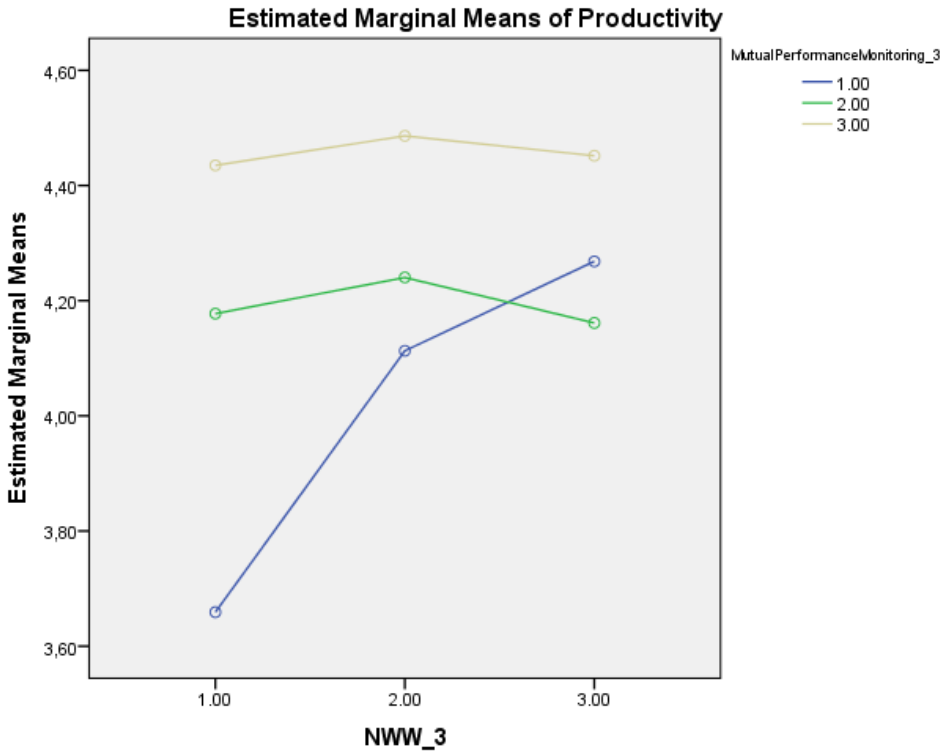

Figure 17 NWW, productivity and mutual performance monitoring

5. Social team cohesion

Descriptive Statistics

Dependent Variable: Productivity

Social Team Cohesion_3	Mean	Std. Deviation	N
1,00	3,9862	,64052	94
2,00	4,2593	,42540	99
3,00	4,5265	,42566	63
Total	4,2247	,55422	256

Table 42 social team cohesion and productivity

Tests of Between-Subjects Effects

Dependent Variable: Productivity

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14,759[a]	8	1,845	7,168	,000
Intercept	4369,970	1	4369,970	16980,254	,000
NWW_3	2,228	2	1,114	4,328	,014
Social Team Cohesion_3	11,762	2	5,881	22,851	,000
NWW_3 * Social Team Cohesion_3	1,302	4	,326	1,265	,284
Error	63,567	247	,257		
Total	4647,522	256			
Corrected Total	78,326	255			

a. R Squared = ,188 (Adjusted R Squared = ,162)

