

## MASTER

### Attracting and retaining millennials the contribution of corporate real estate

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# Attracting and retaining millennials

## The contribution of Corporate Real Estate





# Attracting and retaining millennials

## The contribution of Corporate Real Estate

### Colophon

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## Preface

This thesis is the final product for the completion of the master Urban Systems & Real Estate at Eindhoven University of Technology. I became familiar with the field of corporate real estate during the course Corporate Real Estate Strategies in my master's program. Due to my raised interest in corporate real estate, I participated on the CoreNet Global Academic Challenge in Philadelphia together with 4 other students. At this CoreNet summit we examined a case on "How to attract, retain, and motivate the next generation of knowledge workers". This experience motivated me for choosing the subject of my master thesis.

First, I want to show my appreciation for my supervisors of Eindhoven University of Technology for their guidance throughout the whole process. I want to thank Rianne Appel-Meulenbroek for her enthusiasm, commitment and guidance regarding the subject and content. She already supported me when the initial ideas for my thesis started to rise back in Philadelphia. I want to thank Astrid Kemperman for her constructive comments and for guiding the scientific and methodological quality of my thesis. I also want to thank Theo Arentze for his supervision and feedback. They inspired me with their academic view and without them the same result would not have been accomplished.

I would like to say a special thanks to my boyfriend for supporting me throughout sometimes the most stressful times of graduating. I also want to thank my parents for inspiring me and for always believing in me.

Finally, I want to thank the people who helped me with distributing the questionnaire. Also, a big thanks to the people that took the time for answering the questionnaire. Their help was essential for the results of this study.



## Summary

### Introduction

The overall workforce is declining and the composition of the workforce is shifting. This shift within the workforce is caused by the upcoming generation of millennials (generation with a birth cohort from 1980 to 1998). Organisations value their employees as one of their key assets and continuously seek for the best potential talent. In order to attract and retain talented millennials, the work environment has to support the needs of this generation. Corporate Real Estate Management (CREM) is concerned with creating a workplace that supports the needs of employees and thus also has a role in this study. However, little is known about the relation between the needs of millennials and the possible support by CREM.

The available literature about the needs of millennials, and the possible support of those needs by CREM to attract and retain them, is limited. Most studies only focus on the physical aspects of the workplace in general or only on the characteristics and needs of millennials. Research about the relation between those two subjects is very limited. Besides, studies that focus on the millennial generation and their needs and characteristics, show inconsistencies and contradictions. Also, most of those studies are written by consultants and do not have an academic background. This study tries to cover that gap in literature. To be able to contribute to attracting and retaining millennials, it should be clear which physical workplace aspects CREM should manage in order to create a work environment that supports the needs of millennials. The objective of this research is to provide CREM with insight in how to attract and retain millennials. The research question that follows from this objective, is:

Which physical workplace aspects contribute to attracting and retaining millennials?

This research consists of a descriptive part that contains a literature study and an exploratory part that contains quantitative research. The data for conducting the quantitative research is collected by means of a questionnaire among 302 office employees from different generations.

### Literature

CRE is related to the housing of business activities of an organisation with a core business that does not originate from a profession in real estate. CREM is in charge with the classical tasks of acquiring, maintaining and disposing real estate throughout its life cycle as a facility. Nevertheless, the focus of CREM is changing from 'managing buildings' to the more soft skill of 'managing people'. The activities that CREM performs can be assigned to three levels: strategic, tactical and operational level. Those levels relate respectively to portfolio management, asset management and property management. CREM is increasingly becoming a strategic business management function rather than a technical control function. The primary aim of CREM is to enhance the performance of the core business. Hereby, it is important that the Corporate Real Estate (CRE) manager is already involved during the early strategic planning processes of the company. This way, optimum alignment between the CRE strategy and the organisational strategy can be achieved and CRE can add value to the core business. The



'reduction of costs', 'increase of flexibility' and 'increase employee satisfaction' are important CRE strategies. The policy of attracting and retaining millennials could be assigned to the strategy to 'increase employee satisfaction'.

Currently, there are four generations active in the workplace: veterans, baby boomers, generation X and millennials. In this study, the birth cohort for veterans is adopted as 1922 – 1945, for baby boomers as 1946 – 1964, for generation X'ers as 1965 – 1979 and for millennials as 1980 – 1998. A generation consists of people with the same birth cohort and therefore they share the same experiences during life that shape those people's personalities and beliefs. It can be stated that each generation has its own characteristics and (workplace) needs. However, the self-determination theory (SDT) implies that there are three needs that all people have in life and in the work environment: the need for relatedness, the need for competence and the need for autonomy. Those three SDT needs can be fulfilled in various ways. The three most important workplace needs of millennials in particular (the workplace needs), are the need for sociability with colleagues, the need for opportunity to grow and the need for work-life balance. It is important that the workplace supports these needs of millennials to attract and retain employees that belong to this generation. There are several physical workplace aspects that can be implemented by CREM, which might be able to support the needs of millennials. Those relevant physical workplace aspects are all shown in Figure 1. This study mainly focuses on millennials. However, there are more generations in today's work environment that wants to be supported in their needs. In the literature study is explained that each generation has its own characteristics and workplace needs. Therefore, the differences and similarities between generations (millennials, generation X and baby boomers) regarding their workplace needs and preferences for physical workplace aspects are also examined in this study.

## Research approach

A questionnaire was conducted in order to examine the workplace needs and preferences for physical workplace aspects of baby boomers, generation X and millennials. The questionnaire was distributed between the 7<sup>th</sup> of September and the 6<sup>th</sup> of October. The final sample size contains 302 respondents and the reliability and validity of the data are good. The generalizability is lower since the sample contains a relatively high proportion of respondents that belongs to the millennial generation (63,6%, and 37,4% in a nation-wide study). The proportions of respondents in the sample that belong to generation X and the baby boom generation are lower (24,8% and 11,6%). The questionnaire contained statements about the SDT needs and the workplace needs for which respondents had to indicate their extent of agreement. The questionnaire also contained questions about physical workplace aspects for which respondents had to indicate the extent of importance for supporting the workplace needs.

Before analysing the results of the questionnaire, the data was prepared. The preparation of the workplace needs instigated interesting findings. The Principal Component Analysis (PCA) showed that the variables for those three workplace needs were more internally consistent when they were combined into six new workplace need factors: informal socialisation, formal socialisation, professional growth, coaching, leisure-work balance and

personalised arrangements. Those six workplace need factors were used during the further analyses of the data. Therefore the following hypotheses were formulated:

H1: The need for informal socialisation is related the most to the need for relatedness

H2: The need for formal socialisation is related the most to the need for relatedness

H3: The need for professional growth is related the most to the need for competence

H4: The need for coaching is related the most to the need for competence

H5: The need for leisure-work balance is related the most to the need for autonomy

H6: The need for personalised arrangements is related the most to the need for autonomy

These hypotheses were tested on strength and direction of the possible relationships by means of calculating the Pearson product-moment correlation coefficient ( $r$ ). Next, the differences between generations regarding the workplace need factors were examined. Hereby, hypothesis 7 'Generations differ in workplace need factors' was tested with the one-way analysis of variance (ANOVA), in combination with the Bonferroni test for the post-hoc comparisons. Subsequently, hypothesis 8 'Millennials perceive certain physical workplace aspects to be a support for workplace needs' was tested with frequency tables to show the distribution of the scores for the importance of the physical workplace aspects. Finally, hypothesis 9 'Generations perceive different physical workplace aspects to be a support for workplace needs' was tested again with ANOVA in combination with the Bonferroni test.

## Results

In only two cases, the expected relationships in hypotheses 1 through 6 are confirmed. Those two cases are the relationship between informal socialisation and relatedness, and the relationship between professional growth and competence. Nevertheless, as expected there are relationships between formal socialisation and relatedness, and leisure-work balance and autonomy. However, they did not seem to be the strongest relationships, as was hypothesised. Formal socialisation has the strongest positive relationship with autonomy. Moreover, leisure-work balance positively correlates the strongest to competence. Finally, the workplace need factor coaching correlates the strongest with autonomy, which was also not expected. The relationship between those two variables is negative. Since the expected relationships are only confirmed in two cases, hypotheses 1 and 3 are accepted. Hypotheses 2, 4, 5 and 6 are rejected.

Subsequently, the differences between generations regarding the workplace need factors are analysed (H7). For the workplace need factors professional growth, coaching and leisure-work balance significant differences are found between generations. Millennials attach more value to the workplace need factors professional growth and coaching than generation X does. Generation X attaches more value to the workplace need factor leisure-work balance than millennials do. Regarding this analysis, baby boomers did not differ significantly from other generations in their needs. Since generations differ in their scores for three needs, hypothesis 7 is accepted.

Next, it is analysed whether millennials perceive certain physical workplace aspects to be a support for the workplace needs (H8). The physical workplace aspects that might be able to

support the needs of millennials, are all shown in order of importance in Figure 1. The physical workplace aspects that are indicated as important by millennials, are placed in the white rows.

Sociability with colleagues	Opportunity to grow	Work-life balance
Accessibility of colleagues	Accessibility of colleagues	Accessibility of colleagues
Informal work areas/ break-out zones	Openness and transparency	Remote access to work files or network
Openness and transparency	Quiet rooms for working alone or in pairs	Spatial flexibility
Restaurant/ canteen	Meeting rooms	Commute time
Space between work-settings	Audio-visual equipment	Washroom facilities/ showers
People walking past my desk		Leisure facilities onsite or nearby
Leisure facilities onsite or nearby		Ability to personalise my workstation
IT- services for social networking		Mail and post-room services

	Physical workplace aspect is indicated as important by respondents that belong to the millennial generation
	Physical workplace aspect is indicated as not important by respondents that belong to the millennial generation

Figure 1 Importance of physical workplace aspects

As can be seen in Figure 1, the physical workplace aspect accessibility of colleagues is the most important physical workplace aspect for supporting all the three needs. Most of the physical workplace aspects for supporting sociability with colleagues and work-life balance are indicated as important (respectively six out of eight aspects, and five out of eight aspects). The physical workplace aspects for supporting opportunity to grow are all five indicated as important. Hypothesis 8 is therefore accepted.

Finally, the differences between generations in their preferences for physical workplace aspects that support workplace needs, are analysed (H9). The results of the analyses show that generations do prefer different physical workplace aspects for supporting workplace needs in several cases. Millennials perceive the physical workplace aspects ‘informal work areas/ break-out zones’ and ‘accessibility of colleagues’ to be more important as a support for the sociability with colleagues than generation X does. For supporting the same need, baby boomers indicate that IT-services for social networking are more important than millennials do. Besides, baby boomers also perceive audio-visual equipment to be more important for supporting the opportunity to grow than millennials do. The last significant difference between generations occurs for the need for work-life balance. Millennials perceive the physical workplace aspect ‘ability to personalise my workstation’ to be more important than generation X does. Regarding the results, hypothesis 9 is accepted.

## Conclusions and recommendations

This research gives more insight into the workplace needs and preferences for physical workplace aspects of various generations (baby boomers, generation X and millennials), with a specific focus on the millennial generation. This research also identifies the significant

differences and similarities between generations regarding their workplace needs and preferences for physical workplace aspects.

The existing literature shows that CREM is concerned with creating a workplace that supports the needs of employees to attract and retain them. SDT encompasses three basic needs that all employees have and that can be fulfilled in different ways: the need for relatedness, the need for competence and the need for autonomy. Regarding the results, it can be concluded that informal socialisation, formal socialisation, professional growth and leisure-work balance contribute to fulfilling the need for relatedness. Furthermore, professional growth and leisure-work balance contribute to fulfilling the need for competence. Finally, informal socialisation, formal socialisation and leisure-work balance contribute to fulfilling the need for autonomy.

The results show that in total 13 unique physical workplace aspects have the potential to support the three workplace needs of millennials. Hereby, 'accessibility of colleagues' is indicated as the most important physical workplace aspect for supporting the workplace needs.

In order to implement the physical workplace aspects in the work environment, CREM needs to perform (workplace) design management/ space planning and facility management. Those activities take place on the operational level that can be assigned to the property management of an organisation. In the case an organisation pursues a CRE strategy for attracting and retaining employees, value can be added to the core business when this CRE strategy and the corporate strategy are in alignment.

This master thesis mainly focuses on the needs of millennials, however, there are more generations in today's work environment that also want to be supported in their needs. Therefore, this research explored whether there are differences in needs and preferences for physical workplace aspects between millennials and the non-millennial generations (baby boomers and generation X). The results of this research show that generations differ in three of the six workplace need factors, namely in the need for professional growth, the need for coaching and the need for leisure-work balance. The differences in needs occur only between millennials and generation X. The results of this research also show that the three generations differ for 5 out of the 21 physical workplace aspects in the extent of perceiving those physical workplace aspects as a support for the workplace needs. Based on the analyses and the interpretation of the results, it can be concluded that there are differences between generations regarding their needs and their preferences for physical workplace aspects. However, those differences between generations are rather small.

This research contributes knowledge to the research fields of environmental psychology and CREM. Limitations to this study are the representativeness of the sample and the sample size. Another limitation is that the workplace activities of the respondents were not taken into account in the exploratory research. Recommendations for further research are to conduct the same research with a larger and more representative sample, with other or more independent variables and in different settings. Another recommendation is to explore the physical workplace aspects that support the six workplace need factors, instead of the three workplace

needs. Furthermore, it would be interesting to investigate the workplace needs of other generations and to identify which physical workplace aspects support their needs.

The results of this study can be translated into recommendations for CRE managers and developers and owners of office buildings. The physical workplace aspects that support the needs of millennials have to be taken into account by the CRE manager to attract and retain millennials. In the case of implementing those physical workplace aspects, CREM needs to perform (workplace) design management/ space planning and facility management. For guaranteeing the accessibility of colleagues in combination with the ABW style, it is recommended for the CRE manager to implement additional measurements. Furthermore, it is recommended for CREM to go in consultation with the HR department about how to approach some aspects that employees perceive as important that are related to both departments. Finally, CREM needs to take the results of further research about the needs and preferences of the other generations into account to create a mix of physical workplace aspects that support the workplace needs of all generations.

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# 1. Introduction

In this first chapter, the research on the contribution of CREM for attracting and retaining millennials is introduced. First, the background of the topic, the research gap and the research objective of this study are explained. Next, the main research question and sub questions are formulated. Subsequently, the scientific and practical relevance of this study are explained. Finally, the research approach for conducting this study is outlined.

## 1.1 Background

The workplace environment is changing rapidly. A different nature of work, globalisation and merging cultures are certain trends that instigate these changes (Oseland, 2009). Therefore, it is important to understand how offices can best be used and how workplaces can support employees (Oseland, 2009). Moreover, the overall workforce is declining and the composition of the workforce is shifting. This shift within the workforce is caused by the upcoming generation of millennials (generation with a birth cohort from 1980 to 1998) (Brack, 2012; Gorman, Nelson, & Glassman, 2004). They have grown up with different standards and are said to shape the world of work for the future years to come. It is important that companies understand and support the needs of those millennials in order to attract and retain talent (CoreNet Global, 2015; Harvard Business Review, 2013). This way, companies can have competitive advantage since having the right employees is a key asset for an organisation (Gorman et al., 2004; Rothe, Lindholm, Hyvönen, & Nenonen, 2012). Corporate real estate management (CREM) might play an important role in supporting the needs of the future workforce and thus help to attract and retain millennials (Harris, 2016; Haynes, 2012a, 2012b).

### 1.1.1 Generations in the work environment

Today, four types of generations are active within the workplace: veterans, baby boomers, generation X and millennials (Hammill, 2005; Steelcase, 2009). The following theory explains that people who belong to a generation are “(...) individuals born and reared in the same historical era and are shaped by common formative experiences and therefore develop a unique identity” (Mannheim in Lyons, Schweitzer, Ng, & Kuron, 2012, p. 334). This unique identity can be assigned to the different generations and therefore contributes to the general characteristics of people that belong to a specific birth cohort. However, studies show inconsistencies about the birth cohort of these generations (Giancola, 2006). Due to the inconsistency of studies for assigning age groups to a specific generation, it is useful to indicate a common thread. During this study, the derived birth cohorts for veterans is 1922 – 1945, for baby boomers is 1946 – 1964, for generation X is 1965 – 1979 and for millennials is 1980 – 1998 (see Chapter 3).

Most of the time, the veterans are not taken into account when it comes to studies related to the workforce. The reason for leaving out the veterans is because of the proportion of veterans that belongs to the current workforce is very small (2,1%) (Statistics, 2016). The

percentage of millennials compared to the total population of the more developed countries (Europe, Northern America, Australia/New Zealand and Japan) was 19,8% in 2015 (United Nations Department of Economic and Social Affairs Population Division, 2015). The baby boom generation was the largest generation in 2015 with 25,6% (United Nations Department of Economic and Social Affairs Population Division, 2015). Despite the relatively small proportion of millennials that is present in the more developed countries, the percentage of millennials that belongs to the workforce in 2016 is relatively large (38,6%) (Statistics, 2016). The percentage of the other generations that belong to the workforce in 2016 are 31,3% for generation X and 26,7% for baby boomers (Statistics, 2016). The proportion millennials that belongs to the workforce increased remarkably over the last years. The percentage of millennials that belonged to the work force in 2010 was 25,3% (Statistics, 2015a). The numbers show that the millennials are a relatively new generation that is present in the work environment. The labour force will decline the upcoming years due to the retiring baby boomers (Statistics, 2015b). Therefore, the amount of potential future employees is decreasing. While striving for the best workers, companies are concerned that they will not be able to attract and retain the best employees (Global, 2016; PwC, 2011). This has resulted in the “war for talent”.

Studies show that the four generations express different characteristics and needs (Hammill, 2005; Murphy, 2007; Steelcase, 2009). It is important that companies take those differences into account when there is a shift of generations within the workplace. The needs and characteristics among the generations may vary depending on environmental aspects or industry, however they tend to endure over time and are applicable for most of the workforce (APD, 2016). There are at least three reasons for the importance of attracting and retaining employees that belong to the millennial generation. As already explained, this generation is relatively new to the workplace. Besides, the overall workforce is declining but companies are still seeking for the best potential employees to attract and retain. Secondly, millennials are a highly educated and well-skilled generation (CoreNet Global, 2015; Raines, 2002). Having those types of employees is crucial in the current global (knowledge) economy. Third, the way millennials use communication networks and easily gain knowledge brings more and innovative opportunities to the company (Brack, 2012; Johnson Controls, 2010). Since employees are the organisation’s most important asset, companies are striving to get the most out of this asset (Gorman et al., 2004; Rothe et al., 2012).

### **1.1.2 Importance of corporate real estate management**

Attracting and retaining a specific target audience can be done by ensuring that the workplace and management structure are supporting the needs of this audience (Harris, 2015). This is why corporations attempt to become the “Employer of choice” (Harvard Business Review, 2013). This means that they have “(...) carefully thought about creating an environment where people want to work (...)” (Roberts, 2011, p. 1). By doing so, employers reflect the needs of their preferred potential employees and eventually people will choose that company over others. However, this is not easy. Currently there is a mismatch between organisational models of companies and the nature of potential employees (Harvard Business Review, 2013). Therefore, becoming the employer of choice implies change for most companies (Harvard Business

Review, 2013). According to Harvard Business Review (2013), this change may be related to rethinking of hiring practices and restructuring the workplace. The workplace design and use are also important aspects when it comes to supporting the needs of employees and is therefore the focus of this study (Harris, 2015).

Corporate real estate (CRE) plays an important role in attracting and retaining workers (Khanna, van der Voordt, & Koppels, 2013; Lindholm & Leväinen, 2006). CRE refers to " (...) the real properties that house the productive or business activities of an organisation that owns or leases and, consequently, manages real estate incidental to its primary business objectives, which are not real estate" (CoreNet Global, 2015, p. 1). CRE is much more than managing real estate facilities for housing the business activities (CoreNet Global, 2015). The ultimate goal of CRE is to add value to the main business and to achieve optimal performance of the company (Haynes, 2012b). This goal can only be accomplished when there is optimal alignment between CRE and the organisational strategy (CoreNet Global, 2015; Haynes, 2012a). For example, a CRE strategy that is in alignment with the corporate branding strategy can create a positive image and can contribute a competitive advantage for attracting and retaining talented employees (de Chernatony, 2001).

CRE managers focus on managing people and their experience in the workplace (Harris, 2016). The CRE department is concerned with creating a workplace that supports the needs of employees in order to attract and retain them (Harvard Business Review, 2013; Haynes, 2011). Companies value the importance of attracting and retaining millennials. However, little is known about the relation between the needs of millennials and the support by CRE management (CREM) for those needs. Besides, CREM cannot only focus on millennials since there are also other generations present in the workplace that want to be heard. The differences in needs between millennials and other generations are also important for CRE decision-making. Most studies only focus on the physical aspects of the workplace in general (e.g. (Ted Moudis Associates, 2016; World Economic Forum, 2016), or on the characteristics and needs of millennials (e.g. (Deloitte Consulting LLP, 2005; Martin, 2005). Research about the relation between those subjects is limited. For example, studies about the physical workplace show that a more flexible way of working with flex workstations is increasingly being implemented in the work environment (Davis & Blass, 2007; G. Miller, 2014; Saurin, Ratcliffe, & Puybaraud, 2008). However, a relation with the needs of millennials is missing. The absence of studies that show the relation between the needs of millennials and the possible support by CREM might be caused by the relatively newness of the millennial generation within the work force.

Furthermore, studies that focus on the needs of millennials show inconsistencies and contradictions. Most of the conflicts are related to the preference of millennials to work in a more flexible way (Johnson Controls, 2010; Steelcase, 2009). Working in a flexible way means that employees can (partly) decide on where and when to work. However, studies show that millennials also value mentoring while performing work (Murphy, 2007; Myers & Sadaghiani, 2010). It is difficult for CREM to support those two needs at the same time since not being at the same workplace or not working at the same time might cause challenges for mentors to mentor their pupils. A work-life balance is also an aspect that millennials value (Hammill, 2005; PwC, 2011). However, one could ask whether the possibility for the employee of where



and when to work supports or wipes out the work-life balance (e.g. work-family conflict, (Greenhaus & Beutell, 1985)). Previous studies claim that another preference of the millennials is to have their own desk (CoreNet Global, 2015; Johnson Controls, 2010). This preference also counteracts with the freedom to work from any other place than from the office. Partly due to the costs it is difficult for CRE managers to on the one hand take care of flexible workstations and on the other hand arrange own desks for every employee. The limited studies about the relation between the needs of millennials and the physical workplace aspects that support their needs, cause ignorance and uncertainty for CREM on how to participate in attracting and retaining millennials. To be able to contribute to attracting and retaining millennials, it should be clear which physical workplace aspects CREM should manage in order to create a work environment that supports the needs of millennials.

## 1.2 Objective and research questions

### 1.2.1 Objective

The objective of this study can be derived from the background that is explained in Section 1.1. The limited studies about the relation between the workplace needs of millennials and the physical workplace aspects that support those workplace needs, causes ignorance and uncertainty for CREM on how to participate in attracting and retaining millennials. Therefore, the aim of this study is:

To provide corporate real estate management with insight in how to attract and retain millennials

### 1.2.2 Research questions

The research question that follows from the objective, is:

Which physical workplace aspects contribute to attracting and retaining millennials?

Sub questions are drafted to be able to answer the research question:

1. What is corporate real estate management and which physical workplace aspects should they manage?
2. What are the characteristics and workplace needs of millennials?
3. Which physical workplace aspects are relevant, and how much are they valued to support the workplace needs of millennials?
4. Do other generations differ in workplace needs and prefer different physical workplace aspects to support workplace needs?

## 1.3 Relevance

### 1.3.1 Scientific relevance

The available literature about the needs of millennials and the support of those needs by CREM, in order to attract and retain millennials, is limited. Most studies focus on the one hand on the physical aspects of the workplace in general, or on the other hand on the

characteristics and needs of millennials. Besides, studies that focus on the millennial generation and its needs and characteristics show inconsistencies and contradictions. Prior study that covers the inclusion of the needs of millennials and the potential contribution by CREM with the aim of attracting and retaining millennials is very limited, and therefore this study will try to cover this research gap. The scientific relevance of this thesis is to increase the knowledge and understanding of the needs of millennials and the related contribution of CREM in order to attract and retain millennials.

### **1.3.2 Practical relevance**

This research gives CRE managers more insight into the workplace needs of millennials and the extent to which they differ from other generations (baby boomers and generation X). Besides, this research informs CRE managers and developers and owners of office buildings about the implementation of physical workplace aspects that support the needs of millennials. Based on those insights and information, CRE managers and building developers and owners can make more thoughtful decisions about the actions they chose to perform in order to contribute to attracting and retaining millennials.

The activities that CREM performs can have consequences for the whole organisation. This is related to the value that CREM can add to a company (Dewulf et al., 2000; Lindholm et al., 2006). In the case that CREM contributes to the attraction and retention of (talented) millennials, it might be beneficial for the overall performance of the organisation. Therefore, this study is also relevant for organisations in general that are practicing CREM.

## **1.4 Research approach**

This is a quantitative study that contains both descriptive research and explorative research. The descriptive phase of this study includes literature study. During this literature study, the available literature that is related to the subject of this research is reviewed and evaluated. Moreover, the variables that are used as input for the explorative phase are selected and explained by means of the literature study. Next, hypotheses are drafted in order to support the process of answering the sub questions. During the explorative phase of this study a survey is conducted in order to collect data for testing the hypotheses. This survey is conducted among knowledge workers in The Netherlands. Therefore, the analysed data and the results of this study refer to the situation of The Netherlands. Subsequently, the data is prepared and analysed in order to test the hypotheses. Various statistical tests are used for preparing and analysing the data. The statistical tests that are applied are a factor analysis (Principal Component Analysis), Pearson product-moment correlation test and the one-way analysis of variance (ANOVA). Finally, the results of the analyses are interpreted and conclusions and recommendations are given.

This study consists of four phases and seven chapters. Figure 1.1 illustrates the structure of this study. The first phase is the initial phase and consists of Chapter 1. In this chapter, the background, objective, research questions, relevance and research approach are formulated. The second phase is the descriptive research phase. The first two research questions are answered by means of literature study in Chapter 2 and Chapter 3. The third research question is answered partly by means of the literature study. The quantitative research is conducted

during the explorative phase. Chapter 4 first explains the research approach and instruments for measurement. In Chapter 5 the data is prepared and described. The data is analysed and sub questions 3 and 4 are answered in Chapter 6. Chapter 7 is located in the final phase whereby conclusions and recommendations are given.

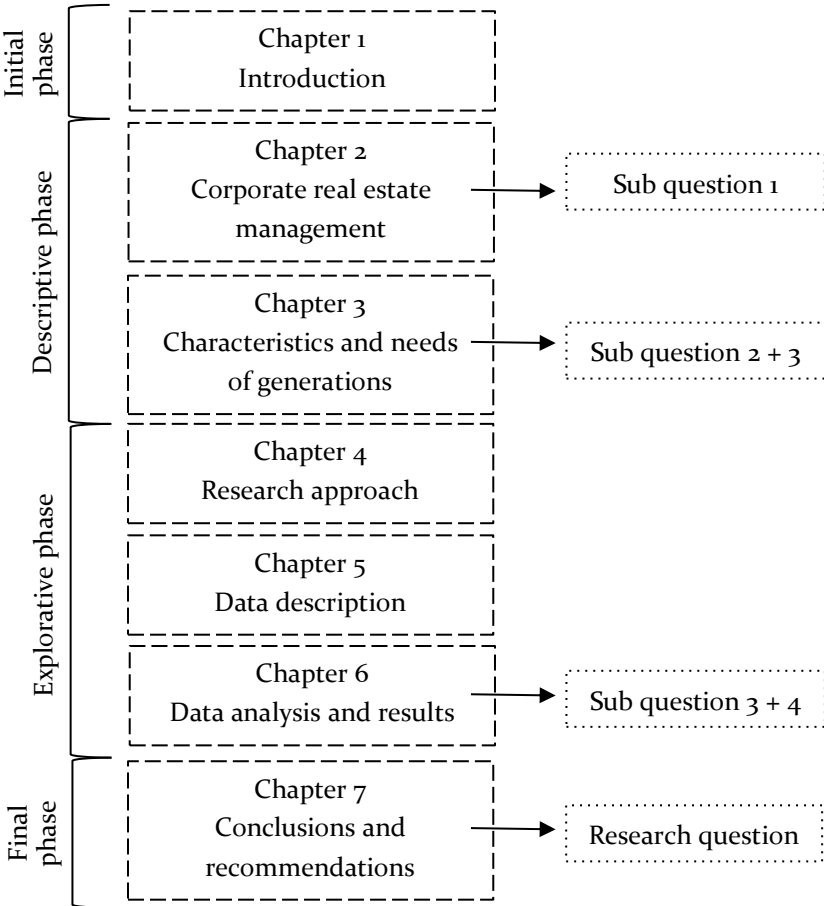


Figure 1.1 Structure study

# 2. Corporate real estate management

This chapter introduces corporate real estate management (CREM). First, the definition of CREM, a brief overview of the evolution of CREM and the activities that CREM performs are explained. Next, the strategic function of CREM and the related added value are explained. The contribution of CREM in attracting and retaining employees is also explained. Subsequently, the physical workplace aspects that CREM can implement and facilitate are shown. This chapter ends with a conclusion and an answer to the first sub question: What is corporate real estate management and which physical workplace aspects should they manage?

## 2.1 Definition

Corporate real estate (CRE) is related to the housing of business activities of an organisation with a core business that does not origin from a profession in real estate (CoreNet Global, 2015). The latter determines the distinction between commercial and corporate real estate since the core business of commercial real estate can be real estate (CoreNet Global, 2015). CRE can be both leased and owned by the organisation and can contain a broad scope of real estate property types (CoreNet Global, 2015). Examples are office buildings, manufacturing plants and different kinds of infrastructure such as parking space. The profession of CRE can be described as:

The management of a corporation’s real estate portfolio by aligning the portfolio and services to the needs of the core business (processes), in order to obtain maximum added value for the businesses and to contribute optimally to the overall performance of the corporation. (Dewulf et al., 2000, p. 32)

## 2.2 The evolution of CREM

CREM has to go through an evolution before it can perform on a strategic position. Krumm (2001) describes the tasks of CREM from the years where the first characteristics of CREM were noticed, until now. The industrial revolution led to the need for buildings that were especially designed for the accommodation of industrial activities. Due to the enormous economic and industrial growth, the need for those type of buildings increased and managerial attention for real estate emerged. Taking care of the accommodation of those industrial activities was one of the many responsibilities of the owner of the organisation. Later, the separated role of CRE officer was implemented.

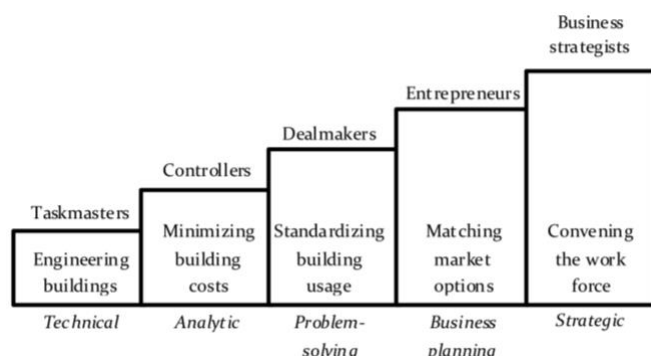


Figure 2.1 Corporate real estate competency shifts. Joroff in Dewulf et al. (2000)

This traditional role was practiced within companies for decades. The real estate officer had to find facilities based on the requirements of the company. He had to negotiate for the best price, manage the space and dispose the facility when it was no longer needed by the company (Gibler, Black, & Moon, 2002). The real estate officer had no participation in the first stages of this real estate process where requirements and goals are established.

In the 1990s, CREM started to professionalise and Joroff mentioned CREM as one of the five resources next to capital, human resources, information and technology (Joroff et al. in Dewulf et al., 2000). An evolution started to develop CREM to the level of business strategists in more and more companies (Appel-Meulenbroek, Brown, & Ramakers, 2010). The steps that CREM had to take to grow from a technical resource to a strategic resource are established by Joroff (Joroff et al. in Dewulf et al., 2000) and are displayed in Figure 2.1. By climbing the ladder, CREM can eventually add value to the core business. CREM fulfils different roles while being located in different stages. Dewulf et al. (2000) describes the role and the related tasks for the CRE unit for every step of the ladder. They state that the model is additive, this means that a business strategist also performs the activities that belong to the previous levels. The taskmasters are located at the first step and have a technical focus. The specific task is to engineer buildings. The controllers have an analytic focus and search for information about their real estate in order to carry out control and minimize the building costs. The dealmakers attempt to solve real estate problems in a way that is financial beneficial for the business units. The entrepreneurs try to match real estate with the business plans of the company and watch the market options. The business strategists anticipate strategically on business trends and monitor the impact of those trends. When CREM belongs to this stage, it contributes to the value of the company as a whole by focusing on the company's mission.

These days, CREM is still in charge with the classical tasks of acquiring, maintaining and disposing real estate throughout its life cycle as a facility (CoreNet Global, 2015). Nevertheless, CREM tends to shift the understanding of real estate as a cost centre to the understanding of real estate as a value for the whole organisation (CoreNet Global, 2015). This shift contributed to the changing focus of CREM from 'managing buildings' to the more soft skilled activities of 'managing people' (Harris, 2016). Managing people and their experience in the workplace entails various challenges for CREM. For example, the CRE manager has to identify the needs and preferences of office workers to make CRE and its services attractive for (potential) employees (Joy & Haynes, 2011). Taking the management of people into account, CREM is increasingly becoming a strategic business management function rather than a technical control function (Harris, 2016). Developments that have affected the way of how organisations manage their real estate, can contribute to the energy costs, tightened capital markets and the "war for talent" (Kämpf-Dern & Pfnür, 2014). By interpreting CREM as a corporate resource, CREM can support the organisation as a whole while anticipating on certain situations.

These days, CREM concerns four different focus fields that are presented in Figure 2.2: general management, facility management, asset management and cost control. Figure 2.2 shows the extreme possibility where CREM is balancing perfectly in the middle of the focus fields that are important for managing the real estate portfolio of a corporation (Dewulf et al., 2000). The increase of CREM as a strategic business management function means a gradual shift to the upper half of the quadrant in Figure 2.2 (Dewulf et al., 2000).

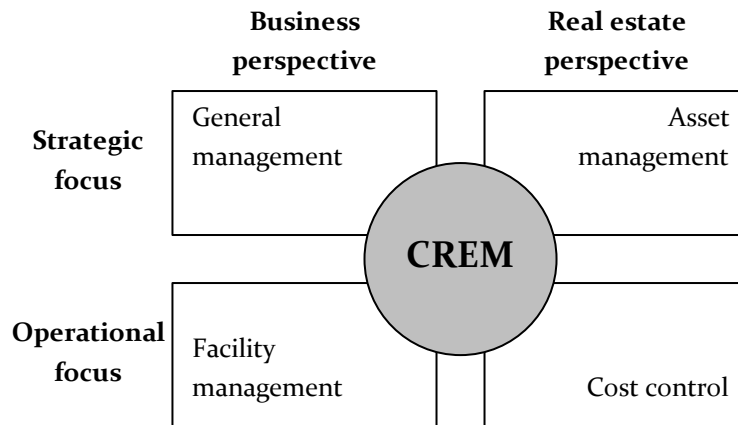


Figure 2.2 Balancing perspectives on managing a corporation’s real estate portfolio. Dewulf, Krumm, and De Jonge (2000)

### 2.3 CREM activities

CRE activities that take place in an organisation that has reached the highest level of the model of Joroff (Figure 2.1), can be differentiated into activities that belong to the core, support or management process level (Rüegg-Stürm, J. in Kämpf-Dern & Pfnür, 2014). The St. Gallen management model in Figure 2.3 illustrates the three process levels.

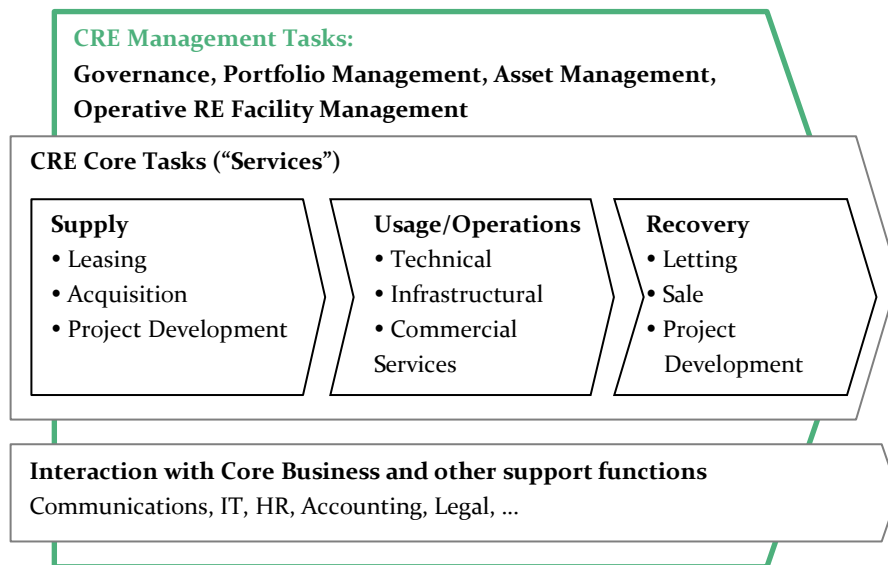


Figure 2.3 CRE related activities, to St. Gallen management model. Kämpf-Dern and Pfnür (2014)

The activities that belong to core processes generate a product or service and include contact with the client. Activities that are related to the support process facilitate other processes that are not directly involved with the product or service that is produced by core activities. Examples are IT, HR and accounting. Activities that are executed during the management process are concerned with controlling the organisation and fulfilling its purpose.

Beneath this umbrella of processes are, next to the activities in the core process level of the St. Gallen management model, particular CREM activities positioned. Bontekoning et al. (2016) have compiled a model of those CREM activities. They derived a list of 31 unique activities out

of eight studies including Epley (2004), Matsham and Heywood (2012) and Kämpf-Dern and Pfnür (2014). Next, they assigned the activities to three levels of CREM that are described by Van Driel (Van Driel in Bontekoning et al., 2016). Those three levels are strategic, tactical and operational and relate respectively to portfolio management, asset management and property management. The strategic level refers to decision-making that influences the whole real estate portfolio of a company. Subsequently, the policy of the tactical level is derived from the strategic level. This level focuses on the whole portfolio. Nevertheless, it also takes specific properties into account when making decisions. Property management focuses on facility management and specific properties. The real estate activities in core process level defined by Kämpf-Dern and Pfnür (2014) in Figure 2.3, belong to the operational level.

Bontekoning et al. (2016) not only assign activities to the strategic, tactical and operational level, but also to the general management and support functions in order to create an organisational structure. Besides, this way all CREM activities that have been established can be incorporated into the model. The CREM activities and corresponding levels are shown in Figure 2.4.

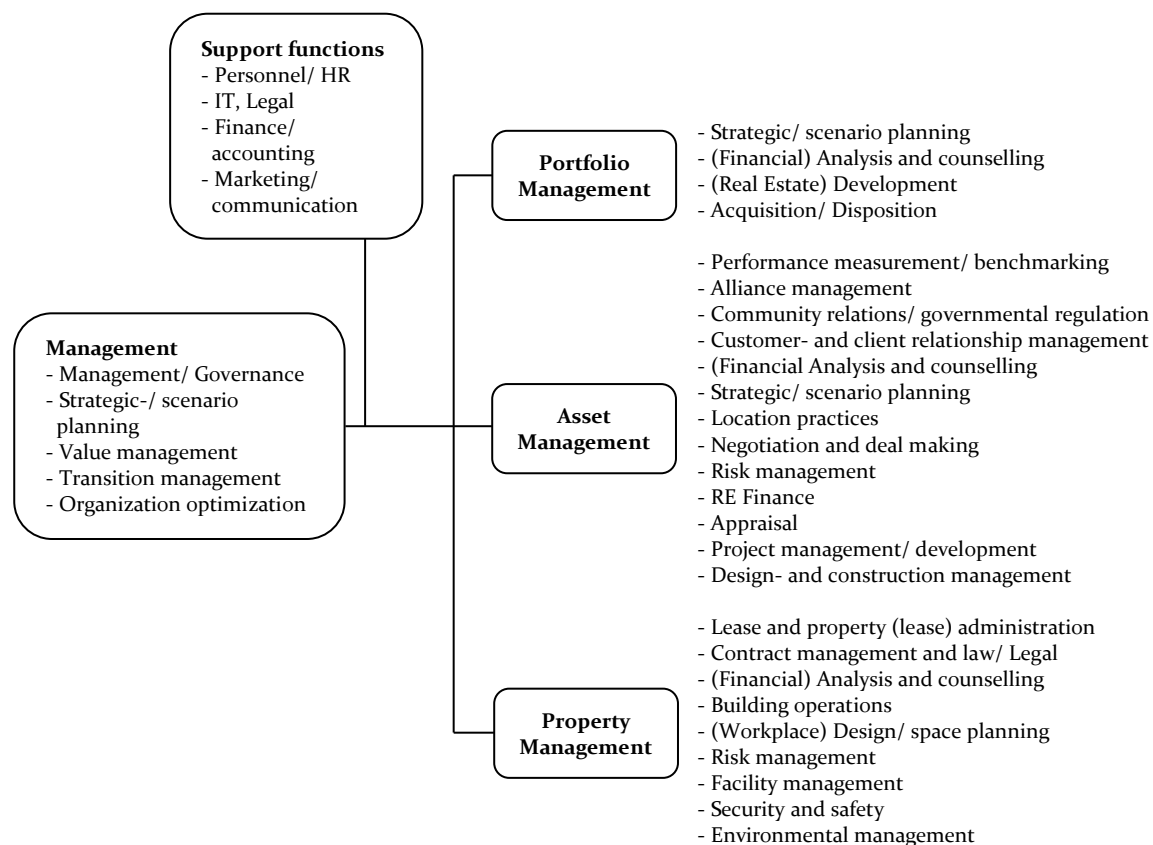


Figure 2.4 CREM activities to levels of CREM and management and support. Bontekoning, Appel-Meulenbroek, Smeets, and Ramakers (2016)

Some activities are being executed on more than one level. Those activities are strategic- / scenario planning (management, portfolio management and asset management), financial analysis and counselling (portfolio management, asset management and property management) and risk management (asset management and property management). Bontekoning et al. (2016) found that in the eight sources that were used, some of the activities



were mentioned more times than others. The following list shows the activities that are mentioned in more than three sources that were used to create the model in Figure 2.4. Those activities are called the most 'prominent' CREM activities. The number in parentheses indicates the number of sources in which the activity is mentioned:

- Facility management (7)
- (Real estate) development (6)
- Leasing and property (lease) administration (5)
- Acquisition and disposition (5)
- Strategic planning / scenario planning (5)
- IT (4)
- Project management / -development (4)

The first activity, facility management, plays a key role in managing facility resources, supporting services and managing the workspaces in order to support the core business for both long and short term (Chotipanich, 2004). Sometimes, adjustments might be needed in order to settle in a building that matches the company's requirements. Therefore, (real estate) development can execute construction work to buildings when needed. Leasing and property (lease) administration includes the control by means of administration of all the buildings that are occupied by the company. The fourth activity, acquisition and disposition, plays an important role in the transaction of real properties. Some buildings might have to be acquired, and some might have to be disposed. This includes various activities such as conducting market research in order to acquire the right building. The use of corporate real estate as a strategic resource contributes to the company as a whole by adding value to the core business. Paragraph 2.4 elaborates on the strategic use of real estate. Scenario planning is an important enabler for strategic planning since the future can change and therefore different strategic scenarios are needed. IT is an abbreviation for Information Technology. This includes the management of all kinds of technical applications in the buildings such as climate control and communication systems. Brugmans (2017) found that the following technological applications cause the highest increase in employee satisfaction within the building: automatically controlling temperature and air quality, depending on the user's preference; automatically adapting adjustable parts of the workspace, depending on the user's requirements and a smart coffee machine that know the preference of every employee within the workplace. Project management or development includes corporate real estate related changes that do not need execution of construction work. An example is managing the movement of a specific team to a new location. This list with the most prominent activities of Bontekoning et al. (2016) shows no direct focus on 'managing people' that is becoming more important in the world of CREM (Harris, 2016).

The study of Gibler et al. (2002) focused on the activities of CREM related to organisations all over the world. They conducted research among different CRE departments across Australia, Hong Kong, the United Kingdom and the United States. Respondents were asked to rank the most crucial activities for CREM in the future. The results show much overlap with the activities that are described by Bontekoning et al. (2016). However, one of the



activities in the top five of the most crucial activities for CREM in the future shows a relation to 'managing people': customer relationship management. This encompasses the relation of CREM and the users of CRE (Gibler et al., 2002). The customers can be seen as employees that work for a certain company that asks CREM to support them with their activities that take place in the work environment. The relation not only includes direct interactional aspects such as the facilitation of services, but also includes the response to future trends, and needs and requirements of customers (Gibler et al., 2002). This study of Gibler et al. (2002) shows a specific focus on strategic activities. Therefore, the more soft facet of 'managing people' is incorporated. A few years after this study of Gibler et al. (2002), Gibler elaborates on the strategic focus and the management of people in the study of Lindholm et al. (2006). This study is addressed in Paragraph 2.4.1 .

