MASTER

The preferred characteristics of coworking spaces
the relation between user characteristics and preferred coworking space characteristics: an attribute based stated choice experiment

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The preferred characteristics of coworking spaces

The relation between user characteristics and preferred coworking space characteristics: an attribute based stated choice experiment.

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Preface

This report presents my master’s thesis for the completion of the master track Real Estate Management & Development of the department Architecture Building and Planning (ABP) at Eindhoven University of Technology (TU/e). During the past year, I have studied the preferred characteristics of coworking spaces and determined whether the preferences differ on user characteristics.

The fulfilment of my research would not have been possible without the advice, support and cooperation of others. I am grateful and wish to thank everyone who helped me during the process, especially the following persons.

This study was not possible without the supervision of Rianne Appel-Meulenbroek, Minou Weij-Perrée and Theo Arentze. They inspired me with their constructive feedback and critical view. Besides my supervisors, I also would like to thank Peter van der Waerden and Mandy van de Sande – van Kasteren, who helped me with the research design of this study.

Secondly, I want to thank ‘Het Academisch Fonds Vastgoedkunde’ which provided me a scholarship to perform this research independently. Furthermore, I want to thank the participating coworking spaces which made this research possible.

Finally, a big shout-out to my parents for giving me the opportunity of following this master at the Eindhoven University of Technology and their unconditional support, help and guidance.

J.G.C. (Jasper) van de Koevering

Tilburg, February 2017
Executive summary

Introduction
Trends in the market have created a new paradigm in office space usage (Calder & Courtney, 1992). Many industries and sectors are shifting towards an increasingly complex, unpredictable and dynamic knowledge environment (Saurin et al., 2008). In a market that requires constant changes, flexibility in the duration of the lease, the use of services and the choice of space is desired (Gibson & Lizieri, 1999). In addition to flexibility, trends in the labor market such as the increasing number of self-employed workers, growth in the use of technologies and a decreasing amount of workspace allocated to individuals, has influence the use of office space (Green, 2014; De Vries & Van de Besselaar, 2013; Barber, Laing, & Simeone, 2005). There are different space needs (surfaces, layout, spaces etc.), contract (for a day, a month, a year etc.) and services (catering, ICT, administration etc.) (laterveer, 2011; Ketting, 2014). The changing demand of office space usage have led to the growth of a new type of property; the multi-tenant office (Peltier, 1992).

The definition of a multi-tenant office is a building in which office space and possibly a number of shared facilities and/or services are offered to multiple organization (Weijs-Perrée, Appel-Meulenbroek, De Vries, & Romme, 2016). Four types of multi-tenant offices can be distinguished according to Weijs-Perrée et al. (2016), namely: the regular business center, the serviced office, the incubator and the coworking space. Each of these types of multi-tenant offices focus on a different part market regarding the type of tenant, atmosphere, services spaces and the overarching goal. The emergence of coworking spaces was a reaction to the absence of an appropriate workplace for self-employed workers, freelancers and entrepreneurs who became tired of the distraction in local coffee bars or the loneliness of working from home (Moriset, 2014; Fuzi et al., 2014). From the previous decade, a growing trend regarding coworking has become visible. This popularity is the result of “a shifting attitude towards work” (Sykes, 2014, p. 142). According to recent study of Deskmag (2015), there were 7,800 coworking spaces worldwide in 2015 in comparison with 310 in 2009. The number of coworker was 510,000 in 2015 in comparison to the 43,000 in 2011. The definition of a coworking space is, as reported by Spinuzzi (2012), a workspace for the community, where people can sit down and collaborate with each other. It is a low-cost workspace and easily accessible with shared knowledge from different business background that can contribute to the own business.

The concept of coworking received a lot of attention from various medias but is almost ignored by the academic literature (Moriset, 2013; Merkel, 2014). Since coworking is a relatively new concept of multi-tenant office, little research has been done in this field of user characteristics and coworking space characteristics. With the aid of this study, the user characteristics of coworkers and their preferred coworking space characteristics in the Netherlands become clear. The typical characteristics of coworking spaces are an under-exposed subject as well and will be discussed in this study. Eventually, the aim of this study is to user groups of coworking spaces based on their preferences and analyze whether these user groups differ on user characteristics. The following research question is formulated:

Can different user groups be identified based on their preferences for coworking space characteristics and do they differ on user characteristics?