Table 43 Interactions between social team cohesion and productivity

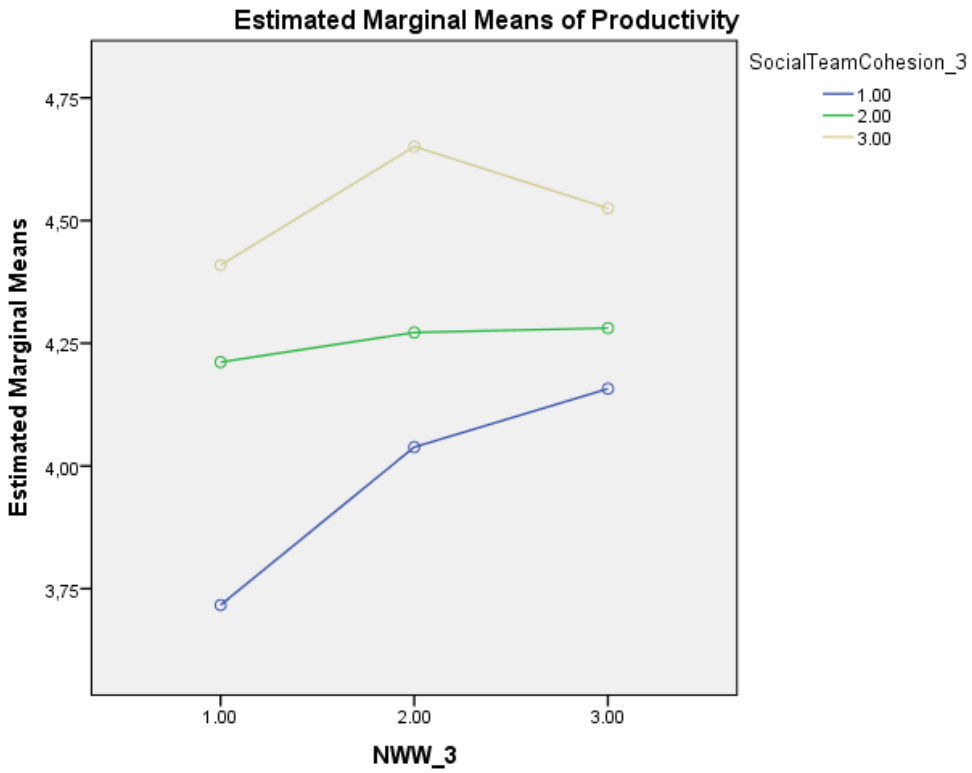

Figure 18 NWW, productivity and social team cohesion

Appendix VI Graphics and tables of components of teamwork behavior on organizational commitment

1. Communication

Descriptive Statistics

Dependent Variable: Organizational commitment

Communication_3	Mean	Std. Deviation	N
1,00	3,6113	,70517	78
2,00	3,9415	,55896	79
3,00	4,0205	,61831	100
Total	3,8720	,65071	257

Table 44 communication and organizational commitment

Tests of Between-Subjects Effects

Dependent Variable: Organizational commitment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13,572[a]	8	1,697	4,437	,000
Intercept	3604,729	1	3604,729	9427,620	,000
NWW_3	2,340	2	1,170	3,061	,049
Communication_3	7,717	2	3,858	10,091	,000
NWW_3 * Communication_3	3,331	4	,833	2,178	,072
Error	94,825	248	,382		
Total	3961,464	257			
Corrected Total	108,397	256			

a. R Squared = ,125 (Adjusted R Squared = ,097)