It can be argued that most studies related to CREM have not taken the changing focus to 'managing people' fully into account yet. However, since this study is strongly related to employees and how CRE can support their needs, it is useful to indicate the CREM activities that more directly affect the employees. Hereby, the activities that are mentioned in the studies of Bontekoning et al. (2016) and Gibler et al. (2002) are all considered on whether they relate to 'managing people'. Due to the extensive list of activities, this section describes the activities that are considered to relate to managing people. Only two activities that are mentioned in the lists with the most important overall CREM activities that are compiled by Bontekoning et al. (2016) and Gibler et al. (2002), are related to managing people. Those activities are 'customer relationship management' and 'facility management'. Those two activities are already explained. Furthermore, the activity of 'marketing/ communication' is important for showing the identity of a company to their clients and (potential) employees. CRE can play a key role in this identification. For example, if an organisation wants to reflect their culture of openness, the use of glass and open spaces in their building might be suitable. Security and safety refers to the feeling of safety of employees at work. This can be interpreted for different types of safety, for example the feel of safety when people have to exchange sensitive information to other companies or the feel of safety within the collegial atmosphere. The place where the company is located can be related to the activity of location practices. A company can be located in a rural or urban area, near a railway or highway, and so on. For example, the way of commuting for employees is closely related to the location of where the organisation is housed. The scope for building operations is narrower than for location practices. Building operations look at CRE from a building level without taking the surrounding or the whole portfolio of a company into account. This activity takes for example the type of building façade and the office climate such as the lighting and the air quality in which employees work every day into account. (Workplace) Design management/ space planning has a narrower scope than building operations. This discipline includes CRE practices that perform on the level of the workplace of employees. An example is the consideration of the most optimal size of the desk when it comes to performing certain activities in the workplace. The following CREM activities are described and are considered to relate to managing people:

- Customer relationship management
- Facility management
- Marketing/ communication
- Security and safety management
- Location practices
- Building operations
- (Workplace) Design management/ space planning

When it comes to skills in order to execute CREM tasks, real estate managers believe that strategic and management skills will be more important for the future success of CRE than the more narrow skills such as technical and financial skills (Gibler et al., 2002; Kamath & Horton, 2011). This shift corresponds with the more strategic activities that belong to CREM. In addition, when CRE managers have the ambition of taking CREM to the strategic level, they have to develop their communication skills in order to explain the top executives of the company about how corporate real estate can contribute to the company's profitability and success (Gibler et al., 2002).

## 2.4 Strategic alignment

The primary goal of CREM is to “ (...) enhance the performance of the client organisation through the alignment of the corporate real estate strategy with the organisational strategy” (Haynes, 2012a, p. 2). Hereby, it is important that the CRE manager is already involved during the early strategic thinking and planning processes at the company's highest policy level (Appel-Meulenbroek et al., 2010). As a result, CREM can act as a strategic management discipline that works across the entire organisation. Besides, the strategic alignment with other businesses can be more optimal when CREM has a closer relation with other business units (e.g. human resources and IT) (CoreNet Global, 2015). Eventually, CRE can deliver enhanced performance and added value for the client organisation. The latter is only the case when optimum alignment is achieved between the CRE strategy and the organisational strategy (Haynes, 2012a). To ensure that the CRE strategy is optimal, the office occupiers' needs and preferences should be clear and taken into account (Niemi & Lindholm, 2010).

### 2.4.1 Added value

In the situation that CRE adds more value to the core business, CREM moves towards the upper half of the model in Figure 2.2. The first study that has defined CRE strategies was the study of Nourse and Roulac (1993). Not many years later in 1996, a model with CRE strategies was also developed by De Jonge (De Jonge in Scheffer, Singer, & Van Meerwijk, 2006). Lindholm et al. (2006) combined both models. Appel-Meulenbroek et al. (2010) analysed different models about CRE strategies and added value, and concluded that the model of Lindholm et al. (2006) is the most actual and suitable model (see Figure 2.5).

The model illustrates how seven real estate strategies add value to the core business. A corporation can choose among those seven real estate strategies in order to support one or both main corporate strategies of revenue growth and profitability growth that increase the shareholder's value. However, the shareholder is only one stakeholder. Research indicates that

the focus of economic value has changed towards a more holistic value concept and includes more stakeholders (Jensen et al., 2012). De Vries, de Jonge, and van der Voordt (2008) defined added value as the quantitative contribution by means of productivity, profitability and competitive advantage for multiple stakeholders. Their study takes the following stakeholders into account: owners, suppliers, government, clients, employees and neighbours.

The added value that is derived from the seven real estate strategies of Lindholm et al. (2006), can be assigned to added exchange value or added use value (Haynes & Appel-Meulenbroek, 2014). The former focuses on cost and the latter focuses on the output. This distinction is also presented by the way CREM is able to add value. The field of expertise of added exchange value belongs fully to CREM and concerns the strategies 'Reducing costs', 'Increasing the value of assets' and 'Increasing flexibility'. Added use value can be delivered by 'Increasing innovation', 'Increasing employee satisfaction', 'Increasing productivity' and 'Promoting marketing and sales'. To be able to deliver added use value, it is necessary to tune with other business functions such as human resources, research & development or marketing & sales. This can make it harder to prove its relevance to the core business.

As shown in Figure 2.5, 'Increase employee satisfaction' is an important real estate strategy since it adds value to the two main corporate strategies: revenue growth and profitability growth. Since 'Increase employee satisfaction' is an added use value, CREM might have to work together with other business functions in order to achieve added value. In a more recent study of Van der Voordt (2016) in which the added value of CRE is being prioritised, the user satisfaction seems also important. The study describes a relation between satisfaction and the attraction and retention of employees. Satisfaction might especially score high on the list of priorities related to added value for the corporation in times of shortages within the workforce. Also other research illustrates a strong relation between the increase of satisfaction and the importance of the physical workplace for attracting and retaining employees (Lindholm & Leväinen, 2006). Likewise, Lindholm et al. (2006) suggest that the workplace plays a big role in recruiting and retaining the world-class workforce that is important for adding value to the entire corporation.

After the first well-known studies of Nourse and Roulac (1993), De Jonge (De Jonge in Scheffer et al., 2006) and Lindholm et al. (2006) who defined CRE strategies, other studies also performed research regarding the added value of various CRE strategies derived by CREM. Those studies are analysed and summarised in a table by Riratanaphong (2014). He used the six perspectives of business performance regarding the balanced scorecard (BSC) concept that Bradley (2002) has classified:

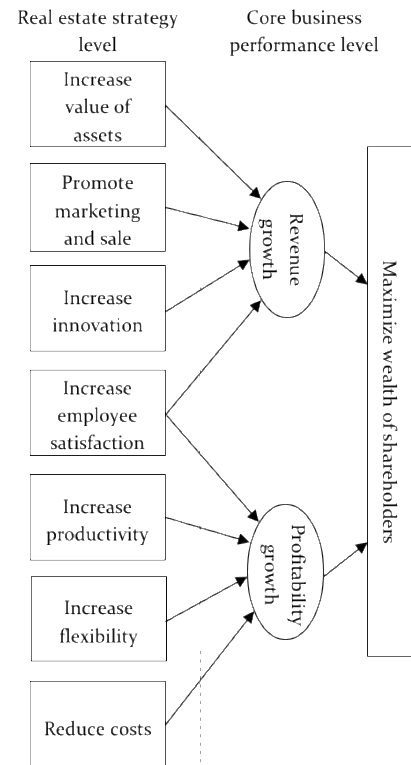


Figure 2.5 How real estate decisions support strategies and core objectives. Lindholm, Gibler, and Leväinen (2006)

- 1) Stakeholder perception (e.g. customer satisfaction and loyalty, community sentiment)
- 2) Financial health (e.g. economic or market value added)
- 3) Organisational development (e.g. innovation quality and quantity, cultural factors, team formation, new process introduction rate)
- 4) Productivity (e.g. space utilisation, process speed and quality, waste levels)
- 5) Environmental responsibility (e.g. transport-related sustainability effects)
- 6) Cost efficiency (e.g. total occupancy cost related to revenue generation)

Those perspectives are linked to different types of added value and the related CREM strategy that have been researched by various studies. Those links are represented in Table 2.1.

All authors express that cost efficiency and flexibility can add value to the core business. They imply this by using the same strategies: an increase of flexibility and a reduction of costs. The increase of flexibility is located under the perspective 'organisational development' and can be accomplished by the implementation of flexible working hours and places. Flexibility can also be implemented on building-level by means of applying a mix of owning, renting and leasing real properties or multi-user buildings. A reduction of costs can be achieved by a more efficient use of workplaces and controlling costs. A remarkable strategy is mentioned by Van Meel, Martens, and Van Ree (2010) since this strategy is strongly related to the subject of this master thesis. They argue that 'attract and retain staff' is a strategy that can add value in order to support the organisation as a whole. This strategy is assigned to the stakeholder perception perspective of business performance in Table 2.1 Van Meel et al. (2010) explain that in essence, creating an attractive work environment has to do with providing healthy and comfortable workplaces. The workplace has to be properly lit, well ventilated and ergonomically designed. However, to keep employees happy, the more psychological and behavioural needs are important too and have to match the company's value. The company has to provide the employees with comfortable and attractive surroundings that show them that they are appreciated and valued by the management. Besides, it helps to make a positive impression on job applicants.

Other studies that are excluded from Table 2.1 also assign the subject of this study, attracting and retaining of (talented) employees, as a specific strategy to create added value for the core business. In 1999 already, Roulac (Roulac in Roulac et al., 2003) mentioned 'attracting and retaining outstanding people' as a contribution that superior corporate property strategy can make to a corporation's competitive advantage. A recent study of CBRE (CBRE, 2017), by which the corresponding survey covered 131 companies with headquarters in Europe, found that the top 3 most applied CRE strategy elements were cost-reduction (90%), business integration/ alignment with enterprise level goals (89%) and talent attraction and development to support the wider business (77%). This study shows that cost-reduction is still valued as the most important CRE strategy. However, it is remarkable that currently a relatively high amount of companies strongly value the importance of attracting talent.

Table 2.1

Lists with strategies for CREM from different authors

Bradley (2002)	Nourse and Roulac (1993)	De Jonge (1996)	Lindholm et al. (2006)	Van Meel et al. (2010)	Den Heijer (2011)	Van der Zwart (2012)	Jensen and Katthamart (2012)
1. Stakeholder perception (employee satisfaction)	Promote Human Resources objectives	Not mentioned	Increasing employee satisfaction	Attract and retain staff	Supporting user activities Increase user satisfaction Improving quality of place	Increase user satisfaction	Satisfaction
2. Financial health	Capture the real estate value creation of business	Increase of value	Increasing the value of assets	Not mentioned	Increase real estate value	Improve finance position	Not mentioned
3. Organisational development	Flexibility	Increase of flexibility	Increasing flexibility	Increase flexibility	Increase flexibility	Improve flexibility	Adaptation
	Facilitate managerial process and knowledge work	Changing the culture	Not mentioned	Encourage interaction Support cultural change	Supporting culture Stimulating collaboration	Improve culture	Culture
	Promote marketing message Promote sales & selling process	PR and marketing	Promoting marketing and sales	Express the brand	Supporting image	Support image	Not mentioned
	Facilitate and control production, operations, service delivery	Risk control	Not mentioned	Not mentioned	Controlling risk	Controlling risk	Reliability
	Not mentioned	Not mentioned	Increasing innovation	Stimulate creativity	Stimulating creativity	Increase innovation	Not mentioned
4. Productivity	Not mentioned	Increasing productivity	Increasing productivity	Enhance productivity	Supporting user activities	Improve productivity	Productivity
5. Environmental responsibility	Not mentioned	Not mentioned	Not mentioned	Reduce environmental impact	Reducing the footprint	Not mentioned	Environmental
6. Cost efficiency	Occupancy cost minimisation	Cost reduction	Reducing costs	Reduce costs	Decreasing costs	Reduce costs	Cost

Riratanaphong (2014)

## 2.5 CREM related to attracting and retaining

Research shows a clear relation between the role of CREM and attracting and retaining employees (Harris, 2015; Haynes, 2012a, 2012b). The CRE department is concerned with creating a workplace that supports the needs of employees in order to attract and retain them (Harvard Business Review, 2013; Haynes, 2011). Besides researchers, companies are aware that attracting and retaining the best and brightest employees is important in today's knowledge-based economy (Harvard Business Review, 2013). Corporations are competing by means of skills and talents of their employees and realise that this way they achieve better competitive advantage (Smith in Phillips & Roper, 2009). Those developments have made them realise that

having the right employees is one of the key assets for an organisation (Rothe et al., 2012). This is why corporations attempt to be the 'Employer of choice'. In order to become an employer of choice, corporations thoughtfully create a work environment in which people want to work (Roberts, 2011). This way, (potential) employees choose this company over others. Especially since people spend much time of their lives at their workplace, it is important that organisations provide an environment in which people enjoy being and that makes them feel comfortable, energised and valued (Earle, 2003). Companies actively take measures to attract and retain staff (Harvard Business Review, 2013). However, those measures are not specifically tuned to millennials because most companies assume that all employees would like the respective measures and therefore attempt to implement them (Earle, 2003; Eversole, Venneberg, & Crowder, 2012).

A Global Workforce Study (Roberts, 2011) composed strategies that are important to implement in a company for being an employer of choice, including:

1) Offering meaningful work

Employees prefer a company that aligns with their personal value. Besides, they want to know where they fit and add input into the company's vision.

2) Providing training and development

The best employers provide training and development that enhances the skills of employees and groom them for future roles. Besides, employees want to see a career path.

3) Rewarding employees with fair and competitive compensation and benefits

Compensation is the basic foundation of a company. Hereby, it is important that benefit programs align with the company's demographics and desires.

4) Inspiring employees with great managers and leaders

Companies should take time to invest in hiring and training great managers because, in return, they develop great employees.

5) Creating the culture you want

At employers of choice, management takes the lead and builds the culture it wants. Make sure the culture responds to the needs of the employees in order to satisfy employees and generate good results.

Those five strategies directly correlate with the employee's satisfaction (Roberts, 2011). Other studies also propose strategies that are important for being the employer of choice. Those strategies show similarities with the workforce related strategies that Roberts (2011) proposed. However, the other studies mention three complementary strategies that are more or less tangible and related to the workplace:

- Implement flexibility (e.g. flexible workplace, flexible working hours) (Harvard Business Review, 2013; Murphy, 2007; Roy, 2008; Steelcase, 2009)
- Use of technology (Roy, 2008; Steelcase, 2009)
- Offering facilities (e.g. gym, restaurant) (Murphy, 2007; Roy, 2008)



Just like the main difference between the use value and exchange value that are mentioned in Paragraph 2.4.1, some strategies that are useful to be employer of choice can be executed by CREM and some strategies need a collaboration of CREM with other business units. The first four strategies that are mentioned by Roberts (2011) mostly need input by other business units instead of CREM. The fifth strategy can be supported by CREM and is also presented in Table 2.1 that shows the list with CREM strategies. Organisations increasingly value agility and connectivity and use the workplace as a communication medium for messages to staff and visitors about the values and culture of the organisation, which is also important for attracting and retaining staff (Khanna et al., 2013). For example, if an organisation wants to reflect power and success, settling in a skyscraper might be fitting (Khanna et al., 2013). The strategies 'Implement flexibility', 'Use of technology', and 'Offering facilities' that are mentioned by other studies can be fully executed by CREM. The lack of mentioning those strategies that are related to CREM by a study such as the Global Workforce Study, emphasises that the link between CREM and the attraction and retention of employees by becoming the employer of choice is still missing.

### **2.5.1 CREM aspects**

In order to attract and retain employees, CREM is concerned with facilitating a work environment that supports the needs of (future) employees (Harvard Business Review, 2013; Haynes, 2011). Therefore, CREM has to carefully think about the environment they want to create in their company and implement this in the workplace (Roberts, 2011). Leesman (2016) launched the Leesman Index Survey that has been deployed among 2,074 offices including more than 260,000 respondents across 67 countries. This index is the largest independent database that includes effectiveness data about the workplace. The workplaces that are involved in the Leesman Index Survey are mostly offices applicable for knowledge workers and some educational environments (Leesman Amsterdam, 2017).

In the Leesman Index, Leesman (2016) mentions the features and facilities that CREM can implement and facilitate. In total, 32 features and facilities were mentioned. Van Susante (2015) conducted a factor analysis among a subset of the Leesman database of 43,791 respondents about the importance of features and facilities in the dataset. By means of the factor analysis, Van Susante (2015) divided the 32 physical workplace aspects among eight categories. The categories he created and the sub aspects of each category are shown in Table 2.2.

Table 2.2 shows the categories and sub aspects that CREM can implement and facilitate and are important to create an environment that supports the needs of employees (Leesman, 2016). Therefore, those physical workplace aspects are taken into account during the research in chapter 4, 5 and 6 on how to supports the needs of millennials.

Table 2.2  
Categories and aspects CREM can implement and facilitate

<b>general office facilities</b>	<b>seclusion rooms</b>
health and safety provisions	small meeting rooms
security	large meeting rooms
mail & post-room services	desk/ room booking systems
access (e.g. lifts, stairways, ramps etc.)	quiet rooms for working alone or in pairs
internal signage	informal work areas/ break-out zones
reception areas	variety of different types of workspace
hospitality services	<b>access (physical &amp; digital)</b>
general tidiness	in-office network connectivity
atriums and communal areas	parking (car, motorbike or bicycle)
general cleanliness	audio-visual equipment
<b>office climate &amp; decor</b>	remote access to work files or network
air quality	guest/ visitors network access
office lighting	accessibility of colleagues
natural light	<b>ICT</b>
noise levels	computing equipment
temperature control	telephone equipment
plants & greenery	printing/ copying/ scanning equipment
general décor	<b>hospitality</b>
people walking past your desk	restaurant/ canteen
art or photography	tea, coffee and other refreshment facilities
<b>storage &amp; privacy</b>	leisure facilities onsite or nearby
ability to personalise my workstation	washroom facilities/ showers
shared storage	<b>desk and chair</b>
space between work-settings	chair
dividers	desk
archive storage	
personal storage	

Van Susante (2015)

## 2.6 Conclusion

Within Chapter 2, the first sub question has been answered:

1. What is corporate real estate management and which physical workplace aspects should they manage?

CREM can be related to the housing of business activities of an organisation with a core business that is different from real estate. During the last years, CREM has been shifting from ‘managing buildings’ to ‘managing people’. In general, it can be concluded that most CREM departments are still evolving from being a technical resource towards being a strategic resource. Eventually, value can be added to the core business when the CRE strategy and the corporate strategy are in alignment. The ‘reduction of costs’ and ‘increase of flexibility’ are important CRE strategies. It is necessary to take the business’ and office occupiers’ needs and preferences into account to ensure that the CRE strategy is optimal in order to contribute to



the overall performance of the company. Research indicates and companies notice that CREM is related to employee satisfaction and the attraction and retention of employees.

The activities that CREM performs can be assigned to the strategic level, the tactical level and the operational level. Different studies show different activities. Since this study is strongly related to employees and on how CREM can supports their needs, a list of CREM activities is compiled that affects employees more directly and is related to ‘managing people’:

- Customer relationship management
- Facility management
- Marketing/ communication
- Security and safety management
- Location practices
- Building operations
- (Workplace) Design management/ space planning

In order to create a work environment that supports the needs of (future) employees, CREM can implement and facilitate the following categories of physical workplace aspects:

- General office facilities
- Office climate and decor
- Storage and privacy
- Seclusion rooms
- Access (physical and digital)
- ICT and equipment
- Hospitality
- Desk and chair

These categories of physical workplace aspects can be implemented in an organisation by means of the activities that CREM performs. Chapter 3 elaborates on the needs of employees. The relation between those needs and the support by CREM is also explained in the next chapter. This support by CREM includes the presence of the physical workplace aspects in the work environment that CREM can implement and facilitate. The activities that have to be performed by CREM in order to implement the physical workplace aspects are also addressed in Chapter 3.

# 3. Characteristics and needs of generations

This chapter contains the literature study about generations, whereby the millennial generation is addressed more extensively. The first section of this chapter explains the term generations, the corresponding birth cohorts and the work force composition. Next, the characteristics and workplace needs of generations are illustrated. The workplace needs of millennials are extracted and the physical workplace aspects for supporting those workplace needs are explained. This chapter ends with a conclusion and answers the second sub question: What are the characteristics and workplace needs of millennials? The third sub question is answered partly: Which physical workplace aspects are relevant, and how much are they valued to support the workplace needs of millennials?

## 3.1 Generations

Currently, four types of generations are present in the workplace: veterans, baby boomers, generation X and millennials. The distinction between those four generations is used in a variety of studies (Giancola, 2006; Hammill, 2005; Haynes, 2011; Johnson Johnson Controls, 2010; Steelcase, 2009). A fifth generation, that is not present in the workplace yet, is generation Z.

The definition of generations is clearly explained by Mannheim (in Lyons et al., 2012). He states by his theory about generations that: “(...) individuals born and reared in the same historical era are shaped by common formative experiences and therefore develop a unique identity” (Mannheim in Lyons et al., 2012, p. 334). Howe and Strauss (2009) describe generations as people with the same birth cohort that experienced a specific political and social movement and therefore developed unique personalities, beliefs and values. They both argue that people that belong to a specific generation share the same birth cohort and therefore those people share the same experiences during life that shaped those people’s personalities.

Studies show inconsistencies about the birth cohorts that belong to the generations (Giancola, 2006). Despite this lack of agreement on the birth cohorts, it is useful to indicate a common thread for this study when it comes to those birth cohorts in relation to generations. The birth cohorts that are representative for the generations are derived from studies of Hammill (2005), Johnson Controls (2010) and Steelcase (2009).

This study adopts the average birth cohorts as presented in Table 3.1 as the birth cohort for the related generation. The derived birth cohort for veterans is 1922 – 1945, for baby boomers is 1946 – 1964, for generation X is 1965 – 1979 and for millennials is 1980 – 1998. Studies are rather vague about the birth cohort of generation Z. However, it is generally accepted that generation Z is the generation after millennials, and their birth cohort ends in the early 00’s (Tulgan, 2013).

Table 3.1  
Birth cohorts and average

	Hammill (2005)	Johnson Controls (2010)	Steelcase (2009)	Average birth cohort
Veterans	1922 - 1945	1935 - 1944	1909 - 1945	1945 and before
Baby boomers	1946 - 1964	1945 - 1964	1946 - 1964	1946 - 1964
Generation X	1965 - 1980	1965 - 1979	1965 - 1978	1965 - 1979
Millennials	1981 - 2000	1980 - 1994	1979 - 2000	1980 - 1998
Generation Z	x	x	x	1998 – early 00's

The identified birth cohorts are important for the consistency of this study. Firstly, generation specific data from other studies can be adopted for this literature study when the birth cohort of an age group is distributed around the identified birth cohorts with a maximum deviation of five years. For example, data that refers to an age group that is born between 1984 and 2000 can be adopted as data for the millennial generation. Secondly, data coming from other studies can be adopted for this literature study when it uses names of generations that correspond with the names of the generations that are mentioned in this study.

### 3.1.1 Work force and prospects

The percentage of millennials that is present in the more developed countries (Europe, Northern America, Australia/New Zealand and Japan) in 2015 was relatively small (19,80%) (United Nations Department of Economic and Social Affairs Population Division, 2015). The percentage of veterans was even smaller with 12,5%. The percentages of baby boomers and generation X were 25,6% and 20,5%. Despite this relatively small presence of millennials in the more developed countries, studies state that millennials cause changes within the labour force (APD, 2016; Brack, 2012; Gorman et al., 2004). This might be the result of the recent rapid growth of the number of millennials that belongs to the workforce. Figures show that they are a new group in the work environment that has to be taken into account. In 2010, only 25,3% of the workforce belonged to the millennial generation (Statistics, 2015a). In 2016, this percentage increased to 38,6% (Statistics, 2016). This same movement is happening in The Netherlands. In 2010, only 23,7% and in 2016, 37,4% of the Dutch workforce belonged to the millennial generation (CBS, 2017a). The increase of the proportion millennials that belongs to the workforce causes considerable changes in the demographical characteristics of employees on the workplace (PwC, 2011). Especially since the amount of baby boomers as part of the workforce is decreasing at rapid speed in the last years. The percentage baby boomers that was present in the work force in 2010 was 36,0% (Statistics, 2015a). This percentage declined to 24,9% in 2017 (Statistics, 2017)

The labour force will continue to decline the upcoming years due to the retiring baby boomers (Statistics, 2015b). This makes the amount of potential future employees scarce. Besides, baby boomers take the depth of their experiences with them when they leave the workplace. This not only means a decline in the number of workers, but also a decline of experience within companies (Phillips & Roper, 2009). Companies are concerned that they will not be able to find the best available workers and strive to attract and retain the best candidates (Global, 2016; Harvard Business Review, 2013; PwC, 2011).

## 3.2 Characteristics and workplace needs

First, the general characteristics of generations are explained in Paragraph 3.2.1 . Next, the workplace related characteristics and needs are illustrated in Paragraph 3.2.2. Generation Z is only taken into account while elaborating on general characteristics in Paragraph 3.2.1. since this generation is not active in the (knowledge work related) workplace yet. The veterans are also only taken into account during the elaboration on general characteristics, since the percentage of veterans that is still active within the workplace is very small (2,1%) (Statistics, 2016).

### 3.2.1 Characteristics of generations

Chamberlin (2009) argues that the definition of generations should be interpreted with care since it is easy to stereotype assumptions. Not every person that belongs to a specific generation will share all the same characteristics that are representative for this generation (Hammill, 2005). Besides, people that are born at the beginning or the end of a birth cohort may see have overlapping characteristics that are related to the preceding or succeeding generation (Hammill, 2005). Therefore, it is important to interpret the characteristics with caution.

Veterans are the oldest generation. They are also known as Traditionalists, Builders, Depression Babies and the Greatest Generation (Murphy, 2007). They were taught discipline and strictness by their parents and being spoiled was no option (Murphy, 2007). The veterans might be the most patient generation (Steelcase, 2009). They are loyal and uncomfortable with conflict (Murphy, 2007; Steelcase, 2009). They are seen as inexpressive and reserved and are resistant to change (Steelcase, 2009).

The baby boomers is a large generation and is also known as Boomers, Vietnam Generation and Me Generation (Murphy, 2007). As children they grew up in the post World War II era. Their parents lived through a global depression and people believed that the world would be better for this next, largest, generation (Murphy, 2007). Baby boomers learned flexible discipline from their parents, which includes the 'how' and 'why' of acceptable behaviour (Murphy, 2007). Baby boomers value the quality of life (Johnson Controls, 2010). They are well-known for their good communication skills (Murphy, 2007). Despite having the tendency of being a bit self-centred, they have a strong aim to please other people (Steelcase, 2009).

Generation X is also known as GenX, Baby Busters, and Post-Boomers (Murphy, 2007). The role of women began to change and many mothers worked outside of home during the childhood of generation X, which resulted in children taking increasingly care of themselves (Murphy, 2007). They are affected by the increase of divorce that might have caused their reticence to commitment and their loyalty (Murphy, 2007). They are more flexible in their behaviour than the previous generations and are less likely to stick to the rules (Haynes, 2011; Murphy, 2007). Generation X is also interpreted as impatient and might be seen as lazy by other generations (Steelcase, 2009).

Millennials belong to the youngest generation that is present in the workplace. This generation is also known as Millennials, Internet Generation and Nexters (Murphy, 2007). Millennials grew up with technology and with a much more casual exposure to

multiculturalism than any earlier generation (Murphy, 2007). They are goal- and achievement-oriented and many were required to serve time volunteering or participating in after school activities (Deloitte Consulting LLP, 2005; Raines, 2002). They are innovative thinkers and are comfortable with speed and change (Deloitte Consulting LLP, 2005). Besides, they are sociable and loyal to others (Steelcase, 2009).

Generation Z is the generation after the millennial generation and is not present in the workplace yet. This generation is also known as Post-Millennials or I-generation (Strauss & Howe, 1991). This group is special because they are grown up with a highly sophisticated computer environment (Mattsson & Alvtegen, 2014). A new study called “GenZ: The Limitless Generation” surveyed 1,200 Gen Z respondents (Wikia Ipsos MediaCT, 2013). Conclusions from this study argue that Generation Z is a highly connected generation, which has good collaboration, critical thinking and problem-solving skills. This generation likes to spend time on what is important to them at a specific moment (Wikia Ipsos MediaCT, 2013).

### **3.2.2 Workplace characteristics and workplace needs**

Before this study elaborates on the workplace and employees of various generations, it might be relevant to define the definitions ‘employees’ and ‘workplace’ that are used during this study. The term ‘employees’ refers to knowledge workers. Drucker introduced the definition of knowledge worker in 1959 in his book *Landmarks of Tomorrow* (Wartzman, 2014). He explains that the economic activities have shifted from ‘brawn to brain’, or from employees working with their hands on tangible resources (e.g. steel) to people working with their heads on intangible resources (e.g. knowledge) (Drucker, 1993). He was convinced that knowledge was more important as an economic resource than land, labour or financial assets that were leading to what he mentioned a “post-capitalist society” (Wartzman, 2014). Many experts refer to this as the era of the knowledge worker. Companies are now competing on the basis of the skills and talents of their employees (Smith, 2007). The terms related to ‘workplace’, ‘workspace’ or ‘work environment’ that are used in this study refer to an office.

#### *Workplace activities*

The extent to which activities within the office are being performed might affect the workplace needs. Leesman Index Survey has deployed a survey across more than 1,200 offices including more than 140,000 respondents over 50 countries. The workplaces that are involved in the Leesman Index Survey include mostly offices for knowledge workers and some educational environments (Leesman Amsterdam, 2017). Leesman (2016) selected 21 activities as the most important ones that are being performed by the respondents during work. Those 21 activities are shown in Table 3.2 and have a sequence that starts with the most important and ends with the least important activity.

Some of the activities are found to be more important by certain age groups. Those activities are marked grey. Figure 3.1 shows a graph in which the activities are related to respondents of a certain age group. It should be noted that older generations might perform different activities than younger generations and therefore value certain activities differently. Those differences are not mentioned by Leesman (2016) and are not taken into account as an intermediate component for compiling Figure 3.1.

Table 3.2

Activities performed during work

1. Individual focused work, desk based	12. Audio conferences
2. Planned meetings	13. Business confidential discussions
3. Telephone conversations	14. Hosting visitors, clients or customers
4. Informal, un-planned meetings	15. Spreading out paper or material
5. Collaborating on focused work	16. Collaborating on creative work
6. Reading	17. Private conversations
7. Relaxing/ taking a break	18. Larger group meetings or audiences
8. Thinking/ creative thinking	19. Individual focused work away from the desk
9. Individual routine tasks	20. Video conferences
10. Informal social interaction	21. Using technical/ specialist equipment or materials
11. Learning from others	

Adapted from Leesman (2016)

Regarding the rules that are set up for this study in Paragraph 3.1, the age group ‘55 or over’ can be accepted as the baby boomers, the groups of ‘45-54’ and ‘35-44’ can be accepted as generation X and the groups ‘25-34’ and ‘under 25’ can be reflected as the millennials.

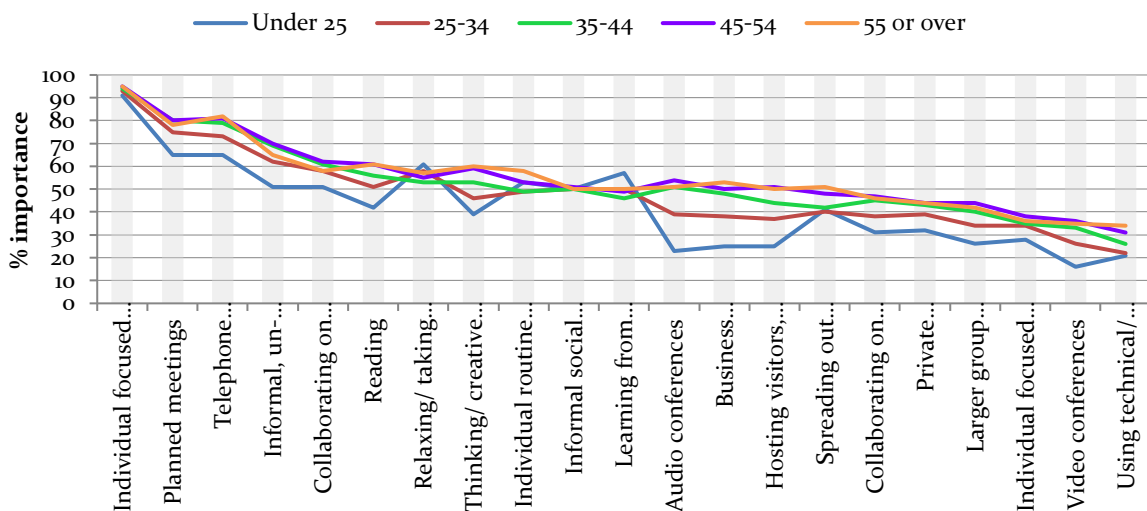


Figure 3.1 Importance of activities by age. Leesman (2016)

The graph in Figure 3.1 appears to show that in general the older respondents in the sample value the importance of activities in the workplace more than the younger respondents in the sample do. The two youngest age cohorts, that can also be interpreted as millennials, show in average the lowest importance for activities in the workplace. However, there are some activities that they clearly value on a higher level than the other generations. Those activities include ‘relaxing/ taking a break’ and ‘learning from others’. The last one increases the willingness to come to the office and makes the workplace an environment where they want to work (Leesman Amsterdam, 2017). All age cohorts value the activity ‘informal social interaction’ around the same level of importance. The biggest gap between the age cohorts is shown for the activities ‘audio conferences’, ‘business confidential discussions’ and ‘hosting visitors, clients or customers’. The respondents that belong to the younger age cohorts value

those activities on a much lower level. An explanation for this phenomenon could be the fact that millennials are being less involved in the performance of those are activities.

Leesman (2016) also conducted research on the impact of the workplace on employees with different age categories. The activities that are being performed by certain age groups might affect the impact those age groups experience about the workplace related statements. Leesman found that younger employees attach more value to the role of the workplace than older employees. Figure 3.2 shows a graph of the results of theorems about the workplace that were presented to respondents of different age categories.

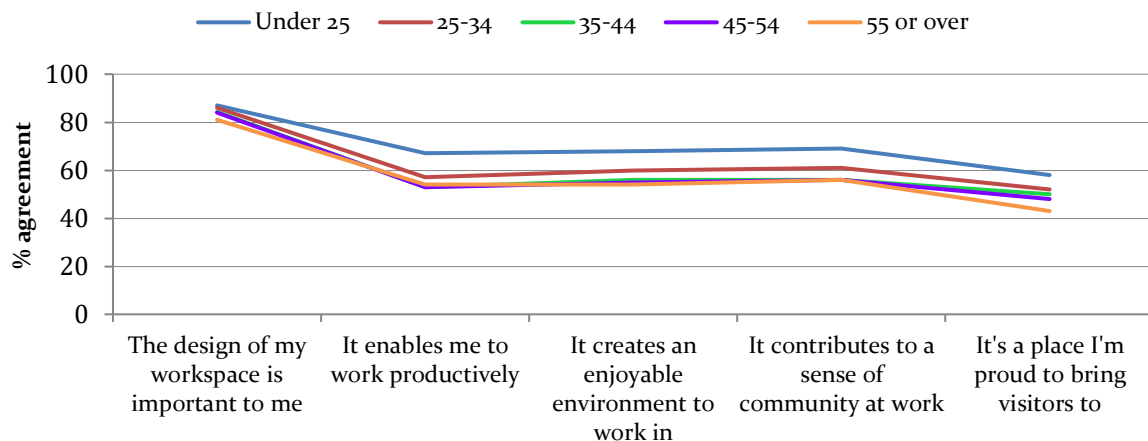


Figure 3.2 Workplace impact by age. Leesman (2016)

The graph shows the same sequence of results for the age groups for every theorem that is presented to those respondents. It can be concluded that the younger employees in the sample value the workplace for every theorem on a higher level.

#### *Workplace characteristics of generations*

Besides a variety of the general personal characteristics of generations, the workplace characteristics of generations differ. Table 3.3 shows the workplace characteristics of the generations that are present in today's workplace. Although this study is about millennials, it is important to take all the generations that are present in the workplace into account. This way, the differences between generations can be examined and CREM does not exclude generations. Four studies that all elaborated on the workplace characteristics of the three generations are used for identifying the workplace characteristics. Hammill (2005), Murphy (2007) and Steelcase (2009) are consultant organizations that approached their study about the characteristics of the three generations by using their own experiences and some other consultation references. The study of Johnson Controls (2010) is the only study that is found in the available literature that examines the characteristics (and needs) of knowledge workers of the three generations by means of an exploratory research they conducted. Johnson Controls (2010) conducted a questionnaire among 5375 respondents coming from five different countries over the world (U.S., China, India, U.K. and Germany). The workplace characteristics that are identified by the four studies are shown in Table 3.3.



Table 3.3  
Workplace characteristics of generations

		<i>Hammill (2005)</i>	<i>Murphy (2007)</i>	<i>Johnson Controls (2010)</i>	<i>Steelcase (2009)</i>	
<i>Workplace related characteristics</i>						
Baby boomers	Characteristics	Team player	X		X	X
		Strong work ethic			X	X
		Optimistic	X		X	X
		Uncomfortable with conflict			X	
		Conformers	X			X
		Good communication skills		X		
		Involved	X	X		X
		Self-centred				X
Generation X	Characteristics	Scepticism	X		X	X
		Result-driven			X	X
		Entrepreneurial	X			X
		Informal	X			X
		Self-reliant			X	X
		Flexible		X		
		Distrustful of authority		X		
		Impatient				X
Millennials	Characteristics	Techno-savvy		X		X
		Confident	X			
		Environmental minded				X
		High ability to multitask	X	X	X	X
		Easily bored				X
		Sociable			X	X
		Optimistic		X		X
		Success-driven		X		

The three generations show different workplace characteristics as can be seen in Table 3.3. Baby boomers show the more basic characteristics. They are optimistic, conformers and have a strong work ethic. This optimistic attitude and strong work ethic might be caused by the fact that they are a post World War II generation. Company cultures had to be rebuilt and their parents experienced rough times. They also feel involved in the company where they work and are real team players.

Generation X is the first generation that is critical about the workplace and questionable about authority (Murphy, 2007). This might be caused by the past of different parenting in which they grew up. They show a more sceptical attitude amongst the organisation and claim to be self-reliant and entrepreneurial.



Millennials show characteristics that belong to a society in which information is exchanged very fast. They are easily bored, have a high ability to multi task and are techno-savvy. Next to those characteristics, millennials value their surroundings and are an environment-minded and sociable generation.

### *Workplace needs*

First, the definition of needs of employees within the workplace is explained. There is a distinction between preferences and needs. A difference is that preferences are not necessarily needed to perform a task (Oseland, 2009). Preferences are components that users would like if they had a choice and have to be fulfilled to increase satisfaction (Rothe et al., 2012). This satisfaction is important for retaining employees (Harvard Business Review, 2013). On the other hand, needs can cause dissatisfaction if they are not met (Rothe et al., 2012). So, in order to reach user satisfaction, as well the needs as the preferences have to be taken into account. Therefore, Van der Voordt (2004) states that “Employee satisfaction refers to the degree to which the working environment meets the wishes and the needs of the employees”. Besides, it is proposed that some components in the workplace can be both needs or preferences at the same time (Rothe et al., 2012). This means that those components contribute to dissatisfaction when not fulfilled and increase satisfaction when realised. During this study, the preferences and needs of employees that are necessary to fulfil satisfaction or that can dissatisfy when not met, are called ‘needs’

In 1954, Maslow first published *Motivation and Personality*, which introduced his theory about the pattern of needs recognition and satisfaction that people generally follow (Maslow, Frager, Fadiman, McReynolds, & Cox, 1970). This pattern can be illustrated by means of the pyramid in Figure 3.3. Maslow states that people are mostly being motivated by striving to satisfy their psychological needs whether or not congenital or learned needs (Maslow et al., 1970). A person cannot pursue the next level in the hierarchy when the current level is not substantially or fully fulfilled yet (Gawel, 1997). This concept is called ‘prepotency’ (Gawel, 1997). Van der Voordt and Van Meel (2002) elaborate on the relation with CREM for each level of needs. Every level is applicable for every employee in the workplace despite the generation that employee belongs to. Every layer is explained according to the interpretation of Van der Voordt and Van Meel (2002).

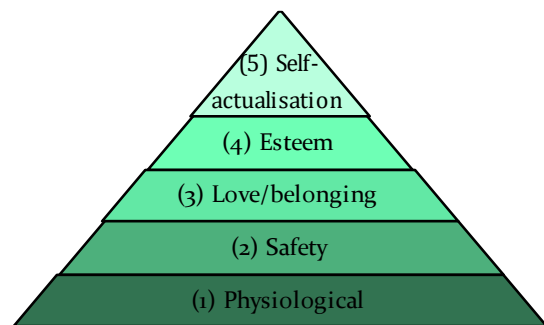


Figure 3.3 Maslow' hierarchy of needs. Stum (2001)

- **Physiological**

The workplace needs that belong to this level are the presence of an ergonomic design and a comfortable intern climate when it comes to temperature, lighting, noise and fresh air.

- **Safety**

The need to have control over the workplace and to have privacy. Feeling comfortable in the office.

- Social

The ability to have social contact in the work environment, as well in a formal way as an informal way.

- Esteem

The need of appreciation, respect and the ability to act autonomous belong to this level. This can be translated to the workplace need of having a workplace that fits the recruited position.

- Self-actualisation

The workplace needs to optimally facilitate development opportunities for employees. Flexibility and autonomy is highly required to enable self-actualisation.

Every level of the pyramid can be refined by needs that belong to the main aspect of that level. Vischer (in Vischer, 2006) provides a model that is specifically applicable for environmental comfort in the workplace that belongs to the first level 'Physiological' of Maslow's pyramid. This model can be illustrated by means of a pyramid and is shown in Figure 3.4. If all three layers are fulfilled, psychological comfort, functional comfort and physical comfort, the comfort of the workplace environment is most optimal. Vischer (2006) explains each level clearly. At the base of the pyramid is physical comfort. Basic human needs

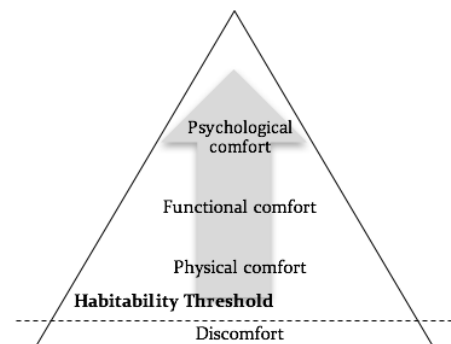


Figure 3.4 Ranges of environmental comfort. Vischer (2006)

such as safety, hygiene and accessibility have to be ensured in order to make the environment habitable. When those basic needs are addressed, the functional comfort must be considered. This level can be explained as user's performance of activities and tasks in the work environment. Functional comfort can be created by means of appropriate lighting, ergonomic furniture and matching rooms for the type of work that has to be performed (e.g. rooms for meeting or concentrating). The top of the pyramid is more difficult to measure. The psychological comfort can be related to feelings of belonging, control over one's workspace and ownership. Workplace comfort is related to satisfaction about the workplace. The satisfaction in particular increases when the needs of the highest level are reached (Vischer, 2006).

Another theory that explains the basic psychological needs that people have in life or in the workplace is the self-determination theory (SDT). Within SDT, basic psychological needs symbolise the nutrients that have to be obtained by a person to promote optimal functioning and health (Deci & Ryan, 2000). In relation to the work environment, employees are motivated and show well-being in organisations to the extent they have psychological need satisfaction within this organisation (Deci & Ryan, 1985). SDT comprises three basic psychological needs: the need for relatedness, the need for competence and the need for autonomy.

The need for relatedness is the desire of individuals to be connected to others and to experience feelings of security and belongingness (Van den Broeck, Vansteenkiste, Witte, Soenens, & Lens, 2010). This third need is fulfilled when individuals experience intimate relationships with other individuals and when they experience a sense of community (Deci &

Ryan, 2000). CREM can affect the need for relatedness by for example designing the physical environment of the office in such a way that it facilitates interaction between employees (Meulensteen, 2017).

The need for competence can be explained as the desire to feel effective in interacting with the environment, whereby the individual can adapt to complex and changing environments (Deci & Ryan, 2000). Thwarted competence satisfaction can lead to helplessness and a lack of motivation (Deci & Ryan, 2000). By means of competence, individuals might tend to explore and manipulate the environment by means of engaging in challenging tasks and extending their skills (Deci & Ryan, 2000). CREM can play an important role for the need for competence by for example facilitating space that supports learning. For example, classrooms or spaces where mentors and their pupils can interact.

The need for autonomy refers to a situation where people can self-organise and regulate their own behaviour while working toward inner integration and coherence among managerial demands (Deci & Ryan, 2000). Hereby, it is important that individuals experience a sense of choice and psychological freedom when carrying out an activity (Deci & Ryan, 2000). The conceptualisation of autonomy by SDT is slightly different from the conceptualisation of autonomy by the typical organisation psychology. SDT refers to the experience of choice and psychological freedom while performing an activity, the typical organisation psychology refers to autonomy as a task characteristic (Van den Broeck et al., 2010). Roelofsen (2002) supports SDT by showing that employees give a better rating to their job satisfaction and a more favourable rating to their job stress if they are able to independently control the temperature and ventilation for the workplace they work in. This example clearly shows that certain workplace aspects are directly related to satisfying psychological needs

Since the three psychological needs that are related to SDT are specified as essential nutriments, individuals cannot thrive without fulfilling the satisfaction of all of them (Ryan & Deci, 2000). Not satisfying all three psychological needs results in less positive outcomes for employees and ultimately the organisation (Vansteenkiste et al., 2007). Examples of these less positive outcomes are less satisfaction at work, less dedication to the company and less vitality while on a job (Vansteenkiste et al., 2007). In the case that work climates are able to satisfy all three needs, employees' intrinsic motivation will be enhanced (Gagné & Deci, 2005). Intrinsic motivation can be defined as "(...) behaviour done for its inherent satisfactions, and it is assessed behaviourally in terms of freely pursued behaviours, and experientially by a perceived internal locus of causality and feelings of interest" (Ryan & Deci, 2008, p. 655). The enhancement of intrinsic motivation will in turn yield various important work outcomes such as (1) persistence and maintained behaviour change; (2) effective performance, especially on activities requiring creativity, cognitive flexibility, and conceptual understanding; (3) job satisfaction; (4) positive work-related attitudes such as work engagement; (5) organisational citizenship behaviours and commitment; and (6) psychological adjustment and well-being (Gagné & Deci, 2005). Figure 3.5 shows the process of how SDT generally works.



Figure 3.5 SDT Process

The basic psychological needs that are defined by SDT are natural and universal (Ryan & Deci, 2008). This means that they apply to all individuals regardless of gender, culture, or upbringing. Simply stated, SDT includes that the effects of need support in contrast to deprivation is generalizable across all people and (cultural) contexts. However, this does not mean that all individuals or cultural groups value or support these needs and that these needs are satisfied or thwarted in the same way (Ryan & Deci, 2008). The way relatedness, competence and autonomy are satisfied may differ among different societies or stages of life, but their necessity is unchanging (Ryan & Deci, 2008). In relation to this master thesis, this implies that different generations can fulfil the three universal psychological needs that are conceptualised by STD in a different way.