To be able to answer this research question, the following sub-questions must be answered:
- What are the typical characteristics of coworking spaces?
- Which types of users can be identified in coworking spaces and with which characteristics can they be described?
- What are the user characteristics of coworkers in general?
- What are the user preferences for coworking space characteristics?
- Can different user groups be identified based on their preferences?
- What are the differences between these user groups based on user characteristics?

When the user preferences for coworking space characteristics becomes clear, coworking space developers and providers should be more capable of offering a more suitable work environment for coworkers. The coworking space can be more effectively developed because providers and developers can respond to the needs and requirements of the user. Moreover, this study is also relevant for users and future users of coworking spaces. Multiple coworking spaces in the Netherlands will be analyzed in this study and corresponding characteristics come across. Users and future users can determine which coworking space characteristics suits them in order to decide where they want to work. This helps the coworkers to search more specific what fits their personal needs. This study provides also an overview of the users’ motivations to work in a coworking space. In this manner, future users know what the intentions are of current users in order to see if it corresponds to their own intentions.
Literature Review

Brad Neuberg, the initiator of the coworking movement, started the first coworking space in 2005 in San Francisco. The coworking space was meant to be a physical space in which independent and mobile workers could come together. Neuberg started this space because he wanted to work by himself, but in the middle of a community. Coworking spaces are of different sizes and have various characteristics; however, as unique as they are, they all have common characteristics. Kwiatkowski and Buczynski (2011) developed five core-values which reflect the coworking philosophy and can be considered as the cradle of the coworking phenomenon. The following core-values can be distinguished:

- **Collaboration:** the willingness to cooperate with others to create shared value;
- **Openness:** free sharing of ideas, information and people;
- **Community:** a group with a shared purpose and shared thoughts about coworking;
- **Accessibility:** coworking spaces are accessible, both socially and economically, for every type of worker; and
- **Sustainability:** resources are used together, which brings economical and ecological benefits.

Together with various characteristics of multi-tenant offices (location, office exterior and division, office décor and facilities and services), which are derived from previous reserach (Leesman, 2013; Liebregts, 2013; Van Susante, 2014; Hartog, 2015), the typical characteristics of coworking spaces are developed. The following coworking space characteristics distinguish a coworking space from another type of multi-tenant office: location, office exterior and division, office décor, facilities and services, community and sustainability and accessibility. It is of importance to emphasize that the presented characteristics are only the typical characteristics of coworking spaces; therefore, characteristics that truly define a coworking space. All the characteristics occur in a typical character/capacity.

Coworking is often associated with self-employed workers and freelancers; however, it became obvious that the users of coworking spaces are a more heterogeneous group. According to the relevant literature, the following user groups make use of a coworking space and are used in this study: self-employed workers, freelancers and entrepreneurs, employee of a company (2-10; 11-50; 50 or more) and students. Each user group contains a great variety of users with a different set of user characteristics. With the aid of geographic characteristics (e.g. country of the coworking space), demographic characteristics (e.g. gender, age, nationality and education) and psychographic characteristics (motivations to work in a coworking space) the coworkers will be described.

Each characteristic, for both the independent and dependent characteristic, consists of multiple variables. The following conceptual model shows the relation between the user characteristics and the user preferences for coworking space characteristics:

![Conceptual model](image)