Table 45 Interactions between communication and organizational commitment

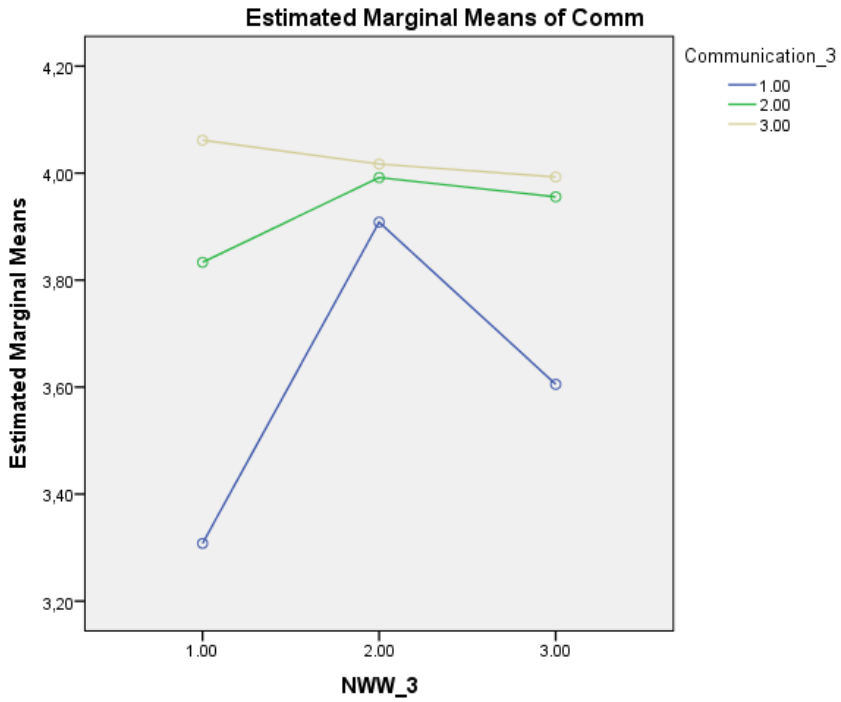

Figure 19 NWW, organizational commitment and communication

2. Balance of member contribution

Tests of Between-Subjects Effects

Dependent Variable: Organizational commitment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	15,672[a]	8	1,959	5,240	,000
Intercept	2758,548	1	2758,548	7377,944	,000
NWW_3	1,336	2	,668	1,787	,170
Balanced Member Contribution_3	5,432	2	2,716	7,265	,001
NWW_3 * Balanced Member Contribution_3	6,431	4	1,608	4,300	,002
Error	92,725	248	,374		
Total	3961,464	257			
Corrected Total	108,397	256			

a. R Squared = ,145 (Adjusted R Squared = ,117)

Table 46 Interactions between balance of member contribution and organizational commitment

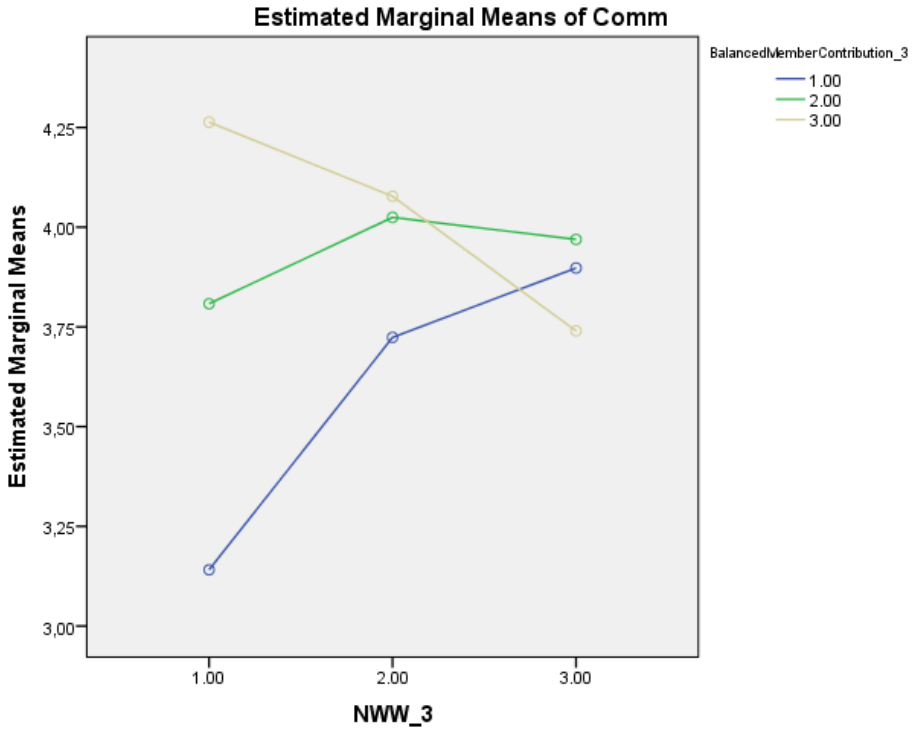

Figure 20 NWW, organizational commitment and communication

3. Mutual support

Descriptive Statistics

Dependent Variable: Organizational commitment

Mutual Support_3	Mean	Std. Deviation	N
1,00	3,7446	,65697	82
2,00	3,9493	,57029	106
3,00	3,9048	,74012	69
Total	3,8720	,65071	257