The SDT view of basic psychological needs differs in various ways from the theory of Maslow. Firstly, Maslow considers that needs are ordered hierarchically. A person cannot pursue the next level in the hierarchy when the current level is not substantially or fully fulfilled yet (Gawel, 1997). SDT does not show a particular order or hierarchy when it comes to the three needs. They all have to be met and are therefore evenly important (Van den Broeck et al., 2010). Another difference in contrast to Maslow's theory, is the fact that SDT does not focus on individual differences in need strength (Van den Broeck et al., 2010). SDT considers the extent to which people are able to satisfy their basic psychological needs as the predictor for optimal functioning (Deci & Ryan, 2000). On the other hand, Maslow states that needs become less potent when they are reasonably satisfied (Van den Broeck et al., 2010). When it comes to SDT, people do not experience a deficit for a psychological need to fully flourish. Besides, people are attracted to situations in which it is most likely that they will satisfy their needs (Deci & Ryan, 2000).

Besides the differences between SDT and the theory of Maslow, there are interesting similarities. Combining the workplace-related explanation of Van der Voordt and Van Meel (2002) about Maslow's pyramid (Maslow et al., 1970) with the explanation about the SDT needs, it can be noticed that the SDT need for relatedness is related the most to level 3 'social', the SDT need for competence is related the most to level 4 'esteem' and the SDT need for autonomy is related the most to level 5 'self-actualisation'.

#### *Workplace needs of generations*

SDT implies that generations can show a different way of satisfying those certain needs. Rothe, Lindholm, Hyvönen, and Nenonen (2011) state that, besides the type of activity that is being performed (see Paragraph 'workplace activities'), personality (Oseland, 2009) and characteristics such as age plays an important role for specific workplace needs. The needs that are highly valued by certain generations are displayed in Table 3.4. The resources of eight different studies were used. The method behind the outcomes of the studies of Hammill

(2005), Murphy (2007), Steelcase (2009) and Johnson Controls (2010) are already explained. Brack (2012) and CoreNet Global (2015) are consultants that approached their studies by means of using their own experiences and using some other consultation references. In the study of Rothe et al. (2012) the results of a preference survey among more than 1100 office employees in Finland are analyzed. Furthermore, PwC (2011) conducted an online survey among 4364 millennials across 75 countries in order to identify the workplace needs of millennials. The workplace needs that are identified by the eight studies are shown in Table 3.4. The related SDT-needs and the level of Maslow's pyramid to which the generation specific needs might be assigned are also displayed in Table 3.4.

Table 3.4  
Workplace needs of generations

	<i>Workplace related needs</i>	<i>SDT need</i>	<i>Level of Maslow's pyramid</i>
Baby boomers	Networking in the building (Rothe et al., 2012)	Relatedness	(3) Love/ belonging
	Have a voice (Murphy, 2007; Steelcase, 2009)	Autonomy	(5) Self-actualisation
	Adjustable indoor climate (Johnson Controls, 2010; Rothe et al., 2012)	Autonomy	(5) Self-actualisation
	Safe and clean area (Rothe et al., 2012)	Autonomy	(2) Safety
	Privacy and concentration (Rothe et al., 2012)	Autonomy	(2) Safety
Generation X	Fun (Hammill, 2005; Steelcase, 2009)	Relatedness	(3) Love/ belonging
	Feedback (Hammill, 2005; Murphy, 2007)	Competence	(4) Esteem
	Meaningful work (Johnson Controls, 2010)	Competence	(4) Esteem
	Compensation (Johnson Controls, 2010)	Competence	(2) Safety
	Work and life separated (Steelcase, 2009)	Autonomy	(5) Self-actualisation
Millennials	Sociability with colleagues (CoreNet Global, 2015; Johnson Controls, 2010)	Relatedness	(3) Love/ belonging
	Mentoring (Brack, 2012; Steelcase, 2009)	Competence	(4) Esteem
	Opportunity to grow (Brack, 2012; Johnson Controls, 2010)	Competence	(4) Esteem
	Work-life balance (PwC, 2011; Steelcase, 2009)	Autonomy	(5) Self-actualisation
	Flexible workplace use (CoreNet Global, 2015; Johnson Controls, 2010)	Autonomy	(5) Self-actualisation

The baby boomers show the more basic needs of which some belong to the lower levels of the Maslow pyramid. This might be caused by the fact that they are a post World War II generation. Company cultures had to be rebuilt and their parents experienced rough times. Therefore, they are satisfied with basic, solid offices. The satisfaction with basic, solid offices matches with the fact that none of the needs of baby boomers belong to the SDT-related psychological need of competence. However, this does not mean they do not satisfy the SDT

need 'competence', since Table 3.4 only contains the needs that are most highly valued regarding literature. The lack of the SDT related need 'competence' in the table might illustrate that they appear to be happy with a basic, solid office environment and culture.

Generation X asks more from their work environment and the needs are balancing around the middle levels of the Maslow pyramid. Besides, they do show needs that are able to satisfy the need of competence that is related to SDT. Generation X is the first generation that is critical about the workplace and questionable about authority (Murphy, 2007). This might be caused by the way they were raised as a child. During the time generation X has been raised, both parents started to work and the amount of divorces started to increase (Murphy, 2007). This situation resulted in the fact that children increasingly had to take care of themselves.

The needs of millennials can be located in the upper levels of the Maslow pyramid. Two out of five needs belong to the highest level of Maslow's pyramid that implies self-actualisation. Besides, technological developments bring more (luxurious) opportunities to the table, which millennials embrace. An example that can be derived from those developments is the flexibility for employees to decide where and when to work. It should be noted that a work-life balance differs from the need of generation X to separate work and live. The first one, work-life balance, is more or less an integration and balance of life and work instead of a separation and therefore belongs to a higher level of Maslow's pyramid. Since this study is about millennials and their needs, Paragraph 3.2.3 elaborates on the workplace needs of this generation.

A remark about the valuation of needs is the fact that older people might perform other activities than younger people and therefore value needs in a different way. Leesman (2016) elaborates on this fact in Figure 3.1 whereby respondents of different ages show differences in the valuation of the importance of certain workplace activities. However, the effect the performance of certain activities might have on generational differences, has not been mentioned in the studies that were used for compiling the workplace needs.

### **3.2.3 Workplace needs of millennials**

At least the lower levels of the Maslow pyramid that represent the basic needs (illustrated in Figure 3.3), should be fulfilled in order to create a workable environment. Eventually, all the levels of Maslow's pyramid and all psychological needs from SDT have to be fulfilled by CREM in order to create a workplace that is able to fully satisfy employees and specifically attract and retain them. Nevertheless, SDT states that people are attracted to situations in which it is most likely that their needs will be satisfied (Deci & Ryan, 2000).

Since this study focuses on the needs of millennials and the support by CREM, this paragraph elaborates on the needs of millennials that are displayed in Table 3.4. The five needs can be reduced to three needs which still incorporate the intention of all five needs. The three needs that remain after the reduction, might correspond each to one of the three needs that are described by SDT. Table 3.5 illustrates this reduction process.



Table 3.5  
Need reduction

Original (five needs)		Reduction (three needs)	Corresponds with SDT need
Sociability with colleagues	→	Sociability with colleagues	Relatedness
Mentoring	→	Opportunity to grow	Competence
Opportunity to grow	→	Opportunity to grow	Competence
Work-life balance	→	Work-life balance	Autonomy
Flexible workplace use	→	Work-life balance	Autonomy

The need of flexible workplace use can be incorporated in the need of having a work-life balance since working remotely and/ or having a flexible schedule is strongly related with the location of executing work. Since mentoring can be seen as an enabler for the opportunity to grow, mentoring is incorporated into the need of having the opportunity to grow. The need of sociability with colleagues remains the same.

It is important that those three workplace needs of millennials (work-life balance, opportunity to grow and sociability with colleagues) are clearly understood before the exploratory research starts. The following paragraphs contain titles that represent the workplace need on which is elaborated. After a short definition, different variants and examples for that specific need are explained. Next, the relation with attracting and retaining millennials and the preferences of millennials regarding the need are explained. Lastly, the relation with CREM is addressed by describing the activities that are executed by CREM and explaining the physical workplace aspects they can manage in order to support the need. The activities are derived from Chapter 2. The physical workplace aspects are in the first place derived from the factor analysis of Van Susante (2015) that is described in Chapter 2. Secondly, some physical workplace aspects are derived from additional literature review.

### *Sociability with colleagues*

Millennials are networked, collaborative and highly social and expect to be constantly connected to a social network, also with colleagues during work by means of a sociable environment (Johnson Controls, 2010). 74% of the millennials agrees that working relationships are more important than other work related aspects (CBRE-dataset, 2016). Where other generations focus on the job itself, this job itself is for millennials increasingly becoming a secondary concern behind other external factors such as their social utility (Thompson, 2011). For some, their job is simply an enabler by which they can achieve those other external factors. A study by Walters (2016) found that one third of the millennials felt that meeting their colleagues in a social setting was the most important aspect of their workplace introduction and see this as an effective way to integrate as part of the team. Those figures are only 15% for the employees that belong to generation X and less than 1% for the Baby Boomers. There are various aspects related to this sociability on the workplace that millennials value:

- Collegial environment

The extraordinary social characteristics of millennials are reflected by their need to be constantly stimulated with human interactions. This results in their preference of being in a collegial environment at the office (Thompson, 2011). What they are looking for in other colleagues, are similar mind-sets and values (Weyland, 2011). Besides an environment with friendly colleagues, millennials value an environment that feels as a second home since this supports their motivation (PwC, 2011).

- Online social networking

Millennials expect an employer to facilitate a workplace with a technology ecosystem that includes social networking, instant messaging, video and blogs (PwC, 2011). Those social, technological tools enable this generation to instantly connect.

- Leadership socialisation

Millennials value leadership socialisation that has a positive relation on altruistic leadership values. They want their manager to ask them: “How is your day?” (Kelly, 2016). Understanding begins here and motivates millennials since they feel acknowledged (Kelly, 2016).

- Career builder

34% of the millennials think of meeting with colleagues outside the office as a positive initiative for their work reputation (Shandwick, 2015). In comparison, only 14% of generation X and 15% of the Baby Boomers share this thought (Shandwick, 2015). Millennials believe that besides doing a good job, it is important to interact with colleagues in order to build their careers (Shandwick, 2015).

- Facilities

Millennials prefer to have access from the workplace to social space that enables social contact (Johnson Controls, 2010). Examples are shops onsite, bars and sport facilities. The type of facility is not significantly important, as long as the facility is communal.

The ability to get on with colleagues plays a very influential factor for millennials when they are choosing a workplace (CBRE, 2016). 89% of the millennials argue that the ability to get on with immediate colleagues/ managers is important when considering a job (CBRE-dataset, 2016). Millennials enjoy being part of a community with strong relation that can be called their “work family” (KPMG, 2017). Millennials may be even more loyal to their colleagues and managers than to their organisation (Ng, Schweitzer, & Lyons, 2010). This could mean that when a manager leaves a firm, the employee is also willing to leave the firm because he refers it to his team he works in (Ng et al., 2010).

More companies are beginning to see the sociability of millennials as a business advantage (KPMG, 2017). They are letting go of the thought about socialisation at work as a distraction. This is also the case for social interaction online since employees are increasingly giving millennials access to the collective intelligence available across organisational boundaries (Johnson Controls, 2010). Besides, millennials will force this change as they are seeking out employers of choice (Brack, 2012; Johnson Controls, 2010).



Sociability with colleagues can take place at different settings. This setting can be present inside the office building varying from the workplace to break out zones, or outside the office building at various leisure spots such as a restaurant or sports club. Besides, sociability with colleagues can take place inside or outside office hours.

CREM activities that might be important for facilitating the need of sociability with colleagues are:

- Customer relationship management

When taking measures in order to support certain needs of (employees in) an organisation, it is important to have a close relationship with the customer. This way, CREM gets to know more about an organisation that implies a more substantiated and specifically oriented approach when implementing certain physical workplace aspects in an organisation.

- Facility management

Facility management plays a key role in managing the workspace in order to support the organisation. Therefore, facility management is important since it can support various needs of employees such as a restaurant where people can lunch together and socialise.

- Marketing/ communication

The fact that a company values the sociability of colleagues should be emitted to the outside so employees and potential employees notice this value. This means that the workplace aspects that CREM will implement to support sociability with colleagues should be clearly present.

- (Workplace) Design management/ space planning

This activity focuses on the level of the workplace. The planning of space and design within the office environment is very important when it comes to supporting needs of employees by means of CRE. An example is the facilitation of space for specific amenities such as a coffee corner for socialising.

The physical workplace aspects that support social interaction in the workplace, are mostly related to spatial features. Some of the aspects that are derived from Van Susante (2015) are also related to the lay out of the office, and include aspects 'people walking past your desk', 'space between work settings' and 'accessibility of colleagues'. Other aspects are related to specific areas that facilitate interaction, such as 'informal work areas/ break-out zones' and 'restaurant/ canteen'. Another aspect that might be important to enable sociability with colleagues that is derived from the CfPH Benchmark 2016 (CfPB, 2017), is 'openness and transparency'. Besides, PwC (2011) argues that millennials expect an employer to facilitate a workplace with a technological ecosystem that includes social networking. Therefore, 'IT-services for social networking' are essential. The physical workplace aspects that might be useful for supporting sociability with colleagues are shown below. The categories and sub aspects that are derived from Van Susante (2015), are shown as a whole including the category and the corresponding aspects, useful or not:

- Office climate & décor (air quality, office lighting, natural light, noise levels, temperature control, plants and greenery, general décor, people walking past your desk, art or photography)
- Storage and privacy (ability to personalise my workstation, shared storage, space between work settings, dividers, archive storage, personal storage)
- Seclusion rooms (small meeting rooms, large meeting rooms, desk/ room booking system, quiet rooms for working alone or in pairs, informal work areas/ break-out zones, variety of different types of workspace)
- Access (in-office network connectivity, parking, audio-visual equipment, remote access to work files or network, guest/visitors network access, accessibility of colleagues)
- Hospitality (restaurant/ canteen, tea coffee and other refreshment facilities, leisure facilities onsite or nearby, washroom facilities/ showers)
- Openness and transparency
- IT-services for social networking

### *Opportunity to grow*

Millennials approach their job with the intention to learn and grow during their time of employment at a certain employer (Gallup, 2016). This desire for development might be the biggest differentiator between this generation and other generations that are already present within the workplace (Gallup, 2016). Therefore, the implementation of a lifetime of learning is a business requirement when companies want to attract millennials (Meister, Willyerd, & Foss, 2010). Since two third of the millennials sees themselves in a management function in the next ten years (e.g. senior/middle manager, business owner or on a C-level such as CEO), it is important that development opportunities focus both on work-related functions and career-focused training (Elance-oDesk, 2014). The infinity loop in Figure 3.6 shows a clear overview of the employee journey in which the organisation plays a dominant role. When employees join (#5) an organisation, the learning process for a new job will start (#6). The duration of this learning process depends on the type of job, experience and learning skills of the employee. After a period of contributing to the company (#7), a plateau will be reached where the employee feels the desire for role change. This point forms a challenge for the organisation: if those opportunities of career growth (#8) do not exist internally, there is a chance that the employee will leave and enter the external job market in order to search for a job that offers what they need (#1).

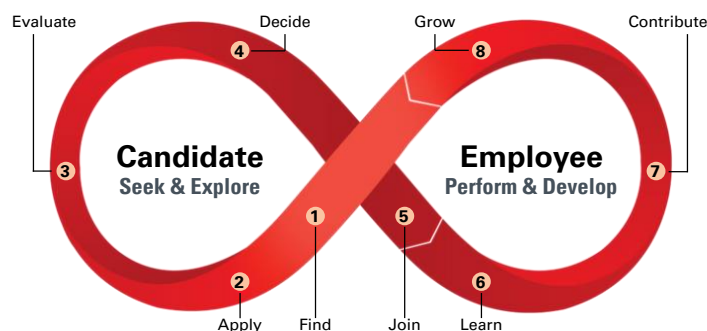


Figure 3.6 The employee journey. ORACLE (2014)

The aspect of learning that is incorporated in the opportunity to grow can be divided into different subcategories such as formal and informal learning, individual and social learning, and synchronous and asynchronous learning (Piech, 2016). There are many different methods for providing training to employers. The most common are traditional classroom training, traditional peer training with a subject matter expert (SME), online training, video training and mentoring (Piech, 2016). Besides facilitating those types of learning, millennials need to have a continuous learning environment with web-based training (Terjesen, Vinnicombe, & Freeman, 2007). It can also be useful to offer projects with a learning component, which will make millennials even work harder (Newman, 2010).

Millennials consider the workplace as an important place where they can learn and develop themselves (Johnson Controls, 2010). There is a direct and positive relation between providing those learning and development opportunities for employees and job satisfaction (Brack, 2010). This is partly due to the fact that people enjoy their work more when they are good at it, and learning opportunities offer the chance to become better at it (Thompson, 2011). This increase in job satisfaction results in an increase of employee retention (Brack, 2010; Deloitte, 2016). Millennials value companies that invest tangible resources in their future and companies that create ways for them to use their skills and talent (Meister et al., 2010; Thompson, 2011). Millennials might even jump to a better offer at another organisation when they feel that they are not getting enough opportunities for learning or development (Beechler & Woodward, 2009). Employers might tend to see risks in investing in learning opportunities for their employees since this they make their employees a more valuable candidate for the recruiting market (Thompson, 2011). However, research shows that the benefits of providing opportunities to learn outweigh the risks since it could potentially lead to a more innovative and stronger company that has a higher retention rate (Manpower Group, 2016; Thompson, 2011).

In general, the vast majority of millennials (93%) see ongoing skills development as a basic requirement in their future careers (Manpower Group, 2016). They would even spend their own time and money on further learning opportunities (CBRE, 2016). These learning opportunities should also take the development of management skills into account, since millennials are intensely ambitious: 56% even felt that they could climb to the top at their current employer (PwC, 2011). With so many employees reaching for the top, many will eventually be disappointed. Employers have to respond to this situation by means of providing fitting development opportunities in order to keep retaining those disappointed employees (PwC, 2011). Other aspects that learning and development should take into account and enhance, are their individualism, new experiences and self-development (Weyland, 2011). The best training concept might be a mix classroom instruction, self-directed study time and group learning, combined with mentoring (PwC, 2011). Millennials often mention mentoring as a separate need that they are looking for in an organisation.

By means of mentoring, knowledge workers can share their experiences from experienced to less-experienced employees (Joy & Haynes, 2011). The mentor initiates this process and challenges the mentee to absorb the mentor's approach. Mentoring is aimed to enhance self-awareness of the mentee at the first place. The ultimate aim is that the mentee

manages themselves better, especially related to activities and goals for which the capabilities of the mentee were questionable (Brewer, 2016). The most traditional explanation of mentoring describes a relationship between the mentor and mentee that is hierarchical (Mezias & Scandura, 2005). However, besides this hierarchical relationship between mentor and mentee, a lateral relationship is also possible (Mezias & Scandura, 2005).

Mentoring is an important aspect when it comes to attracting and retaining millennials (Meister & Willyerd, 2010). Aruna and Anitha (2015) imply the importance of the relation between strong mentoring, a luxurious workplace and the retention of millennials at a particular company. Also Nekuda (in Brack, 2012) agrees on the relation

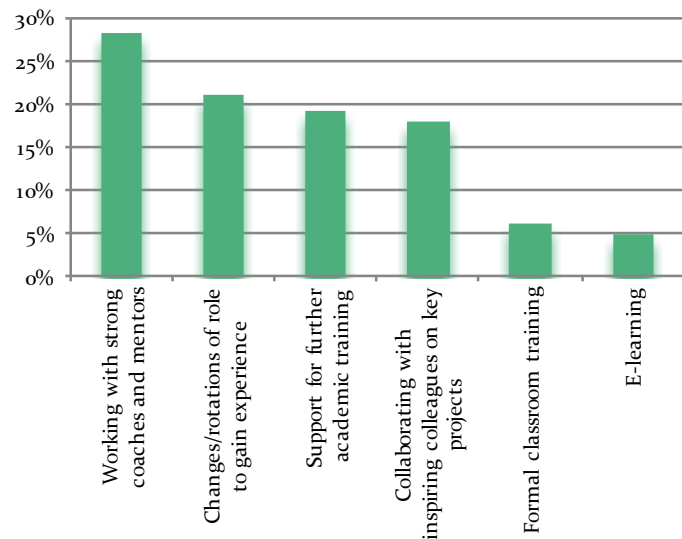


Figure 3.7 Training/ development opportunities valued. PwC (2011)

between mentoring and retention of employees since a study of Sun Microsystems by Bellevue University's Human Capital Lab found that mentees show a 23% higher retention rate than employees who did not participate. Also mentors showed a higher retention rate of 20% than employees who did not participate. PwC (2011) even concludes that the presence of strong coaches and mentors is the most important opportunity to value an employer. Figure 3.7 shows a graph of the study.

Learning and the development of skills are the most important features that belong to the opportunity to grow. Organisations have to reserve office space in order to be able to facilitate all types of learning that contribute to the opportunity to grow. The CREM activities that might be important for reserving space and facilitating for the need for opportunity to grow are:

- Customer relationship management

It is important to have a close relationship with the customer and to know a lot about their requirements and needs. This way, CREM can take the right measures for supporting learning opportunities that are provided.

- Marketing/ communication

The same as with 'sociability with colleagues', it is important that a company shows the outside that they care about facilitating the opportunity to grow. Therefore, the physical workplace aspects that are implemented within the office should be clearly visible and present.

- (Workplace) Design management/ space planning

The planning of space and design within the office environment is very important when it comes to facilitating the space that is needed for offering training and coaching.

When it comes to learning, different learning concepts require different amounts of space and types of rooms. For example, the most space is required for training in groups, such as a classroom or large conference room. Less space is needed for mentoring since this type of learning most of the time only includes a mentor and a mentee. The least space is needed for learning online. There are several physical workplace aspects in the work environment that can influence the opportunity to grow. Most of the aspects can be derived from the Leesman Index (Leesman, 2016). First of all, the category 'seclusion rooms' includes aspects that each present a certain type of room, for example rooms where people can work together or larger meeting rooms where people can view a presentation on a screen or collaborate. The interaction with other people is also essential for learning, especially for mentoring. That is why the category 'access' of the factorial design of Van Susante (2015) plays a role in facilitating the opportunity to grow. 'Accessibility of colleagues' and 'audio-visual equipment' are the underlying aspects of the category 'access'. When it comes to mentoring, it might be useful that the mentee watches the mentor work. This way he learns by example. This is why 'openness and transparency' is also an important aspect that CREM has to take into account. The physical workplace aspects that might be useful for supporting the opportunity to grow are shown below. The categories and sub aspects that are derived from Van Susante (2015), are shown as a whole including the category and the corresponding aspects, useful or not:

- Seclusion rooms (small meeting rooms, large meeting rooms, desk/ room booking system, quiet rooms for working alone or in pairs, informal work areas/ break-out zones, variety of different types of workspace)
- Access (in-office network connectivity, parking, audio-visual equipment, remote access to work files or network, guest/visitors network access, accessibility of colleagues)
- Openness and transparency

### *Work-life balance*

The definition of work-life balance can be explained as "(...) people spending sufficient time at their jobs while also spending adequate time on other pursuits, such as family, friends, and hobbies" (Smith, 2010, p. 434). The term work-life balance was introduced in the United States in 1986 to explain the fact that people were spending more time on work-related tasks than other aspects of their lives (Smith, 2010). The term especially gained more attention as two-earner families became more common (Earle, 2003). Besides, studies began to show that it is inadequate to accomplish total satisfaction in life when employees focus on work only (Smith, 2010). Therefore companies are increasingly rethinking the business benefits of enabling employees to achieve a more fitting work-life balance (Glynn, Steinberg, & McCartney, 2002). This goes beyond enabling employees to work on a part-time base and providing the ability to telecommute. The creation of a good work-life balance is a joint responsibility between the employer and its employee, by which both the individual and organisational needs have to be met (Glynn et al., 2002).

An important note is the fact that researchers write about a certain balance between work and life aspects, however, an agreement concerning the conceptualisation of this balance is still lacking (Reilly, Sirgy, & Gorman, 2012). Another difficulty when it comes to work-life balance is the fact that there is no 'one size fits all' solution (Glynn et al., 2002). Moreover, there is a chance that the content of balance that is valued by a person can change over time. It is important that a work arrangement is adopted in which every employee can find its balance regardless what gender, age or function (Glynn et al., 2002). Managerial support, communication and understanding are therefore very important when it comes to achieving this personalised work-life balance (Eversole et al., 2012). Management has the power to develop work-life balance arrangements and plays a vital role in support of a work-life balance (Gardner, 2007).

A work-life balance can include all kinds of arrangements that can be adopted up to a different extent. According to Reilly et al. (2012) the most common arrangements are family responsibilities, leave policies, multiple services and flexibility. Assistance with childcare, lactation support and elder care resources can be arrangements so employees can meet family responsibilities (Reilly et al., 2012). Leave policies can also be offered by organisations in order to assist employees with the birth of a child or with a family member's illness (Reilly et al., 2012). Remainder services that can help to arrange a work-life balance are employee health and wellness programs, dry-cleaning and postal services (Reilly et al., 2012). Companies can also set up training programs to learn employees on how to manage their balance better (Glynn et al., 2002). The arrangement of facilitating flexibility within the workplace is an important enabler for creating a good work-life balance. However, this arrangement is more comprehensive. Therefore, the following paragraphs elaborate on facilitating flexibility within the workplace.

A definition of workplace flexibility is: "the ability of workers to make choices influencing when, where, and for how long they engage in work-related tasks" (Jeffrey Hill et al., 2008, p. 151). Flexibility has several implications such as the assumption that employees will be more motivated, loyal and engaged (Jeffrey Hill et al., 2008). Flexibility in the work environment can roughly be divided into two variants: temporal flexibility and spatial flexibility. Temporal flexibility can also be called 'flexitime'. The definition of flexitime can be explained as follows: "employees exercise a decision regarding the time of day they will arrive at and leave from work. The employer creates a band of core time where each employee must be present" (Baltes, Briggs, Huff, Wright, & Neuman, 1999, p. 497). It means that employees can, within fixed boundaries, decide how to distribute their contractual work hours (Reilly et al., 2012). This can be done for every day of every week. According to Jeffrey Hill et al. (2008), temporal flexibility can be subdivided in: options in work schedules, options in work hours, options for entering and exiting the labour force and options to manage unexpected personal and family responsibilities.

Spatial flexibility can also be called telecommuting. The definition of telecommuting can be explained as: "an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a primary or central workplace, for at least some portion of their work schedule, using electronic media to interact with others inside and outside the organization" (Gajendran & Harrison, 2007, p. 1525). In other words, it means that employees, again with fixed boundaries, are possible to work from various different workplaces (e.g.



another office, from home, et cetera). The intensity in which telecommuting is being performed can vary. According to Jeffrey Hill et al. (2008), spatial flexibility can be subdivided in:

- Options to work off-site (e.g. working from home on a full-time basis, a part of the week or occasionally)
- Options to select one or more worksite locations (e.g. the ability to periodically/ occasionally change the worksite location, only if the employer has more than one worksite)

The combination of temporal and spatial flexibility in the workplace is also known as the New Way of Working (NWW) (Nijp, Beckers, van de Voorde, Geurts, & Kompier, 2016). NWW can be defined as “Time and place-independent work, often combined with extensive use of ICT and performance based management” (Nijp et al., 2016, p. 604). ICT is a prerequisite for the implementation of temporal and/ or spatial flexibility. ICT plays an important role for the access to information and for communication between employees who are working at different locations. Besides, well-documented files are highly required when employees work at different hours.

With the arrangement of flexible workplace use, workstations are not assigned which has logically led in some companies to the implementation of the activity-based office. Activity based working (ABW) is an approach which does not include a traditional workplace, but a ‘hybrid environment’ that provides various types of workplaces for employees (Ross, 2010). Those workplaces are used on a need basis, depending on the activity that is being performed. Besides, ABW provides resources and specialised facilities when employees demand them (Ross, 2010). Examples of different types of activity based workspaces are open spaces, meeting rooms, concentration rooms and informal collaboration points.

Despite the fact that desks are most of the time not assigned when spatial and/ or temporal flexibility is implemented within the work environment, millennials appear to be more conservative than everyone thought since 70% prefers their own desk (Johnson Controls, 2010) it comes to having an assigned desk. The study of Johnson Johnson Controls (2010) In the first place, millennials think of having an own desk as a status symbol (CBRE, 2016). Besides, this way millennials feel more emotionally engaged to the company which can result in better motivation (Johnson Controls, 2010). The need for a work-life balance indicate important implications for organisations when it comes to their professional services of recruiting and retaining millennials (Business Value Exchange, 2015; Harvard Business Review, 2013). Mercer (2001) even shows that 71% of the 456 companies from the U.S. used the implementation of a work-life balance policy as the most important aim for the retention of employees. Moreover, Deloitte (2016) conducted a survey among 7700 millennials across 29 and found that they value a work-life balance as the most important soft arrangement for choosing an employer.

Commute time can be related to work-life balance since time can be spend on other activities when not commuting. Hereby, 52% of the millennials does not want to spend more than 30 minutes on getting to work (CBRE-dataset, 2016). Besides, most the millennials see rigid hours as a higher turn-off than long hours (CBRE-dataset, 2016). They are comfortable

with working in the weekends as long as they have the flexibility to plan their own long hours across the week (Johnson Controls, 2010; Thompson, 2011).

Regarding the literature, there are various ways for fulfilling the need for work-life balance. The CREM activities that might be important for facilitating the need of a work-life balance are:

- Customer relationship management

It is important to have a close relationship with the customer in order to take the right measures for supporting the work-life balance of the customer. Especially since there is no 'one size fits all' measurement.

- Facility management

Facility management is important for the facilitation of facilities that support employees in having a fitting work-life balance. An example is the presence of mail & post-room services. By means of this service, employers can for example send their ordered packages to their work location.

- Marketing/ communication

The fact that a company strives to support their employees to have a fitting work-life balance should be emitted to the outside so employees and potential employees notice this arrangement. This means that the workplace aspects that CREM might implement to support this work-life balance should be clearly present. An example is the presence of facilities such as childcare and wash facilities.

- Location practices

The location of where a certain company is located is important for the work-life balance of employees. The office building should be well accessible and the commute time should be as low as possible for most employees. Besides, the facilities in the surrounding of the building play an important role. This way, employees can combine work with their daily activities such as going to the gym or the grocery store.

- (Workplace) Design management/ space planning

The planning of space and design within the office environment is important for reserving space for certain facilities that positively contribute to a work-life balance. Besides, when flexible workplace use is implemented within the organisation, the workplace has to be designed with flexible workplace stations.

Because of the different ways of creating a work-life balance, there are relatively many aspects in the work environment that can enable this balance. First, the aspects that are derived from Leesman (2016) are explained. Facilities that can make employers save time support their work-life balance. That is why the aspects that belong to the categories 'general office facilities' and 'hospitality' are important. Aspects such as mail & post-room services and leisure facilities onsite or nearby can save time for employers. Besides, people can combine their daily life and work. The category 'storage and privacy' should also be taken into account since people might not have an assigned workspace due to flexible work arrangements. 'Access' is therefor also an important category since colleagues and files have to be accessible while working at different



times and/ or places. The most important physical workplace aspects that belong to 'access' are 'remote access to work files or network' and 'accessibility of colleagues'.

The aspect 'spatial flexibility' facilitates telecommuting and has also to be taken into account when creating a fitting work-life balance (Gajendran & Harrison, 2007; Jeffrey Hill et al., 2008). 'Commute time' is another aspect that is derived from the literature study and is closely related to the need of having a work-life balance (CBRE, 2016). Employees can save time by shorter commute times and people are located closer to their families during the day. Commute time is one of the few aspects that show its presence outside the building. Also here, the physical workplace aspects that might be useful for a work-life balance are shown below. The categories and subaspects that are derived from Van Susante (2015), are shown as a whole including the category and the corresponding aspects, useful or not:

- General office facilities (health and safety provisions, security, mail & post-room services, access, internal signage, reception areas, hospitality services, general tidiness, atriums and communal areas, general cleanliness)
- Hospitality (restaurant/ canteen, tea coffee and other refreshment facilities, leisure facilities onsite or nearby, washroom facilities/ showers)
- Storage and privacy (ability to personalise my workstation, shared storage, space between work settings, dividers, archive storage, personal storage)
- Access (in-office network connectivity, parking, audio-visual equipment, remote access to work files or network, guest/visitors network access, accessibility of colleagues)
- Spatial flexibility
- Commute time

### 3.3 Conclusion

Within Chapter 3, the second sub question has been answered and the third sub question has been answered partially:

2. What are the characteristics and workplace needs of millennials?
3. Which physical workplace aspects are relevant, and how much are they valued to support the workplace needs of millennials?

Currently, there are four generations active in the workplace: veterans, baby boomers, generation X and millennials. Generation Z is not present in the workplace yet. A generation consists of people with the same birth cohort and they therefore share the same experiences during life that shape those people's personalities and beliefs. However, the definition of generations should be interpreted with caution.

According to literature, each generation shows its own characteristics. The needs that employees require in the work environment also differentiate between generations. However, SDT implies that there are three needs that all people have in life and in the work environment: relatedness, competence and autonomy. Those three SDT needs can be fulfilled in various ways.

This master thesis elaborates on the needs of millennials. The three most important needs that millennials have within the workplace are sociability with colleagues, the opportunity to grow and a work-life balance. There are several physical workplace aspects that are relevant for supporting those workplace needs. The categories to which those physical workplace aspects belong are shown. Besides, CREM needs to undertake some activities in order to implement those physical workplace aspects:

#### Sociability with colleagues

##### CREM activities

- Customer relationship management
- Facility management
- Marketing/ communication
- (Workplace) Design management/ space planning

##### CRE categories

- Office climate & décor
- Storage and privacy
- Seclusion rooms
- Access
- Hospitality
- Openness and transparency
- IT-services for social networking

#### Opportunity to grow

##### CREM activities

- Customer relationship management
- Marketing/ communication
- (Workplace) Design management/ space planning

##### CRE categories

- Seclusion rooms
- Access
- Openness and transparency

#### Work-life balance

##### CREM activities

- Customer relationship management
- Facility management
- Marketing/ communication
- Location practices
- (Workplace) Design management/ space planning

##### CRE categories

- General office facilities
- Hospitality
- Storage and privacy
- Access
- Spatial flexibility
- Commute time

The workplace needs and the relevant physical workplace aspects for supporting those needs have been explained in this chapter. The following chapters elaborate on the relations between those workplace needs and the physical workplace aspects by means of exploratory research.



# 4 ● Research approach

This chapter initiates the process for answering sub questions 3 and 4: Which physical workplace aspects are relevant, and how much are they valued to support the workplace needs of millennials? and Do other generations differ in workplace needs and prefer different physical workplace aspects to support workplace needs? A large part of this process consists of exploratory research. This chapter outlines the approach of this research. In the first section, hypotheses are proposed that contribute to answering the remaining research questions 3 and 4. Next, the output variables from the literature study are operationalized. Those output variables are used as input for the exploratory research. The next section elaborates on the questionnaire that is used for conducting the research. Finally, the statistical tests that are used for the analyses of the data are described.

## 4.1 Recapitulation

This research is a quantitative research with an exploratory character. In Chapter 2, the CREM activities and the physical workplace aspects are described. In Chapter 3 it became clear that there are different generations within the workplace that all show different characteristics and needs. However, SDT states that all people despite to which generation they belong, generally show the three needs of relatedness, competence and autonomy. Those three needs can be fulfilled in various ways. Eventually, in Chapter 3 the three specific needs of millennials ('workplace needs' from now on) were linked to the physical workplace aspects that were defined in Chapter 2.

Quantitative exploratory research is conducted in order to answer sub questions 3 and 4 and eventually the main research question. This chapter outlines the approach of the research that is conducted.

## 4.2 Hypotheses

The SDT needs, the three workplace needs and the physical workplace aspects represent the variables that are examined more extensively by means of exploratory research. Hypotheses are proposed that elaborate on the content of and relationships between the variables. The next paragraphs address the hypotheses that are tested by means of the exploratory research.

### *Relation SDT needs and workplace needs*

The three SDT needs that all people have in life and in the workplace can be fulfilled in different ways (Ryan & Deci, 2008). Since this research focuses on millennials, the research questions and therefore the hypotheses elaborate on the needs of this generation when it comes to fulfilling the three SDT needs. The three most important workplace needs of millennials are identified in Chapter 3: sociability with colleagues, opportunity to grow and work life balance. There is a possibility that those three workplace needs can fulfil the more

general SDT needs that every generation has. Taking this perception into account, sociability with colleagues might fulfil relatedness, the opportunity to grow might fulfil competence and the work-life balance might fulfil the SDT need of autonomy. In order to examine those relationships, the following hypotheses are composed:

H1: The need for sociability with colleagues is related the most to the need for relatedness

H2: The need for opportunity to grow is related the most to the need for competence

H3: The need for work-life balance is related the most to the need for autonomy

#### *Generations and workplace needs*

Mannheim (in Lyons et al., 2012) and Howe and Strauss (2009) argue that people that belong to a specific generation share the same birth cohort and therefore share the same experiences during life that shaped those people's personalities. When it comes to having specific workplace needs, those personalities and age play an important role (Oseland, 2009; Rothe et al., 2011). Table 3.4 in Chapter 3 already illustrated that every generation shows its own, general workplace needs. This leads to the assumption that generations differ in the three workplace needs:

H4: Generations differ in workplace needs

H4A: Generations differ in the need for sociability with colleagues

H4B: Generations differ in the need for the opportunity to grow

H4C: Generations differ in the need for work-life balance

#### *Millennials, workplace needs and physical workplace aspects*

Research shows that there is a strong relationship between the increase of satisfaction at work and the importance of the physical workplace (Lindholm & Leväinen, 2006). The CRE department is concerned with creating this workplace in such a way that it supports the needs of employees and eventually attracts and retains them (Harvard Business Review, 2013; Haynes, 2011). In Chapter 3, the three workplace needs are linked to the physical workplace aspects that are relevant for supporting them. This leads to the following hypotheses:

H5: Millennials perceive certain physical workplace aspects to be a support for workplace needs

H5A: Millennials perceive certain physical workplace aspects to be a support for sociability with colleagues

H5B: Millennials perceive certain physical workplace aspects to be a support for the opportunity to grow

H5C: Millennials perceive certain physical workplace aspects to be a support for a work-life balance

#### *Generations, workplace needs and physical workplace aspects*

The paragraph that explains the background of hypothesis 4 already elaborates on the fact that different generations show their own, general workplace needs. Although the workplace needs that are addressed in hypothesis 6 are fixed, different generations might perceive different physical workplace aspects for supporting those needs. The reason for this assumption is the fact that people with the same birth cohort developed unique personalities, beliefs and values (Howe & Strauss, 2009). Therefore, different generations might perceive specific necessities in the shape of physical workplace aspects for supporting the fixed needs. The following hypotheses are formulated:

H6: Generations perceive different physical workplace aspects to be a support for workplace needs

H6A: Generations perceive different physical workplace aspects to be a support for sociability with colleagues

H6B: Generations perceive different physical workplace aspects to be a support for the opportunity to grow

H6C: Generations perceive different physical workplace aspects to be a support for a work-life balance

### **4.3 Data collection**

Since there is no existing data to test the hypotheses, data is collected by means of a survey. Baarda et al. (2014) explains that an online questionnaire is a useful tool to conduct a survey. Respondents can at their own time and pace fill in the questionnaire and can remain anonymous. This might positively contribute to the response rate (Baarda, 2009). However, since the questionnaire is set up online, the process of responding cannot be controlled. This is why questions should be clearly explained and the system should be programmed in a way that no questions can be skipped (Baarda, 2009). The English version of the questionnaire that was distributed for the research of this study is attached in Appendix A.

The variables that are present in the hypotheses are operationalized in this section. The variables are linked to levels of measurement that form the basis for formulating the questions and answer options in the questionnaire. Besides, those levels of measurement are useful when the results are processed by means of statistical analyses.

### 4.3.1 Operationalization

This section of operationalization is divided into headings that represent the types of variables that are asked in the questionnaire. First, the part in the questionnaire about the socio-demographic characteristics of the respondent is operationalized. Secondly, the part in the questionnaire about SDT needs and thirdly the part about workplace needs are operationalized. Finally, the part in the questionnaire about the physical workplace aspects is operationalized.

#### *Socio-demographic characteristics*

For defining the socio-demographic characteristics of respondents, eight different variables were distinguished and described. Table 4.1 shows an overview of the operationalization of all the socio-demographic characteristics.

Table 4.1  
*Operationalization socio-demographic characteristics*

Variable	LoM	Item
Gender	Nominal	Multiple choice (2): 1= Male, 2= Female
Date of birth	Interval/ Ratio	Open question (integer)
Education level	Ordinal	Multiple choice (4): 1= Primary education 2= Secondary education 3= Vocational education 4= Undergraduate (University bachelor level) 5= University Master or PhD
Job position	Nominal	Multiple choice (6): 1= Intern/ trainee 2= Administrator 3= Employee 4= Manager 5= Board member 6= Other
Years of deployment	Interval/ Ratio	Open question (integer)
Number of employers	Interval/ Ratio	Open question (integer)
Household composition	Nominal	Multiple choice (4): 1= Married/ living together without children 2= Married/ living together with children 3= Single without children 4= Single with children 5= Other, namely

The first two variables have a more standard operationalization. For gender, a two-item multiple-choice question is set up with the options male or female. An integer open question for date of birth is chosen in which respondents can fill in their year of birth.

For education level, a multiple-choice question is implemented in which the different answer options describe education levels. The options are 'Primary education', 'Secondary education', 'Vocational education', 'Undergraduate (University bachelor level)' and 'University Master or PhD'. Most of the answers are also used in prior research (De Been & Beijer, 2014).

Respondents are asked about their job position. Also in this case the answers are derived from prior research of the Centre for People and Buildings (De Been & Den Hollander, 2014). Also here, the answer options originate from a more extended list of De Been and Den Hollander (2014). The most common job positions are selected to implement in the questionnaire and an answer option 'other' is added. The possibilities to choose from are: 'Intern/ trainee', 'Administrator', 'Employee', 'Manager', 'Board member' and 'Other'.

The questions about their years of deployment and number of employers are open, integer questions. In the question about their years of deployment, respondents fill in the years of deployment at their current employer. In the question about the number of employers,



respondents fill in the number of employers they have worked for including their current employer.

The last question is about household composition. This is a multiple-choice question with five answer options that contain the most common household compositions for people that belong to the labour force. The answer options are 'Married/ living together without children', 'Married/ living together with children', 'Single without children', 'Single with children' and 'Other, namely'. By choosing the last option, respondents can fill in their specific household composition when theirs is not present in the previous answer option.

### *SDT needs*

The part in the questionnaire that addresses the SDT needs measures the extent to which respondents agree with statements that are related to the SDT needs. Table 4.2 shows an overview of the operationalization.

Table 4.2  
*Operationalizing SDT needs*

Variable	Indicators	LoM	Item
Agreement about relatedness (1)	Connected Part of a group Don't mix Can talk Often feel alone Close friends	Ordinal	Scale (5): 1 = Totally disagree 2 = Disagree 3 = Somewhat disagree/ somewhat agree 4 = Agree 5 = Totally agree
Agreement about competence (2)	Don't feel competent Master tasks Feel competent Doubt able to execute Good at things Accomplish difficult tasks	Ordinal	Scale (5): 1 = Totally disagree 2 = Disagree 3 = Somewhat disagree/ somewhat agree 4 = Agree 5 = Totally agree
Agreement about autonomy (3)	Be myself Follow commands Do things differently Tasks are in line Do the way I think Feel forced	Ordinal	Scale (5): 1 = Totally disagree 2 = Disagree 3 = Somewhat disagree/ somewhat agree 4 = Agree 5 = Totally agree

The operationalization of the SDT needs is derived from Van den Broeck et al. (2010). Van den Broeck et al. (2010) constructed a Work-related Basic Need Satisfaction scale (W-BNS) with statements that are applicable to personal experiences at work. Therefore, it should be taken into account that the general subjects of the statements are the SDT needs, but the answers illustrate the current situation of the respondent. This is the case since the theory assumes that every employee wants the three needs to be fulfilled. Therefore, the scales and agreement for having those needs do not have to be checked again. Instead, it is more interesting to check whether the needs are being satisfied. On every need is elaborated by means of six statements.

An example of a statement is: At work, I feel part of a group. Respondents have to check the extent to which they agree to the statement on a five-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree).

### *Workplace needs*

A same kind of design as for the SDT needs is used for operationalizing the workplace needs. This way, it can be analysed whether certain SDT needs and certain workplace needs are related to each other. On every workplace need is elaborated by means of five or six statements. Respondents have to check the extent of agreement to which they would like the illustrated situation to happen. This way, it can be examined whether respondents (of all generations) value the needs. An example of a statement is: I would rather join an individual, personalised training program than group classes in order to become better in my current job. to which they agree to the concerning statement. The type of scale that is applied is a five-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree).

Every statement is derived from the literature study in Chapter 3. The following section explains for every statement the source that was used for initiating the statement.

1. Variable: Agreement about sociability with colleagues

- Indicator: Similar mind-sets

Weyland (2011) states that millennials are looking for similar mind-sets and values in other colleagues.

- Indicator: Meet to integrate

According to research from Walters (2016), one third of the millennials felt that meeting their colleagues in a social setting was the most important aspect of their workplace introduction. Besides, Walters (2016) concludes that millennials see meeting their colleagues in a social setting as an effective way to integrate as part of the team.

- Indicator: Second home

Results of the latest KPMG (2017) report point out that millennials enjoy being part of a community with a strong relationship that can be called their “work family”. Besides, PwC (2011) notes in their report that an environment with friendly colleagues that feels as a second home supports the motivation of employees

- Indicator: Socialise with manager

Millennials value socialisation with their managers (Kelly, 2016). They prefer leaders that involve them and communicate on a less hierarchical level (Ukleja & Jackson, 2015).

- Indicator: Interact for reputation

Shandwick (2015) explains that millennials believe that besides doing a good job, it is important to interact with colleagues in order to build their careers. Besides, 34% of the millennials think of meeting with colleagues outside the office as a positive initiative for their work reputation (Shandwick, 2015).

## 2. Variable: Agreement about opportunity to grow

- Indicator: Management function

Research of Elance-oDesk (2014) indicates that two third of the millennials sees themselves in a management function in the next ten years (e.g. senior/middle manager, business owner or on a C-level such as CEO).

- Indicator: Join training program

A report of Thompson (2011) concludes that people enjoy their work more when they are good at it. Since learning opportunities offer the chance to become better at it, people want to learn (Thompson, 2011). Piech (2016) analysed various learning programmes. He explains that individual learning processes include a personalised program that can be adjusted in relationship to a person's test scores, experiences or previous knowledge. This individual learning process can be very effective (Piech, 2016). Social learning contains learning together in a group (Piech, 2016). It can be assumed that people prefer individual learning programs over group learning because of the effectiveness. This assumption is redirected into a statement.