Figure 3.1: Conceptual model

Research Design

To clarify the methodology of this research, the methods are split into two forms, namely: methods for data collection and methods for data analysis. To collect the data for the independent factor user characteristics of coworkers, survey questions are asked to determine the geographic, demographic and psychographic characteristics. To collect the data for the dependent factor user preferences, an *attribute based stated choice method* is used. In this type of method, a respondent (coworker) is placed in a particular framework to compare alternatives of coworking spaces that are described...
by multiple attributes (Adamowicz, Boxall, Williams, & Louviere, 1998). The respondent has to choose their most preferred coworking space/alternative. In total, 66 coworking spaces in the Netherlands were approached if they were willing to cooperate in the study. These coworking spaces are selected from multiple coworking websites. An e-mail was sent to the operators of coworking spaces throughout the Netherlands with a short introduction/explanation of the research and the relevance for the operators. Twenty-five coworking spaces were willing to cooperate in the study. Data is collected with the use of an online questionnaire. In total, 219 coworkers have indicated what their preferences are for the typical coworking space characteristics. Each characteristic is translated into an attribute with multiple attribute levels. The most important typical characteristics are selected in order that the alternatives represent the best hypothetical situation of a coworking space. The attribute levels indicate a proper range of variation for each attribute (Adamowicz et al., 1998). The following attributes and attribute levels (between the brackets) are used:

- **Location**: accessibility of the location (by car and public transport; by car; by public transport);
- **Office exterior and division**: layout of the space (open layout; half-open layout; closed layout);
- **Office exterior and division**: diversity in supply spaces (basic coworking space; standard coworking space; premium coworking space);
- **Office décor**: atmosphere and interior aesthetics (industrial; modern; homey);
- **Facilities and services**: reception and hospitality (no reception and no host; reception but no host; reception and active host);
- **Community and sustainability**: events (none; sometimes; often);
- **Accessibility**: diversity of tenants (no diversity of tenants; moderate diversity of tenants; strong diversity of tenants); and
- **Accessibility**: type of lease contract (no contract; short term (day, week or month); long term (year or longer).

Multiple methods are used for the data analysis. The user characteristics of the coworkers in general will be described by descriptive statistics (occurrence of variables, mean, standard deviation and range) and graphics that show the distribution of the variables. It becomes clear what the geographic, demographic and psychographic characteristics are of the users in the sample. For instance, what is their level of education, sector of organization and motivations to work in a coworking space. To analyze what the user preferences are for coworking space characteristics, a multinomial logit model is estimated. With the aid of a multinomial logit model, an estimation can be made of which of the characteristics of a coworking space are the most preferred for coworkers. This type of model estimates the utility weights of parameters. The respondents in the sample attain a certain level of utility to a characteristic of a coworking space (attribute level/parameter). The parameter with the highest utility has the largest probability to be chosen and can be considered as most preferred. The parameter with the lowest utility has the lowest probability to be chosen and can be considered as the least preferred. To find similar groups (classes) in the data of preferred characteristics of coworking spaces, a latent class logit model is estimated. In the context of this research, coworkers with matching preferences form a latent class. The preferred characteristics in a latent class will be the same but the user characteristics will differ. With the aid of multiple chi-square tests and independent samples T-tests, the differences on user characteristics between the estimated classes are determined.

**Results**

This study provides insight in the user characteristics of coworkers in the Netherlands. A number of demographic characteristics are remarkable. First of all, the coworkers in the Netherlands are highly educated (higher vocational education or a degree on university). The most dominant user group in the sample are the self-employed workers, freelancers and entrepreneurs with a share of 53%. Almost 70% of this user group has a board/owner position. Almost half of the coworkers in the sample is active in the sector consultancy (25%) or IT (21%). These three demographic characteristics are quite in line with the user characteristics of coworkers on a global level according to multiple studies of Deskmag (Deskmag, 2013; Deskmag, 2016). The most important motivation to work in a coworking space is to separate work and private life. The second most important motivation is the vibrant and creative atmosphere followed by the affordable accommodation.