Table 47 Mutual support and organizational commitment

Tests of Between-Subjects Effects

Dependent Variable: Organizational commitment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13,794[a]	8	1,724	4,520	,000
Intercept	3502,371	1	3502,371	9181,338	,000
NWW_3	1,865	2	,932	2,444	,089
Mutual Support_3	1,950	2	,975	2,556	,080
NWW_3 * Mutual Support_3	8,759	4	2,190	5,740	,000
Error	94,604	248	,381		
Total	3961,464	257			
Corrected Total	108,397	256			

a. R Squared = ,127 (Adjusted R Squared = ,099)

Table 48 Interactions between mutual support and organizational commitment

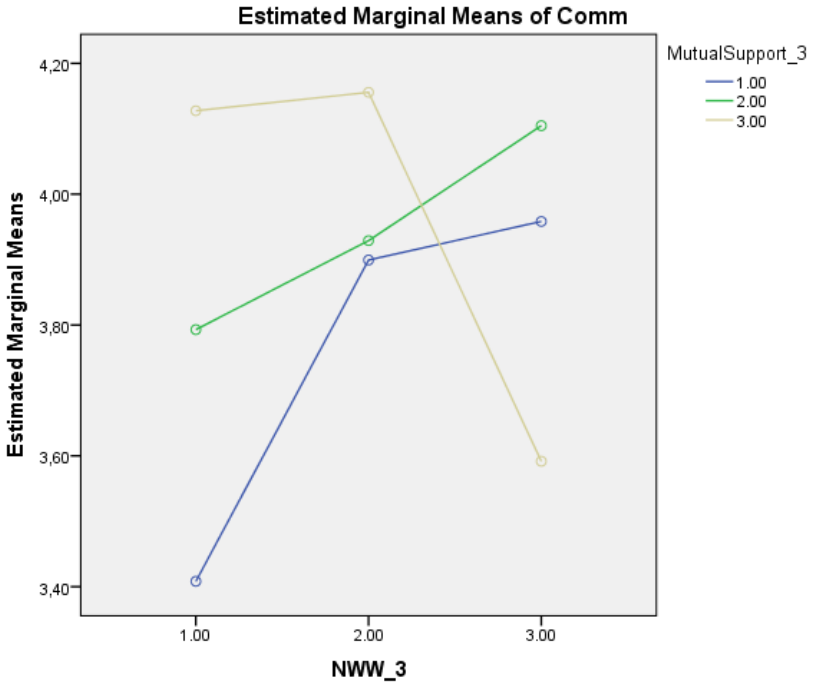

Figure 21 NWW, organizational commitment and mutual support

4. Mutual performance monitoring

Descriptive Statistics

Dependent Variable: Organizational commitment

Mutual Performance Monitoring_3	Mean	Std. Deviation	N
1,00	3,7440	,63029	75
2,00	3,8679	,54849	106
3,00	4,0040	,77337	76
Total	3,8720	,65071	257

Table 49 Mutual performance monitoring and organizational commitment

Tests of Between-Subjects Effects

Dependent Variable: Organizational commitment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14,728[a]	8	1,841	4,874	,000
Intercept	3663,037	1	3663,037	9698,260	,000
NWW_3	2,662	2	1,331	3,524	,031
Mutual Performance Monitoring_3	3,490	2	1,745	4,620	,011
NWW_3 * Mutual Performance Monitoring_3	9,024	4	2,256	5,973	,000
Error	93,670	248	,378		
Total	3961,464	257			
Corrected Total	108,397	256			

a. R Squared = ,136 (Adjusted R Squared = ,108)