- Indicator: Personal investment

Another conclusion of the report from Thompson (2011) is that employees feel valued when a company invests tangible sources in their future. Skill development of employees by means of course and classes is such a tangible source by which organisations can invest in the future of their employees.

- Indicator: Participate development

The vast majority of millennials (93%) see on going skills development as a basic requirement in their future careers (Manpower Group, 2016).

- Indicator: Presence of coaches

PwC (2011) concludes that millennials value the presence of strong coaches and mentors as the most important asset an employer could have.

## 3. Variable: Agreement about work-life balance

- Indicator: Family responsibilities

According to Reilly et al. (2012) are arrangements that offer family responsibility during the office hours one of the most common arrangements for facilitating a work-life balance. An example is facilitating childcare. Leave policies can also be offered by organisations in order to assist employees with the birth of a child or with a family member's illness (Reilly et al., 2012)

- Indicator: Make some sacrifices

Millennials work to live (CBRE-dataset, 2016). They observed and often experienced the sacrifices their parents made as Baby Boomers (Hershatter & Epstein, 2010).

- Indicator: Leave early

Glynn et al. (2002) indicate that a difficulty when it comes to work-life balance is the fact that there is no ‘one size fits all’ solution. This leads to personalised arrangements. But the question is: are people comfortable with those personalised arrangements when facing others? For example, when they leave much earlier on a regular workday than their colleagues.

- Indicator: Working hours

Most of the millennials see rigid hours as a higher turn-off than long hours. They are comfortable working in weekends as long as they have the flexibility to plan their own long hours across the week (Johnson Controls, 2010; Thompson, 2011).

- Indicator: Separate leisure

To be able to control their work-life balance, millennials want to separate work and leisure completely (CBRE-dataset, 2016)

Table 4.3 shows an overview of the operationalization of the workplace needs.

Table 4.3  
*Operationalization workplace needs*

Variable	Indicators	LoM	Item
Agreement about sociability with colleagues (1)	Similar mind-sets Meet to integrate Second home Socialise with manager Interact for reputation	Ordinal	Scale (5): 1 = Totally disagree 2 = Disagree 3 = Somewhat disagree/ somewhat agree 4 = Agree 5 = Totally agree
Agreement about opportunity to grow (2)	Management function Join training program Personal investment Participate development Presence of coaches	Ordinal	Scale (5): 1 = Totally disagree 2 = Disagree 3 = Somewhat disagree/ somewhat agree 4 = Agree 5 = Totally agree
Agreement about work-life balance (3)	Family responsibilities Make sacrifices Leave early Working hours Separate leisure	Ordinal	Scale (5): 1 = Totally disagree 2 = Disagree 3 = Somewhat disagree/ somewhat agree 4 = Agree 5 = Totally agree

#### *Physical workplace aspects*

Some of the CRE categories that were found in Chapter 2 are linked to the three workplace needs in Section 3.2.3. That section already explained the source of each CRE category. Some of them are derived from separate specialised literature. However, most of those categories are derived from the factor analysis Van Susante (2015) conducted on the Leesman (2016)

outcomes. This factor analysis shows eight CRE categories with all CRE sub aspects. Sometimes, the concerned workplace need that needs to be supported shows more affinity with some of the underlying CRE sub aspects than it does with the umbrella category. Therefore, the questionnaire sometimes asks respondents to indicate the importance for some sub aspects instead of the main category. Table 4.4 indicates for each workplace need which physical workplace aspects are being asked.

Table 4.4  
Implemented physical workplace aspect

Need	Original category	Implemented physical workplace aspect
Sociability with colleagues	Office climate and décor	People walking past my desk
	Storage & Privacy	Space between work-settings
	Seclusion rooms	Informal work areas/ break-out zones
	Access	Accessibility of colleagues
	Hospitality	Restaurant/ canteen Leisure facilities onsite or nearby
	Openness and transparency	Openness and transparency
	IT-services for social networking	IT-services for social networking
Opportunity to grow	Seclusion rooms	Meeting rooms
		Quiet rooms for working alone or in pairs
	Access	Audio-visual equipment
		Accessibility of colleagues
Openness and transparency	Openness and transparency	
Work-life balance	General office facilities	Mail and post-room services
	Hospitality	Leisure facilities onsite or nearby
		Washroom facilities/ showers
	Storage & Privacy	Ability to personalise my workstation
	Access	Remote access to work files or network
		Accessibility of colleagues
	Spatial flexibility	Spatial flexibility
Commute time	Commute time	

In the questionnaire, respondents are asked to indicate to which degree they consider the physical workplace aspects important for supporting a certain need. The type of scale by which they can indicate the importance of a physical workplace aspect is a five-point Likert scale ranging from 1 (not important) to 5 (very important).

Regarding to each of the three needs, a last open question is asked in which respondents can suggest another important physical workplace aspect they consider important for supporting the concerned need. Respondents also indicate to which degree they consider the aspect important. Table 4.5 shows an overview of the operationalization of the physical workplace aspects.

Table 4.5  
Operationalization of physical workplace aspects

Variable	Indicators	LoM	Item
Importance of physical workplace aspects related to sociability with colleagues (1)	People walking past my desk Space between work-settings Informal work areas/ break-out zones Accessibility of colleagues Restaurant/ canteen Leisure facilities onsite or nearby Openness and transparency IT-services for social networking	Ordinal	Scale (5): 1 = Not important 2 = Slightly important 3 = Moderately important 4 = Important 5 = Very important
	Other work environment aspects		
Importance of physical workplace aspects related to opportunity to grow (2)	Meeting rooms Quiet rooms for working alone or in pairs Audio-visual equipment Accessibility of colleagues Openness and transparency	Ordinal	Scale (5): 1 = Not important 2 = Slightly important 3 = Moderately important 4 = Important 5 = Very important
	Other work environment aspects		
Importance of physical workplace aspects related to work-life balance (3)	Mail and post-room services Leisure facilities onsite or nearby Washroom facilities/ showers Ability to personalise my workstation Remote access to work files or network Accessibility of colleagues Spatial flexibility Commute time	Ordinal	Scale (5): 1 = Not important 2 = Slightly important 3 = Moderately important 4 = Important 5 = Very important
	Other work environment aspects		

### 4.3.2 Distribution of the questionnaire

The sequence of the questionnaire is different from the sequence that is shown in the operationalization section since this is clearer for respondents in order to address the questions. For example, questions about relatedness, sociability with colleagues and the physical workplace aspects that might be important for supporting sociability with colleagues are clustered in a specific part of the questionnaire.

The questionnaire is distributed among people that work at an office building. Those people can also be called 'knowledge workers'. In Section 3.2.2 is explained that knowledge workers work with their heads on intangible resources (e.g. knowledge) (Drucker, 1993). One of the main activities of those employees is working on a desk with a computer in a workplace environment. The distribution of the questionnaire takes place online by means of a link that directs to the questionnaire. There is a Dutch and an English version of the questionnaire.

This link that leads to the questionnaire is distributed in various ways. The link is sent to certain members of the CREME association. They were asked to distribute the link among the employees of their company. CREME is a Dutch organisation for Corporate Real Estate

Managers. Lastly, the link is distributed by means of posting it on my own social media sites such as LinkedIn and Facebook.

### **4.3.3 Reliability**

Reliability concerns the extent to which the measurement is independent from coincidence (Baarda, 2009). In the most optimal situation, the data is free of random errors (Baarda et al., 2014). Random errors can occur regarding the moment of measurement. Respondents can be influenced by, for example, the place, their mood or distraction when filling in the questionnaire. Another aspect that can influence the data is the sensitivity of respondents. The latter can be the case for some questions about SDT since those questions are relatively personal. The reliability of the data about personal and work-related characteristics of respondents is expected to be high since those answers are based on facts. Furthermore, some questions are asked in a negative or reversed way. This way, respondents have to stay focused and the overall reliability of the data might improve. Overall, the questions in this questionnaire are not very difficult to answer, which implies that the random errors that might occur in the data is limited.

### **4.3.4 Validity**

The validity concerns the extent to which the data is free of systematic errors (Molin, 2014). The validity is divided into two different types of validity: the external validity and the internal validity.

#### *Internal validity*

The internal validity refers to the degree to which the research measures what it is supposed to measure (Heijs, 2016). The variables are operationalized in the most logic and clear way in order to secure a high internal validity. This way, respondents understand the questions and data is gathered as it is intended. Besides, the questions that contain statements of which respondents have to check their extent of agreement are adopted from the standard SDT questions of Van den Broeck et al. (2010). Section 4.3.1 elaborates on the content of those questions. The operationalization and scales of those SDT questions is generally accepted and more studies adopted these scales. In Chapter 5 the internal validity of the questions about the SDT needs are shown by means of Cronbach's alpha. The section of the questionnaire in which respondents are asked to fill in the importance of several physical workplace aspects for supporting the opportunity to grow might be difficult to understand. Therefore, explanatory text is added to this section of the questionnaire in order to secure a higher internal validity.

#### *External validity*

External validity refers to the fact that the results of the sample are more generally valid (Heijs, 2016). The results have to be representative for larger groups, namely the target population. This is the 'representativeness' of a research. Probability or random sampling leads to the most representative samples (University of California, 2015). However, it was not possible to obtain a sample by means of probability or random sampling. Therefore, non-random sampling is applied, which resulted in a convenience sample for this study. In a convenience sample, respondents participate in the study since they are most easy to recruit (Explorable, 2009).



This sampling technique is fast, inexpensive and the respondents are well accessible (Explorable, 2009). The generalisation of the sample for non-random samples is limited since they do not represent a specific population (University of California, 2015). However, Chapter 5 will explain the representativeness for the sample of this study more extensively.

#### 4.4 Data description and statistical analysis

The data is gathered by means of the questionnaire and is described and analysed by using SPSS. First, the data is prepared. Some of the raw data needs to be transformed whereby missing values are examined and some variables are recoded.

Next, the data about the socio-demographic characteristics and the data about the physical workplace aspects is described by means of frequency tables calculating the frequencies, mean and standard deviation.

The data about the SDT variables is prepared and described by first showing the mean and standard deviation. Next, the extent to which the variables in the scale are correlated is examined. Despite the fact that the scale is generally accepted in social sciences (Van den Broeck et al., 2010), the Cronbach's alpha is calculated to check the internal consistency of the scale. Ideally, the Cronbach's alpha coefficient of a scale should be above .7 (Devellis, 2012). In the case that the requirements are met, a new variable is created out of the mean of the sumscores for all the underlying variables (Pallant, 2016). The formula for creating this new variable is:

$$\text{New variable} = \frac{\sum \text{item scores}}{\text{number of items}}$$

Since the variables about the three workplace needs are exploratory, the variables are prepared and described by means of a factor analysis. Hereby, the variables about the workplace needs are combined into new workplace need factors. For the extracted method, the Principal Component Analysis is used (PCA). For the rotation method Varimax with Kaiser normalisation is used. This is the most used method for orthogonal (uncorrelated) solutions (Pallant, 2016). For conducting the PCA, there are no fixed numbers of factors used as input. This way, it is examined whether the variables can ideally be assigned to the three factors that each represents one of the three needs. The suitability of the data for the factor analysis is assessed by checking the sample size, conducting the Barlett's test of sphericity, performing the Kaiser-Meyero-Olkin test and checking the correlation matrix for the value of the coefficients. The number of factors is determined by means of using the Kaiser's criterion. Regarding this criterion, the components with an Eigenvalue of one or more are most interesting (Pallant, 2016). The screeplot and pattern matrix are also taken into account for determining the number of factors.

Now, the data is ready for analysing and for testing the hypotheses that are proposed in Section 4.2. The statistical tests that are used are shown in the next sections.

##### 4.4.1 Pearson product-moment correlation

The Pearson product-moment correlation coefficient ( $r$ ) is calculated to test hypotheses 1 to 3 (hypotheses 1 to 6 after Chapter 5). The strength and direction of the linear relationship

between the STD needs and workplace need factors is explored by means of this correlation analysis.

First, a scatterplot is generated that enables to check for violation of the assumptions of linearity and homoscedasticity. The plot also gives an overview of the nature of the relationships between the variables that are used.

Next, the Pearson product-moment correlation coefficient ( $r$ ) is calculated. In the case the coefficient is negative, an increase in score on one variables implies a decrease in the score for the other variable in the relationship. When the coefficient is positive, an increase for the score on one variable implies an increase for the score for the other variable that is in the relationship. Looking at the correlation coefficient ( $r$ ), the strength of the relationship can be determined. Cohen (Cohen in Pallant, 2016) suggests the following guidelines: small =  $r = .10$  to  $.29$ , medium =  $r = .30$  to  $.49$  and large =  $r = .50$  to  $1.0$ .

The 'coefficient of determination' is calculated to determine the percentage of variance the two variables share. This is calculated by squaring the  $r$  value (coefficient of determination =  $r^2 \times 100\%$ ).

The last step is to check the significance level (shown as Sig. 2 tailed). This indicates the confidence of the results that are obtained. The significance of  $r$  or  $\rho$  depends strongly on the size of the sample. Since this sample is large ( $N=100+$ ), small correlations may reach a statistical significance level at  $p < .05$  (Pallant, 2016).

#### **4.4.2 One-way ANOVA**

Hypotheses 4 and 6 (hypotheses 7 and 9 after Chapter 5) are tested by means of applying the one-way analysis of variance (ANOVA). Two types of variables are involved in the one-way ANOVA. The independent variable in this study is the generation variable that contains three levels of generations. The dependent variable is a continuous variable and consists of a variable that contains a five-point Likert scale.

First, the Levene's test for homogeneity of variances will be performed. By means of this test it can be examined whether the variance in scores is equal for each of the generation groups. When the  $p$  value for significance is less or equal to  $.05$ , there is difference among the mean scores for the three groups. In this case there is a violated assumption of homogeneity and therefore the accuracy of ANOVA could be questioned. The next step is to use, instead of the ANOVA, the Welch test and Brown-Forsythe test. However, when the Levene's test for homogeneity of variance shows a significance of more than  $.05$ , ANOVA is performed.

The ANOVA tables shows the between-groups and within-groups sums of squares, degrees of freedom, mean square,  $F$  value and significance. The most important aspect is the significance level. When the  $p$  value is less than or equal to  $.05$ , there is a significant difference among the mean score on the dependent variable for the generation groups. This test only shows whether there is a difference. This test does not indicate where the difference(s) occur. Therefore, the post-hoc is carried out with multiple comparisons.

There are different post-hoc tests that indicate where differences among the generations groups occur. In this study, the Bonferroni test is applied since not all three generation groups contain a large sample of cases. In the column 'Mean Difference', the asterisks next to the

coefficients implies that there is a difference between the concerned generations. The significance level of the difference is shown in the column 'Sig.'.

Lastly, the effect size of the difference is determined by means of calculating the eta squared. The formula calculating the eta squared is as follows:

$$\text{Eta squared} = \frac{\text{Sum of squares between groups}}{\text{Total sum of squares}}$$

Cohen (Cohen in Pallant, 2016) determines that an eta squared of .01 is a small effect size, .06 is medium a medium effect size and an eta squared of .14 is a large effect size.

The results of the one-way ANOVA should be interpreted carefully. Although there are significant differences in mean scores between groups, the actual effect might be small in the case those mean scores do not differ substantially from each other.

#### 4.4.3 Frequency

No difficult statistical tests are needed for testing hypothesis 5 (hypothesis 8 after Chapter 5). The survey answers of millennials related to the questions that concern the physical workplace aspect variables are extracted. Frequency tables show the distribution of the scores for the importance on the physical workplace aspects. Those tables show the mean, standard deviation, minimum and maximum value, skewness and kurtosis. The skewness indicates the level of symmetry of the distribution. Positive skewness suggests that the scores are clustered on the left side of the scale. Negative skewness indicates the opposite. Positive kurtosis indicates that the distribution of the scores is rather peaked and clustered in the centre with long, thin tails. Negative kurtosis indicates a relatively flat distribution with many cases in the extreme values.

#### 4.5 Conclusion

Chapter 4 initiated the process for answering the remaining sub questions 3 and 4:

3. Which physical workplace aspects are relevant, and how much are they valued to support the workplace needs of millennials?
4. Do other generations differ in workplace needs and prefer different physical workplace aspects to support workplace needs?

In this chapter, the approach for the exploratory research is outlined. This research examines relationships between variables such as the workplace needs of generations and the importance of certain physical workplace aspects for supporting the workplace needs.

In total, six hypotheses are proposed that elaborate on the content of and relationships between the variables in order to accurately answer sub questions 3 and 4. Those variables have been operationalized before composing the questionnaire. This questionnaire is distributed among knowledge workers over a wide variety of organisations and provides the data that is needed for addressing the hypotheses. The validity and reliability of the data are already explained in this chapter, but are addressed more extensively in Chapter 5 when the actual data is being described. The statistical tests that are used for analysing the data in order

to test the hypothesis, are the Pearson product-moment correlation test, the one-way ANOVA and frequency tables.

In Chapter 5, the data is prepared and described. Subsequently, the data is analysed and the hypotheses are tested in Chapter 6. Sub questions 3 and 4 are also answered in Chapter 6.



# 5. Data description

Chapter 5 prepares and describes the data that is analysed for answering sub questions 3 and 4: Which physical workplace aspects are relevant, and how much are they valued to support the workplace needs of millennials? and Do other generations differ in workplace needs and prefer different physical workplace aspects to support workplace needs? First, the method for distributing and collecting the data is described. Next, the data is prepared whereby missing values are examined and some variables are recoded. The largest part of this chapter consists of describing the data. The socio-demographic characteristics of the respondents are described and, when possible, checked on representativeness. The variables about SDT needs, workplace needs and physical workplace aspects are also described.

## 5.1 Distribution and collection

The questionnaire was distributed between the 7<sup>th</sup> of September and the 6<sup>th</sup> of October. The distribution happened by means of two online links that led to the questionnaire. One link contained the English version and one link the Dutch version of the questionnaire. As already explained in Section 4.3.3, the type of sample for this study is a non-random convenience sample (Explorable, 2009). The link was posted on my own social media site LinkedIn and Facebook. In other cases, an invitation was sent to corporate real estate managers of various companies in which they were asked to participate in the research by distributing the questionnaire to other employees. A reminder was sent to all addressees two weeks after the first series of distribution.

It is not clear how many people noticed or received the questionnaire and whether companies sent the questionnaire to all their employees. Nevertheless, it can be concluded that the link to go to the questionnaire was used 699 times. In total, 336 respondents filled in the questionnaire. The English version was filled in four times and the Dutch version was filled in 332 times.

## 5.2 Data preparation

The data needs to be prepared before the data can be analysed. This means that some of the raw data needs to be transformed whereby missing values are examined and some variables are recoded in the statistical program SPSS. In order to make the process of analysing better readable, variables are coded in SPSS. Appendix B shows the codebook. The codebook shows the label, variable code, variable values and remarks. The column for remarks explains whether a question is asked reversed.

### 5.2.1 Missing values

The first step is to check for missing values in the dataset. As already explained in Section 5.1, the questionnaire was filled in 332 times. However, not all the questionnaires were completed

and some values are missing. The next section addresses the cases that include missing values and are therefore not taken into account in further analyses.

- In 27 cases, respondents already dropped out of the questionnaire while answering the main questions. Those questions are about the respondent's opinion regarding certain needs and physical workplace aspects. Those cases cannot be taken into account when continuing this study since far too many values are missing for answering the hypotheses and research questions accurately.
- In five cases, respondents dropped out at the last part of the questionnaire that is about the socio-demographic characteristics of the respondents. Those cases are not taken into account for further analysis since too much information about the respondents is missing.
- Two cases are not taken into account for further analysis because the question about the date of birth have not been answered correctly. In one case, nothing is filled in. In the other case, the year 2017 is filled in as year of birth. Since some hypotheses and the main research question focus on generations, the date of birth is essential when continuing this study. Those two cases are deleted from the dataset.

After deleting the described cases with missing values in SPSS, it might seem that some answers of the completed questionnaires have not been filled in. This is the fact since the concerned questions only needed to be answered in the case the respondent checked the box with the answers 'yes, namely' or 'other, namely'. In total, an amount of 302 completed questionnaires remain and will be taken into account when continuing this study.

### **5.2.2 Recoding**

In the second step, some variables are recoded. In the questionnaire, respondents are asked to fill in their date of birth. However, the variable about the date of birth needs to be recoded into age. Using the date and time wizard in SPSS, dates can be extracted from each other. The ages of the respondents are accurate on October the 9<sup>th</sup> in 2017.

Since some hypotheses and the main research question focus on generations, a variable has to be created that recodes respondents with a certain year of birth to a certain generation. Therefore, a new variable is added to the dataset, namely Generation. This new variable Generation contains three variable values: Baby boomers, Generation X and Millennials. Respondents that belong to the birth cohort 1946 – 1964 are assigned to the value Baby boomers, respondents that belong to the birth cohort 1965 – 1979 are assigned to the value Generation X and respondents that belong to the birth cohort 1980 – 1998 are assigned to the value Millennials.

The data about the education level distinguishes five different education levels. However, in order to be able to assess the representativeness of the sample, the five education levels have to be recoded into a variable with three education levels. The two original levels Primary education and Secondary education are recoded into the new variable value Low



education level. The original level Vocational education is recoded into the new variable value Medium education level. Lastly, the original levels Undergraduate and University Master or PhD are recoded into the new variable value High education level. The distribution of the original levels over the three new variable values is largely equal to the definitions of CBS (2017d) about the three education levels.

When it comes to the data about the number of employees, three respondents filled in '0'. This might be explained by the fact that those respondents are interns and look at their internship as part of their education. However, those organisations can be counted as their first employer. Therefore, the answers of those three respondents are recoded to '1'. Besides, one respondent indicates to have worked for 25 employers. This can be explained by the fact that this person might have a profession for which you have to change your employer often. This respondent might be a freelancer that gets hired by various companies which he all counted for filling in the questionnaire. In order to avoid outliers, the answer of this respondent is recoded into the mean number of employers that other respondents of the same age indicate. Therefore, the answer of 25 is recoded into nine.

#### *Reversed variables*

Before analysing the results, the questions that are negatively worded, have to be recoded in such a way that the scale is reversed and points the same way as the other questions. The codebook in Appendix B shows in the column for remarks which variables are asked in a reversed way.

### **5.3 Data description**

In total, the dataset consists of 302 useable questionnaires. In the following sections the data of these useable questionnaire is described.

#### **5.3.1 Socio-demographic characteristics**

First, the data about the socio-demographic characteristics is explained. Those values are not only important as exploratory variables, those values also indicate the representativeness of the sample. Therefore, when possible, the data of this study is compared to data of the CBS (Central Bureau for Statistics). CBS provides Dutch nation-wide data about the population in the Netherlands. For this study, the latest data of the CBS is taken that represents the working population within the labour force in 2016. The reason for the selection of this specific representation is because of the fact that the respondents of the questionnaire belong to the working population within the labour force. However, a remark is the fact that the sample from the CBS that represents the working population within the labour force in 2016 does not only include office workers, as the sample of this research does.

#### *Gender*

Table 5.1 shows the numbers about data for gender from this study and from the CBS (CBS, 2017b). From the total of 302 respondents, 159 respondents are male and 143 respondents are female. This results in percentages of respectively 52,6% (male) and 47,4% (female).

Table 5.1  
Distribution of gender

	This study		CBS (2017b)
	N	%	%
Male	159	52,6	53,7
Female	143	47,4	46,3

A chi-square goodness-of-fit test indicates there was no significant difference in the proportion of males and females identified in the current sample as compared with the values that were obtained in the study about the Dutch nation-wide working population within the labour force of CBS (CBS, 2017b),  $\chi^2 (1, n = 302) = .13, p = .71$ . The chi-square test is attached in Appendix C. It can be concluded that the sample of this study shows a high representativeness for the Dutch nation-wide working population within the labour force when it comes to gender.

### Age

The respondents in the dataset are between 19 and 63 years old. Figure 5.1 shows that the variable age has a mean of 35,3 years old.

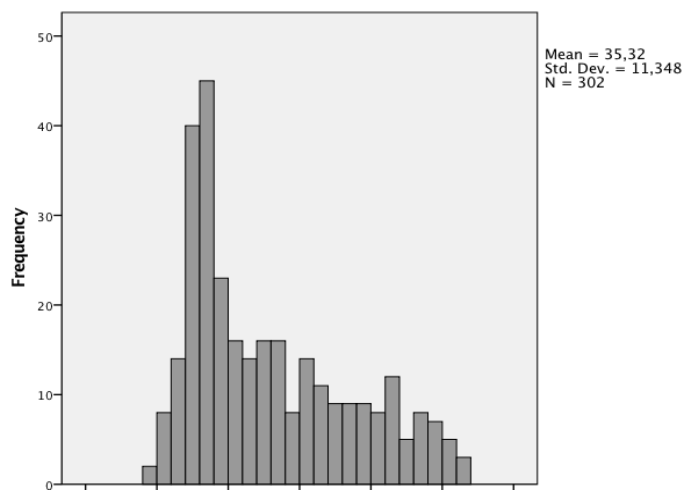


Figure 5.1 Distribution of age

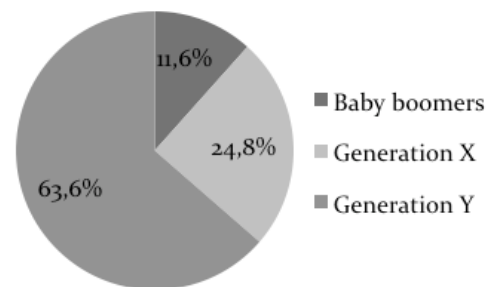


Figure 5.2 Distribution of generations

The standard deviation of 11,35 is relatively high because of the wide distribution of the variable values. As can be seen in Figure 5.1, the bars are relatively high at the left side of the figure.

The respondents are assigned to a corresponding generation by means of recoding that is described in Section 5.2.2. The distribution of the respondents over the generations is important for testing the hypotheses and answering the research questions. Besides, the representativeness of the sample can be assessed when comparing the distribution of generations for this study with a study about the nation-wide working population within the labour force in 2016 (CBS, 2017a). Figure 5.2 and Table 5.2 show an overview of the distribution of the respondents over the different generations.

Table 5.2  
Distribution of generations

Generation	Birth cohort	This study		CBS (2017b)
		N	%	%
Baby boomers	1946 - 1964	35	11,6	26,9
Generation X	1965 -1979	75	24,8	35,7
Millennials	1980 - 1998	192	63,6	37,4

As showed in Figure 5.2 and Table 5.2, the generation of baby boomers represents the smallest generation (11,6%) in the sample of this study. A relatively high percentage of respondents (24,8%) belongs to generation X. The millennial generation represents the largest generation (63,6%).

The sequence in size of each generation is equal to the data of the Dutch nation-wide working population within the labour force in 2016 (CBS, 2017a). However, the ratios differ considerably. A chi-square goodness-of-fit test indicates that there is a significant difference in the proportion of the three generations identified in the current sample as compared with the values that were obtained in the study about the Dutch nation-wide working population within the labour force of CBS (CBS, 2017a),  $\chi^2 (2, n = 302) = 91.63, p = .00$ . The chi-square test is attached in Appendix C. It can be concluded that the representativeness of the generation groups within this study is arguable. This implies that the results of this study should be interpreted with care in the case of generalising the results for the population of the Netherlands.

This lack of representativeness can be mostly assigned to the high percentage of millennials in this study. The percentage of millennials in this study is 26,2% higher than the percentage of millennials that is showed by the CBS (2017a). The cause of this relatively high ratio of millennials for this study is already explained in the section that belongs to Table 5.2.

### Education level

The level of education of the respondents is also explained in the dataset. Five education levels are distinguished, namely: primary education, secondary education, vocational education, undergraduate (e.g. university bachelor) and university master or PhD. Table 5.3 shows the frequencies and percentages of the education levels distributed over the respondents.

Table 5.3  
Distribution of education level

Original levels	This study		New levels	This study		CBS (2017d)
	N	%		N	%	%
Primary education	0	0	Low education level	10	3,3	21,3
Secondary education	10	3,3				
Vocational education	51	16,9	Medium education level	51	16,9	42,5
Undergraduate	106	35,1	High education level	241	79,8	36,2
University Master or PhD	135	44,7				

As can be seen in Table 5.3, the majority of the respondents is highly educated (undergraduate or university master or PhD) with a percentage of 79,8%. Even 44,7% is in the possession of a

Master's degree or PhD. A smaller ratio of the respondents had vocational education (16,9%) or secondary education (3,3%). None of the respondents stopped receiving education after primary education.

By comparing the data of this study to data of the CBS the representativeness of the sample can be assessed. In section 5.2.2 is described that the 5 levels of education are recoded into the 3 new levels, namely: 'low education level', 'medium education level' and 'high education level'. A chi-square goodness-of-fit test indicates that there is a significant difference in the proportion of education levels identified in the current sample as compared with the values that were obtained in the study about the Dutch nation-wide working population within the labour force of CBS (CBS, 2017d),  $\chi^2(2, n = 302) = 251.09, p = .00$ . The chi-square test is attached in Appendix C. It can be concluded that the representativeness of the education levels within this study is arguable. This implies that the results of this study should be interpreted carefully when generalising them for the whole population of the Netherlands.

The percentage of highly educated respondents is notably high compared to the nation-wide working population within the labour force. An explanation for the relatively high percentage of respondents that belong to the high education level is the fact that the questionnaire was distributed amongst knowledge workers. Those people are most of the time highly educated since they work with their heads on intangible resources (e.g. knowledge) (Drucker, 1993).

### *Job position*

Six options are defined for exploring the job position of the respondents. Table 5.4 shows the frequencies and percentages of the job positions distributed over the respondents.

Table 5.4  
*Distribution of job position*

	N	%
Intern/ trainee	14	4,6
Administrator	17	5,6
Employee	154	51,0
Manager	69	22,8
Board member	16	5,3
Other	32	10,6

Looking at Table 5.4, it can be concluded that the job positions intern/ trainee (4,6%), board member (5,3%) and administrator (5,6%) share the smallest ratio. Most of the respondents are 'regular' employees (51,0%). This is not surprising since organisations need a large part of 'regular' employees to function. It is striking that a relatively large part of the respondents (22,8%) is a manager. This can be explained by the fact that the emails with the link to the questionnaire were first sent to the corporate real estate managers before the link was eventual forwarded to other employees. In some cases, those managers did not choose to forward the link, but did participate in the questionnaire themselves. Respondents indicated 32 times (10,6%) that they have another job position than the five described positions.

### *Years of deployment*

In the questionnaire, respondents were asked to fill in the years of deployment they have fulfilled at their current employer. They could enter '0' when they have not completed one year yet. The results are shown in Figure 5.3.

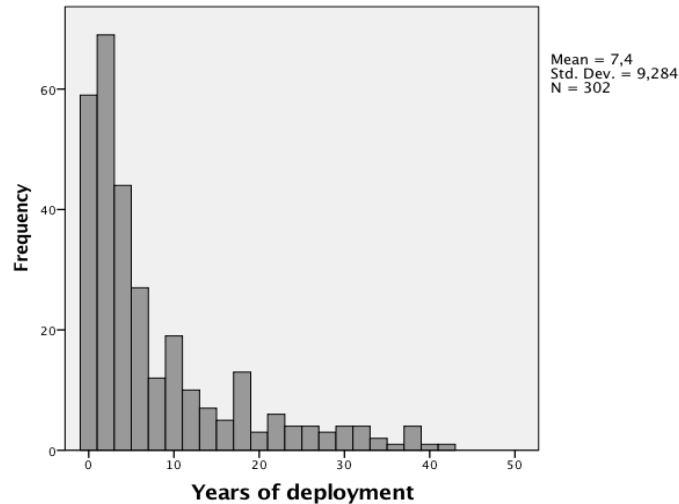


Figure 5.3 Distribution of years of deployment

The graph in Figure 5.3 shows years of deployment of respondents at their current employer. The years are distributed over the range between zero to 42 years. The mean of years of deployment is 7,4 with a standard deviation of 9,3 years. The bars are the highest at the left side of the figure. In total, 51% of the respondents indicate that they fulfilled three or less years of deployment at their current employer. This small number of years of deployment can partly be explained by the age of the respondents. Since the age of the respondents in the sample is relatively low, a large part of the respondents might be at the beginning of their working lives.

### *Number of employers*

Respondents were asked to indicate how many employers (including their current employer) they worked for. The graph in Figure 5.4 and Table 5.5 show the distribution of the number of employers that respondents worked for. The number of employers vary between the range of one and 10. The mean is 2,89 and the standard deviation is 1,63. The largest part of the respondents (69,9%) worked for three or less employers. This relatively low number of employers that respondents worked for is probably related to the fact that respondents are relatively young. As already explained, this large part of young respondents might be at the beginning of their working lives and therefore the number of employers they worked for is relatively low.

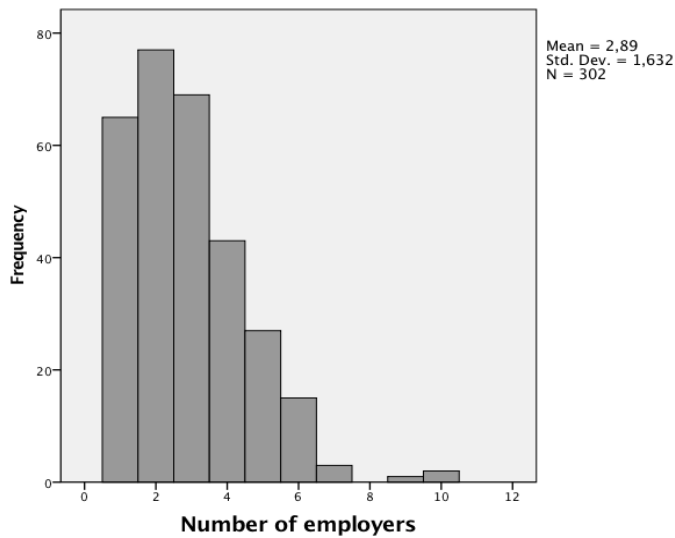


Figure 5.4 Distribution of number of employers

Table 5.5  
Distribution of number of employers

Number of employers	N	%
1	65	21,5
2	77	25,5
3	69	22,8
4	43	14,2
5	27	8,9
6	15	5,0
7	3	1,0
9	1	0,3
10	2	0,7

### Household composition

The household composition is the final socio-demographic characteristic in the dataset. Five different options for household composition are distinguished, namely: married/ living together without children, married/ living together with children, single without children, single with children and other, namely. The results are shown in Table 5.6.

Table 5.6  
Distribution of household composition

	This study		CBS (2017c)
	N	%	%
Married/ living together without children	97	32,1	36,0
Married/ living together with children	114	37,7	33,1
Single without children	71	23,5	24,2
Single with children	10	3,3	4,6
Other, namely	10	3,3	2,2

As can be seen in Table 5.6, the largest part of the respondents is married/ living together with children (37,7%). The smallest groups are the singles with children (3,3%) and the respondents that filled in 'other, namely' (3,3%). The ten respondents that checked the box 'other, namely' indicated that they are living with their parents.

The data of this study can be compared to data of the CBS in order to assess the representativeness of the sample. This time, the data from CBS is not derived from the working population within the labour force in 2016. The data of CBS in Table 5.6 is derived from the total Dutch population in 2017 of which children under 18 are excluded (CBS, 2017c). A chi-square goodness-of-fit test indicates there was no significant difference in the proportion of types of household compositions identified in the current sample as compared with the values that were obtained in the Dutch nation-wide study of CBS (CBS, 2017c),  $\chi^2(4, n = 302) = 6.09$ ,

$p = .19$ . The chi-square test is attached in Appendix C. It can be concluded that the sample of this study shows a high representativeness for the Dutch population when it comes to household composition.

### 5.3.2 SDT-needs

The questionnaire addresses statements that are derived from the literature study of Van den Broeck et al. (2010). Respondents had to check the extent to which they agree to the statements on a five-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree). As explained in the literature study of Chapter 3, each variable is related to one of the needs that are established by SDT (relatedness, competence and autonomy). The three SDT needs will be addressed separately, whereby the mean and standard deviation of every variable are shown and explained. Hereby, the negatively worded statements are recoded as already explained in Section 5.2.2 of Chapter 5.

The number of 18 variables needs to be reduced for the analysis in Chapter 6. This reduction happens most ideally from by combining the 18 variables into the three SDT needs. Previous studies about SDT already validated the scales for relatedness, competence and autonomy (Van den Broeck et al., 2010). However, before combining the variables into the three SDT variables, the Cronbach's alpha coefficients are calculated in order to check the internal consistency reliability for the scale. In the case that the requirements are met a new variable can be created (Devellis, 2012; Pallant, 2016). The formula that is used to calculate the new variables is:

$$\text{New variable} = \frac{\sum \text{item scores}}{\text{number of items}}$$

#### *Relatedness*

The first SDT need that is addressed is the need for relatedness. The first three columns of Table 5.7 show the label, mean and standard deviation. The mean varies between 2,16 and 4,19. The mean score of four variables is as high or higher than 'agree'. Those items all describe a social situation in which employees are together. The two items with the lowest score describe a situation in which people have a close relation at work. The score for the item that is labelled 'close friends' even tend to approach 'disagree'. Figure D.1 in Appendix D shows the detailed distribution of the results for every variable.

To check the internal consistency reliability for the scale for a possible new variable 'relatedness', the Cronbach's alpha coefficient is calculated as an indicator. The Cronbach's Alpha coefficient is also shown in Table 5.7. According to Devellis (2012) it is ideal if the Cronbach's alpha coefficient of a scale scores above .7. The latter is the case for the variables in Table 5.7 since the Cronbach's alpha is .750. The fourth column in Table 5.7, Cronbach's Alpha if Item Deleted, indicates the impact of removing the item from the scale. None of the values in this column are higher than the Cronbach's alpha coefficient and therefore no items need to be removed. It can be concluded that by means of the sum scores for all six items a new variable 'relatedness' can be created. The mean (3,78) and the standard deviation (0,52) of the new variable 'relatedness' are presented in the row 'sumscore'.



Table 5.7  
Distribution of agreement on relatedness

Label (n= 302)	Mean	Std. deviation	Cronbach's Alpha if Item Deleted
Often feel alone	4,19	0,77	,711
Connected	4,08	0,73	,683
Don't mix	4,08	0,83	,710
Part of a group	4,00	0,70	,726
Can talk	3,74	0,76	,715
Close friends	2,61	0,84	,739
Sumscore (N items= 6)	3,78	0,52	
Cronbach's Alpha (N items= 6)	,750		

### Competence

The first three columns of Table 5.8 show the label, mean and standard deviation for the variables that belong to competence. It is remarkable that the mean varies between 4,03 and 4,21. This implies that on average the respondents indicate that they more than 'agree' on all statements.

Table 5.8  
Distribution of agreement on competence

Label (n= 302)	Mean	Std. deviation	Cronbach's Alpha if Item Deleted
Don't feel competent	4,21	0,76	,824
Feel competent	4,14	0,58	,804
Doubt able to execute	4,07	0,78	,818
Master tasks	4,06	0,65	,807
Accomplish difficult tasks	4,05	0,64	,821
Good at things	4,03	0,59	,805
Sumscore (N items= 6)	4,09	0,50	
Cronbach's Alpha (N items= 6)	,839		

As can be seen in Table 5.8, the items labelled 'don't feel competent' and 'feel competent' score the highest. The description of both items is closely related to each other, except for the fact that the description for 'don't feel competent' is worded negatively. However, however the data for this variable is recoded to reverse the scale. Figure D.2 in Appendix D shows the detailed distribution of the results for every variable.

Cronbach's alpha is also calculated for the six variables that are related to the SDT need 'competence'. Table 5.8 shows that Cronbach's alpha is .839. This coefficient is ideal since a value above .8 is mostly preferred (Pallant, 2016). Besides, none of the values in the Cronbach's Alpha if Item Deleted column in Table 5.8 are higher than the Cronbach's alpha coefficient. Therefore, it can be concluded that by means of the sum scores for all six items a new variable 'competence' can be created. The mean and standard deviation of this new variable are shown in the row Sumscore (4,09 and 0,50).

### Autonomy

The first three columns of Table 5.9 show the label, mean and standard deviation for the variables that belong to autonomy. The mean varies between 3,50 and 4,09. Therefore, the average level of agreement of the respondents balances around the value of 'agree'. The item that is labelled 'be myself' contains obviously the highest mean. The items on the second and third row describe situations in which employees are more or less free on how to fulfil their job. Figure D.3 in Appendix D shows the detailed distribution of the results for every variable.

Table 5.9  
*Distribution of agreement on autonomy*

Label (n= 302)	Mean	Std. deviation	Cronbach's Alpha if Item Deleted
Be myself	4,09	0,55	,778
Feel forced	3,98	0,84	,740
Do the way I think	3,91	0,76	,747
Follow commands	3,70	0,84	,758
Tasks are in line	3,55	0,87	,763
Do things differently	3,50	0,91	,750
Sumscore (N items= 6)	3,79	0,56	
Cronbach's Alpha (N items= 6)	,789		

Lastly, also for the possible new variable 'autonomy' the internal consistency reliability for the scale is checked. The Cronbach's alpha value is shown in Table 5.9 and shows a coefficient of .789. This is an ideal value since Cronbach's alpha is optimal above .7 (Devellis, 2012). As can be seen in the fourth column of Table 5.9, none of the values of the six items score higher than the Cronbach's alpha. Therefore, it can be concluded that by means of the sum scores of all six items a new variable 'autonomy' can be created. The mean and standard deviation of the variable autonomy are calculated and shown in the Sumscore row in Table 5.9. The mean and standard deviation of this new variable are shown in the row Sumscore (4,09 and 0,50).

The three new variables 'relatedness', 'competence' and 'autonomy' are calculated by means of the formula that is shown in the first paragraph of this section (Section 5.3.2). Those new variables are also entered into the codebook in Appendix B.

### 5.3.3 Workplace needs

Besides statements about SDT, the questionnaire also addresses statements about the three workplace needs. Every statement is related to one of the three workplace needs that were identified in the literature study in Chapter 3 (sociability with colleagues, the opportunity to grow and a work-life balance). Respondents had to check the extent to which they agree to the statement on a five-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree). Figure E.1 in Appendix E shows the detailed distribution of the results for every variable.

For further analysis in Chapter 6, all the 15 variables that belong to one of the three workplace needs are combined and reduced into new variables. However, Cronbach's alpha shows that the internal consistency reliability of the scales is too low for combining the 15 variables into the three workplace needs. This is the case in both situations when only taking the data of the millennials into account and when taking the data of all generations into

account. For combining the items of all generations that belong to sociability with colleagues, Cronbach's alpha is .445. The Cronbach's alpha for opportunity to grow is .155 and finally the Cronbach's alpha for work-life balance is .105. Those low coefficients might be caused by the fact that those variables are new and the scales are not validated yet by means of previous studies. Therefore, factor analysis will be conducted in order to assess the internal validity of the data and to create a new, fewer number of variables.

Section 4.4 already elaborated on the method for using the factor analysis. For the extracted method, the Principal Component Analysis is used (PCA). For the rotation method Varimax with Kaiser normalisation is used. For conducting the PCA, there are no fixed numbers of factors used as input in order to obtain variables that most optimal 'hang together'.

Prior to performing PCA, the suitability of the data for factor analysis is assessed. The recommendations of Tabachnick and Fidell (2013) and Nunnally (1987) for determining whether the size of the sample is large enough, satisfies. Furthermore, the Barlett's test of sphericity is significant (.000) and the Kaiser-Meyero-Olkin test is above .6 (.644). Tabachnick and Fidell (2013) recommend a correlation matrix for evidence of coefficients above .3. The latter is not the case for the data of this study. However, we are still able to conduct the analysis. The results of the PCA are shown in Table 5.10.

Next, the number of factors has to be determined. The Total Variance Explained table (Figure F.1 in Appendix F) shows that six factors have an Eigenvalue that is higher than one. Those six Eigenvalues are also shown in Table 5.10. Besides, the screeplot (Figure F.1) shows six times a change of shape in its plot. The Pattern Matrix however, does not show three or more items on each factor which would have been the most ideal situation for continuing the analysis (Pallant, 2016). Nevertheless, the analysis can be continued. Since the six factors and its items have a clear description, the study continues with 6 factors. Those six items represent an explained variance of 46,40%.

Table 5.10 shows the results of the PCA. The left column in Table 5.10 shows the original needs sociability with colleagues (soc with coll), opportunity to grow (opp to grow) and work-life balance (w-l balance) to which the 15 variables in the second column belong, according to literature. As can be seen in Table 5.10, the variables with the same original needs are most of the time combined in factors.

Table 5.10  
Principal Component Analysis of workplace needs

Original need	Label	Factors					
		Leisure-work balance	Professional growth	Informal socialisation	Formal socialisation	Personalised arrangements	Coaching
W-l balance	Separate leisure	<b>-,697</b>	,060	-,228	-,115	,087	-,118
W-l balance	Working hours	<b>,692</b>	,065	-,124	,057	,275	,044
W-l balance	Make sacrifices	<b>-,641</b>	-,296	,018	,222	,142	,216
Opp to grow	Management function	,386	<b>,386</b>	-,287	,195	,062	,192
Opp to grow	Personal investment	,099	<b>,733</b>	,071	,108	,009	,076
Opp to grow	Participate develop	,062	<b>,616</b>	,169	,060	,001	-,029
Soc with coll	Similar mind-sets	,064	,031	<b>,651</b>	,025	-,283	,216
Soc with coll	Second home	-,175	,284	<b>,600</b>	-,178	,246	,078
Soc with coll	Socialise with manager	,124	,076	<b>,588</b>	,334	,218	-,168
Opp to grow	Join training program	-,044	,009	-,045	<b>-,792</b>	,037	-,102
Soc with coll	Interact for reputation	-,032	,379	-,053	<b>,586</b>	-,017	-,207
Soc with coll	Meet to integrate	,062	,193	,254	<b>,364</b>	,343	,218
W-l balance	Family responsibilities	-,009	,051	-,059	-,085	<b>,816</b>	,107
W-l balance	Leave early	,146	-,324	,257	,182	<b>,495</b>	-,266
Opp to grow	Presence of coaches	,052	,039	,095	,017	,060	<b>,892</b>
Eigenvalue		2,324	1,561	1,318	1,206	1,090	1,022
Explained variance (%)		15,49	10,40	8,79	8,04	7,27	6,81

- Factor 1 is called 'leisure-work balance'. The items with the highest loads for this factor describe a certain separation of work and leisure/ private life. The items that contain the highest loads for 'leisure-work' are 'separate leisure', 'working hours' and 'make sacrifices'. The item 'management function' also contains a relatively high load. However, this item formally belongs to factor 2 since the definition of that factor and the description of the item have a better fit (Elance-oDesk, 2014).
- Factor 2 concerns 'professional growth'. The items with the highest loads describe skill or function development within an organisation. Those items are 'management function', 'personal investment' and 'participate development'.
- Factor 3 covers 'informal socialisation'. The strongest related items describe social situations that address a certain comfort level. Those items deal with the feel of employees. An example is 'having an environment that feels as a second home with friendly colleagues'. The items with the highest loads are 'similar mind-sets', 'second home' and 'socialise with manager'.
- Factor 4 is the first and only factor that contains items originated from different original needs, namely the opportunity to grow and sociability with colleagues. The item that is originated from the opportunity to grow describes a social setting in which people attend training. Therefore, this item is also very closely related to the original need of sociability with colleagues. The overall factor is called 'formal socialisation'. The items with the highest loads describe situations in which an activity takes place in

order to become better in something. Those items are 'join training program', 'interact for reputation' and 'meet to integrate'.