Table 50 Interactions between Mutual performance monitoring and organizational commitment

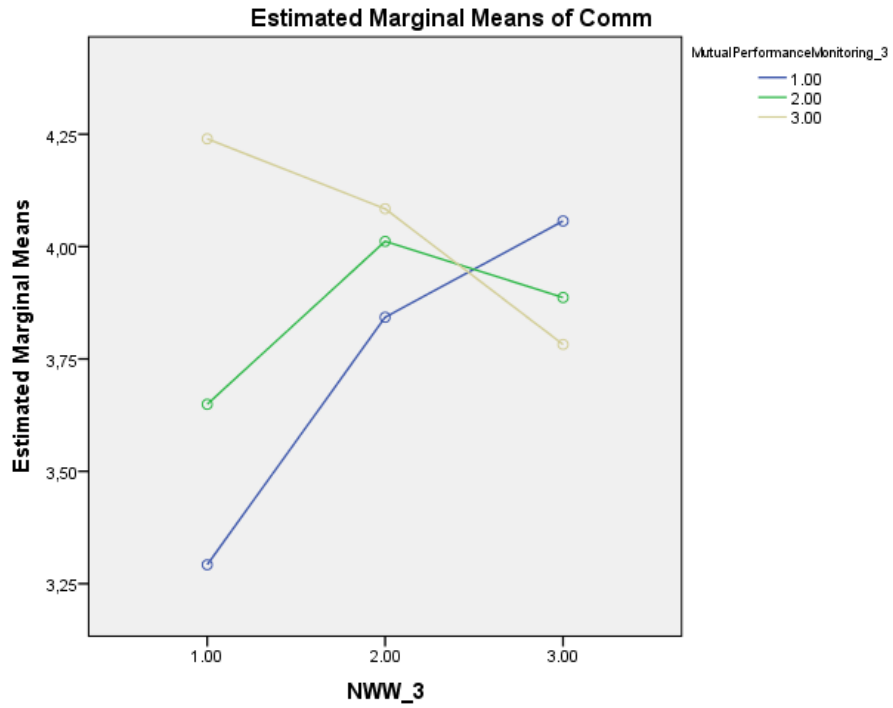

Figure 22 NWW, organizational commitment and mutual performance monitoring

5. Social team cohesion

Descriptive Statistics

Dependent Variable: Organizational commitment

Social Team Cohesion_3	Mean	Std. Deviation	N
1,00	3,6712	,67725	94
2,00	3,9188	,52835	100
3,00	4,0975	,70585	63
Total	3,8720	,65071	257

Table 51 social team cohesion and organizational commitment

Tests of Between-Subjects Effects

Dependent Variable: Organizational commitment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	11,619[a]	8	1,452	3,722	,000
Intercept	3648,448	1	3648,448	9349,401	,000
NWW_3	3,151	2	1,576	4,038	,019
Social Team Cohesion_3	7,952	2	3,976	10,189	,000
NWW_3 * Social Team Cohesion_3	,762	4	,191	,488	,744
Error	96,778	248	,390		
Total	3961,464	257			
Corrected Total	108,397	256			

a. R Squared = ,107 (Adjusted R Squared = ,078)

Table 52 Interactions between social team cohesion and organizational commitment

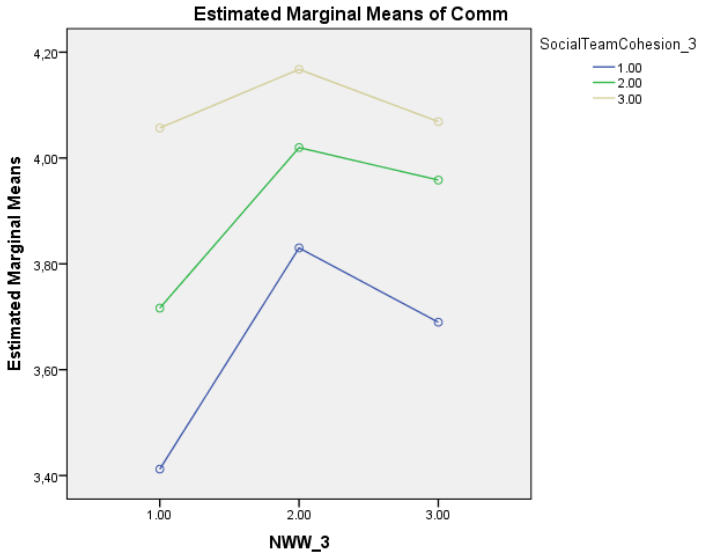

Figure 23 NWW, organizational commitment and social team cohesion

Appendix VII Graphics and tables of NWW and components of teamwork behavior