- Factor 5 concerns 'personalised arrangements'. The two items with the highest loads for this factor are both originated from the former need 'work-life balance'. Those two items are 'family responsibilities' and 'leave early' and describe the personalised arrangements by which an employee can leave early and/ or can take care of family responsibilities
- Factor 6 only contains one item labelled 'presence of coaches' from which it directly deduced its name: coaching. The description of this item is the value for the presence of strong coaches and mentors when choosing an employer. This item did not fit sufficiently enough with other factors.

Those six factors represent six workplace needs. Therefore, those six factors are called 'workplace need factors'. Apparently, the three workplace needs have a deeper meaning. Therefore, the 'old' three workplace needs are replaced by the six workplace need factors. This implies adjustments on the hypotheses that are proposed in Chapter 4. Hypotheses 1, 2, 3 and 4 are adjusted, whereby seven hypotheses are proposed instead of the initial four:

H1: The need for informal socialisation is related the most to the need for relatedness

H2: The need for formal socialisation is related the most to the need for relatedness

H3: The need for professional growth is related the most to the need for competence

H4: The need for coaching is related the most to the need for competence

H5: The need for leisure-work balance is related the most to the need for autonomy

H6: The need for personalised arrangements is related the most to the need for autonomy

H7: Generations differ in workplace need factors

H7A: Generations differ in their need for informal socialisation

H7B: Generations differ in their need for formal socialisation

H7C: Generations differ in their need for professional growth

H7D: Generations differ in their need for coaching

H7E: Generations differ in their need for leisure-work balance

H7F: Generations differ in their need for personalised arrangements

The three SDT needs can be fulfilled in different ways (Ryan & Deci, 2008). Therefore, the workplace need factors are in hypotheses 1 to 6 expected to correlate (the most) to one of the SDT needs to which the workplace need factor is mostly associated.

Although the hypotheses about the physical workplace aspects (hypotheses 5 and 6) incorporate the three workplace needs that are now divided into workplace need factors, those hypotheses remain as they are. This is the case since the questions that provide the data explicitly ask for the relationship between physical workplace aspects and sociability with colleagues, the opportunity to grow or a work-life balance. Besides, the questionnaire showed an explanation about those three needs. Therefore, the survey measured what was supposed to be measured and the internal validity of those questions and the hypotheses remains.

### 5.3.4 Physical workplace aspects

In the questionnaire, respondents were asked to indicate to which degree they consider certain physical workplace aspects important for supporting one of the workplace needs ‘sociability with colleagues’, ‘opportunity to grow’ and ‘work-life balance. The type of scale is a five-point Likert scale ranging from 1 (not important) to 5 (very important). Regarding each of the three needs, a last open question is asked in which respondents may suggest another important physical workplace aspect they consider important for supporting the concerned need. However, it is arguable whether all the aspects are related to the physical workplace. Therefore, only the aspects that are related to the physical workplace are shown.

The following section will elaborate on each need. First, the results for the described physical workplace aspects related to the concerned need are explained. Next, the open questions with suggestions from the respondents are explained.

#### *Physical workplace aspects related to sociability with colleagues*

In total, eight physical workplace aspects are linked to the need for sociability with colleagues. Table 5.11 shows the results. Figure G.1 in Appendix G shows the detailed distribution of the results for every variable.

Table 5.11  
*Importance of physical workplace aspects for sociability with colleagues*

Label (n= 302)	Mean	Std. deviation
Accessibility of colleagues	4,21	0,58
Openness and transparency	3,95	0,78
Informal work areas/ break-out zones	3,93	0,83
Restaurant/ canteen	3,75	0,90
Space between work-settings	3,52	0,87
People walking past my desk	3,30	0,97
Leisure facilities onsite or nearby	2,86	1,19
IT-services for social networking	2,84	1,07

As shown in Table 5.11, the mean of the scores vary between 2,84 and 4,21. Accessibility with colleagues has the highest rank with a mean score of 4,21. This might be caused by the fact that this aspect brings people together in a more direct way, since they only can socialise when they are accessible for each other. Openness and transparency is indicated as the second most important aspect. This aspect might be related to creating a better accessibility to other colleagues since they can more easily notice each other. The presence of informal work areas/ break out zones and restaurant/ canteen are ranked as third and fourth and both encompass physical space for socialising. Space between work-settings is ranked on the fifth place. The explanation for ‘accessibility with colleagues’ can also be valid for the aspect ‘people walking past my desk’ since this aspect also brings people together in a more direct way. However, the score of this aspect is substantially lower. This can be caused by the fact that people are not explicitly willing to approach each other but have to walk across certain desks. This can be experienced as a distraction and therefore might have a negative impact on the overall score of

this aspect. ‘Leisure facilities onsite or nearby’ and ‘IT-services for social networking’ have the lowest rank. The respondents indicate them to be less than ‘moderately important’.

*Other physical workplace aspects related to sociability with colleagues*

Respondents suggested other physical workplace aspects they consider important for supporting sociability with colleagues. Table G.1 in Appendix G shows the extensive list of answers. Table 5.12 shows the combined results of the aspects that are related to the physical workplace.

Table 5.12  
*Other physical workplace aspects for sociability with colleagues*

New variable	N
Informal drinks	14
Coffee corner	9
Warm/ inspiring environment	5
Mixing up workplaces	3
Outdoor space	3
Space for relaxing/ playing games	2

The physical workplace aspect that is mentioned most times is ‘informal drinks’. Respondents describe that they want to meet and bond with their colleagues. At first sight, it is arguable whether this aspect is related to the physical workplace. However, CREM can facilitate space for those informal drinks. The third most mentioned aspect is the presence of coffee corners. Respondents explain that this is a good place for meeting people in a more spontaneous way. Respondents indicate that a warm/ inspiring environment motivates them to act more social. Mixing up workspaces stimulates socialisation with different colleagues. The presence of outdoor space and space for relaxing/ playing games makes it possible for people to interact while exerting an activity.

The most mentioned aspect was the organisation of personnel activities. However, this aspect is hardly related to the physical workplace, since personnel activities (as respondents describe) take most of the time place outside the office building. Respondents value those activities since they are interested in getting to know colleagues from other departments. Other aspects that are mentioned and that are not related to the physical workplace, are the presence of an open and social work policy, the presence of a personnel association and the opportunity to give feedback to each other.

*Physical workplace aspects related to opportunity to grow*

In total, five physical workplace aspects are linked to the need for the opportunity to grow. Table 5.13 shows the results. Figure G.2 in Appendix G shows the detailed distribution of the results for every variable.



Table 5.13  
*Importance of physical workplace aspects for opportunity to grow*

Label (n= 302)	Mean	Std. deviation
Accessibility of colleagues	4,24	0,56
Openness and transparency	4,03	0,71
Meeting rooms	3,69	0,90
Quiet rooms for working alone or in pairs	3,67	0,99
Audio-visual equipment	3,63	0,90

As can be seen in Table 5.13, the mean varies between 3,63 and 4,24. This mean is relatively high and balances around the scale value ‘important’.

Also for this need, the aspect accessibility of colleagues has the highest rank. This could imply that people are willing to learn from each other. However, learning can also take place by means of other media such as programs that are supported by audio-visual equipment (mean= 3,63). This aspect is ranked on the last place but is still indicated as important. ‘Openness and transparency’ is ranked second. The aspects that are most important for facilitating classroom instruction, meeting rooms and quiet rooms for working alone or in pairs, are indicated third and fourth most important. In general, it can be stated that all five aspects are indicated as important for supporting the opportunity to grow.

*Other physical workplace aspects related to opportunity to grow*

Respondents suggested other physical workplace aspects they consider important for supporting the opportunity to grow. Table G.2 in Appendix G shows the extensive list of answers. Table 5.14 shows the combined results of the aspects that are related to the physical workplace.

Table 5.14  
*Other physical workplace aspects for opportunity to grow*

New variable	N
Facilitating training	5
Good mix of quiet and open workplaces	3
Informal, collaborative workspace	3
Inspiring and light work environment	3
Library/ specialist literature	3

Respondents indicate that providing training is important for improving their skills and subsequently for supporting their growth. This aspect is only related to the physical workplace in the case space is reserved for providing training. Respondents also value the physical layout and indicate that a good mix of quiet and open workplaces and the presence of informal, collaborative workspace are important. They believe that by providing those types of spaces the level of disturbance will decrease and that they are better able to work concentrated when needed. Performing work in an inspiring and light work environment with enough windows and greenery also supports the opportunity to grow since according to respondents. Lastly, the presence of a library or space where employees can obtain specialist literature also supports

the opportunity to grow. The latter does not have to take up a large space and can even happen online. However, this abolishes the relationship with the physical workplace.

Another aspect that was mentioned but that is not related to the physical workplace, is career guidance. Respondents explain that a good coach or career counsellor is valuable for their job-related growth. The presence of a motivating and challenging work culture is also an aspect that is not related to the physical workplace. Examples for this aspect are the presence of managers that are inspiring leaders and employees that get responsibilities. Lastly, peace and quietness during a workday and in work schedules is an aspect that is mentioned but does not relate to the physical workplace.

*Physical workplace aspects related to work-life balance*

In total, eight physical workplace aspects are linked to the need of a work-life balance. Table 5.15 shows the results. Figure G.3 in Appendix G shows the detailed distribution of the results for every variable.

Table 5.15  
*Importance of physical workplace for work-life balance*

Label (n= 302)	Mean	Std. deviation
Remote access to work files or network	4,18	0,79
Accessibility of colleagues	4,17	0,60
Spatial flexibility	3,98	0,97
Commute time	3,88	0,87
Washroom facilities/ showers	3,35	1,12
Leisure facilities onsite or nearby	2,81	1,17
Ability to personalise my workstation	2,63	1,13
Mail and post-room services	2,32	1,09

The mean varies between 2,32 and 4,18. The aspects that are important for telecommuting have a high score. Remote access to work files or network is important for working at a different place than the regular office. This is related to the aspect ‘spatial flexibility’ since employees do not work from the same place every day when they are telecommuting. In the case that some employees work at a different place than (most) other colleagues, it is important that they remain accessible in order to keep in touch about work or whatsoever. That is why ‘accessibility of colleagues’ is also indicated as important. ‘Commute time’ is the fourth most important aspect. Due to a favourable commute time, employees can save time for other important things in life and people are located closer to their families during the day. Therefore, this aspect might be seen as important for supporting a work-life balance

The aspects ‘washroom facilities/showers’, ‘leisure facilities onsite or nearby’ and ‘mail and post-room services’ support people in activities during their daily life’s, however those aspects are ranked relatively low. Two out of three are even indicated as less than ‘moderately important’. Lastly, the aspect ‘ability to personalise my workstation’ is indicated as moderately important and is ranked on the seventh place.

### *Other physical workplace aspects related to work-life balance*

Respondents suggested other physical workplace aspects they consider important for supporting a work-life balance. Table G.3 in Appendix G shows the extensive list of answers. Table 5.16 shows the combined results of the aspects that are related to the physical workplace.

Table 5.16  
*Other of physical workplace aspects for work-life balance*

New variable	N
Flexible hours	4
Shops and childcare near work	3

The most important aspect that respondents suggest is 'flexible hours'. Respondents explain that they want to decide on how to divide their working hours over the whole week. It could be arguable whether this aspect is related to the physical workplace. However, flexible hours can imply the flexibility of space since workplaces are not fully being occupied during the hours of a regular workweek. Therefore, CREM has to think of solutions on how to still make an efficient use of the work environment. The presence of shops and childcare near work is suggested as the second most important new aspects. This way, people can save a lot of time.

Other aspects that were mentioned, but that are not related to physical workplace, are: understanding, the possibility switch the business phone off outside working hours, the presence of good arrangements for working overtimes and services for walking your dog.

## 5.4 Conclusion

In Chapter 5, the data that is analysed for answering sub questions 3 and 4 is prepared and described:

3. Which physical workplace aspects are relevant, and how much are they valued to support the workplace needs of millennials?
4. Do other generations differ in workplace needs and prefer different physical workplace aspects to support workplace needs?

The data of this research was collected between the 7<sup>th</sup> of September and the 6<sup>th</sup> of October 2017 in the Netherlands. In total, 302 useable questionnaires were collected that have been prepared for further analyses. Hereby, the missing values have been examined and some variables were recoded. Next, the data has been described.

First, the data about the socio-demographic characteristics of the respondents has been presented. The representativeness of the data was checked by comparing the composition of this dataset to the dataset of prior national research, when available. The data about gender and household composition showed a high representativeness. The representativeness of the data about generation groups and education levels within this study is arguable.

Next, the data about the SDT needs is described. For reducing the number of variables that are related to SDT, the Cronbach's alpha coefficient and the mean of the sumscores of the combined variables are calculated. This results in a reduction of all the SDT related variables to three new variables: relatedness, competence and autonomy.

For reducing the number of variables that are related to the workplace needs, a PCA is conducted. It was found that the scales for combining the variables into the three workplace needs were not internally consistent according to reliability tests. Therefore, the workplace needs were split into six workplace need factors by means of the PCA. Those six workplace need factors are informal socialisation, formal socialisation, professional growth, coaching, leisure-work balance and personalised arrangements. In order to take those results into account in the analysis, the proposed hypotheses were adjusted.

According to the data, respondents value the importance of physical workplace aspects for supporting certain needs. All physical workplace aspects score higher than 'moderately important'. Only the aspects 'IT-services for social networking', 'ability to personalise my workstation' and some aspects that are related to the daily activities of employees outside their work (e.g. leisure facilities on site or nearby and mail and post-room services) have a lower score.

All the variables are ready to be further analysed. The analyses of the data will take place in the next chapter, Chapter 6.

# 6.

## Data analysis and results

In this chapter, the data that is prepared and described in Chapter 5 is analysed. Besides, the hypotheses that are proposed in Chapter 4 and Chapter 5 are tested. The results are also shown and briefly discussed in this chapter. In the first section, the relationships between the SDT needs and the six workplace need factors are analysed. Next, the differences between generations related to the six workplace need factors are analysed. The next section addresses whether millennials perceive certain physical workplace aspects to be a support for the three workplace needs. Finally, the differences between generations related to physical workplace aspects for supporting the workplace needs are analysed. Subsequently, in a discussion the results of the analysis are reflected to the findings of the literature study in Chapter 2 and Chapter 3. This chapter ends with a conclusion and answers the third and fourth sub questions: Which physical workplace aspects are relevant, and how much are they valued to support the workplace needs of millennials? and Do other generations differ in workplace needs and prefer different physical workplace aspects to support workplace needs?

### 6.1 SDT needs and workplace need factors

In this section, the relationships are analysed between SDT needs and the workplace need factors. Hereby, hypotheses 1 to 6 are tested by means of the Pearson product-moment correlation coefficient ( $r$ ). Hereby, the strength and direction of the linear relationship between the STD needs and the workplace need factors can be explored. Section 4.4.1 already elaborated on the application of the Pearson product-moment correlation coefficient ( $r$ ). The SDT needs are represented by the variables 'relatedness', 'competence' and 'autonomy'. The workplace need factors are represented by the six factors that are calculated out of the PCA: informal socialisation, formal socialisation, professional growth, coaching, leisure-work balance and personalised arrangements.

Before performing the correlation analysis, a scatterplot is generated for the six tests that are mostly related to the six hypotheses. Those scatterplots give information about the nature of the relationships between the variables and ensures assumptions of normality, linearity and homoscedasticity. The scatterplots are shown in Appendix H. The scatterplots show that there are no outliers and there is no assumption of homoscedasticity. The next step is to calculate the Pearson correlation coefficients. This is done for every possible relationship in order to be able to test the hypotheses. Figure 6.1 shows an overview of the relationships between the SDT needs and the workplace need factors. In the case that the Pearson product-moment correlation coefficient was significant, an 'x' is placed in the box between the two variables in the relationship. In the case of significance, the darkest box shows the strongest relationship for the workplace need factor with one of the SDT needs.

Workplace need factor	SDT need		
	Relatedness	Competence	Autonomy
Informal socialisation	+	0	+
Formal socialisation	+	0	+
Professional growth	+	+	0
Coaching	0	0	-
Leisure-work balance	+	+	+
Personalised arrangements	0	0	0

+	Significant positive relationship at the $p < .05$
-	Significant negative relationship at the $p < .05$
0	Strongest significant relationship at the $p < .05$ for this workplace need with an SDT need
0	No significant relationship

Figure 6.1 Overview workplace need factors and SDT needs

### 6.1.1 Informal socialisation and formal socialisation

In hypotheses 1 and 2, it is proposed that informal socialisation and formal socialisation would most correlate with the SDT need for relatedness. Both correlations are significant at the  $p < .01$  level (2-tailed). The correlation coefficient for informal socialisation with relatedness is positive ( $r = .290$ ,  $n = 302$ ,  $p = .000$ ). According to Cohen (Cohen in Pallant, 2016), the strength of this relationship is small. The variance that both variables share is 8,4% ( $r^2 \times 100\%$ ). This is a relatively small amount of variance explained when comparing with other research in social sciences (Pallant, 2016). The workplace need factor informal socialisation also correlates to the SDT need autonomy ( $r = .203$ ,  $n = 302$ ,  $p = .000$ ). However, this relationship is less strong than the relationship between the concerned workplace need factor and relatedness.

The correlation coefficient for formal socialisation and relatedness is positive and small ( $r = .178$ ,  $n = 302$ ,  $p = .002$ ). The explained variance is also relatively small with 3,17%. Nevertheless, the significant relationship between formal socialisation and autonomy is stronger ( $r = .229$ ,  $n = 302$ ,  $p = .000$ ).

Both relationships for informal socialisation and formal socialisation with relatedness are positive and significant. However, only the workplace need factor informal socialisation has the strongest relationship with the SDT need autonomy. Therefore, it can be concluded that hypothesis 1 (The need for informal socialisation is related the most to the need for relatedness). Hypothesis 2 (The need for formal socialisation is related the most to the need for relatedness) is rejected.

### 6.1.2 Professional growth and coaching

In hypotheses 3 and 4, it is proposed that professional growth and coaching would most correlate with the SDT need for competence. However, only the correlation coefficient for professional growth and competence is significant at the  $p < .01$  level (2-tailed) ( $r = .156$ ,  $n = 302$ ,  $p = .007$ ). The strength of the correlation is small and the explained variance is only 2,4%. The

workplace need factor professional growth also correlates to the SDT need relatedness ( $r = .138$ ,  $n = 302$ ,  $p = .016$ ).

The correlation coefficient for the workplace need factor relationship between competence and coaching is not significant and shows a weak strength ( $r = -.109$ ,  $n = 302$ ,  $p = .59$ ). The variable coaching does show a significant negative relationship with the SDT need autonomy ( $r = -.178$ ,  $n = 302$ ,  $p = .002$ ).

Since the workplace need factor professional growth shows the strongest, significant relationship with competence, hypothesis 3 (The need for professional growth is related the most to the need for competence) is accepted. The relationship between coaching and competence is not significant and therefore hypothesis 4 (The need for coaching is related the most to the need for competence) is rejected.

### **6.1.3 Leisure-work balance and personalised arrangements**

Finally, in hypotheses 5 and 6 it is proposed that leisure-work balance and personalised arrangements would most correlate with the SDT need autonomy. Only the correlation coefficient for the relationship between leisure-work balance and autonomy is significant and positive at the  $p < .01$  level (2-tailed) ( $r = .154$ ,  $n = 302$ ,  $p = .007$ ). The strength of the relationship is small. This results in an explained variance of 2,4%. The variable leisure-work balance also correlates significantly to the SDT need for relatedness ( $r = .135$ ,  $n = 302$ ,  $p = .019$ ). Nevertheless, this workplace need factor shows the strongest relationship to the SDT need competence ( $r = .193$ ,  $n = 302$ ,  $p = .001$ ). However, the strength of this relationship is still small.

The correlation coefficient for the relationship between the workplace need factor personalised arrangements and autonomy is not significant ( $r = -.005$ ,  $n = 302$ ,  $p = .924$ ). The strength of the relationship is almost zero, which indicates that there is no relationship between the two variables (Pallant, 2016). The variable personalised arrangements has no significant relationships to one of the three SDT needs.

Since the relationship between leisure-work balance and autonomy is significant but not the strongest for this SDT need, hypothesis 5 (The need for leisure-work balance is related the most to the need for autonomy) is rejected. The relationship between personalised arrangements and autonomy is not significant and therefore hypothesis 6 (The need for personalised arrangements is related the most to the need for autonomy) is also rejected.

### **6.1.4 Overview results**

Figure 6.1 shows the overview of the relationships between the workplace need factors and the SDT needs. Only in two cases, the expected relationships are confirmed. Those two cases are the relationship between informal socialisation and relatedness, and the relationship between professional growth and competence. Nevertheless, there are relationships between formal socialisation and relatedness, and leisure-work balance and autonomy, as expected. However, they did not seem to be the strongest, as was hypothesised. Formal socialisation has the strongest positive relationship with autonomy. Employees might perceive more autonomy when they achieve progress in their career by means of formal socialisation. They can achieve this progress by themselves and therefore perceive autonomy. This explanation is also applicable in the reversed way since the relationship is positive. Leisure-work balance positively correlates the strongest to competence. Competent people with busy schedules



might perceive a balance in leisure and work as more important. This explanation can also be applied in the reversed way. Finally, the workplace need factor coaching correlates the strongest with autonomy, which was also not expected. The relationship between those two variables is negative, which can imply that employees perceive to need less coaching when they have more autonomy in their job. On the other hand, employees might perceive to need more coaching when they have less autonomy.

## 6.2 Needs of generations

In this section, the differences between generations regarding the workplace need factors are examined. Hereby, hypothesis 7 is tested: Generations differ in workplace needs factors. The statistical test that is applied is the one-way analysis of variance (ANOVA). Section 4.4.2 in Chapter 4 already elaborated on the application of this statistical test and the use of the Bonferroni test for the post-hoc comparisons.

The test will be conducted six times, one time for each variable. The independent categorical variable for every test is 'generation' and consists out of the three levels: baby boomers, generation X and millennials. The continuous dependent variable is one of the six workplace need factors: informal socialisation, formal socialisation, professional growth, coaching, leisure-work balance and personalised arrangements. The dependent variable varies for every test.

Before conducting the ANOVA, the Levene's test for homogeneity of variances is performed to test on whether the variances in scores is the same for each of the generation groups. The results of the Levene's test are shown in Table I.2 in Appendix I. The Levene's test shows that significance values for five out of the six variables are greater than  $p = .05$ . This implies that there is no violated assumption of homogeneity of variance and therefore the one-way ANOVA can be used for testing the differences for those variables. The Levene's test for homogeneity of variances shows that the significance value for the variable 'professional growth' is  $p = .046$ , which indicates a violated assumption of homogeneity. This issue can also be noticed by checking the wide differentiation of the standard deviations for this variable in Table 6.1. Instead of the one-way ANOVA, the Welch test and Brown-Forsythe test are performed for testing the differences between generations for the variable 'professional growth'.

Figure 6.2 shows the mean scores for every generation for all the six variables. The scores are standardised around the score of zero and the mean scores of generations can therefore be negative. Table 6.1 shows an overview of the most important results of the tests. The mean and standard deviation sumscores for all the respondents are not shown since the mean is 0,00 and the standard deviation is 1.00 for every variable. The results are shown more comprehensively in Appendix I by means of extensive tables including the descriptive, tests of homogeneity of variances, one-way ANOVA tests, robust tests of equality of means and post-hoc tests. The results are explained for every variable separately.



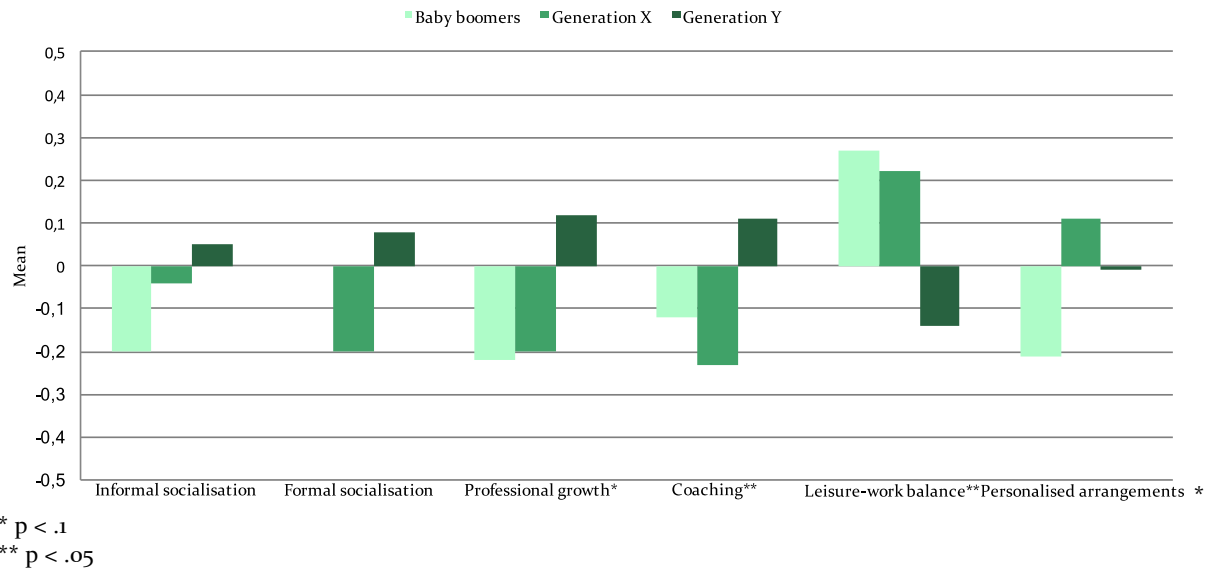


Figure 6.2 Mean scores of generations for workplace importance of need factors

Table 6.1  
Overview descriptives, results ANOVA and post- hoc needs of generations

Label	Baby boomers (1)		Generation X (2)		Millennials (3)		ANOVA		Post-hoc
	M	SD	M	SD	M	SD	F (2, 299)		
Informal socialisation	-0,20	1,20	-0,04	1,05	0,05	0,94	1,009		
Formal socialisation	0,00	0,96	-0,20	1,02	0,08	0,99	2,072		
Professional growth	-0,22	1,28	-0,20	0,81	0,12	1,00	0,013** Welch	0,010** Brown-Forsythe	3 > 2*
Coaching	-0,14	1,11	-0,23	0,91	0,11	1,00	3,542**		3 > 2**
Leisure-work balance	0,27	0,91	0,22	1,08	-0,14	0,96	5,065**		2 > 3**
Personalised arrangements	-0,21	0,92	0,11	0,97	-0,01	1,02	1,256		

\* p < .1

\*\* p < .05

### 6.2.1 Informal socialisation

First, the differences between generations related to the need for informal socialisation are tested. The mean score between the groups varies between -0,20 (SD = 0,20) for baby boomers and 0,05 (SD = 0,94) for millennials (Figure 6.2). The ANOVA in Table 6.1 shows that there is no significant difference at the  $p < .05$  level in the variable informal socialisation for the three generation groups:  $F(2, 299) = 1.0, p = .37$ . Since there are no significant differences, the post-hoc test is not carried out and hypothesis 7A (Generations differ in their need for informal socialisation) is rejected.

### 6.2.2 Formal socialisation

In Table 6.1 and Figure 6.2 can be seen that the mean score between the groups for formal socialisation varies between -0,20 (SD = 1,02) for millennials and -0,08 (SD = 0,99) for

millennials. As can be seen in Table 6.1, the result of ANOVA indicates that there is no significant difference at the  $p < .05$  level in the variable formal socialisation for the three generation groups:  $F(2, 299) = 2.01, p = .13$ . Since there are no significant differences, the post-hoc test is not performed and hypothesis 7B (Generations differ in their need for formal socialisation) is rejected.

### 6.2.3 Professional growth

In this section, the differences between generations related to the need for professional growth are tested. As can be seen in Table 6.1 and Figure 6.2, the mean score for the groups differ between  $-0.22$  ( $SD = 1.28$ ) for baby boomers and  $0.12$  ( $SD = 1.00$ ) for millennials. The results in Table 6.1 show that there is a statistically significant difference at the  $p < .05$  level for the three generation groups in the variable 'professional growth'. The Welch test and the Brown-Forsythe test both show a rounded statistical significance with a  $p$  value of  $p = .01$ . Despite the statistical significance, the actual differences in mean scores between the groups was quite small (sum of squares between groups/ total sum of squares =  $.02$ ). An eta squared value of  $.02$  is considered as a small effect size according to Cohen (Cohen in Pallant, 2016).

The comprehensive post-hoc comparisons using the Bonferroni test are shown in Table I.4 in Appendix I. No statistical significant value can be observed for  $p < .05$  in the column 'Mean Difference (I-J)'. However, there are significant differences for  $p < .1$ . Since the Robust Tests of Equality of Means shows convincingly that there are differences between groups ( $p = .01$ ), we can assume that the differences occur between millennials and generation X. Besides, Mooi and Sarstedt (2014) explain that a significance level of  $.10$  can be used for exploratory research. Therefore, it can be concluded that the mean score for millennials ( $M = 0.12, SD = 1.00$ ) is significantly higher than the mean score of generation X ( $M = -0.20, SD = 0.81$ ). This implies that millennials attach more value to the need for professional growth than generation X does. Baby boomers ( $M = -0.22, SD = 1.28$ ) did not differ significantly from either millennials or generation X when it comes to the need for professional growth. Due to the significant difference, hypothesis 7C (Generations differ in their need for professional growth) can be accepted.

### 6.2.4 Coaching

Table 6.1 and Figure 6.2 show that the mean score for coaching varies for the three groups between  $-0.23$  ( $SD = 0.91$ ) for generation X and  $0.11$  ( $SD = 1.00$ ) for millennials. As can be seen in the ANOVA column in Table 6.1, there is a statistically significant difference at the  $p < .05$  level in the workplace need factor coaching for the three generation groups:  $F(2, 299) = 3.5, p = .03$ . Despite the statistical significance, the actual differences in mean scores between the groups was quite small (Table 6.1). The eta squared for the effect size for coaching is  $.02$  ( $6.967/301.000$ ). The post-hoc test indicates that the mean score for millennials ( $M = 0.11, SD = 1.00$ ) was significantly higher than the mean score for generation X ( $M = -0.23, SD = 0.91$ ). Therefore, millennials attach more value to the need for coaching than millennials do. Baby boomers ( $M = -0.14, SD = 1.11$ ) did not differ significantly from either millennials or generation X. The ANOVA and post-hoc results indicate that hypothesis 7D (Generations differ in their need for coaching) can be accepted.

### 6.2.5 Leisure-work balance

In this section, the differences between generations related to the need for a leisure-work balance are tested. The mean varies between -0,14 (SD = 0,96) for millennials and 0,27 (SD = 0,91) for baby boomers (Figure 6.2). Table 6.1 shows that there is a statistically significant difference at the  $p < .05$  level in the workplace need factor leisure-work for the three generation groups:  $F(2, 299) = 5.1, p = .01$ . The effect size is small ( $9.863/301.000 = .03$ ). The post-hoc comparisons using the Bonferroni test shows that the mean score for millennials ( $M = -0,14, SD = 0,96$ ) was significantly lower than the mean score for generation X ( $M = 0,22, SD = 1,08$ ). This implies that millennials attach less value to a leisure-work balance than generation X does. Baby boomers ( $M = 0,27, SD = 0,91$ ) did not differ significantly from either millennials or generation X. Due to the significant difference, hypothesis 7E (Generations differ in their need for leisure-work balance) is accepted.

### 6.2.6 Personalised arrangements

In this last section, the differences between generations related to the need for personalised arrangements are examined. The mean score for the groups for personalised arrangements varies between -0,21 (SD = 0,92) for baby boomers and 0,11 (SD = 0,97) for generation X (Figure 6.2). Table 6.1 shows that there is no statistically significant difference at the  $p < .05$  level in the workplace need factor personalised arrangements for the three generation groups:  $F(2, 299) = 1.3, p = .29$ . Since the ANOVA test shows that there are no significant differences, the post-hoc test is not carried out and hypothesis 7F (Generations differ in their need for personalised arrangements) is rejected.

### 6.2.7 Overview results

Figure 6.2 shows an overview of the differences between generation groups for various needs. No significant differences are found between generations for the workplace need factors informal socialisation, formal socialisation and personalised arrangements. For the workplace need factors professional growth, coaching and leisure-work balance significant differences are found between generations. As can be seen in Figure 6.3, millennials value the workplace need factors professional growth and coaching on a higher level than generation X does. Figure 6.3 shows that generation X attaches more value to the need for a leisure-work balance than millennials do.

Since generations differ in their scores for the three needs, hypothesis 7 (Generations differ in workplace need factors) is accepted. Nevertheless, a remark to this conclusion is the fact that baby boomers did not differ significantly from other generations.

Variable	Generation	Baby boomers	Generation X	Millennials
Informal socialisation				
Formal socialisation				
Professional growth			-	+
Coaching			--	++
Leisure-work balance			++	--
Personalised arrangements				

+	Generation attaches more value to this need with a significant difference at the $p < .1$
-	Generation attaches less value to this need with a significant difference at the $p < .1$
++	Generation attaches more value to this need with a significant difference at the $p < .05$
--	Generation attaches less value to this need with a significant difference at the $p < .05$
	No significant difference

Figure 6.3 Overview needs of generations

### 6.3 Millennials and physical workplace aspects

In this section is discussed whether millennials perceive the physical workplace aspects to be a support for the three workplace needs. Hereby, hypothesis 8 is tested: Millennials perceive certain physical workplace aspects to be a support for workplace needs.

No difficult statistical tests are needed in order to test this hypothesis. The survey answers of millennials are addressed in this section. The answers are given on a five-point Likert scale and indicate the importance of physical workplace aspects for supporting certain needs. In the case that the mean score of a physical workplace aspect contains a mean score of 3 or higher (3= moderately important), the physical workplace aspect is important for supporting the related need. However, the hypothesis can only be accepted when the total average mean score of all the physical workplace aspects for a need contains a value of 3 (moderately important) or higher.

#### 6.3.1 Sociability with colleagues

First, it is examined whether millennials perceive physical workplace aspects as a support for the need of sociability with colleagues. The detailed distribution by means of histograms and the extensive table that includes the mean score, standard deviation, minimum value, maximum value, skewness and kurtosis are shown in Figure J.1 and Table J.1 in Appendix J. The most important results that contain the mean score and the standard deviations are shown in Figure 6.4.

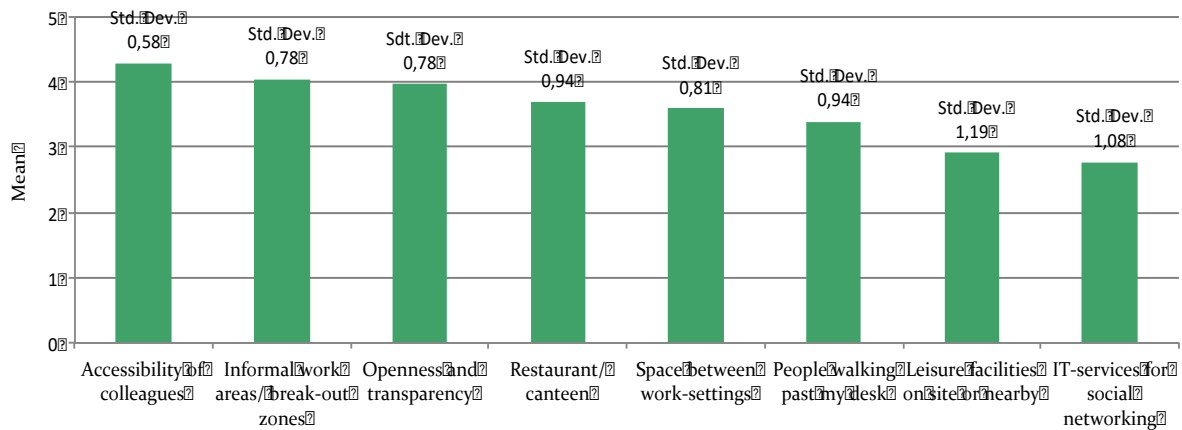


Figure 6.4 Importance of physical workplace aspects for sociability with colleagues

Figure 6.4 shows the mean scores for the physical workplace aspects. The mean score varies between 2,78 for IT-services for social networking and 4,29 for accessibility of colleagues. Accessibility has clearly the highest score ( $M = 4,29$ ,  $SD = 0,58$ ). The aspect informal work areas/ break-out zones is indicated as the second most important aspect. As can be seen in Table J.1 in the appendix, the skewness for the aspect informal work areas/ break-out zones is strongly negative. This negative skewness value suggests that the scores are clustered at the right-hand side of the histogram (Figure J.1) (Pallant, 2016). The strong positive value for the kurtosis indicated that the distribution is peaked with long thin tails (Table J.1) (Pallant, 2016). Openness and transparency is ranked as third most important aspect with a mean score that approaches the indication of 'important' ( $M = 3,97$ ). The fourth most important aspect is restaurant/ canteen with a mean score of 3,40. The two aspects that are related to the more spatial aspects of the work setting are ranked fifth and sixth. Those aspects are respectively 'space between work-settings' and 'people walking past my desk'.

The first aspect that has a mean score below the answer option 'moderately important' is leisure facilities on site or nearby (mean= 2,91). Table J.1 in Appendix J shows that this aspect is the first one with a positive skewness, which indicates that the scores are clustered on the left side of the histogram at the lower values (Figure J.1). The kurtosis is strongly negative which indicates a flat distribution with many cases in the extremes (Pallant, 2016). This wider distribution is related to the relative high value for the standard deviation. The millennials in this study value IT-services for social networking as the least important aspect for supporting sociability with colleagues.

The mean of all the physical workplace aspects is 3,58. As already explained in the first section of Paragraph 6.3, the hypothesis can only be accepted in the case the total average mean of all the physical workplace aspects contains a value of three or higher. Since the latter is the case, it can be concluded that hypothesis 8A (Millennials perceive certain physical workplace aspects to be a support for sociability with colleagues) is accepted. Nevertheless, a remark to this conclusion is the fact that the aspects 'leisure facilities onsite or nearby' and 'IT-services for social networking' have a lower mean than the value 'moderately important'.

### 6.3.2 Opportunity to grow

In this section is examined whether millennials perceive the physical workplace aspects as a support for the need of opportunity to grow. The extensive table including the mean, standard deviation, minimum value, maximum value, skewness and kurtosis is attached in Figure J.2 in Appendix J. The histograms with the detailed distributions are also included in Appendix J. Figure 6.5 shows the most important results with the mean and standard deviation for each physical workplace aspect.

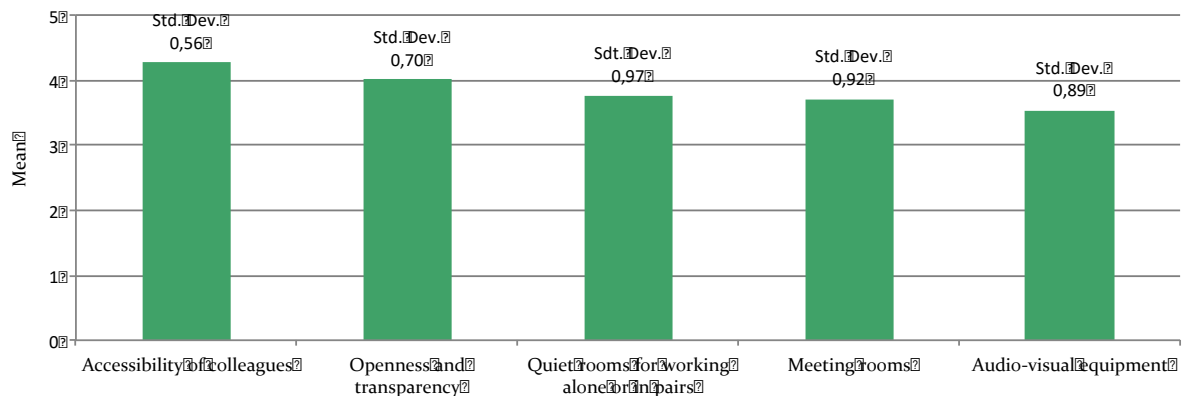


Figure 6.5 Importance of physical workplace aspects for the opportunity to grow

Figure 6.5 shows the mean scores. They vary between 3,54 for audio-visual equipment and 4,27 for accessibility of colleagues. Those scores imply that all the five physical workplace aspects are important for facilitating the opportunity to grow according to millennials. Besides, Table J.2 in the appendix shows that all the values have a negative skewness which indicates that the scores are clustered at the right side of the histogram with the high values (Figure J.2).

The most important aspect for supporting the opportunity to grow is the accessibility of colleagues. As can be seen in Figure 6.5, openness and transparency scores as the second most important aspect with a mean of 4,01. The kurtosis value is relatively high which indicates that the distribution is rather peaked and clustered in the centre (Table J.2). The physical aspects ‘quiet rooms for working alone or in pairs’ and ‘meeting rooms’ tend to score average with mean scores of respectively 3,76 and 3,71 (Figure 6.5). The aspect audio-visual equipment has the lowest score, but still approaches the value ‘important’.

The mean for all the physical workplace aspects is 3,84 and therefore is can be concluded that hypothesis 8B (Millennials perceive certain physical workplace aspects to be a support for the opportunity to grow) is accepted.

### 6.3.3 Work-life balance

This section examines whether millennials perceive certain physical workplace aspects as a support for the need of work-life balance. The detailed distribution by means of histograms and the extensive table that includes the mean score, standard deviation, minimum value, maximum value, skewness and kurtosis are shown in Figure J.3 and Table J.3 in Appendix J. The most important results are shown in Figure 6.6.

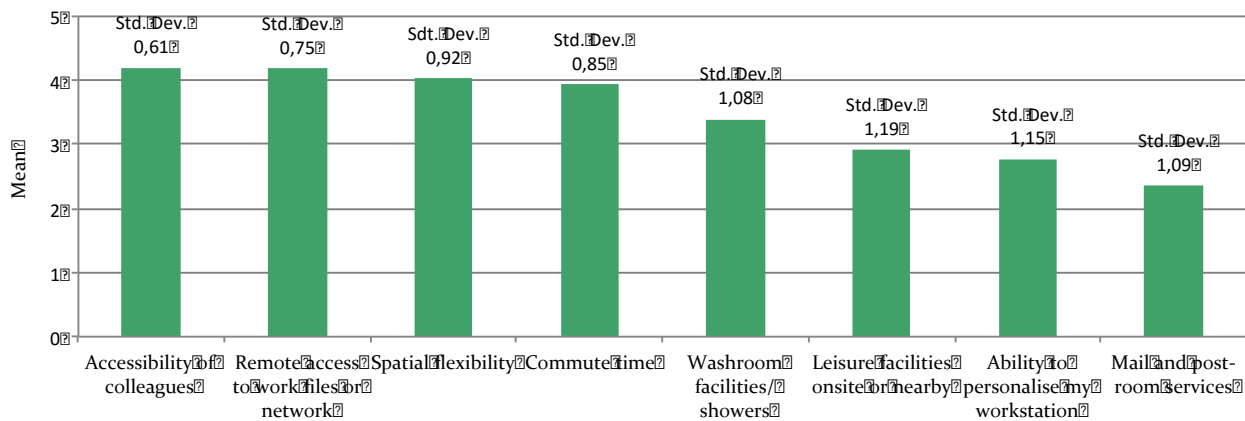


Figure 6.6 Importance of physical workplace aspects for work-life balance

Figure 6.6 shows the mean scores and standard deviation of the physical workplace aspects. The mean scores vary between 2,78 for mail and post-room services and 4,29 for accessibility of colleagues. Also for this third need, the aspects ‘accessibility of colleagues’ has the highest score. The aspects that are strongly related to telecommuting score as second and third most important (‘remote access to work files or network’ and ‘spatial flexibility’). The skewness values for both aspects indicate that the scores are mostly clustered on the right side of the histogram (Figure J.3). Commute time is ranked on the fourth place with a mean of 3,93 (Figure 6.6). The aspects ‘washroom facilities/showers’, ‘leisure facilities onsite or nearby’ and ‘mail and post-room services’ support people in activities during their daily life’s. Especially the last two aspects score low with a mean below ‘moderately important’. The aspect ‘ability to personalise my workstation’ is also indicated to be less important for supporting a work-life balance. This makes sense since this aspect cannot support a work-life balance in a direct way. However, the presence of spatial flexibility can be more pleasant when people can (easily) personalise a workstation.

The mean of all the physical workplace aspects is 3,47. Therefore, hypothesis 8C (Millennials perceive certain physical workplace aspects to be a support for a work-life balance) is accepted. Nevertheless, it should be noted that the aspects ‘leisure facilities onsite or nearby’, ‘ability to personalise my workstation’ and ‘mail and post-room services’ have a lower mean than the value ‘moderately important’.