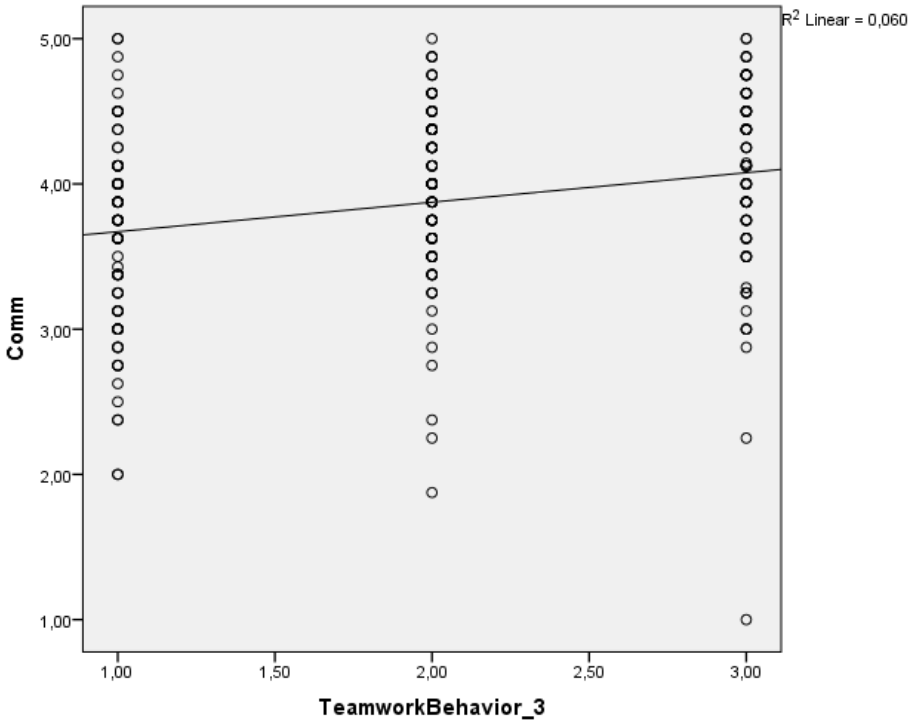

Figure 24 Teamwork behavior and organizational commitment

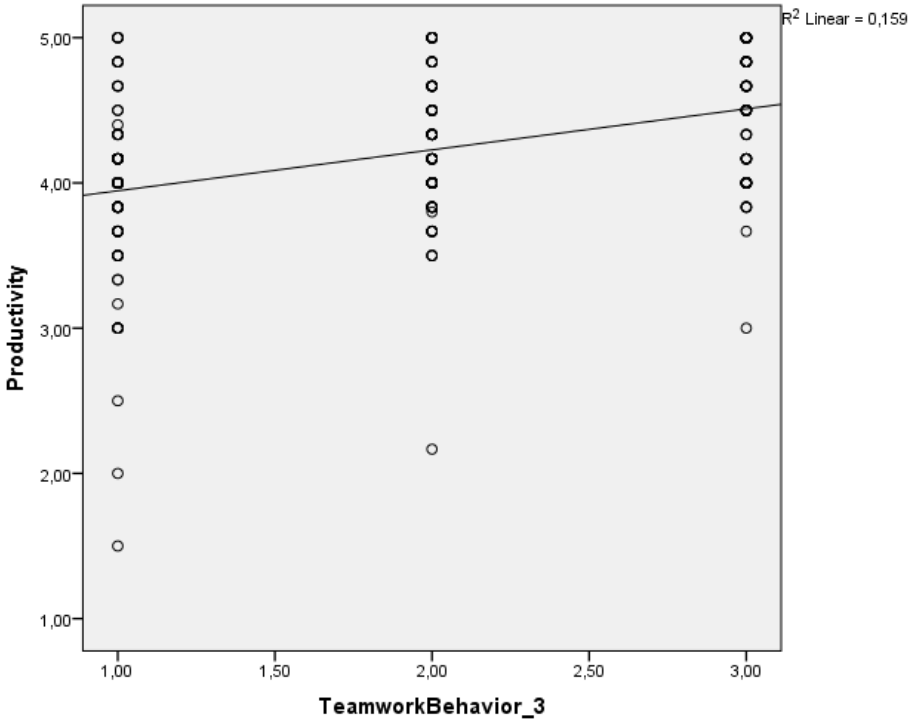

Figure 25 Teamwork behavior and productivity

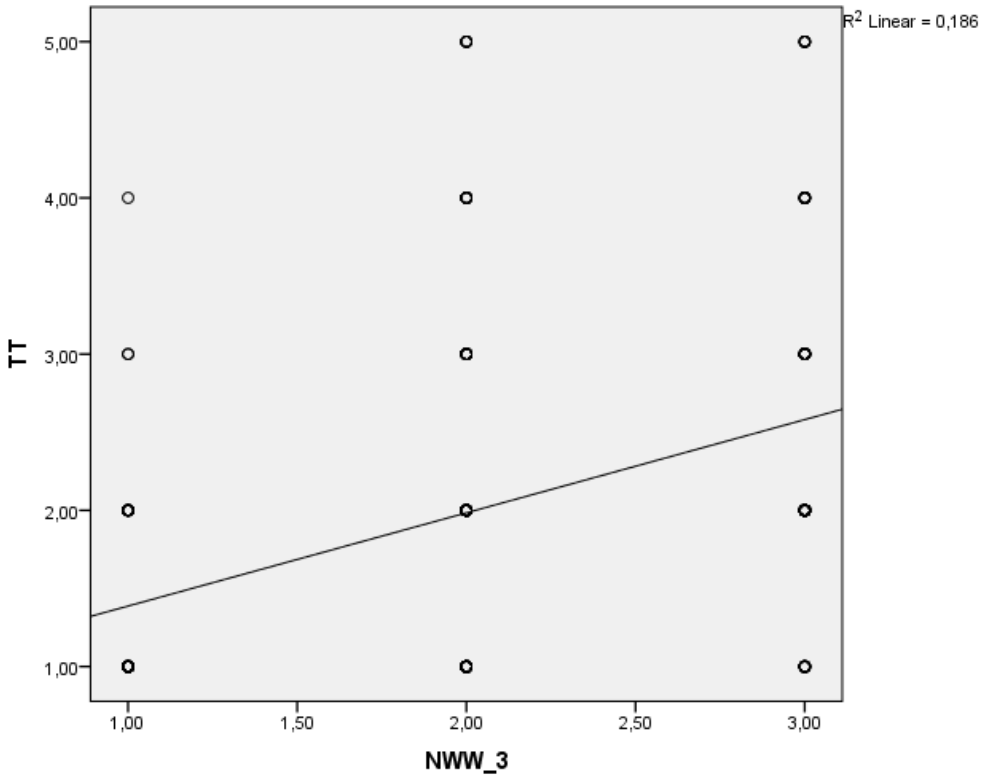

Figure 26 NWW and virtual teams