### 6.3.4 Overview results

In section 6.3 was discussed whether millennials perceive physical workplace aspects to be a support for certain needs. In the case that the overall score of a physical workplace aspect contains a mean of three or higher (3= moderately important), the physical workplace aspect is important for supporting the related need. Therefore, Table 6.2 shows the physical workplace aspects that are indicated to be important by respondents that belong to the millennial generation:



Table 6.2

*Importance of physical workplace aspects related to workplace needs according to millennials*

Sociability with colleagues	Opportunity to grow	Work-life balance
Accessibility of colleagues	Accessibility of colleagues	Accessibility of colleagues
Informal work areas/ break-out zones	Openness and transparency	Remote access to work files or network
Openness and transparency	Quiet rooms for working alone or in pairs	Spatial flexibility
Restaurant/ canteen	Meeting rooms	Commute time
Space between work-settings	Audio-visual equipment	Washroom facilities/ showers
People walking past my desk		

As can be seen in Table 6.2, is the accessibility of colleagues the most important for supporting all the three needs. Most of the physical workplace aspects for supporting the sociability with colleagues and the work-life balance are indicated as important (respectively six out of eight aspects and five out of eight aspects). The physical workplace aspects for supporting the opportunity to grow are all five indicated as important.

Regarding the results in this section, hypothesis 8 (Millennials perceive certain physical workplace aspects to be a support for workplace needs) is accepted.

#### 6.4 Generations and physical workplace aspects

In this section, the differences between generations related to physical workplace aspects for supporting workplace needs are discussed. Hereby, hypothesis 9 is tested: Generations perceive different physical workplace aspects to be a support for workplace needs. The statistical test that is used to test this hypothesis is the one-way analysis of variance (ANOVA). The methodology for applying this test is already explained in Section 4.4.2 of Chapter 4.

The test will be conducted multiple times. The independent categorical variable is for every test 'Generation' and consists of the three levels baby boomers, generation X and millennials. The continuous dependent variable is one of the 21 physical workplace aspects and contains a five-point Likert scale. This dependent variable varies for every test.

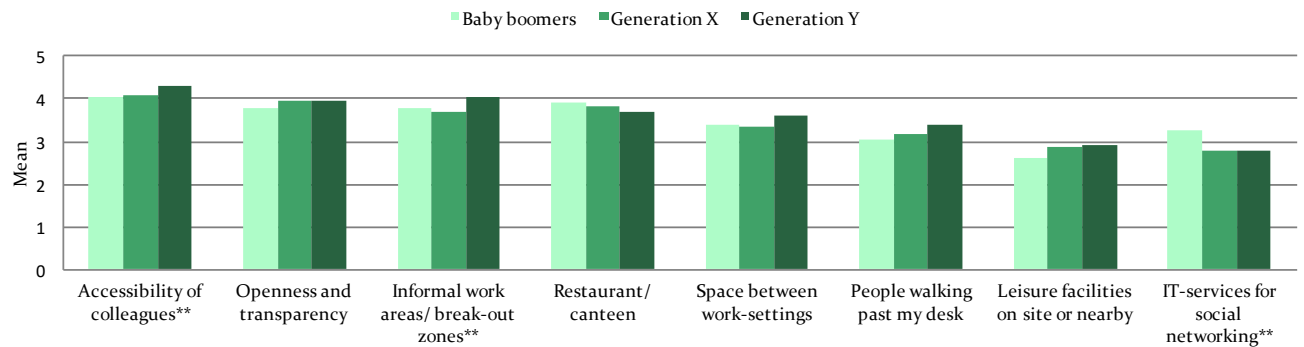
Before conducting the ANOVA, the Levene's test for homogeneity of variances is performed to test on whether the variances in scores is the same for each of the generation groups. The tables with the results of the Levene's test are attached in Appendix K. In the case the significance value is greater than  $p = .05$ , there is no violated assumption of homogeneity of variance and therefore the on-way ANOVA can be used for testing the differences. When Levene's test for homogeneity of variances shows a significance value of  $p < .05$ , there is a violated assumption of homogeneity. In this case, the Welch test and Brown-Forsythe test are performed for testing the differences between generations.

The results are explained for every workplace need separately. The graphs show the mean scores for every generation for all physical workplace aspects. The tables show an overview of the most important results of the tests. The results are shown more comprehensively in Appendix K by means of extensive tables including the descriptive, tests of homogeneity of variances, one-way ANOVA tests, robust tests of equality of means and post-hoc tests.



### 6.4.1 Sociability with colleagues

First, the differences between generations related to the physical workplace aspects for supporting sociability with colleagues are tested. Figure 6.7 and Table 6.3 show that the mean scores of importance for all the variables that can support sociability with colleagues varies between 2,60 (SD = 1,14) for the variable leisure facilities onsite or nearby according to baby boomers and 4,29 (SD = 0,58) for the variable accessibility of colleagues according to millennials. The mean sumscores vary between 2,84 (SD = 1,07) for the IT-services for social networking and 4,21 (SD = 0,58) for the variable accessibility of colleagues (Table 6.3).



\*  $p < .1$

\*\*  $p < .05$

Figure 6.7 Mean scores of generations of importance for physical workplace aspects sociability with colleagues

Table 6.3  
Overview descriptives, ANOVA and post-hoc sociability with colleagues

Label	Baby boomers (1)		Generation X (2)		Generation Y (3)		Sumscore Generations		ANOVA		Post-hoc
	M	SD	M	SD	M	SD	M	SD	F (2, 299)		
Accessibility of colleagues	4,06	0,64	4,07	0,53	4,29	0,58	4,21	0,58	0,006** Welch	0,008** Brown-Forsythe	3 > 2**
Openness and transparency	3,80	0,90	3,97	0,72	3,97	0,78	3,95	0,78	0,738		
Informal work areas/ break-out zones	3,80	0,87	3,71	0,91	4,04	0,78	3,93	0,83	0,014** Welch	0,014** Brown-Forsythe	3 > 2**
Restaurant/canteen	3,91	0,85	3,81	0,80	3,69	0,94	3,75	0,90	1,231		
Space between work-settings	3,40	1,17	3,37	0,87	3,59	0,81	3,52	0,87	0,139 Welch	0,213 Brown-Forsythe	
People walking past my desk	3,06	0,97	3,16	1,03	3,40	0,94	3,30	0,97	2,829		
Leisure facilities on site or nearby	2,60	1,14	2,88	1,20	2,91	1,19	2,86	1,19	0,991		
IT-services for social networking	3,26	1,12	2,80	1,00	2,78	1,08	2,84	1,07	3,044**		1 > 3**

\*  $p < .1$

\*\*  $p < .05$

First, the one-way ANOVA test is analysed. As can be seen in Table 6.3 there is a statistically significant difference at the  $p < .05$  level in the variable IT-services for social networking between generation groups:  $F(2, 299) = 3.0, p = .05$ . Despite the statistical significance, the actual differences in mean scores between the groups is quite small. The effect size calculated by using eta squared, is .02 (6.873/344.371). According to Cohen (Cohen in Pallant, 2016), this is a small effect size.

As can be seen in Table 6.3, the Welch test and the Brown-Forsythe test both show a statistically significant difference at the  $p < .05$  level in the variables accessibility of colleagues ( $p = .07$ ) and informal work areas/ break-out zones ( $p = .01$ ). The effect size related to accessibility of colleagues is small with a value of .03 (3.474/101.272). The eta squared for examining the effect size related to informal work areas/ break-out zones is also small with a value of .03 (6.726/209.540). Since the ANOVA test and the robust tests of equality of means indicate a significant difference between generations for three variables, the post-hoc test is carried out.

For the variable accessibility of colleagues, the post-hoc test indicates that the mean score of millennials ( $M = 4.29, SD = 0.58$ ) is significantly higher than the mean score of generation X ( $M = 4.07, SD = 0.53$ ). This implies that millennials indicate the physical workplace aspect accessibility of colleagues to be significantly more important for supporting sociability with colleagues than generation X does. Baby boomers ( $M = 4.06, SD = 0.64$ ) did not differ significantly from either millennials or generation X when it comes to the variable accessibility of colleagues.

Secondly, the post-hoc test indicates that the mean score of millennials ( $M = 4.04, SD = 0.78$ ) is significantly higher than the mean score of generation X ( $M = 3.71, SD = 0.91$ ) for the variable informal work areas/ break-out zones. Therefore, it can be stated that millennials indicate the physical workplace aspect informal work areas/ break-out zones a significantly more important for supporting sociability with colleagues than millennials do. For this variable, baby boomers ( $M = 3.80, SD = 0.87$ ) show no significant difference from either millennials or generation X.

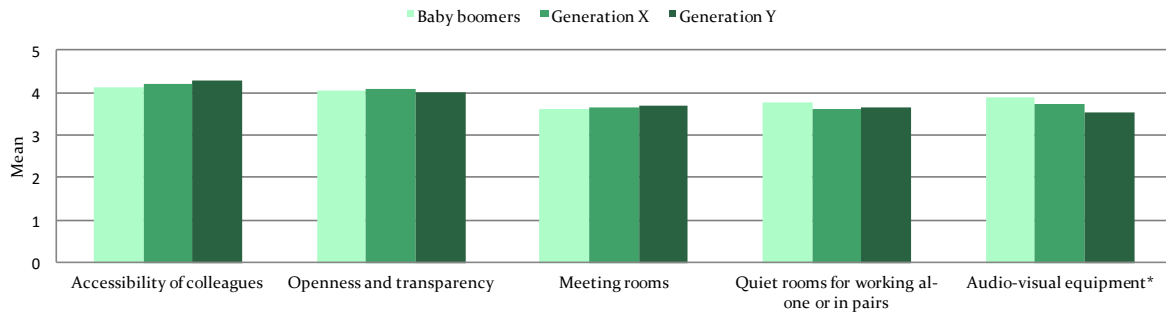
Lastly, for the variable IT-services for social networking, the post-hoc test indicates that the mean score of millennials ( $M = 2.78, SD = 1.08$ ) is significantly lower than the mean score of baby boomers ( $M = 3.26, SD = 1.12$ ). This implies that baby boomers indicate that the physical workplace aspect IT-services for social networking is significantly more important for supporting sociability with colleagues than millennials indicate. Generation X ( $M = 2.80, SD = 1.00$ ) did not differ significantly from either millennials or baby boomers when it comes to the variable IT-services for social networking.

The results of the tests indicate generations perceive different physical workplace aspects to be a support for sociability with colleagues. Therefore, hypothesis 9A (Generations perceive different physical workplace aspects to be a support for sociability with colleagues) is accepted.

#### **6.4.2 Opportunity to grow**

In this section, the differences between generations related to the physical workplace aspects for supporting opportunity to grow are tested. Figure 6.8 and Table 6.4 show that the mean scores of importance for all the variables that can support the opportunity to grow varies

between 3,54 (SD = 0,89) according to millennials for the variable audio-visual equipment and 4,27 (SD = 0,56) for accessibility of colleagues also according to millennials. The mean sumscores vary between 3,63 (SD= 0,90) for the variable audio-visual equipment and 4,24 (SD= 0,56) for the variable accessibility of colleagues (Table 6.4).



\*  $p < .1$

\*\*  $p < .05$

Figure 6.8 Mean scores of generations of importance for physical workplace aspects opportunity to grow

Table 6.4  
Overview descriptives, ANOVA and post-hoc opportunity to grow

Label	Baby boomers (1)		Generation X (2)		Generation Y (3)		Sumscore Generations		ANOVA F (2, 299)	Post-hoc
	M	SD	M	SD	M	SD	M	SD		
Accessibility of colleagues	4,14	0,65	4,19	0,51	4,27	0,56	4,24	0,56	1,148	
Openness and transparency	4,03	0,82	4,09	0,68	4,01	0,70	4,03	0,71	0,367	
Meeting rooms	3,60	0,88	3,65	0,86	3,71	0,92	3,69	0,90	0,298	
Quiet rooms for working alone or in pairs	3,77	0,97	3,60	1,05	3,67	0,97	3,67	0,99	0,369	
Audio-visual equipment	3,91	1,10	3,73	0,83	3,54	0,89	3,63	0,90	3,179**	1 > 3*

\*  $p < .1$

\*\*  $p < .05$

Table 6.4 shows there is only a statistically significant difference at the  $p < .05$  level in the variable audio-visual equipment between generation groups:  $F(2, 299) = 3.2, p = .04$ . For the other variables, there is no statistically significant difference at the  $p < .05$  level between the generation groups. The effect size that is related to the variable audio-visual equipment is small with a value of .02 ( $5.126/246.202$ ). The next step is to conduct the post-hoc test for the variable audio-visual equipment.

The comprehensive post-hoc comparisons using the Bonferroni test are shown in Table K.9 in Appendix K. No statistical significant value can be observed for  $p < .05$  in the column 'Mean Difference (I-J)'. However, there are significant differences for  $p < .1$ . Since ANOVA shows with a significance of  $p < .05$  that there are differences, it can be assumed that the differences occur between millennials and baby boomers although the post-hoc test shows a significance of  $p = .07$ . Mooi and Sarstedt (2014) explain that a significance level of .10 can be used for exploratory research. Therefore, it can be concluded that the mean score of

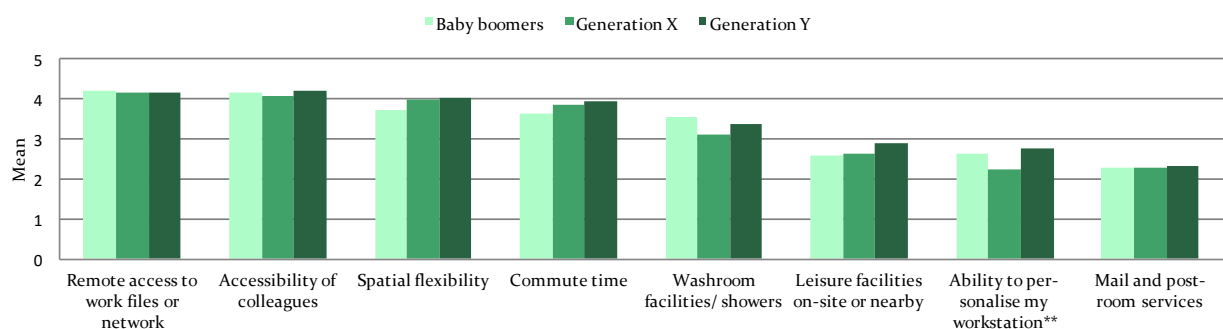
millennials ( $M = 3,54$ ,  $SD = 0,89$ ) is significantly lower than the mean score of baby boomers ( $M = 3,91$ ,  $SD = 1,10$ ). This implies that baby boomers indicate the physical workplace aspect audio-visual equipment to be significantly more important for supporting the opportunity to grow than millennials do. Generation X ( $M = 3,73$ ,  $SD = 0,83$ ) did not differ significantly from either baby boomers or millennials when it comes to the physical workplace aspect audio-visual equipment.

The results of the tests indicate generations perceive different physical workplace aspects to be a support for the opportunity to grow. Therefore, hypothesis 9B (Generations perceive different physical workplace aspects to be a support for the opportunity to grow) is accepted.

### 6.4.3 Work-life balance

In this last section, the differences between generations related to the physical workplace aspects for supporting work-life balance are tested. Figure 6.9 shows that the mean scores of importance for all the variables that can support a work-life balance varies between 2,25 ( $SD = 0,96$ ) for the variable ability to personalise my workstation for generation X and 4,20 ( $SD = 0,80$ ) for the variable remote access to work files or network regarding baby boomers and also 4,20 ( $SD = 0,61$ ) for the variable accessibility of colleagues for millennials. The mean sumscores vary between 2,32 ( $SD = 1,09$ ) for the variable mail and post-room services and 4,18 ( $SD = 0,79$ ) for the variable remote access to work files or network (Table 6.5). First, the one-way ANOVA test is analysed. As shown in Table 6.5, there is no statistically significant difference at the  $p < .05$  level in the variables between the generation groups.

As can be seen in Table 6.5, the Welch test and the Brown-Forsythe test show only a statistically significant difference at the  $p < .05$  level in the variable ability to personalise my workstation ( $p = .00$ ). The eta squared for examining the effect size related to ability to personalise my workstation is .04 ( $14.444/386.719$ ). This is the highest effect size founded in this study, however according to Cohen (Cohen in Pallant, 2016) the effect size is still small.



\*  $p < .1$

\*\*  $p < .05$

Figure 6.9 Mean scores of generations of importance for physical workplace aspects work-life balance

Table 6.5  
Overview descriptives, ANOVA and post-hoc work-life balance

Label	Baby boomers (1)		Generation X (2)		Generation Y (3)		Sumscore Generations		ANOVA		Post-hoc
	M	SD	M	SD	M	SD	M	SD	F (2, 299)		
Remote access to work files or network	4,20	0,80	4,16	0,90	4,18	0,75	4,18	0,79	0,035		
Accessibility of colleagues	4,17	0,71	4,07	0,50	4,20	0,61	4,17	0,60	0,180 Welch	0,274 Brown-Forsythe	
Spatial flexibility	3,74	1,01	3,97	1,08	4,03	0,92	3,98	0,97	1,309		
Commute time	3,63	1,03	3,88	0,85	3,93	0,85	3,88	0,87	1,737		
Washroom facilities/showers	3,54	1,01	3,13	1,26	3,40	1,08	3,35	1,12	2,081		
Leisure facilities on-site or nearby	2,60	1,06	2,64	1,14	2,92	1,19	2,81	1,17	2,190		
Ability to personalise my workstation	2,63	1,24	2,25	0,96	2,77	1,15	2,63	1,13	0,002** Welch	0,004** Brown-Forsythe	3 > 2**
Mail and post-room services	2,29	1,15	2,28	1,09	2,35	1,09	2,32	1,09	0,131		

\* p < .1

\*\* p < .05

The post-hoc test in Table K.14 indicates that the mean score of millennials (M = 2,25, SD = 0,96) is significantly higher than the mean score of generation X (M = 2,77, SD = 1,15). This implies that millennials indicate that the physical workplace aspect ability to personalise my workstation is significantly more important for supporting a work-life balance. Baby boomers (M = 2,63, SD = 1,24) did not differ significantly from either millennials or baby boomers when it comes to the variable ability to personalise my workstation.

The results of the tests indicate generations perceive different physical workplace aspects to be a support for a work-life balance. Therefore, hypothesis 9C (Generations perceive different physical workplace aspects to be a support for a work-life balance) is accepted.

#### 6.4.4 Overview results

Figure 6.10 shows an overview of the differences between generations for the physical workplace aspects for supporting the workplace needs. There are differences between some generations in three out of the eight physical workplace aspects that support sociability with colleagues. Millennials indicate the physical workplace aspects accessibility of colleagues and informal work areas/ break-out zones to be significantly more important than generation X does.

Furthermore, the oldest generation (the baby boomers) perceives IT-services for social networking as a more important support for sociability with colleagues than millennials, the youngest generation, do. Baby boomers also perceive audio-visual equipment as more important for the support of opportunity to grow than millennials do.

Variable	Generation	Baby boomers	Generation X	Millennials
Sociability with colleagues				
Accessibility of colleagues			-	++
Openness and transparency				
Informal work areas/ break-out zones			-	++
Restaurant/ canteen				
Space between work-settings				
People walking past my desk				
Leisure facilities on site or nearby				
IT-services for social networking		++		--
Opportunity to grow				
Accessibility of colleagues				
Openness and transparency				
Meeting rooms				
Quiet rooms for working alone or in pairs				
Audio-visual equipment		+		-
Work-life balance				
Remote access to work files or network				
Accessibility of colleagues				
Spatial flexibility				
Commute time				
Washroom facilities/ showers				
Leisure facilities onsite or nearby				
Ability to personalise my workstation			--	++
Mail and post-room services				

+	Generation indicates physical workplace aspect as more important for supporting the concerned need with a significant difference at the $p < .1$
-	Generation indicates physical workplace aspect as less important for supporting the concerned need with a significant difference at the $p < .1$
++	Generation indicates physical workplace aspect as more important for supporting the concerned need with a significant difference at the $p < .05$
--	Generation indicates physical workplace aspect as less important for supporting the concerned need with a significant difference at the $p < .05$
	No significant difference

Figure 6.10 Overview generations and physical workplace aspects

The last physical workplace aspect that is significantly different in importance for some generations is ‘the ability to personalise my workstation’. Millennials perceive the ability to personalise their workstation to be a more important support for a work-life balance than generation X does.

Since generations differ in their scores for the importance of the physical workplace aspects for supporting the workplace needs, it can be concluded that hypothesis 9 (Generations perceive different physical workplace aspects to be a support for workplace needs) is accepted.

## 6.5 Discussion

In this section, the results of the analyses in this chapter are reflected to the findings of the literature study in Chapter 2 and Chapter 3. The most interesting comparisons are mentioned in this discussion.

### 6.5.1 Needs and physical workplace aspects

The first part of the analyses in this chapter addresses the SDT needs that are established by Ryan and Deci (2008) and the workplace need factors. Ryan and Deci (2008) claim that the three SDT needs that all people have in life and in the workplace (relatedness, competence and autonomy) can be fulfilled in different ways. It can be concluded that the workplace need factors that have a positive and significant relation with an SDT need, contribute to fulfilling this SDT need. Therefore, informal socialisation, formal socialisation, professional growth and leisure-work balance contribute to fulfilling the need for relatedness. Professional growth and leisure-work balance contribute to fulfilling the need for competence. Finally, informal socialisation, formal socialisation and leisure-work balance contribute to fulfilling the need for autonomy.

It is interesting that most of the significant differences between generations for the workplace need factors might be explained by means of Table 3.4. This table in Chapter 3 identifies the workplace needs of generations by means of literature study. According to those findings, millennials have a need for mentoring and the opportunity to grow. The results of this research show that millennials attach significantly more value to the need for professional growth and the need for coaching than generation X does. Mentoring is closely related to coaching (Piech, 2016).

The largest part of the analyses elaborates on the physical workplace aspects for supporting the three workplace needs: the need for sociability with colleagues, the need for opportunity to grow and the need for work-life balance. Almost all the physical workplace aspects that are originated from the literature study in Chapter 2 and Chapter 3 are perceived as important by millennials for supporting one of the workplace needs. Only five of the 21 aspects were perceived as not important. The aspects 'leisure facilities onsite or nearby' from Leesman (2016) and 'IT-services for social networking' from PwC (2011) for supporting sociability with colleagues, and the aspects 'leisure facilities onsite or nearby', 'ability to personalise my workstation' and 'mail and post-room services' all from Leesman (2016) for supporting work-life balance were not perceived as important.

Millennials indicated that the most important physical workplace aspect for supporting all three workplace needs is 'accessibility of colleagues'. This high valuation about the accessibility of colleagues might be explained by the fact that this generation is 'sociable', as Table 3.3 about the workplace characteristics of generations indicates. This result of high importance for 'accessibility of colleagues' is also in line with the studies of Leesman (2016).



They conducted research on the CRE features and facilities that are most important for supporting social interaction and learning from others. Hereby, Leesman (2016) indicates that the accessibility of colleagues is important for supporting social interaction and learning from others. However, the physical workplace aspect spatial flexibility is also indicated as important for supporting a work-life balance for millennials. Moreover, in Section 3.2.3 is explained that activity based working (ABW) is increasingly being implemented in the work environment. ABW is an approach that does not include a traditional workplace, but a 'hybrid environment' that provides various types of workplaces for employees (Ross, 2010). Those workplaces are used on a need basis, depending on the activity that is being performed (Ross, 2010). Examples of different types of activity based workspaces are open spaces, meeting rooms, concentration rooms and informal collaboration points. In the case of a work environment that includes spatial flexibility or ABW, it could be questionable whether colleagues are well accessible for each other since they can work at a different workplace every day (or hour!). This interesting contradiction between the literature review of Chapter 3 and the results of the analysis in this chapter is addressed more extensively in the practical implications of Chapter 7.

Another interesting contradiction is related to the importance of the physical workplace aspect 'ability to personalise my workstation'. Regarding literature, millennials value the ability to personalise their workstation (CBRE, 2016; Johnson Controls, 2010). However, the results in this chapter show that the physical workplace aspect 'ability to personalise my workstation' is not perceived as important by millennials for supporting a work-life balance. This result might be related to their need for flexible workplace use as indicated in Table 3.4 (workplace needs of generations).

The second most important physical workplace aspect for supporting sociability with colleagues is 'informal work areas/ break-out zones. This finding is in line with the study of Leesman (2016). They found that this aspect is very important for facilitating social interaction in the work environment.

Furthermore, it was expected that both the physical aspects 'meeting rooms' and 'quiet rooms for working alone or in pairs' would be indicated as more important for supporting opportunity to grow. Especially since those aspects are important for facilitating classroom instruction. This type of instruction is important for learning PwC (2011). While participating in the questionnaire, it could have been the case that respondents focused on other aspects for the need for opportunity to grow instead of learning and developing skills (e.g. on possibilities for making promotion).

### **6.5.2 The influence of activities**

As already explained in Section 3.2.2, the extent to which activities within the office are performed, might affect the workplace needs of employees. Besides, some types of activities are more often performed by people that belong to a certain age group. For example, a function as a manager or board member is most of the time assigned to older and more experienced employees. Moreover, there are certain activities that are involved in this specific function. Therefore, Leesman (2016) states that older generations might perform different activities than younger generations and on that account value certain activities and certain needs differently. Some of the results in this chapter might (partly) be caused by this



explanation. Hereby, generations differ from each other in their needs since they might be less or more experienced at their job and perform other activities. There are three cases present in the results of this study that might confirm this phenomenon.

The first case is the result that millennials attach more value to the needs professional growth and coaching than generation X does. This can be caused by the fact that this generation is younger and less experienced and therefore values development and growth and the presence of coaches.

Secondly, millennials value the important of the ability to personalise their workstation more than generation X does. This might be caused by the fact they are often at the beginning of establishing their position within an organisation. By means of a personalised workstation they might feel more involved and acknowledged by an organisation (Johnson Controls, 2010).

Finally, Table 3.3 about the workplace characteristics of generations indicates that millennials are techno-savvy. However, the results in this chapter show that the baby boomers significantly perceive audio-visual equipment as more important for supporting the opportunity to grow than millennials do. Moreover, they also perceive IT-services for social networking as more important for supporting sociability with colleagues than millennials do. This might be in line with their workplace characteristic of having good communication skills (Table 3.3) Nevertheless, the study of Leesman (2016) indicates that older respondents value activities such as audio conferences at a higher level than younger respondents. Since the baby boomers might therefore be more common with this activity, they also perceive the physical workplace aspects that support this activity as more important. The latter might be the reason why baby boomers perceive the physical workplace aspects IT-services for social networking and audio-visual equipment as more important than the techno-savvy millennial generation.

### **6.5.3 CREM activities**

CREM needs to undertake some activities in order to implement certain physical workplace aspects in the work environment. The activities that CREM can perform are explained in Section 2.6 of this study. The results in this chapter show the physical workplace aspects that support the needs of millennials. All those physical workplace aspects relate to access and the lay out of work settings, and to the facilitation of physical space for supporting specific activities and hospitality services. Therefore, CREM needs to perform the two activities (workplace) design management/ space planning and facility management. The activity of (workplace) design management/ space planning is important for providing fitting physical space within the office environment and facility management plays a key role in managing facility resources and supporting services.

Regarding the St. Gallen management model in Figure 2.3, the two activities take place in the core process of the model (Kämpf-Dern & Pfnür, 2014). While performing the two activities, there is interaction and linkage with the management process and the support process. Bontekoning et al. (2016) assigned the two activities of (workplace) design management/ space planning and facility management to the operational level of CREM (Figure 2.4). Mainly the property management of an organisation is involved when implementing the physical workplace aspects that contribute to attracting and retaining millennials. In the case of pursuing a certain CRE strategy, such as increasing employee

satisfaction, value can be added to the core business when this CRE strategy and the corporate strategy are in alignment (Haynes, 2012a). Riratanaphong (2014) analysed and summarised various CRE strategies by using six perspectives of business performance regarding the BSC concept of Bradley (2002) (Table 2.1). Attracting and retaining millennials can be assigned to the stakeholder perception perspective that includes employee satisfaction. Besides, Riratanaphong (2014) assigned the CRE strategy ‘Attract and retain staff’ of Van Meel et al. (2010), that is very similar to attracting and retaining millennials, also to the stakeholder perception perspective.

## 6.6 Conclusion

Within Chapter 6, the third and fourth sub questions have been answered:

3. Which physical workplace aspects are relevant, and how much are they valued to support the workplace needs of millennials?
4. Do other generations differ in workplace needs and prefer different physical workplace aspects to support workplace needs?

The research questions are answered by means of testing the hypotheses that are proposed in Chapter 4 and Chapter 5. The findings on whether the hypotheses are accepted or rejected are shown in Table 6.6:

Table 6.6  
*Hypotheses data analysis*

H1	The need for informal socialisation is related the most to the need for relatedness	Accepted
H2	The need for formal socialisation is related the most to the need for relatedness	Rejected
H3	The need for professional growth is related the most to the need for competence	Accepted
H4	The need for coaching is related the most to the need for competence	Rejected
H5	The need for leisure-work balance is related the most to the need for autonomy	Rejected
H6	The need for personalised arrangements is related the most to the need for autonomy	Rejected
H7	Generations differ in workplace need factors	Accepted
H8	Millennials perceive certain physical workplace aspects to be a support for workplace needs	Accepted
H9	Generations perceive different physical workplace aspects to be a support for workplace needs	Accepted

The results of the analysis show that millennials perceive six physical workplace aspects to be a support for sociability with colleagues, five physical workplace aspects to be a support for the opportunity to grow and five physical workplace aspects to be a support for a work-life balance:

### Sociability with colleagues

- Accessibility of colleagues
- Informal work areas/ break-out zones
- Openness and transparency
- Restaurant/ canteen
- Space between work-settings
- People walking past my desk

### Opportunity to grow

- Accessibility of colleagues
- Openness and transparency
- Quiet rooms for working alone or in pairs
- Meeting rooms
- Audio-visual equipment

### Work-life balance

- Accessibility of colleagues
- Remote access to work files or network
- Spatial flexibility
- Commute time
- Washroom facilities/ showers

The physical workplace aspect accessibility of colleagues is indicated as the most important aspect to support the three workplace needs.

The analysis shows that generations differ in three of the six workplace need factors: the need for professional growth, the need for coaching and the need for leisure-work balance. Hereby, millennials attach more value to the workplace need factors professional growth and coaching than generation X does. Generation X attaches more value to the need for a leisure-work balance than millennials do. Baby boomers did not differ significantly from other generations regarding the six needs.

The results of the analyses also show that generations do prefer certain different physical workplace aspects for supporting workplace needs. Millennials perceive the physical workplace aspects 'informal work areas/ break-out zones' and 'accessibility of colleagues' to be more important for supporting sociability with colleagues than generation X does. For supporting the same need, baby boomers indicate that the physical workplace aspect 'IT-services for social networking' is more important than millennials do. Besides, baby boomers perceive audio-visual equipment to be more important for supporting the opportunity to grow than millennials do. The last significant difference between generations occurs for the need for work-life balance. Hereby, millennials perceive the physical workplace aspect 'ability to personalise my workstation' to be more important as a support than generation X does.

In Chapter 7, the conclusions of this research are given. Moreover, implications and recommendations for future studies are outlined.



## 7. Conclusions and recommendations

The overall workforce is declining and the composition of the workforce is shifting. This shift within the workforce is caused by the upcoming generation of millennials. It is important that companies understand and support the needs of these millennials in order to attract and retain them. CREM is concerned with creating a workplace that supports those needs. However, little is known about the relation between the needs of millennials and the possible support of those needs by CREM.

This research gives more insight into the workplace needs and preferences for physical workplace aspects of various generations (baby boomers, generation X and millennials), with a specific focus on the millennial generation. This research also identifies the significant differences and similarities between generations regarding their workplace needs and preferences for physical workplace aspects.

The objective of this study is to provide corporate real estate management with insight in how to attract and retain millennials. The research question that follows from this objective, is:

Which physical workplace aspects contribute to attracting and retaining millennials?

The research consists of a descriptive part that contains a literature study and an exploratory part that contains quantitative research. The data for conducting the quantitative research is collected by means of a questionnaire that is distributed among knowledge workers. The data was collected between the 7<sup>th</sup> of September and the 6<sup>th</sup> of October. The final sample size contains 302 respondents. The reliability and validity of the data are good. The generalizability is lower due to the relatively high proportion of respondents that belong to the millennial generation in the sample. Therefore, the conclusions should be interpreted with care in the case of generalising the results.

The existing literature showed that CREM is concerned with creating a workplace that supports the needs of employees in order to attract and retain them. The self-determination theory (SDT) encompasses three basic needs that all employees have and that can be fulfilled in different ways: the need for relatedness, the need for competence and the need for autonomy. Since this master thesis focuses on millennials, the three most important workplace needs of millennials were identified from existing literature that each might fulfil one of the SDT needs when they are satisfied. Those three workplace needs are the need for sociability with colleagues, the need for opportunity to grow and the need for work-life balance. The physical workplace aspects that support those three workplace needs are examined by means of a questionnaire. Results show that millennials perceive the following physical workplace aspects as a support for the three workplace needs:

<p>Sociability with colleagues</p> <ul style="list-style-type: none"> <li>- Accessibility of colleagues</li> <li>- Informal work areas/ break-out zones</li> <li>- Openness and transparency</li> <li>- Restaurant/ canteen</li> <li>- Space between work-settings</li> <li>- People walking past my desk</li> </ul>	<p>Opportunity to grow</p> <ul style="list-style-type: none"> <li>- Accessibility of colleagues</li> <li>- Openness and transparency</li> <li>- Quiet rooms for working alone or in pairs</li> <li>- Meeting rooms</li> <li>- Audio-visual equipment</li> </ul>	<p>Work-life balance</p> <ul style="list-style-type: none"> <li>- Accessibility of colleagues</li> <li>- Remote access to work files or network</li> <li>- Spatial flexibility</li> <li>- Commute time</li> <li>- Washroom facilities/ showers</li> </ul>
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In total, 13 unique physical workplace aspects support the three workplace needs. ‘Accessibility of colleagues’ is indicated as the most important physical workplace aspect for supporting all the three needs. In order to implement those physical workplace aspects in the work environment, CREM needs to perform (workplace) design management/ space planning and facility management. Those activities take place on the operational level that can be assigned to the property management of an organisation.

This master thesis mainly focuses on the needs of millennials in the work environment and the support by CREM. However, there are more generations in today’s work environment that also want to be supported in their needs. Therefore, it is interesting for CREM to explore whether there are differences in workplace needs and preferences for physical workplace aspects between millennials and the non-millennial generations (baby boomers and generation X). The exploratory research in this study examined those two subjects.

The variables that were identified from existing literature and that all relate to one of the three workplace needs, represented the starting point for examining the differences in needs between generations. However, it was found that combining those variables into one of the three workplace needs was not internally consistent. This implies that the three workplace needs have a deeper meaning. In fact, six new workplace need factors were found, namely the workplace need factors informal socialisation, formal socialisation, professional growth, coaching, leisure-work balance and personalised arrangements. The internal inconsistency for combining the variables into one of the three millennial needs might be caused by the limited literature about the needs of millennials that was used as input for identifying the three workplace needs. The exploratory research shows that generations differ in three of the six workplace need factors, namely in the need for professional growth, the need for coaching and the need for leisure-work balance. Millennials attach more value to the needs professional growth and coaching than generation X does. On the other hand, generation X attaches more value to the need for a leisure-work balance than millennials do. Baby boomers did not differ significantly from other generations when it comes to the six workplace need factors. Although the results show that generations differ in certain workplace need factors, those findings should be interpreted with care since the differences between the mean scores for those needs and the effect sizes are small.

The exploratory research also shows that generations differ for 5 out of the 21 physical workplace aspects in the extent of perceiving those physical workplace aspects as a support for workplace needs. Millennials indicate that the physical workplace aspects ‘informal work areas/ break-out zones’ and ‘accessibility of colleagues’ are more important as a support for the

need for sociability with colleagues and the physical workplace aspect 'ability to personalise my workstation' is more important as a support for the need for work-life balance than generation X does. Baby boomers indicate that the physical workplace aspect 'IT-services for social networking' is more important as a support for the need for sociability with colleagues and that the physical workplace aspect 'audio-visual equipment' is more important as a support for the need for opportunity to grow than millennials do. Although the results show that generations perceive different physical workplace aspects as a support for certain needs, those findings should be interpreted with care since the differences between the actual mean scores and the effect sizes for the importance of the concerned physical workplace aspects are rather small.

In conclusion, this study explored the corporate real estate aspects that contribute to attracting and retaining millennials. Based on the literature study, the analyses and the interpretation of the results, the physical workplace aspects that support the workplace needs of millennials are identified, and therefore those physical workplace aspects contribute to attracting and retaining millennials. In addition, based on the analyses and the interpretation of the results it can be concluded that the differences between generations regarding their workplace needs and their preferences for the physical workplace aspects are rather small.

## 7.1 Contribution to knowledge

The available literature about the needs of millennials and the support by CREM in order to attract and retain millennials, is limited. Most studies only focus on the physical aspects of the workplace in general or on the characteristics and needs of millennials. Research about a relation between those two subjects is very limited. Besides, studies that focus on the millennial generation and its needs and characteristics show inconsistency and contradictions. Most of those studies are written by consultants and do not have an academic focus. This study tries to cover the gap in literature.

This research contributes knowledge to the research field of environmental psychology. It gives more insight into the workplace needs of various generations (baby boomers, generation X and millennials), with a specific focus on the millennial generation. Furthermore, this research also investigates the significant differences and similarities between generations regarding workplace needs.

This research also contributes knowledge to the research field of CREM. It identifies the physical workplace aspects that support the workplace needs of millennials. Besides, this research also explored significant differences between generations regarding their preferences for certain physical workplace aspects.

This study builds upon prior literature of the two research fields that are mentioned. The results of this study are reflected to prior literature in the discussion in Chapter 6. Hereby, some of the results of this research might confirm some findings of prior literature, such as the differences for some needs between generations. The other way around, some of the results of this research might be explained by the available literature such as why baby boomers value IT-services on a higher level than millennials do. Furthermore, some of the results of this research disprove prior literature such as the importance of the ability for millennials to

personalise their desk. This research also implies practical implications that are addressed in Section 7.3

One of the most interesting results of this research is the finding that the differences between generations regarding their needs and preferences are rather small. Especially since current studies claim that millennials would shape the world of work for the future years to come. Those studies were in fact the initial trigger for setting up the subject of this research. However, those studies did not clearly investigate the relationship between the workplace needs of millennials and their preferences for certain physical workplace aspects, compared with the needs and preferences of other generations. This research contributes to the understanding of those subjects and their relation.

## 7.2 Limitations and recommendations for further research

The data for the exploratory part of this research was collected by means of an online questionnaire. The use of an online questionnaire brings both benefits (e.g. anonymity, choice of where and when to participate) and disadvantages. A disadvantage of this method is that the researcher cannot supervise the process of filling in the questionnaire. Besides, people might not be willing to spend much time on the questionnaire. Therefore, the use of an online questionnaire brings a limitation to this research since only a few respondents filled in the open questions. In fact, the further the respondents proceeded in the questionnaire, the less respondents kept filling in the open questions.

Another limitation of this research is the generalizability of the results due to the composition of the sample. Non-random sampling was applied, which resulted in a convenience sample. The link is, besides emailed to CRE managers, distributed by means of social media. Therefore, a substantial part of the respondents consists of acquaintances that belong to the millennial generation. This caused that the sample of this study consists of a relatively high proportion of respondents that belong to the millennial generation, compared to the population of the Netherlands. Mainly for increasing the generalizability of the results, it would be interesting to conduct the same questionnaire with a larger and more representative sample.

This study focuses on the workplace needs of millennials and their preferences for physical workplace aspects and the differences between other generations. However, the discussion in Chapter 6 already appointed that workplace needs and preferences can also be affected by means of activities that employees perform. Therefore, it would be interesting to conduct this research with independent variables that are not divided in groups by means of age, such as generations. Independent variables can for example be divided in groups by means of their most often-performed activities, or personality. The same questionnaire can be conducted, however instead of age, the other aspect that divides the independent variables in groups should be identified (e.g. indicating the activities a respondent often performs). Furthermore, a limitation of this research is the fact that the analyses that are conducted are bivariate. Hereby, only the effect of generations on the independent variable is examined. It is interesting to conduct multivariate analyses that include more independent variables than one (than only generations). This way, the effects on the outcomes can be examined more detailed



by testing which of the independent variables are most predictive for a certain outcome. It is also interesting to test whether the effect of generations on the dependent variable remains.

During the preparation of the data, the 15 variables that belong to one of the three workplace needs (sociability with colleagues, opportunity to grow and work-life balance) were combined and reduced into six new workplace need factors. Those six workplace need factors are: informal socialisation, formal socialisation, professional growth, coaching, leisure-work balance and personalised arrangements. It would be interesting if further research continues to investigate those six workplace need factors in somewhat different settings. This way, further research continues to validate the exploratory results of this study. The eventual objective is to establish the scales of the six workplace need factors. When those six workplace need factors are scientifically confirmed, they can function as basic workplace needs in future studies.

This research explored the physical workplace aspects that support the three workplace needs. However, the results of the PCA show that the variables that belong, regarding literature, to those three workplace needs can be combined into six workplace need factors. It is interesting for further research to explore the physical workplace aspects that support those six workplace need factors. Hereby, it is suggested to also use five-point Likert scales ranging from 1 (not important) to 5 (very important) to indicate the degree of support of the physical workplace aspect for the concerned workplace need factor. This way, results of other studies can be compared to this study on whether the physical workplace aspects for supporting the other needs are the same and, in the case they are, to what extent the degree of importance differs from the results of this study.

The results of this research show that generations differ in their workplace needs. Therefore, it would be interesting to investigate the workplace needs of other generations (baby boomers and generation X) and to identify which physical workplace aspects support their needs. It is recommended to use a five-point Likert scale ranging from 1 (not important) to 5 (very important) to indicate the degree of support of the physical workplace aspects for the concerned need. This way, the results can be compared and examined to this study on whether and to which extent the physical workplace aspects differ for supporting the workplace needs of generations. This research shows more insight in the needs of all the generations that are present in the workplace. This might be valuable since this research mainly focuses on supporting the needs of millennials.

It might be possible that the lists in the questionnaire that include the physical workplace aspects, were not complete. Therefore, further research is needed to complement and validate those lists. Besides, not all respondents suggested additional physical workplace aspects for supporting the workplace needs. Therefore, it is recommended to use a recall-method for the concerned questions about the additional physical workplace aspect that might support the concerned workplace need. Respondents are asked to indicate the extent of importance for this additional physical workplace aspect on a five-point Likert scale ranging from 1 (not important) to 5 (very important). In the case a new physical workplace aspect is often mentioned as important for supporting the concerned need, the physical workplace aspect can be added to the list. Likewise, physical workplace aspects can be deleted from the list when they are often indicated as not important.

### 7.3 Practical implications

The results of this study can be translated into recommendations for CRE managers and developers and owners of office buildings. Eventually, implementation of the recommendations can affect the involved organisation that is present in the concerned office building.

In order to attract and retain talented employees from the upcoming generation of millennials, the work environment has to support the needs of this generation. CREM is concerned with creating a work environment that supports those needs of employees. This study gives CRE managers more insight into the workplace needs of millennials and the extent to which they differ from other generations (baby boomers and generation X). Besides, this study informs CRE managers and developers and owners of office buildings about the physical workplace aspects that millennials perceive as a support for certain needs, and the extent to which they differ from baby boomers and generation X. Based on those insights and information, CRE managers and building developers and owners can make more thoughtful decisions about implementing physical workplace aspects for supporting the needs of millennials in order to contribute to attracting and retaining them. The list in Figure 7.1 shows the physical workplace aspects that are perceived as important by millennials for supporting the three workplace needs (sociability with colleagues, opportunity to grow and work-life balance). The physical workplace aspects are shown in order of their mean score for importance. Those mean scores were indicated by the respondents that participated in the questionnaire and that belong to the millennial generation. Two aspects are ranked 11<sup>th</sup> since they have the same mean score for importance. The colours indicate the workplace need(s) that the physical workplace aspect support(s).

1	Accessibility of colleagues	8	Meeting rooms
2	Remote access to work files or network	9	Restaurant/ canteen
3	Informal work areas/ break -out zones	10	Space between work-settings
4	Spatial flexibility	11	People walking past my desk
5	Openness and transparency	11	Washroom facilities/ showers
6	Commute time	12	Audio-visual equipment
7	Quiet rooms for working alone or in pairs		

	Sociability with colleagues
	Opportunity to grow
	Work-life balance

Figure 7.1 List of physical workplace aspects

It is important for CRE managers to take the presence of all the physical workplace aspects in Figure 7.1 into account, when creating a work environment that aims at attracting and retaining millennials.

This study recommends CREM to undertake action in (workplace) design management/ space planning and facility management when implementing the physical workplace aspects

that are shown in Figure 7.1 in the work environment. Those activities are most of the time performed by property management and belong to the operational level of CREM. This study is also interesting for organisations in general that are practising CREM. In the case of implementing a policy for attracting and retaining millennials and therefore pursuing a CRE strategy for increasing employee satisfaction, value can be added to the core business when this CRE strategy and the organisational strategy are in alignment. Hereby, it is recommended to involve the CRE manager already during the early strategic processes of the organisation in general.

As can be seen in Figure 7.1, the most important physical workplace aspect for supporting all the three workplace needs is 'accessibility of colleagues'. However, ABW is a phenomenon that is increasingly being implemented in the work environment. With the presence of ABW in the work environment, it could be questioned whether colleagues remain well accessible for each other since they can work from a different workplace all the time. Therefore, special attention has to be paid to the accessibility of colleagues in the case CRE managers want to implement ABW within the work environment. For guaranteeing the accessibility of colleagues in combination with the ABW style, CRE managers might implement additional measures. An example of such a measure is an IT-system that can locate employees. Another example is the implementation of a policy that requires employees to be at the office (at a certain workplace) for at least one fixed day of the week.

By means of open questions, respondents suggested additional aspects as a support for certain workplace needs. However, a substantial amount of these suggestions does not concern the physical workplace but are more related to the human resource (HR) department although the open question explicitly asked for a physical workplace aspect. The suggestions that are mentioned most often, are: personnel activities (17x), career guidance (6x), motivating and challenging work culture (4x) and open and social work policy (3x). It is recommended for the CRE department to go in consultation with the HR department in order to discuss how to jointly approach the suggested aspects that do not typically concern the physical workplace.

This research suggests that in order to attract and retain millennials, it is important for CREM to support the workplace needs of those millennials. Therefore, it is recommended for CREM to at least implement the physical workplace aspects that support the millennial workplace needs. However, this does not imply that CREM should ignore the workplace needs of other generations that are present in the work environment. A recommendation has already been given for further research to also identify the workplace needs and physical workplace aspects that the other two generations value (baby boomers, and especially generation X since most of them are probably not retiring the coming years). By means of taking the results of this further research into account, CREM can create a mix of physical workplace aspects that support the workplace needs of all generations. This research already explained that the differences in certain workplace needs and the differences in importance for certain physical workplace aspects between millennials and the other generations are small. It is expected in further research that the differences between generations will also be small. Therefore, CREM might eventually succeed in implementing a set of physical workplace aspects that support the most important workplace needs of all the generations that are present in the work environment.



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## Appendix A

Questionnaire – English version

1. The following statements deal with your personal experiences at work  
*Would you please indicate in which degree you agree with these statements*

	Totally disagree	Disagree	Somewhat disagree/ somewhat agree	Agree	Totally agree
What I am looking for in other colleagues are similar mind-sets and values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not think that meeting colleagues in a social setting is an effective way to integrate as part of the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I value an environment that feels as a second home with friendly colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not want to socialise with my manager and communicate in an informal way with him/ her	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to interact with colleagues for my reputation and in order to build my career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't really feel connected with other people at my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At work, I feel part of a group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't really mix with other people at my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At work, I can talk with people about things that really matter to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often feel alone when I am with my colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Some people I work with are close friends of mine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Sociability with colleagues includes interaction such as communication and undertaking activities together.

2. How important are the following aspects for enabling sociability with colleagues?

*Would you please indicate in which degree you consider these aspects important*

	Not important	Slightly important	Moderately important	Important	Very important
People walking past my desk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Space between work-settings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informal work areas/ break-out zones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accessibility of colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Restaurant/ canteen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leisure facilities on site or nearby	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Openness and transparency in the work environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IT-services for social networking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Is there an other work environment aspect that you find important for supporting sociability with colleagues?

- No
- Yes, namely: .....

4. The following statements deal with your personal experiences at work  
*Would you please indicate in which degree you agree with these statements*

	Totally disagree	Disagree	Somewhat disagree/ somewhat agree	Agree	Totally agree
I do not see myself in a management function	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would rather join an individual, personalised training program than group classes in order to become better in my current job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel valued by an organisation when it invests in my future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to participate in ongoing skills development during my whole career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The presence of strong coaches and mentors is not an important value when choosing an employer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't really feel competent in my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really master my tasks at my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel competent at my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I doubt whether I am able to execute my job properly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at the things I do in my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the feeling that I can even accomplish the most difficult tasks at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The opportunity to grow within the business environment includes for example skills development and climbing to a higher/ different function. Training sessions and mentoring can play an important role.

5. How important are the following aspects for enabling the opportunity to grow?  
*Would you please indicate in which degree you consider these aspects important*

	Not important	Slightly important	Moderately important	Important	Very important
Meeting rooms (e.g. conference room)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quiet rooms for working alone or in pairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Audio-visual equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accessibility of colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Openness and transparency in the work environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Is there another work environment aspect that you find important for supporting the opportunity to grow?

- No
- Yes, namely: .....

7. The following statements deal with your personal experiences at work  
*Would you please indicate in which degree you agree with these statements*

	Totally disagree	Disagree	Somewhat disagree/ somewhat agree	Agree	Totally agree
I want to be able to take care of family responsibilities during regular office hours when necessary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing to make some sacrifices in my private life to be able to do my job properly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leaving early for personal reasons makes me feel uncomfortable when facing my colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would rather work rigid hours than long, flexible hours (in the evening/weekends)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to separate my work and my leisure activities completely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like I can be myself at my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At work, I often feel like I have to follow other people's commands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could choose, I would do things at work differently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The tasks I have to do at work are in line with what I really want to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel free to do my job the way I think it could best be done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In my job, I feel forced to do things I do not want to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

A work-life balance includes people spending sufficient time at their jobs while also spending adequate time on other pursuits, such as family, friends, and hobbies.

8. How important are the following aspects for supporting a work-life balance?  
Would you please indicate in which degree you consider these aspects important

	Not important	Slightly important	Moderately important	Important	Very important
Mail and post-room services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leisure facilities onsite or nearby	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Washroom facilities/ showers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to personalise my workstation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Remote access to work files or network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accessibility of colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spatial flexibility (also called telecommuting: working from an other location, e.g. from home)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commute time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Is there an other work environment aspect that you find important for supporting a work-life balance?

- No
- Yes, namely: .....

10. What is your gender?

- Male
- Female

11. What is your date of birth? (dd-mm-yyyy)

.....

12. What is your level of education?

- Primary education
- Secondary education
- Vocational education
- Undergraduate (University bachelor level)
- University Master or PhD

13. What is your job position within the organisation?

- Intern/ trainee
- Administrator
- Employee
- Manager
- Board member
- Other

14. How many years of deployment have you fulfilled at your current employer?

*Please fill in 'o' if you have not completed one year yet*

.....

15. How many employers (including your current employer) have you worked for?

.....

16. What is your household composition?

- Married/ living together without children
- Married/ living together with children
- Single without children
- Single with children
- Other, namely

.....





## Appendix B

Table B.1  
Codebook

Position	Label	Variable code	Variable values	Remarks
1	id	id	None	
2	Similar mind-sets	Similar_mind_sets	1= Totally disagree	
3	Meet to integrate	Original_Dont_meet_to_integrate	2= Disagree	Reversed
4	Meet to integrate	Recoded_Dont_meet_to_integrate	3= Somewhat disagree/ somewhat agree	
5	Second home	Second_home	4= Agree	
6	Socialise with manager	Original_Socialise_with_manager	5= Totally agree	Reversed
7	Socialise with manager	Recoded_Socialise_with_manager		
8	Interact for reputation	Interact_for_reputation		
9	Connected	Original_Connected		Reversed
10	Connected	Recoded_Connected		
11	Part of a group	Part_of_a_group		
12	Don't mix	Original_Dont_mix		Reversed
13	Don't mix	Recoded_Dont_mix		
14	Can talk	Can_talk		
15	Often feel alone	Original_Often_feel_alone		Reversed
16	Often feel alone	Recoded_Often_feel_alone		
17	Close friends	Close_friends		
18	People walking past my desk	Walking	1= Not important	
19	Space between work-settings	Work_settings	2= Slightly important	
20	Informal work areas/ break-out zones	Informal_zones	3= Moderately important	
21	Accessibility of colleagues	Accessibility_colleagues_Soc	4= Important	
22	Restaurant/ canteen	Restaurant_canteen	5= Very important	
23	Leisure facilities on site or nearby	Leisure_Soc		
24	Openness and transparency	Openness_Soc		
25	IT-services for social networking	IT_services		
26	Other work environment aspects	CRE_Soc_JaNee	1= No	
			2= Yes, namely	
27	Other work environment aspects	CRE_Soc_Anders	None	
28	Other work environment aspects	CRE_Soc_Other_Imp	1= Not important	
			2= Slightly important	
			3= Moderately important	
			4= Important	
			5= Very important	
29	Management function	Original_Management_function	1= Totally disagree	Reversed
30	Management function	Recoded_Management_function	2= Disagree	
			3= Somewhat disagree/ somewhat agree	
31	Join training program	Join_training_program	4= Agree	
32	Personal investment	Personal_investment	5= Totally agree	

33	Participate development	Participate_in_developmen t		
34	Presence of coaches	Original_Presence_of_coac hes		Reversed
35	Presence of coaches	Recoded_Presence_of_coac hes		
36	Don't feel competent	Original_Dont_feel_compe tent		Reversed
37	Don't feel competent	Recoded_Dont_feel_compe tent		
38	Master tasks	Master_tasks		
39	Feel competent	Feel_competent		
40	Doubt able to execute	Original_Doubt_able_to_e xecute		Reversed
41	Doubt able to execute	Recoded_Doubt_able_to_e xecute		
42	Good at things	Good_at_things		
43	Accomplish difficult tasks	Accomplish_difficult_tasks		
44	Meeting rooms	Meeting_rooms	1= Not important	
45	Quiet rooms for working alone or in pairs	Quiet_rooms	2= Slightly important	
46	Audio-visual equipment	Audio_visual	3= Moderately important	
47	Accessibility of colleagues	Accessibility_colleagues_O pp	4= Important	
48	Openness and transparency	Openness_Opp	5= Very important	
49	Other work environment aspects	CRE_Opp_JaNee	1 = No	
50	Other work environment aspects	CRE_Opp_Anders	2 = Yes, namely	
51	Other work environment aspects	CRE_Opp_Other_Imp	None	
52	Family responsibilities	Family_responsibilities	1= Not important	
53	Make sacrifices	Original_Make_some_sacri fices	2= Slightly important	
54	Make sacrifices	Recoded_Make_some_sacri fices	3= Moderately important	
55	Leave early	Original_Leave_early	4= Important	
56	Leave early	Recoded_Leave_early	5= Very important	
57	Working hours	Original_Working_hours	1= Totally disagree	
58	Working hours	Recoded_Working_hours	2= Disagree	Reversed
59	Separate leisure	Separate_leisure	3= Somewhat disagree/ somewhat agree	
60	Be myself	Be_myself	4= Agree	
61	Follow commands	Original_Follow_command s	5= Totally agree	Reversed
62	Follow commands	Recoded_Follow_comman ds		
63	Do things differently	Original_Do_things_differe ntly		Reversed
64	Do things differently	Recoded_Do_things_differ ently		
65	Tasks are in line	Tasks_are_in_line		

66	Do the way I think	Do_the_way_I_think		
67	Feel forced	Original_Feel_forced		Reversed
68	Feel forced	Recoded_Feel_forced	1= Not important 2= Slightly important 3= Moderately important 4= Important 5= Very important	
69	Mail and post-room services	Mail_post	1= Not important 2= Slightly important 3= Moderately important 4= Important 5= Very important	
70	Leisure facilities onsite or nearby	Leisure_Aut		
71	Washroom facilities/showers	Washroom		
72	Ability to personalise my workstation	Personalise		
73	Remote access to work files or network	Remote_access		
74	Accessibility of colleagues	Accessibility_colleagues_Aut		
75	Spatial flexibility	Spatial_flexibility		
76	Commute time	Commute_time		
77	Other work environment aspects	CRE_WLb_JaNee	1= No 2= Yes, namely	
78	Other work environment aspects	CRE_WLb_Anders	None	
79	Other work environment aspects	CRE_WLb_Other_Imp	1= Not important 2= Slightly important 3= Moderately important 4= Important 5= Very important	
80	Gender	Gender	1= Male 2= Female	
81	Date of birth	Date_birth	None	
82	Age at 09-10-2017	Age	None	
83	Year of birth	Year_birth	None	
84	Generation	Generation	1= Baby boomers 2= Generation X 3= Millennials	
85	Education level	Education	1= Primary education, 2= Secondary education 3= Vocational education 4= Undergraduate (University bachelor level) 5= University Master or PhD	
86	3 levels	Education_levels	1= Low education level 2= Medium education level 3= High education level	

87	Job position	Job_position	1= Intern/ trainee 2= Administrator 3= Employee 4= Manager 5= Board member 6= Other	
88	Years of deployment	Years_employment	None	
89	Number of employers	Number_employers	None	
90	Household composition	Household_composition1	1= Married/ living together without children 2= Married/ living together with children 3= Single without children 4= Single with children 5= Other, namely	
91	Email	Textbox_Email	None	
92	REGR factor score 1 for analysis 1	Factor 1 Leisure-work balance	None	
93	REGR factor score 2 for analysis 1	Factor 2 Professional growth	None	
94	REGR factor score 3 for analysis 1	Factor 3 Informal socialisation	None	
95	REGR factor score 4 for analysis 1	Factor 4 Formal socialisation	None	
96	REGR factor score 5 for analysis 1	Factor 5 Personalised arrangements	None	
97	REGR factor score 6 for analysis 1	Factor 6 Coaching	None	
98	Relatedness	Relatedness	None	
99	Competence	Competence	None	
100	Autonomy	Autonomy	None	

## Appendix C

Table C.1

*Chi-square test for gender*

Gender	
Chi-Square	,134
df	1
Asymp. Sig.	,714

Table C.2

*Chi-square test for generations*

Age - Generations	
Chi-Square	91,633 <sup>a</sup>
df	2
Asymp. Sig.	,000

Table C.3

*Chi-square test for education level*

Education level	
Chi-Square	251,093 <sup>a</sup>
df	2
Asymp. Sig.	,000

Table C.4

*Chi-square test for household composition*

Household composition	
Chi-Square	6,086 <sup>a</sup>
df	4
Asymp. Sig.	,193



## Appendix D

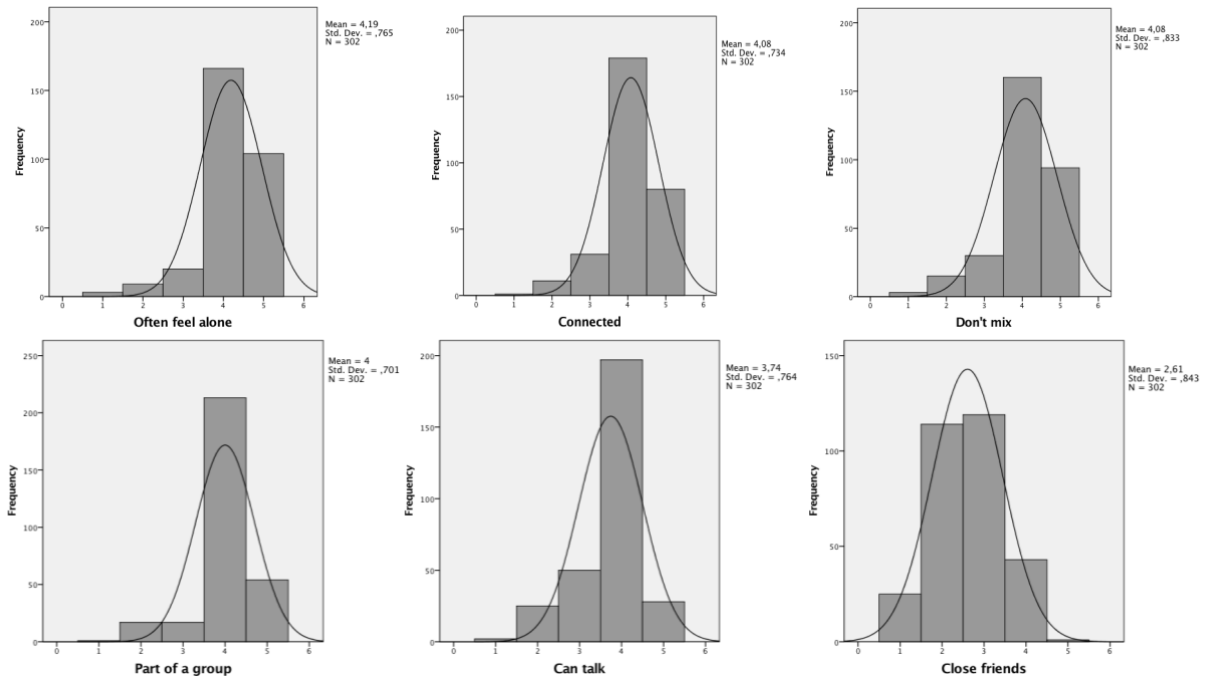


Figure D.1 Histograms of scores of agreement about relatedness (Often feel alone, connected, don't mix, Part of a group, can talk, close friends)

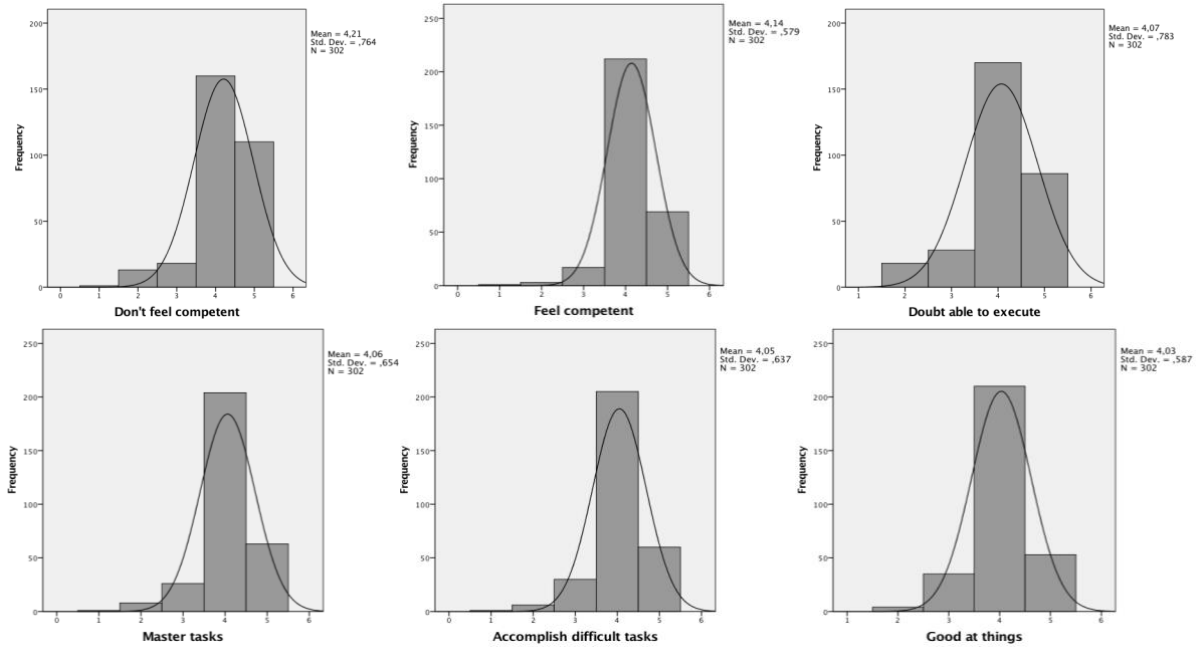


Figure D.2 Histograms of scores of agreement about competence (Don't feel competent, feel competent, doubt able to execute, master tasks, accomplish difficult tasks, good at things)

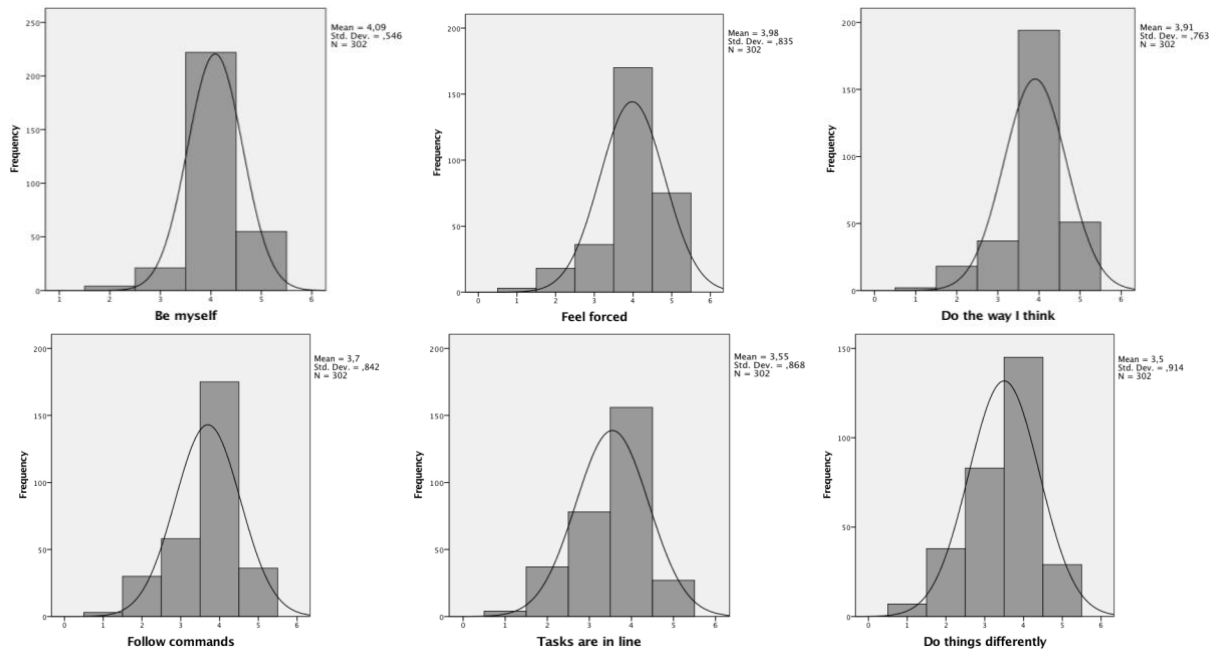


Figure D.3 Histograms of scores of agreement about autonomy (be myself, feel forced, do the way I think, follow commands, tasks are in line, do things differently)

According to the histograms in Figures D.1, D.2 and D.3, it can be concluded that the mean varies between 2,16 and 4,21. For the factor analysis and further analysis in Chapter 6, only the recoded variables are used. Respondents agree the most on the statement that is reversed: they do not feel competent at their job. This is in line with the study of Meulensteen (2017). He also conducted a questionnaire on the SDT statements that are established by Van den Broeck et al. (2010) and also concluded that respondents agree the most on this statement. Four out of the six variables that are related to the SDT need of competence score 4,00 or above. This is also in line with the study of Meulensteen (2017). He also found that most of the variables with the highest scores also belong to the SDT need of competence. The statement ‘some people I work with are close friends of mine’ has the absolute lowest score. This was striking since respondents tend to disagree on this statement. ‘The second lowest absolute score belongs to the statement ‘The tasks I have to do at work are in line with what I really want to do’. However, this variable already scores 3,55 which means that people do agree despite this low-ranking position.



## Appendix E

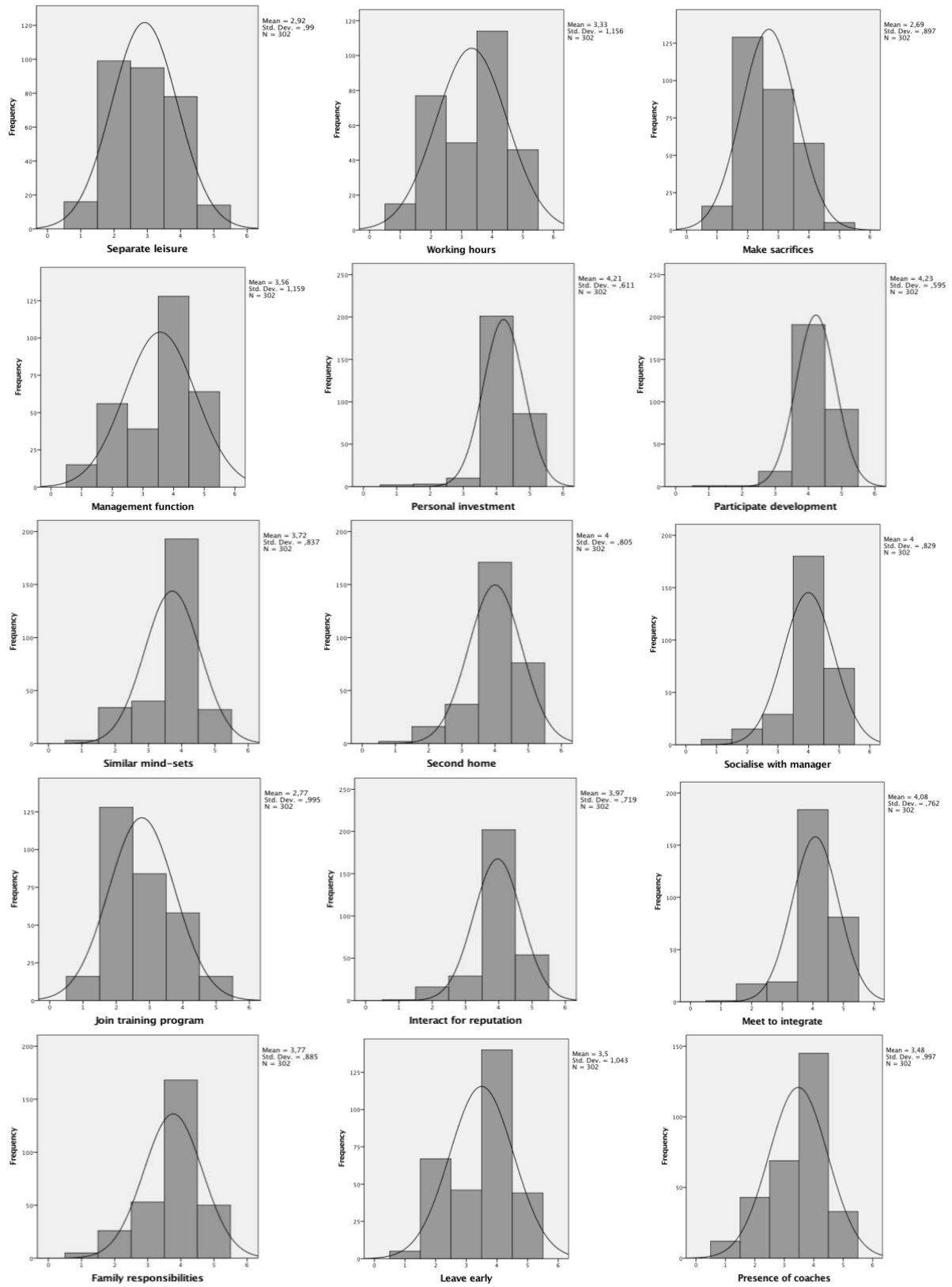


Figure E.1 Histograms of scores of agreement about workplace needs

According to the histograms in Figure E.1, it can be concluded that respondents agree the most on the statement that they want to participate in ongoing skills development during their whole career. This makes sense since most of the respondents belong to the millennial generation and literature study states that most millennials (93%) want to develop themselves continuously (Manpower Group, 2016). Respondents agree secondly most on the statement that they feel valued by an organisation when it invests in their future. Both variables with the highest scores belong to the needs 'opportunity to grow'. The variable with the second lowest score that is not reversed, contains the statement 'I would rather join an individual, personalised training program than group classes in order to become better in my current job'. As the results indicate, respondents even disagree on this statement. This can be explained by the need for sociability. By participating in group classes, respondents can fulfil both needs of sociability with colleagues and the opportunity to grow. Another low variable on which respondents do not agree, contains the statement 'I want to separate my work and my leisure activities completely'. This is a striking result since literature study stated that employees increasingly tend to separate their work and leisure activities (CBRE, 2016). The lowest variable is 'I am willing to make some sacrifices in my private life to be able to do my job properly'. It was expected that this variables would be ranked this low since literature states that people more and more work to live (CBRE, 2016; Hershatter & Epstein, 2010). Besides, other generations observed and often experienced the sacrifices their parents made as Baby Boomers (Hershatter & Epstein, 2010).

## Appendix F

Table F.1  
Total variance explained

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
	1	2,324	15,491	15,491	2,324	15,491	15,491	1,619	10,796
2	1,561	10,403	25,894	1,561	10,403	25,894	1,538	10,252	21,048
3	1,318	8,785	34,679	1,318	8,785	34,679	1,460	9,736	30,784
4	1,206	8,039	42,719	1,206	8,039	42,719	1,407	9,383	40,167
5	1,090	7,266	49,984	1,090	7,266	49,984	1,330	8,866	49,032
6	1,022	6,812	56,796	1,022	6,812	56,796	1,165	7,764	56,796
7	,962	6,415	63,211						
8	,825	5,502	68,713						
9	,801	5,337	74,050						
10	,785	5,233	79,283						
11	,682	4,546	83,829						
12	,669	4,457	88,286						
13	,615	4,100	92,386						
14	,589	3,929	96,315						
15	,553	3,685	100,000						

Extraction Method: Principal Component Analysis.

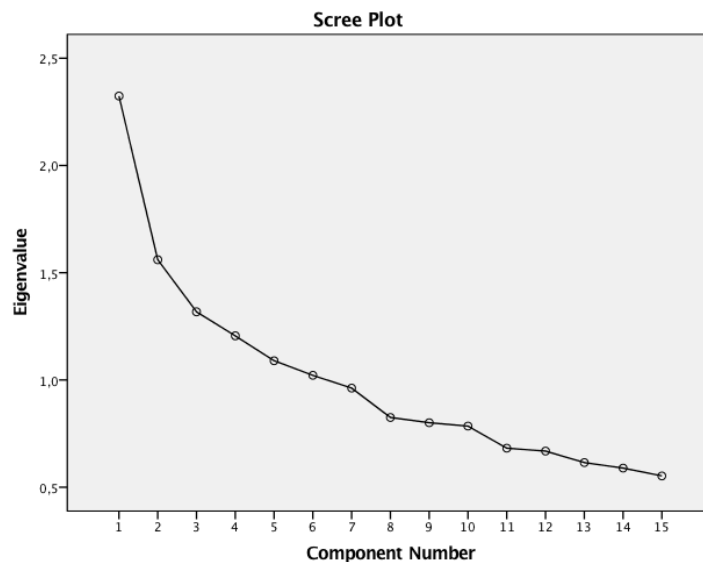


Figure F.1 Scree Plot Factor analysis SDT needs



## Appendix G

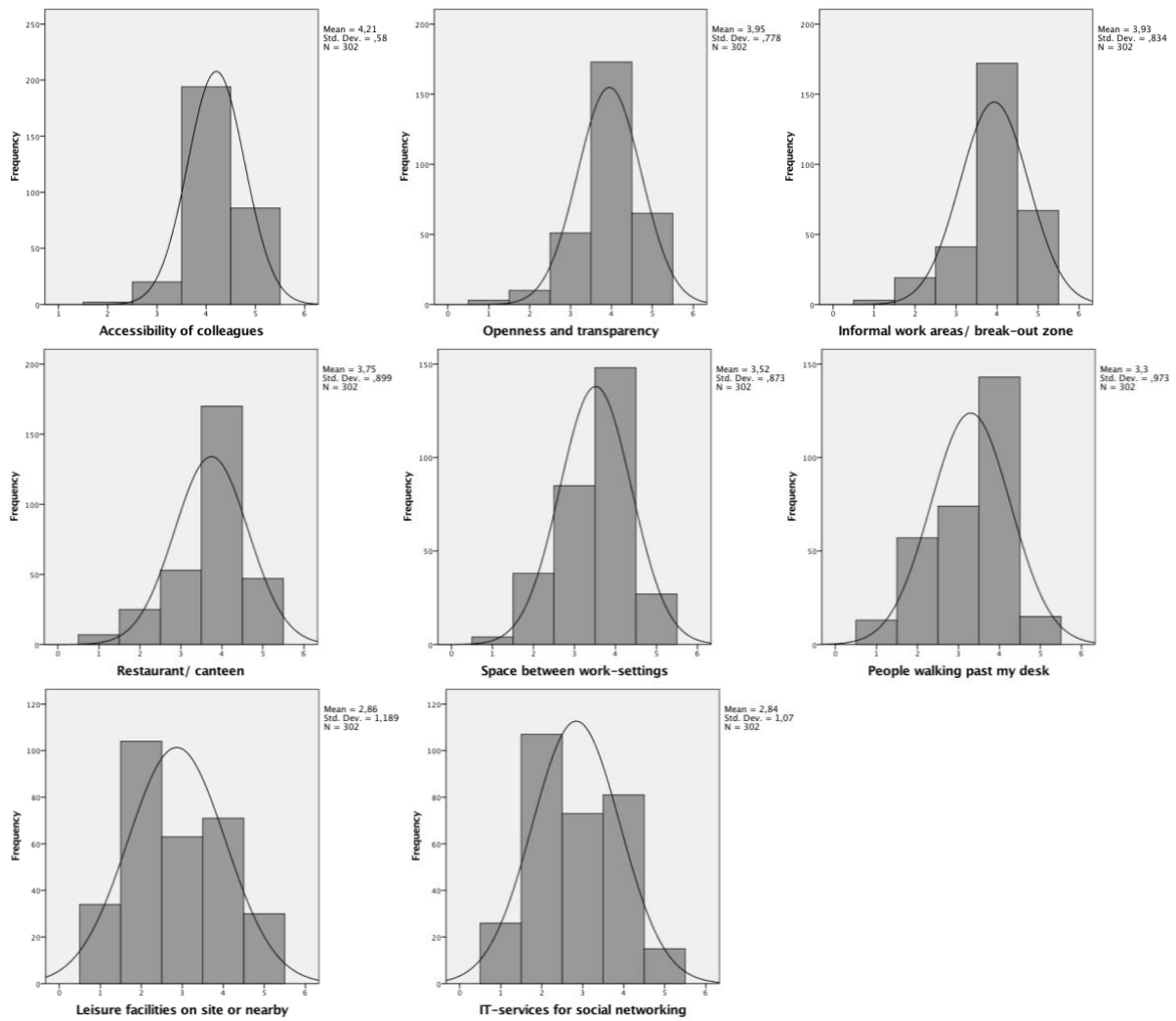


Figure G.1 Histograms of scores of importance about physical workplace aspects 1 (Accessibility of colleagues, openness and transparency, informal work areas/ break-out zones, restaurant/ canteen, space between work-settings, people walking past my desk, leisure facilities on site or nearby, IT-services for social networking)

Table G.1  
*All other physical workplace aspects related to sociability with colleagues*

New variable	Original answer	N
Informal drinks	De vrijdag middag "borrel" informeel de week afsluiten / weekend start	1
Informal drinks	Af een toe eens een borrel met elkaar drinken doet wonderen.....	1
Personnel activities	Af en toe een teamuitje met activiteit	1
Informal drinks	Bar in het pand of in de buurt van het pand	1
Personnel activities	Bedrijfsuitjes	3
Outdoor space	Buitenruimte	1
Presence of a personnel association	Bv personeelsvereniging om activiteiten te organiseren	1
Personnel activities	Initiatieven om gezamenlijk in ontspannen omgeving (sport) activiteiten te organiseren	1
Coffee corner	De (ruime) aanwezigheid van koffievoorzieningen (hoe trager het apparaat, des te beter voor het socializen)	1
Coffee corner	De koffieautomaat!	1
Warm/ inspiring environment	De omgeving/ werkruimte v.w.b. aankleding ed.	1
Coffee corner	De snoep pot bij de balie. Iedereen komt daar stiekem toch vaak langs gelopen en dat geeft een stukje socialiteit	1
Open and social work policy	De vrijheid om een kort gesprek te hebben met een collega, ook als dit een keer langer duurt dan de pauze	1
Informal drinks	Een borrel of andersoortige gezellige activiteit	1
Coffee corner	Een gezamenlijke koffie automaat, juist daar komen er gesprekjes op gang	1
Informal drinks	Een gezellige borrelmogelijkheid in de buurt	1
Coffee corner	Een ruimte waar je met elkaar even kan pauzeren met een kop koffie of thee	1
Personnel activities	Etentje / activiteit	1
Giving feedback to each other	Feedback geven naar elkaar toe	1
Mixing up workplaces (over all departments)	Fysiek mengen van werkplekken voor verschillende afdelingen	1
Mixing up workplaces (over all departments)	Geen hiërarchie in werkplek (dus manager niet in een aparte kamer)	1
Mixing up workplaces (over all departments)	Geen vaste werkplek hebben	1
Personnel activities	Georganiseerde activiteiten zoals workshop of excursie	1
Personnel activities	Gezamenlijke challenges, bijv elkaar steunen bij alp d'huez of elke vrijdag 14u '2 minuten planken'	1
Coffee corner	Goede koffie- en theevoorzieningen en ruimte om daar even te socializen	1
Personnel activities	Het aanbieden van gezamenlijk sporten op kantoor (tussen de middag of einde dag)	1
Coffee corner	Het koffiezetapparaat	1
Personnel activities	Collega's leren kennen van andere afdelingen. Het zou leuk zijn als daar iets creatiefs voor wordt bedacht	1
Informal drinks	Horeca in de buurt/ informele borrels (ook op kantoor)	1
Warm/ inspiring environment	Huiskamer gevoel / warm gevoel/ geen kille werkruimte	1
Personnel activities	Een goede teamvorming binnen of buiten de werkomgeving opbouwen	1
Personnel activities	Informeel bijeenkomsten	1

Informal drinks	Informele borrels	1
Warm/ inspiring environment	Inspirerende werkomgeving	1
Personnel activities	Jaarlijkse uitjes buiten het werk	1
Coffee corner	Koffiecorners waar je lekkere koffie kan drinken	1
Coffee corner	Kwaliteit van koffie	1
Personnel activities	Leuke uitjes zodat je ook anderen (buiten je eigen afdeling) leert kennen	1
Open and social work policy	Manager die als beleid voert een open en sociale werksfeer te creëren	1
Outdoor space	Mogelijkheid om buiten te kunnen zitten of een rondje te lopen	1
Informal drinks	Mogelijkheid tot vrijdagmiddagborrel, gefaciliteerd door de werkgever	1
Personnel activities	Occasional outings (drinks, games, dinner, etc)	1
Open and social work policy	Open agenda's	1
Personnel activities	Organisatie van informele activiteiten	1
Personnel activities	Personeelsdagen, Vrijmibo's	1
Presence of a personnel association	Personeelsvereniging	1
Outdoor space	Plek waar je bijv. een keer per week met je collega's kan socializen, bijv. mogelijkheden om te wandelen etc.	1
Space for relaxing/ playing games	Plekken waar je samen iets (simpels) kan 'doen/ spelen' tijdens pauzes in plaats van alleen maar samen zitten	1
Warm/ inspiring environment	Sfeer	1
Space for relaxing/ playing games	Tafelvoetbal! Zowel goed om te socializen, maar ook om even te ontspannen	1
Informal drinks	Teamavonden die gewoon voor gezelligheid zijn bv. simpele avond bbq en drinken	1
Informal drinks	Vrijdag 10 minuten eerder ophouden en dat iedereen een drankje doet. Verplicht!!!!	1
Informal drinks	Vrijdagmiddag borrel	1
Informal drinks	Vrijdagmiddagborrel	1
Informal drinks	Vrijdagmiddagborrel	1
Informal drinks	Vrijmibo	1
Warm/ inspiring environment	Werkplek waar je naar buiten kunt kijken, voldoende belicht en groen geven motivatie	1
	Total	59

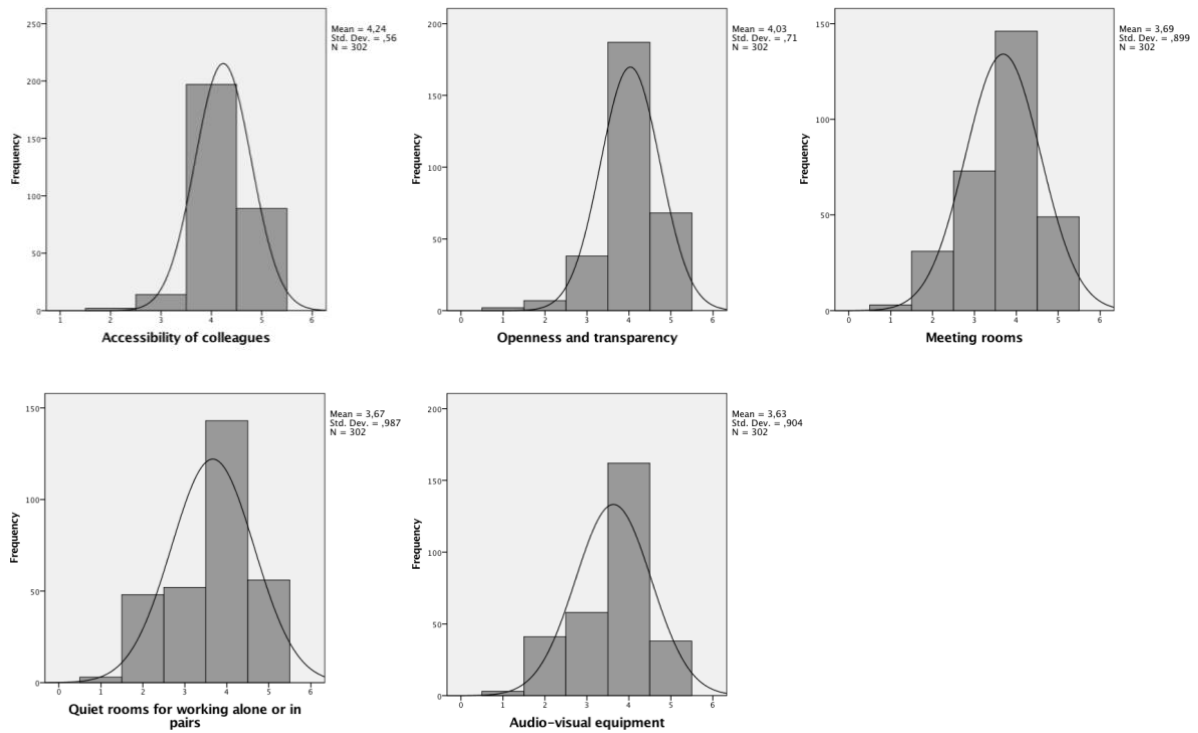


Figure G.2 Histograms of scores of importance about physical workplace aspects 2 (Accessibility of colleagues, openness and transparency, meeting rooms, quiet rooms for working alone or in pairs, audio-visual equipment)



Table G.2  
*All other physical workplace aspects related to opportunity to grow*

New variable	Original answer	N
Facilitating training	Aangeboden trainingen	1
Library/ specialist literature	Aanwezigheid van vakliteratuur en boeken	1
Career guidance	Actieve loopbaanbegeleiding	1
Career guidance	Assertiviteit van coach / mentor, meedenken	1
Facilitating training	Beschikbaarheid van elearnings bijvoorbeeld introductie NLP	1
Library/ specialist literature	Bibliotheek/leesruimte	1
Informal, collaborative workspace	Brake-out ruimten	1
Outdoor space	Buitenruimte	1
Motivating and challenging work culture	Collegialiteit en teamgevoel om de organisatie in zijn geheel tot een hoger niveau te brengen	1
Good mix of quiet and open workplaces	De combinatie van stilte-ruimten en openere werkplekken die voor iedereen toegankelijk zijn	1
Career guidance	Degelijk HR beleid door een onafhankelijk persoon, niet een collega of een baas	1
Inspiring and light work environment	Een prettige werkomgeving met buitenbeleving, goed belicht en met veel groen	1
Good mix of quiet and open workplaces	Er moet sprake zijn van een transparant en open werkomgeving, het moet niet van belang zijn met wie je samen werkt	1
Facilitating training	het aanbieden van cursussen dan wel trainingen om professional development te stimuleren	1
Career guidance	Het traject van loopbaan begeleiding.	1
Motivating and challenging work culture	Inspirerend leiderchap	1
Career guidance	Intervisie	1
Inspiring and light work environment	Licht/ zonlicht	1
Informal, collaborative workspace	Meer 'collaborative workspaces' zoals staande vergaderplekken en informele overleg-ruimtes met sofa's / loungestoelen	1
Motivating and challenging work culture	Met regelmaat nieuwe uitdagingen	1
Informal, collaborative workspace	Open ruimte om bijeen te komen	1
Career guidance	Persoonlijke coaching/begeleiding	1
Peace and quietness	Ruimte in de planning: een (te) volle planning is een remmende factor, omdat er dan geen tijd voor lijkt te zijn	1
Peace and quietness	Rust op de werkplek	1
Library/ specialist literature	Toegang tot informatie	1
Facilitating training	Training en budget	1
Facilitating training	Trainingprogramma's, perspectief, transparantie	1
Motivating and challenging work culture	Verantwoordelijkheid krijgen	1
Good mix of quiet and open workplaces	Werkplekken om met teams samen te werken en stilte-ruimtes waarbij alle afdelingen door elkaar zitten	1
	Total	29

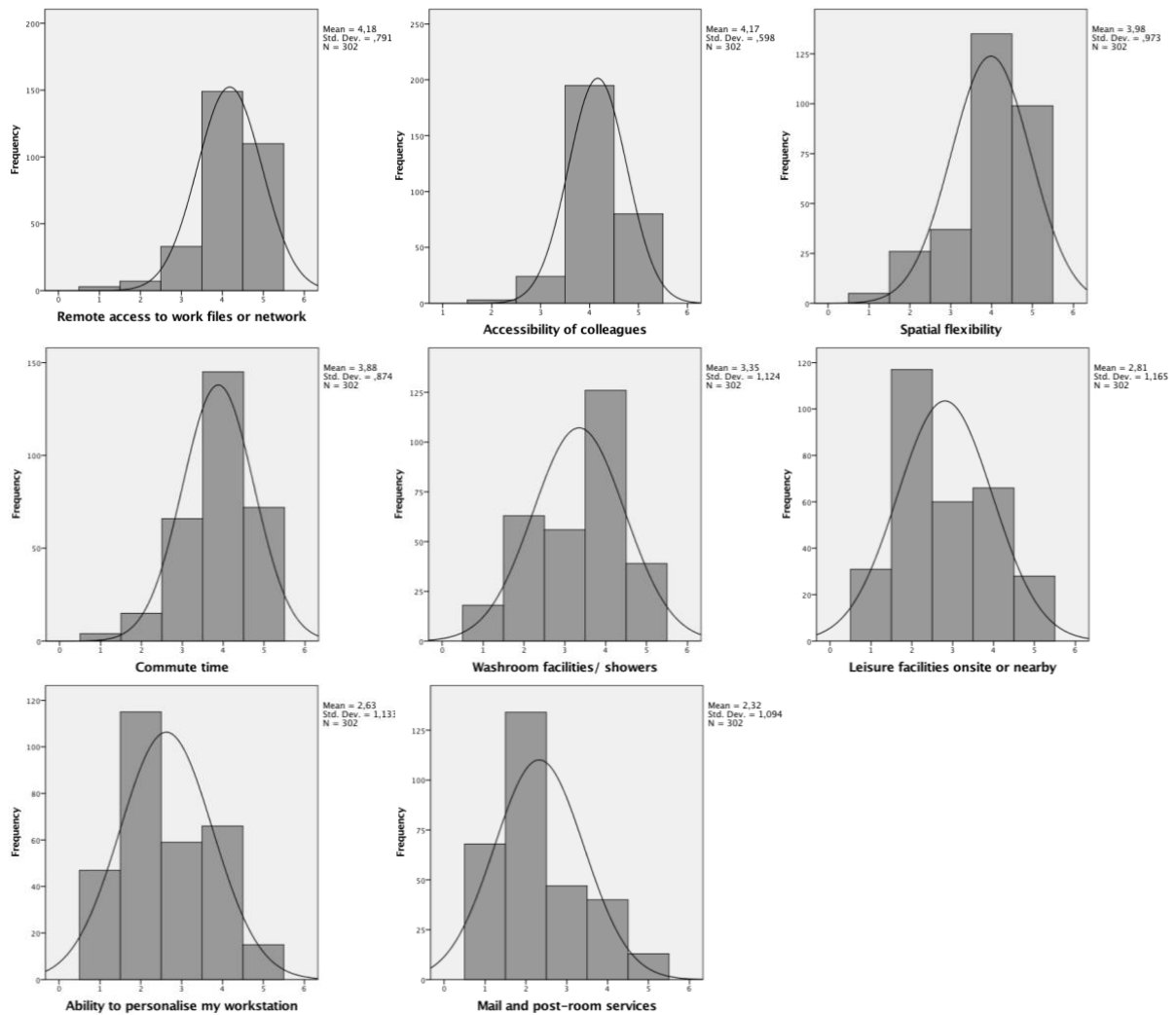


Figure G.3 Histograms of scores of importance about physical workplace aspects 3 (Remote access to work files or network, accessibility of colleagues, spatial flexibility, commute time, washroom facilities/ showers, leisure facilities onsite or nearby, ability to personalize my workstation, mail and post-room services)

Table G.3  
*All other physical workplace aspects related to work-life balance*

New variable	Original answer	N
Shops and childcare near work	Aanwezigheid van kinderopvang in nabijheid van werk	1
Shops and childcare near work	Aanwezigheid van winkels in de buurt/ in gebouw (drogist, drycleaner, bloemist, kleine cadeauwinkel)	1
Understanding	Begrip en ondersteuning om een en eigen zaak buiten het werk te mogen ontplooiën	1
Flexible hours	Eigen verantwoordelijkheid voor het afronden van taken en hoelang dat duurt. Soms ben je na een werkdag van 6 uur klaar en 'gaar'	1
Flexible hours	Flexibiliteit in begin en eindtijd van de werkdag, is voor mij persoonlijk nu goed geregeld	1
Understanding	Flexibiliteit van collega's	1
Flexible hours	Flexwerken	1
Good arrangements for working overtime	Genoeg vakantie, opsparen overuren of compensatie tijd voor tijd	1
Services for walking your dog	Hondenuitlaatsevice	1
Shops and childcare near work	Nabijheid van supermarkt, kinderdagverblijf, apotheek	1
No business phone outside working hours	Normaal gsm-gebruik (dus geen misbruik)	1
Understanding	Respect voor het privéleven/ gezinsleven vanuit de directie	1
No business phone outside working hours	Telefoon van de zaak niet privé gebruiken	1
Flexible hours	Flexibele uren	1
	Total	14



## Appendix H

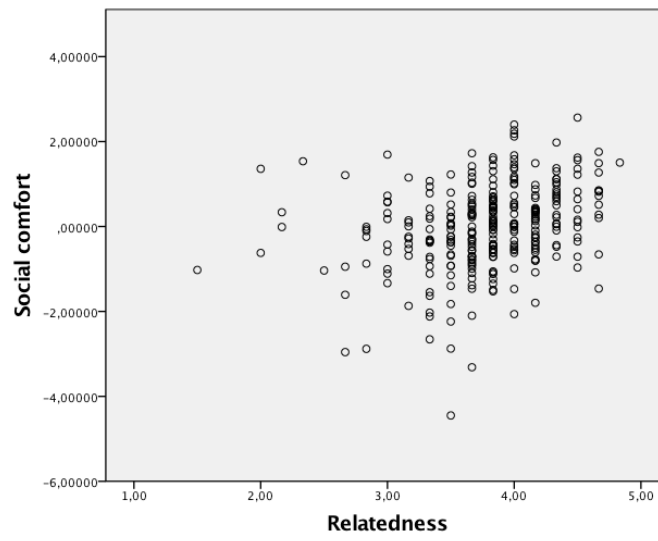


Figure H.1 Scatterplot relatedness and informal socialisation

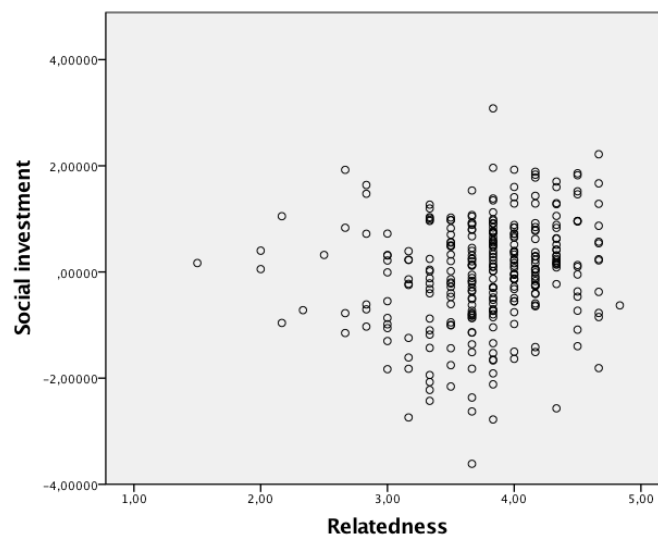


Figure H.2 Scatterplot relatedness and formal socialisation

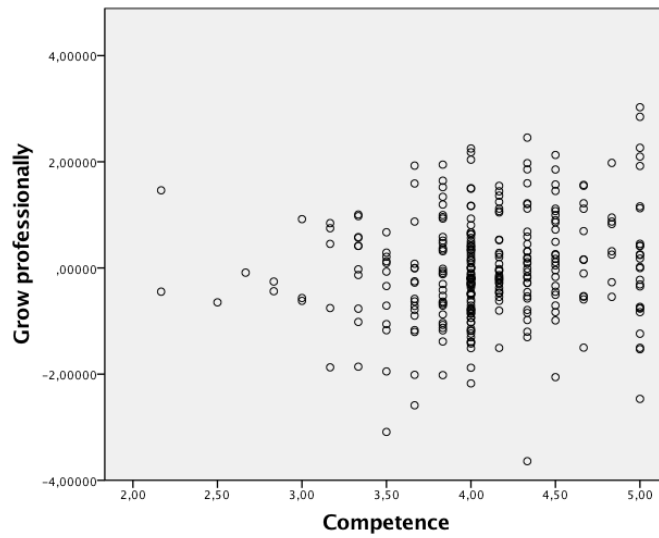


Figure H.3 Scatterplot competence and professional growth

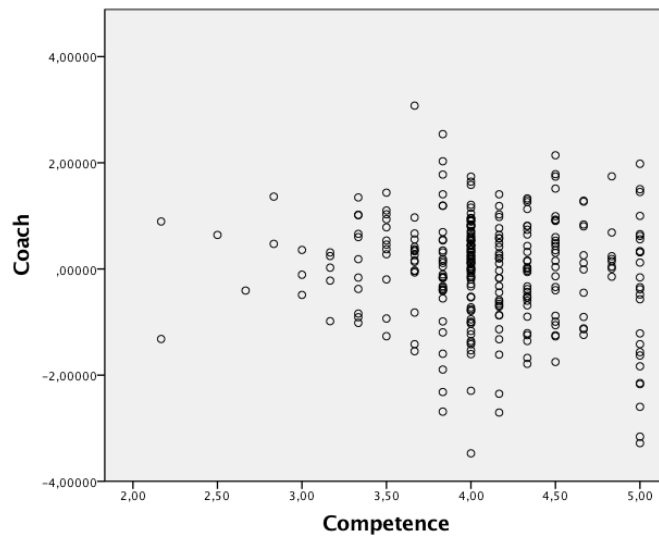


Figure H.4 Scatterplot competence and coaching

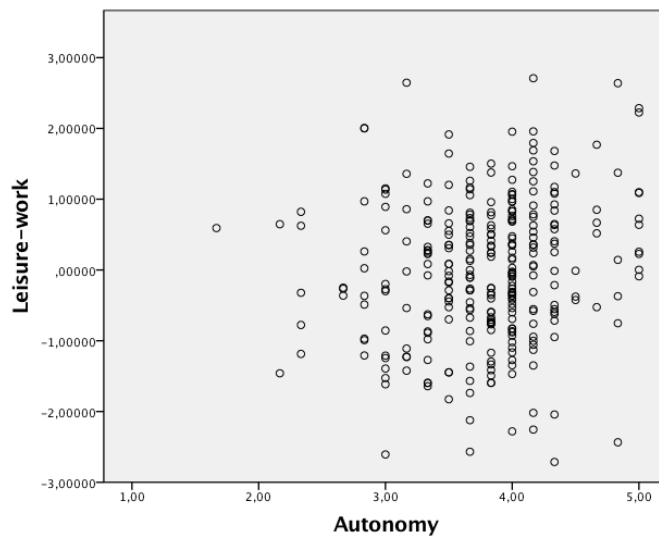


Figure H.5 Scatterplot autonomy and leisure-work balance

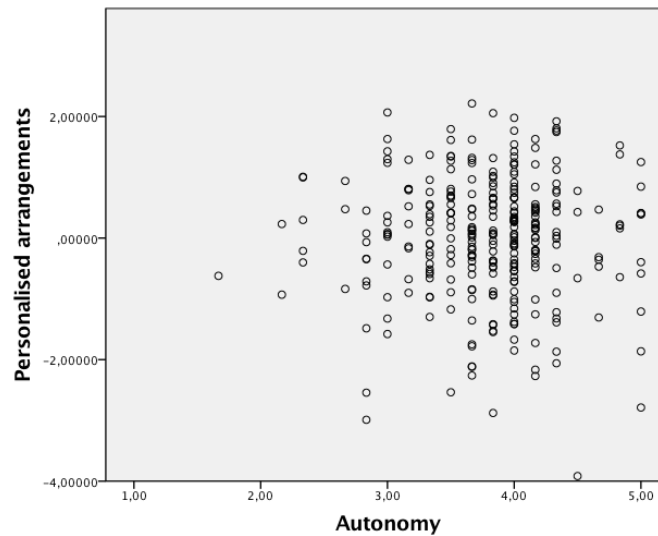


Figure H.6 Scatterplot autonomy and personalised arrangements

The scatterplots in Figure H.1 and H.2 show that there might be a positive, linear relationship between relatedness and the two variables informal socialisation and formal socialisation. The scatterplots in Figure H.3, H.4 and H.5 show that there might be some sort of relationship between competence and the two variables professional growth and coaching, and between autonomy and the variable leisure-work balance. Finally, it is arguable whether the scatterplot in Figure H.6 shows relationship between autonomy and the variable personalised arrangements.





## Appendix I

Table I.1  
*Descriptives needs of generations*

Label	Group label	N	Mean	Std. Dev	Std. Error	95% Confidence Interval for Mean		Min	Max
						Lower Bound	Upper Bound		
Informal socialisation	Baby Boomers	35	-0,20	1,20	0,202	-0,61	0,21	-2,957	2,118
	Generation X	75	-0,04	1,05	0,122	-0,28	0,21	-3,314	2,564
	Millennials	192	0,05	0,94	0,068	-0,08	0,18	-4,450	2,265
	Total	302	0,00	1,00	0,058	-0,11	0,11	-4,450	2,564
Formal socialisation	Baby Boomers	35	0,00	0,96	0,162	-0,33	0,33	-2,158	1,463
	Generation X	75	-0,20	1,02	0,118	-0,43	0,04	-3,615	1,859
	Millennials	192	0,08	0,99	0,072	-0,06	0,22	-2,629	3,082
	Total	302	0,00	1,00	0,058	-0,11	0,11	-3,615	3,082
Professional growth	Baby boomers	35	-0,22	1,28	0,216	-0,66	0,22	-3,640	3,029
	Generation X	75	-0,20	0,81	0,094	-0,38	-0,01	-2,056	1,975
	Millennials	192	0,12	1,00	0,072	-0,02	0,26	-3,089	2,456
	Total	302	0,00	1,00	0,058	-0,11	0,11	-3,640	3,029
Coaching	Baby boomers	35	-0,14	1,11	0,188	-0,52	0,24	-3,474	2,029
	Generation X	75	-0,23	0,91	0,105	-0,44	-0,02	-2,705	1,785
	Millennials	192	0,11	1,00	0,072	-0,03	0,26	-3,281	3,076
	Total	302	0,00	1,00	0,058	-0,11	0,11	-3,474	3,076
Leisure-work balance	Baby boomers	35	0,27	0,91	0,155	-0,05	0,58	-1,599	2,225
	Generation X	75	0,22	1,08	0,125	-0,02	0,47	-2,435	2,709
	Millennials	192	-0,14	0,96	0,069	-0,27	0,00	-2,713	2,001
	Total	302	0,00	1,00	0,058	-0,11	0,11	-2,713	2,709
Personalised arrangements	Baby boomers	35	-0,21	0,92	0,155	-0,52	0,11	-2,119	1,369
	Generation X	75	0,11	0,97	0,112	-0,11	0,34	-2,544	2,055
	Millennials	192	-0,01	1,02	0,074	-0,15	0,14	-3,916	2,214
	Total	302	0,00	1,00	0,058	-0,11	0,11	-3,916	2,214

Table I.2  
*Test of Homogeneity of Variances needs of generations*

Label	Levene Statistic	df1	df2	Sig.
Informal socialisation	2,395	2	299	0,093
Formal socialisation	0,022	2	299	0,978
Professional growth	3,101	2	299	0,046
Coaching	0,187	2	299	0,830
Leisure-work balance	0,610	2	299	0,544
Personalised arrangements	0,176	2	299	0,838

Table I.3  
One-way ANOVA needs of generations

Label		Sum of Squares	df	Mean Square	F	Sig.
Informal socialisation	Between groups	2,018	2	1,009	1,009	0,366
	Within groups	298,982	299	1,000		
	Total	301,000	301			
Formal socialisation	Between groups	4,114	2	2,057	2,072	0,128
	Within groups	296,886	299	0,993		
	Total	301,000	301			
Coaching	Between groups	6,967	2	3,483	3,542	0,030
	Within groups	294,033	299	0,983		
	Total	301,000	301			
Leisure-work balance	Between groups	9,863	2	4,931	5,065	0,007
	Within groups	291,137	299	0,974		
	Total	301,000	301			
Personalised arrangements	Between groups	2,508	2	1,254	1,256	0,286
	Within groups	298,492	299	0,998		
	Total	301,000	301			

Table I.4  
Robust Tests of Equality of Means needs of generations

Label		Statistic <sup>a</sup>	df1	df2	Sig.
Professional growth	Welch	4.380	2	284.508	0,013
	Brown-Forsythe	4.623	2	423.601	0,010

a. Asymptotically F distributed

Table I.5  
Post-hoc test Bonferroni needs of generations

Label	(I) Generation	(J) Generation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Professional growth	Baby boomers	Generation X	-0,021	0,203	1,000	-0,51	0,47
		Millennials	-0,336	0,182	0,200	-0,77	0,10
	Generation X	Baby boomers	0,021	0,203	1,000	-0,47	0,51
		Millennials	-0,314	0,135	0,061	-0,64	0,01
	Millennials	Baby boomers	0,336	0,182	0,200	-0,10	0,77
		Generation X	0,314	0,135	0,061	-0,01	0,64
Coaching	Baby boomers	Generation X	0,088	0,203	1,000	-0,40	0,58
		Millennials	-0,252	0,182	0,505	-0,69	0,19
	Generation X	Baby boomers	-0,088	0,203	1,000	-0,58	0,40
		Millennials	-0,339*	0,135	0,037	-0,66	-0,01
	Millennials	Baby boomers	0,252	0,182	0,505	-0,19	0,69
		Generation X	,339*	0,135	0,037	0,01	0,66
Leisure-work balance	Baby boomers	Generation X	0,043	0,202	1,000	-0,44	0,53
		Millennials	0,404	0,181	0,080	-0,03	0,84
	Generation X	Baby boomers	-0,043	0,202	1,000	-0,53	0,44
		Millennials	0,361*	0,134	0,023	0,04	0,68
	Millennials	Baby boomers	-0,404	0,181	0,080	-0,84	0,03
		Generation X	-0,361*	0,134	0,023	-0,68	-0,04

\* The mean difference is significant at the 0,05 level

## Appendix J

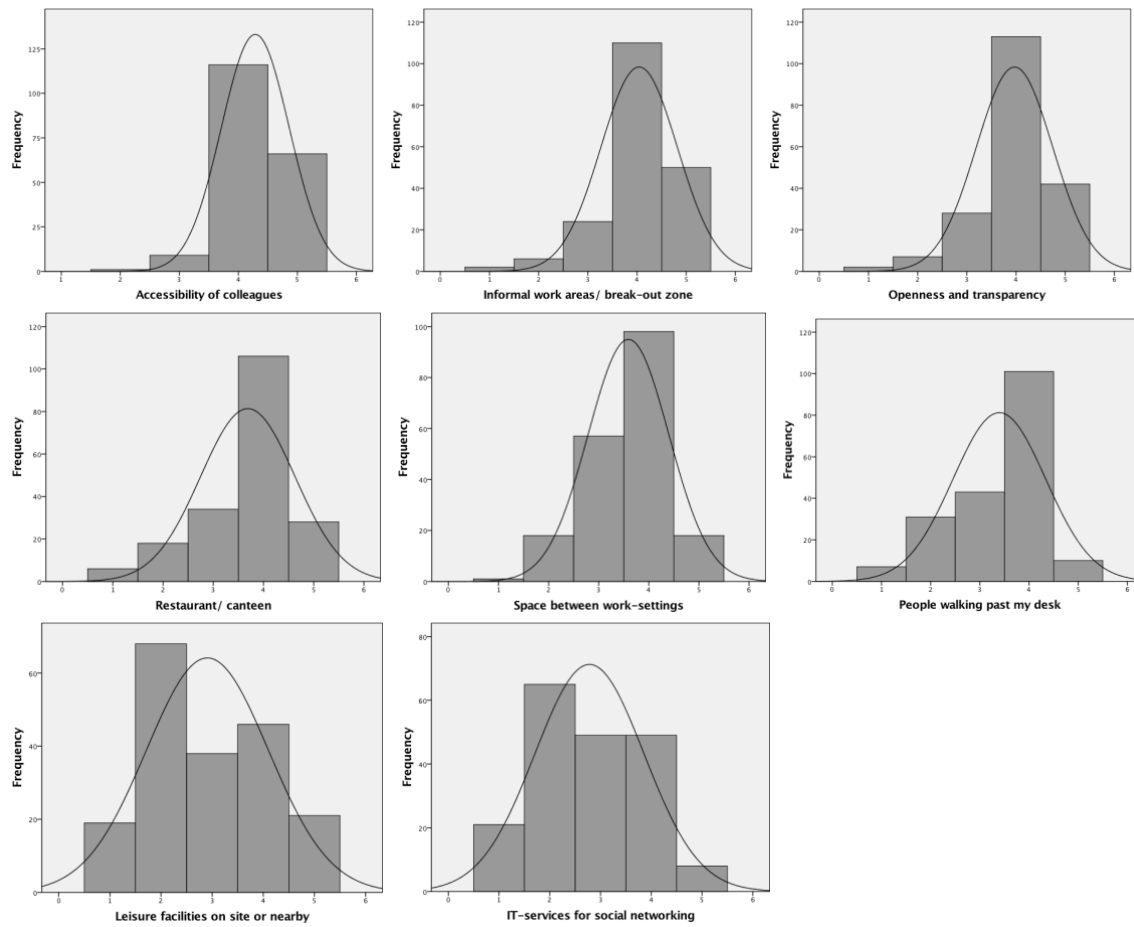


Figure J.1 Histograms importance for sociability with colleagues

Table J.1  
Importance of physical workplace aspects for sociability with colleagues

Label (n= 192)	Mean	Std. Dev	Min	Max	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Accessibility of colleagues	4,29	0,58	2	5	-0,274	0,175	0,395	0,349
Informal work areas/ break-out zones	4,04	0,78	1	5	-1,016	0,175	2,048	0,349
Openness and transparency	3,97	0,78	1	5	-0,954	0,175	1,841	0,394
Restaurant/ canteen	3,69	0,94	1	5	-0,935	0,175	0,741	0,349
Space between work-settings	3,59	0,81	1	5	-0,460	0,175	0,033	0,349
People walking past my desk	3,40	0,94	1	5	-0,755	0,175	-0,119	0,349
Leisure facilities on site or nearby	2,91	1,19	1	5	0,220	0,175	-1,011	0,349
IT-services for social networking	2,78	1,08	1	5	0,115	0,175	-0,874	0,349

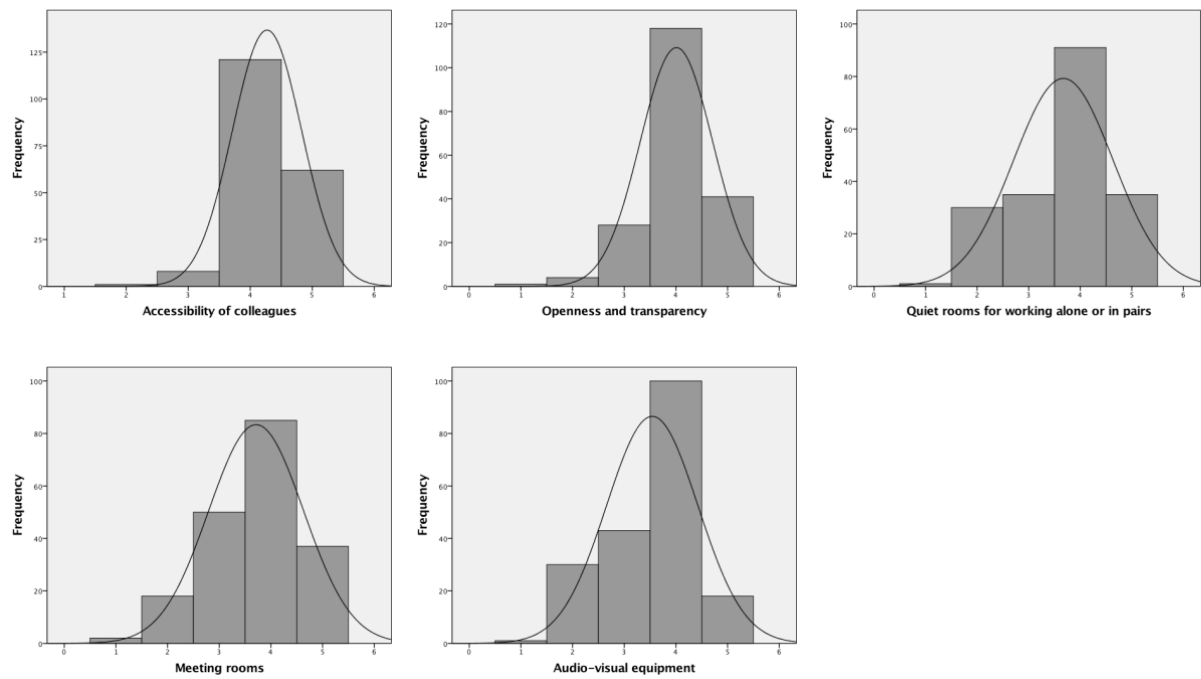


Figure J.2 Histograms importance for opportunity to grow

Table J.2  
Importance of physical workplace aspects for the opportunity to grow

Label (n= 192)	Mean	Std. Dev	Min	Max	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Accessibility of colleagues	4,27	0,56	2	5	-0,196	0,175	0,556	0,349
Openness and transparency	4,01	0,70	1	5	-0,750	0,175	1,772	0,349
Quiet rooms for working alone or in pairs	3,76	0,97	1	5	-0,970	0,175	-0,553	0,349
Meeting rooms	3,71	0,92	1	5	-0,463	0,175	-0,178	0,349
Audio-visual equipment	3,54	0,89	1	5	-0,517	0,175	-0,402	0,349

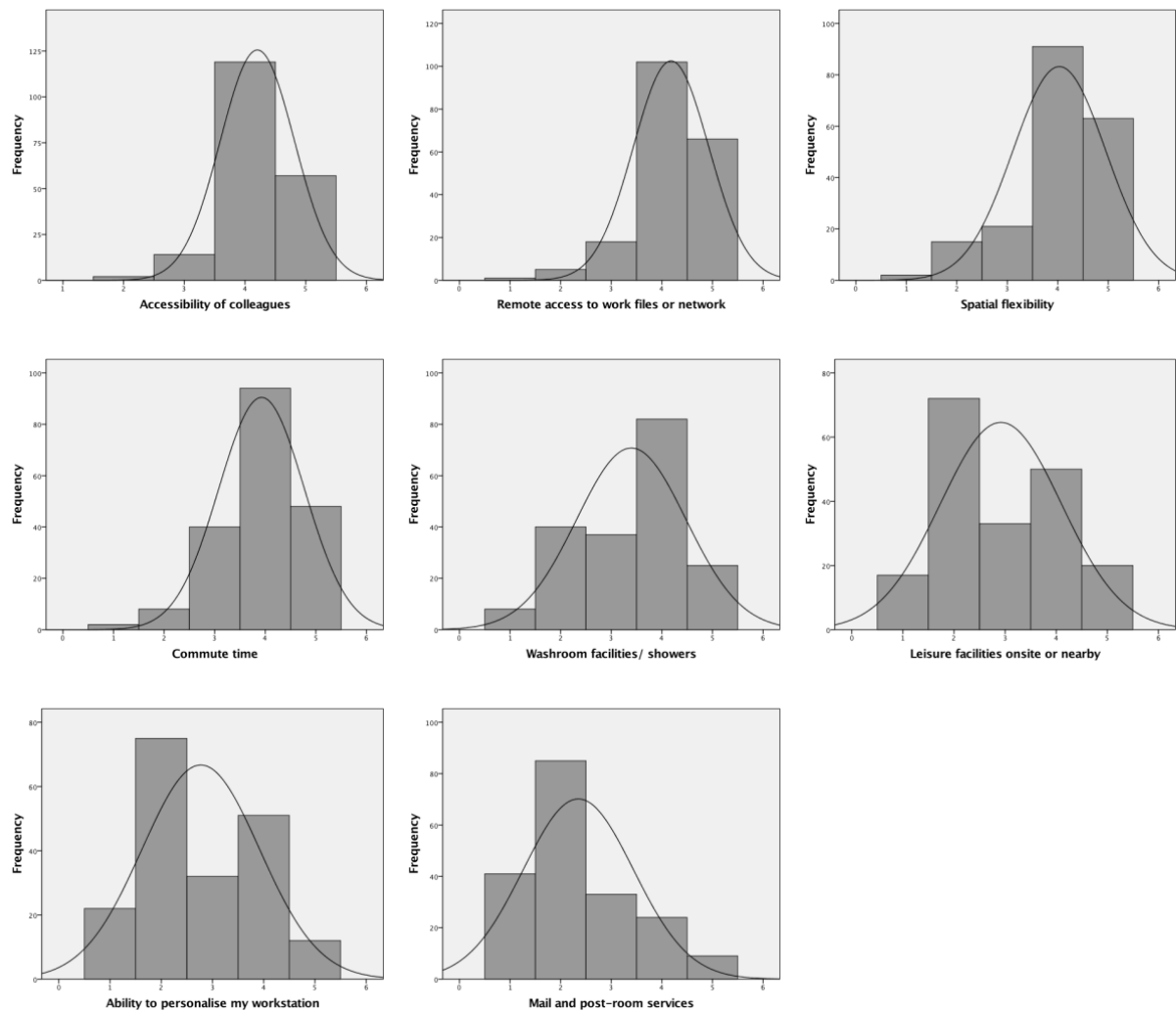


Figure J.3 Histograms importance for work-life balance

Table J.3  
Importance of physical workplace aspects for work-life balance

Label (n= 192)	Mean	Std. Dev	Min	Max	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Accessibility of colleagues	4,20	0,61	2	5	-0,418	0,175	0,839	0,349
Remote access to work files or network	4,18	0,75	1	5	-0,995	0,175	1,820	0,349
Spatial flexibility	4,03	0,92	1	5	-0,999	0,175	0,742	0,349
Commute time	3,93	0,85	1	5	-0,697	0,175	0,632	0,349
Washroom facilities/ showers	3,40	1,08	1	5	-0,416	0,175	-0,717	0,349
Leisure facilities onsite or nearby	2,92	1,19	1	5	0,220	0,175	-1,066	0,349
Ability to personalise my workstation	2,77	1,15	1	5	0,250	0,175	-1,011	0,349
Mail and post-room services	2,35	1,09	1	5	0,734	0,175	-0,134	0,349



## Appendix K

Table K.1

*Descriptives physical workplace aspects sociability with colleagues*

Label	Group label	N	Mean	Std. Dev	Std. Error	95% Confidence Interval for Mean		Min	Max
						Lower Bound	Upper Bound		
Accessibility of colleagues	Baby Boomers	35	4,06	0,64	0,108	3,84	4,28	2	5
	Generation X	75	4,07	0,53	0,061	3,95	4,19	3	5
	Millennials	192	4,29	0,58	0,042	4,20	4,37	2	5
	Total	302	4,21	0,58	0,033	4,14	4,27	2	5
Openness and transparency	Baby Boomers	35	3,80	0,90	0,152	3,49	4,11	1	5
	Generation X	75	3,97	0,72	0,083	3,81	4,14	2	5
	Millennials	192	3,97	0,78	0,056	3,86	4,08	1	5
	Total	302	3,95	0,78	0,045	3,86	4,04	1	5
Informal work areas/ break-out zones	Baby Boomers	35	3,80	0,87	0,147	3,50	4,10	2	5
	Generation X	75	3,71	0,91	0,105	3,50	3,92	1	5
	Millennials	192	4,04	0,78	0,056	3,93	4,15	1	5
	Total	302	3,93	0,83	0,048	3,84	4,02	1	5
Restaurant/ canteen	Baby Boomers	35	3,91	0,85	0,144	3,62	4,21	2	5
	Generation X	75	3,81	0,80	0,092	3,63	4,00	1	5
	Millennials	192	3,69	0,94	0,068	3,55	3,82	1	5
	Total	302	3,75	0,90	0,052	3,64	3,85	1	5
Space between work-settings	Baby Boomers	35	3,40	1,17	0,197	3,00	3,80	1	5
	Generation X	75	3,37	0,87	0,100	3,17	3,57	2	5
	Millennials	192	3,59	0,81	0,058	3,48	3,71	1	5
	Total	302	3,52	0,87	0,050	3,42	3,62	1	5
People walking past my desk	Baby Boomers	35	3,06	0,97	0,164	2,72	3,39	1	5
	Generation X	75	3,16	1,03	0,119	2,92	3,40	1	5
	Millennials	192	3,40	0,94	0,068	3,26	3,53	1	5
	Total	302	3,30	0,97	0,056	3,19	3,41	1	5
Leisure facilities on site or nearby	Baby Boomers	35	2,60	1,14	0,193	2,21	2,99	1	5
	Generation X	75	2,88	1,20	0,138	2,60	3,16	1	5
	Millennials	192	2,91	1,19	0,086	2,74	3,08	1	5
	Total	302	2,86	1,19	0,068	2,73	3,00	1	5
IT-services for social networking	Baby Boomers	35	3,26	1,12	0,189	2,87	3,64	1	5
	Generation X	75	2,80	1,00	0,115	2,57	3,03	1	5
	Millennials	192	2,78	1,08	0,078	2,63	2,93	1	5
	Total	302	2,84	1,07	0,062	2,72	2,96	1	5

Table K.2

*Test of Homogeneity of Variances physical workplace aspects sociability with colleagues*

Label	Levene Statistic	df1	df2	Sig.
Accessibility of colleagues	6,329	2	299	0,002
Openness and transparency	1,018	2	299	0,362
Informal work areas/ break-out zones	3,714	2	299	0,026
Restaurant/ canteen	2,426	2	299	0,090
Space between work-settings	6,742	2	299	0,001
People walking past my desk	0,671	2	299	0,512
Leisure facilities on site or nearby	0,068	2	299	0,935
IT-services for social networking	0,325	2	299	0,723

Table K.3  
One-way ANOVA physical workplace aspects sociability with colleagues

Label		Sum of Squares	df	Mean Square	F	Sig.
Openness and transparency	Between groups	0,896	2	0,448	0,738	0,479
	Within groups	181,359	299	0,607		
	Total	182,255	301			
Restaurant/ canteen	Between groups	1,988	2	0,994	1,231	0,293
	Within groups	241,380	299	0,807		
	Total	243,368	301			
People walking past my desk	Between groups	5,296	2	2,648	2,829	0,061
	Within groups	279,882	299	0,936		
	Total	285,179	301			
Leisure facilities on site or nearby	Between groups	2,801	2	1,401	0,991	0,372
	Within groups	422,633	299	1,413		
	Total	425,434	301			
IT-services for social networking	Between groups	6,873	2	3,436	3,044	0,049
	Within groups	337,498	299	1,129		
	Total	344,371	301			

Table K.4  
Robust Tests of Equality of Means physical workplace aspects sociability with colleagues

Label		Statistic <sup>a</sup>	df1	df2	Sig.
Accessibility of colleagues	Welch	5,384	2	83,658	0,006
	Brown-Forsythe	5,024	2	106,147	0,008
Informal work areas/ break-out zones	Welch	4,488	2	81,191	0,014
	Brown-Forsythe	4,450	2	123,019	0,014
Space between work-settings	Welch	2,025	2	77,845	0,139
	Brown-Forsythe	1,573	2	85,028	0,213

a. Asymptotically F distributed

Table K.5  
Post-hoc test Bonferroni physical workplace aspects sociability with colleagues

Label	(I) Generation	(J) Generation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Accessibility of colleagues	Baby boomers	Generation X	-0,010	0,117	1,000	-0,29	0,27
		Millennials	-0,229	0,105	0,090	-0,48	0,02
	Generation X	Baby boomers	0,010	0,117	1,000	-0,27	0,29
		Millennials	-,220*	0,078	0,015	-0,41	-0,03
	Millennials	Baby boomers	0,229	0,105	0,090	-0,02	0,48
		Generation X	,220*	0,078	0,015	0,03	0,41
Informal work areas/ break-out zones	Baby boomers	Generation X	0,093	0,169	1,000	-0,31	0,50
		Millennials	-0,242	0,151	0,334	-0,61	0,12
	Generation X	Baby boomers	-0,093	0,169	1,000	-0,50	0,31
		Millennials	-,335*	0,112	0,009	-0,60	-0,07
	Millennials	Baby boomers	0,242	0,151	0,334	-0,12	0,61
		Generation X	,335*	0,112	0,009	0,07	0,60
IT-services for social networking	Baby boomers	Generation X	0,457	0,217	0,109	-0,07	0,98
		Millennials	,476*	0,195	0,046	0,01	0,95
	Generation X	Baby boomers	-0,457	0,217	0,109	-0,98	0,07
		Millennials	0,019	0,145	1,000	-0,33	0,37
	Millennials	Baby boomers	-,476*	0,195	0,046	-0,95	-0,01
		Generation X	-0,019	0,145	1,000	-0,37	0,33



Table K.6  
*Descriptives physical workplace aspects opportunity to grow*

Label	Group label	N	Mean	Std. Dev	Std. Error	95% Confidence Interval for Mean		Min	Max
						Lower Bound	Upper Bound		
Accessibility of colleagues	Baby Boomers	35	4,14	0,65	0,110	3,92	4,37	2	5
	Generation X	75	4,19	0,51	0,059	4,07	4,30	3	5
	Millennials	192	4,27	0,56	0,040	4,19	4,35	2	5
	Total	302	4,24	0,56	0,032	4,17	4,30	2	5
Openness and transparency	Baby Boomers	35	4,03	0,82	0,139	3,75	4,31	1	5
	Generation X	75	4,09	0,68	0,079	3,94	4,25	2	5
	Millennials	192	4,01	0,70	0,051	3,91	4,11	1	5
	Total	302	4,03	0,71	0,041	3,95	4,11	1	5
Meeting rooms	Baby Boomers	35	3,60	0,88	0,149	3,30	3,90	1	5
	Generation X	75	3,65	0,86	0,100	3,46	3,85	2	5
	Millennials	192	3,71	0,92	0,066	3,58	3,84	1	5
	Total	302	3,69	0,90	0,052	3,58	3,79	1	5
Quiet rooms for working alone or in pairs	Baby Boomers	35	3,77	0,97	0,164	3,44	4,11	2	5
	Generation X	75	3,60	1,05	0,122	3,36	3,84	1	5
	Millennials	192	3,67	0,97	0,070	3,53	3,81	1	5
	Total	302	3,67	0,99	0,057	3,55	3,78	1	5
Audio-visual equipment	Baby Boomers	35	3,91	1,10	0,185	3,54	4,29	1	5
	Generation X	75	3,73	0,83	0,096	3,54	3,92	1	5
	Millennials	192	3,54	0,89	0,064	3,42	3,67	1	5
	Total	302	3,63	0,90	0,052	3,53	3,73	1	5

Table K.7  
*Test of Homogeneity of Variances physical workplace aspects opportunity to grow*

Label	Levene Statistic	df1	df2	Sig.
Accessibility of colleagues	1,603	2	299	0,203
Openness and transparency	0,122	2	299	0,886
Meeting rooms	0,310	2	299	0,734
Quiet rooms for working alone or in pairs	0,835	2	299	0,435
Audio-visual equipment	2,499	2	299	0,084

Table K.8  
*One-way ANOVA physical workplace aspects opportunity to grow*

Label		Sum of Squares	df	Mean Square	F	Sig.
Accessibility of colleagues	Between groups	0,719	2	0,359	1,148	0,319
	Within groups	93,589	299	0,313		
	Total	94,308	301			
Openness and transparency	Between groups	0,372	2	0,186	0,367	0,693
	Within groups	151,297	299	0,506		
	Total	151,669	301			
Meeting rooms	Between groups	0,484	2	0,242	0,298	0,742
	Within groups	242,631	299	0,811		
	Total	243,116	301			
Quiet rooms for working alone or in pairs	Between groups	0,722	2	0,361	0,369	0,692
	Within groups	292,500	299	0,978		
	Total	293,222	301			
Audio-visual equipment	Between groups	5,126	2	2,563	3,179	0,043
	Within groups	241,076	299	0,806		
	Total	246,202	301			

Table K.9  
*Post-hoc test Bonferroni physical workplace aspects opportunity to grow*

Label	(I) Generation	(J) Generation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Audio-visual equipment	Baby boomers	Generation X	0,181	0,184	0,977	-0,26	0,62
		Millennials	0,373	0,165	<b>0,074</b>	-0,02	0,77
	Generation X	Baby boomers	-0,181	0,184	0,977	-0,62	0,26
		Millennials	0,192	0,122	0,354	-0,10	0,49
	Millennials	Baby boomers	-0,373	0,165	<b>0,074</b>	-0,77	0,02
		Generation X	-0,192	0,122	0,354	-0,49	0,10

Table K.10  
*Descriptives physical workplace aspects work-life balance*

Label	Group label	N	Mean	Std. Dev	Std. Error	95% Confidence Interval for Mean		Min	Max
						Lower Bound	Upper Bound		
Remote access to work files or network	Baby Boomers	35	4,20	0,80	0,135	3,93	4,47	2	5
	Generation X	75	4,16	0,90	0,104	3,95	4,37	1	5
	Millennials	192	4,18	0,75	0,054	4,08	4,29	1	5
	Total	302	4,18	0,79	0,046	4,09	4,27	1	5
Accessibility of colleagues	Baby Boomers	35	4,17	0,71	0,119	3,93	4,41	2	5
	Generation X	75	4,07	0,50	0,058	3,95	4,18	3	5
	Millennials	192	4,20	0,61	0,044	4,12	4,29	2	5
	Total	302	4,17	0,60	0,034	4,10	4,23	2	5
Spatial flexibility	Baby Boomers	35	3,74	1,01	0,171	3,40	4,09	1	5
	Generation X	75	3,97	1,08	0,124	3,73	4,22	1	5
	Millennials	192	4,03	0,92	0,066	3,90	4,16	1	5
	Total	302	3,98	0,97	0,056	3,87	4,09	1	5
Commute time	Baby Boomers	35	3,63	1,03	0,174	3,27	3,98	1	5
	Generation X	75	3,88	0,85	0,099	3,68	4,08	1	5
	Millennials	192	3,93	0,85	0,061	3,81	4,05	1	5
	Total	302	3,88	0,87	0,050	3,78	3,98	1	5
Washroom facilities/showers	Baby Boomers	35	3,54	1,01	0,171	3,20	3,89	1	5
	Generation X	75	3,13	1,26	0,145	2,84	3,42	1	5
	Millennials	192	3,40	1,08	0,078	3,24	3,55	1	5
	Total	302	3,35	1,12	0,065	3,22	3,47	1	5
Leisure facilities onsite or nearby	Baby Boomers	35	2,60	1,06	0,180	2,23	2,97	1	5
	Generation X	75	2,64	1,14	0,131	2,38	2,90	1	5
	Millennials	192	2,92	1,19	0,086	2,75	3,09	1	5
	Total	302	2,81	1,17	0,067	2,68	2,94	1	5
Ability to personalise my workstation	Baby Boomers	35	2,63	1,24	0,209	2,20	3,05	1	5
	Generation X	75	2,25	0,96	0,111	2,03	2,47	1	4
	Millennials	192	2,77	1,15	0,083	2,61	2,93	1	5
	Total	302	2,63	1,13	0,065	2,50	2,75	1	5
Mail and post-room services	Baby Boomers	35	2,29	1,15	0,195	1,89	2,68	1	5
	Generation X	75	2,28	1,09	0,125	2,03	2,53	1	5
	Millennials	192	2,35	1,09	0,079	2,19	2,50	1	5
	Total	302	2,32	1,09	0,063	2,20	2,45	1	5

Table K.11  
*Test of Homogeneity of Variances physical workplace aspects work-life balance*

Label	Levene Statistic	df1	df2	Sig.
Remote access to work files or network	1,353	2	299	0,260
Accessibility of colleagues	6,071	2	299	0,003
Spatial flexibility	2,099	2	299	0,124
Commute time	2,192	2	299	0,113
Washroom facilities/ showers	2,662	2	299	0,071
Leisure facilities onsite or nearby	1,019	2	299	0,362
Ability to personalise my workstation	4,167	2	299	0,016
Mail and post-room services	0,160	2	299	0,852

Table K.12  
*One-way ANOVA physical workplace aspects work-life balance*

Label		Sum of Squares	df	Mean Square	F	Sig.
Remote access to work files or network	Between groups	0,045	2	0,022	0,035	0,965
	Within groups	188,300	299	0,630		
	Total	188,344	301			
Spatial flexibility	Between groups	2,472	2	1,236	1,309	0,272
	Within groups	282,445	299	0,945		
	Total	284,917	301			
Commute time	Between groups	2,638	2	1,319	1,737	0,178
	Within groups	227,071	299	0,759		
	Total	229,709	301			
Washroom facilities/ showers	Between groups	5,224	2	2,612	2,081	0,127
	Within groups	375,269	299	1,255		
	Total	380,493	301			
Leisure facilities onsite or nearby	Between groups	5,895	2	2,948	2,190	0,114
	Within groups	402,347	299	1,346		
	Total	408,242	301			
Mail and post-room services	Between groups	0,316	2	0,158	0,131	0,877
	Within groups	359,883	299	1,204		
	Total	360,199	301			

Table K.13  
*Robust Tests of Equality of Means physical workplace aspects work-life balance*

Label		Statistic <sup>a</sup>	df1	df2	Sig.
Accessibility of colleagues	Welch	1,753	2	83,906	0,180
	Brown-Forsythe	1,312	2	93,099	0,274
Ability to personalise my workstation	Welch	6,955	2	85,094	0,002
	Brown-Forsythe	5,710	2	103,510	0,004

a. Asymptotically F distributed

Table K.14  
*Post-hoc test Bonferroni physical workplace aspects work-life balance*

Label	(I) Generation	(J) Generation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Ability to personalise my workstation	Baby boomers	Generation X	0,375	0,228	0,304	-0,17	0,93
		Millennials	-0,142	0,205	1,000	-0,64	0,35
	Generation X	Baby boomers	-0,375	0,228	0,304	-0,93	0,17
		Millennials	-,518*	0,152	0,002	-0,88	-0,15
	Millennials	Baby boomers	0,142	0,205	1,000	-0,35	0,64
		Generation X	,518*	0,152	0,002	0,15	0,88

## Attracting and retaining millennials

### The contribution of corporate real estate

Organizations value their employees as one of their key assets and continuously seek for the best potential talent. In order to attract and retain talented millennials, the work environment has to support the needs of this generation. Corporate Real Estate Management (CREM) is concerned with creating a workplace that supports the needs of employees and thus also has a role in this study. However, little is known about the relation between the needs of millennials and the possible support by CREM. This study tries to cover that gap in literature. The objective of this research is to provide CREM with insight in how to attract and retain millennials. The research question that follows from this objective, is: Which physical workplace aspects contribute to attracting and retaining millennials?

Corporate real estate (CRE) is related to the housing of business activities of an organisation with a core business that does not origin from a profession in real estate. During the last years, the focus of CREM has been changing from ‘managing buildings’ to the more soft skill of ‘managing people’.

Currently, there are four generations active in the workplace: veterans, baby boomers, generation X and millennials. A generation consists of people with the same birth cohort and therefore they share the same experiences during life that shape those people’s personalities and beliefs. Each generation has its own characteristics and (workplace) needs and it is important that the workplace supports these needs if order to attract and retain them. This study identifies the physical workplace aspects that can be implemented by CREM, which might be able to support the workplace needs of millennials. However, there are more generations in today’s work environment that wants to be supported in their needs. Therefore, the differences and similarities between generations (millennials, generation X and baby boomers) regarding their workplace needs and preferences for physical workplace aspects are also examined in this study.

A questionnaire was conducted in order to examine the workplace needs and preferences for physical workplace aspects of baby boomers, generation X and millennials. The data was analysed by means of various (basic) statistical tests, such as the Principal Component Analysis, one-way analysis of variances and Pearson r correlation.

The results show that there are differences between generation X and millennials for the workplace needs professional growth, coaching and leisure-work balance. Generations also consider different physical workplace aspects to be important for supporting certain workplace needs. However, despite the significant results, the differences are rather small. Finally, millennials indicated to perceive certain physical workplace aspects to be a support for the three workplace needs they mostly value (Table 1 in Appendix A). Hereby, ‘accessibility of colleagues’ was indicated as the most important physical workplace aspect for supporting all the three needs.

This research contributes knowledge to the research fields of environmental psychology and CREM. Limitations to this study are the representativeness of the sample and the sample size. Recommendations for further research are to conduct the same research with a larger and more representative sample, with other or more independent variables and in different settings. The most important recommendations for CRE managers and developers and owners of office buildings regarding this study, is to take the physical workplace aspects that support the needs of millennials into account when the aim is to attract and retain millennials.

## Appendix A

Table 1  
*Workplace needs and physical workplace aspects*

Sociability with colleagues	Opportunity to grow	Work-life balance
Accessibility of colleagues	Accessibility of colleagues	Accessibility of colleagues
Informal work areas/ break-out zones	Openness and transparency	Remote access to work files or network
Openness and transparency	Quiet rooms for working alone or in pairs	Spatial flexibility
Restaurant/ canteen	Meeting rooms	Commute time
Space between work-settings	Audio-visual equipment	Washroom facilities/ showers
People walking past my desk		