According to the 219 coworkers in the sample, the following attributes are the most preferred characteristics of a coworking space, in order of importance with between the brackets the most preferred attribute level:

1. Type of lease contract (no lease contract or a short lease contract (day, week or month));
2. Accessibility of the location (by car and public transport);
3. Layout of the space (half-open layout);
4. Diversity of tenants (moderate or strong diversity);
5. Reception and hospitality (reception but no host to stimulate user interaction);
6. Events (sometimes an event in the coworking space); and
7. Atmosphere and interior aesthetics (homey);

Location is one of the most important characteristics in real estate in general. However, this research has shown that the type of lease contract takes a more important place regarding this type of multi-tenant office. The study made it clear that attention should be paid to the structure of the lease contract. Coworkers attach value to no contract or a short contract (e.g., a rental period of a day, a week or a month). A lot of attention is paid to the atmosphere and interior aesthetics in coworking spaces while little utility value is assigned to this attribute. The multinomial logit model did not estimate significant utility values for the attribute diversity in supply spaces which can be considered as not a preferred characteristic of a coworking space. With the aid of a latent class logit model two latent classes are estimated consisting of coworkers with corresponding preferred coworking space characteristics. Class 1 consists of 82 coworkers which has no preferences according the coworking space characteristics. This class is perhaps still very heterogeneous or selected the attribute levels complete randomly. Class 2 consists of 137 coworkers with a slightly preferences for multiple attribute levels. Various chi-square tests and independent samples T-tests are performed to analyze the differences between the estimated classes (class 1 and class 2) based on user characteristics. Only a significant difference is found between the two estimated classes regarding the ratio variable hours working in the coworking space. The coworkers in class 2 work significantly more hours per week in the coworking space than the coworkers in class 1. This means that coworkers who spend more time in the coworking space prefer sometimes an event in the coworking space, a premium coworking space, accessibility by public transport, a strong diversity of tenants and no rental contract. Apparently, those coworking space characteristics becomes more important when more time is spent in the coworking space.

Conclusion and Recommendations
Compared to the studies of Deskmag (Deskmag, 2013; Deskmag, 2014; Deskmag, 2016), which are performed on a global level, the coworkers in the Netherlands find it important to work on an external (remote), relatively affordable and energetic/creative location and attach less value to the present community in the coworking space. The three most mentioned motivations concern in particular the characteristics of the coworking space, and to a lesser extent the community present in the coworking space.

Location is often seen as the most important characteristics of real estate. This study showed that the structure of the lease is more important. The literature and the results of this study indicate that the low threshold and flexibility of the coworking spaces (rent price, lease period, multiple locations) are attractive to coworkers and contribute positively to the popularity of this type of multi-tenant office. Many coworking spaces have a specific appearance and great attention is paid to the interior design which is one of the important factors of the creative and energetic atmosphere in a coworking space. However, results showed that little utility value is assigned to this attribute and ended in last place of the preferred characteristics. Less attention needs to be paid to the appearance of the space and more attention to the structure of the lease contract (period and price). It is of importance for operators to offer a moderate or strong diversity of tenants, a reception and to organize sometimes an event in the coworking space. For the developers of coworking spaces it is important to create a half-open layout. Coworkers who spend more time in the coworking space have a certain preference for sometimes an event in the coworking space, a premium coworking space, accessibility by public transport, a strong diversity of tenants and no rental contract. Providers and developers of coworking spaces have to focus on those characteristics in order to attract and satisfy the coworkers which spend relatively more time in the coworking space. Users and future users can, with the aid of this study, determine which coworking space characteristics suits them in order to decide where they want to work. In addition, users and future users can decide if the motivations to working a coworking space correspond to their personal needs and requirements.

Few limitations of this research can be drawn up. It has been noticed that the questionnaire was far more started than finished. For instance, the Dutch questionnaire was more than 400 times started of which 219 respondents actually finished it. Perhaps the attribute based stated choice method had a deterred effect on the respondents, due to the complexity and comprehensibility of the choice sets. What can be learned from this, is that the attribute levels should be understandable and clear at a glance. Moreover, it might be better to ask questions with the use of an attribute based stated choice method further down the questionnaire. Perhaps this type of method has a deterred effect on the respondents because of the degree of difficulty. The sample of this research is relatively small (219). With a larger sample size, more relations between user characteristics and user preferences could have been explored. Finally, perhaps other user characteristics have to be applied in order to find significant relations between the estimated user groups. Only the demographic variable hours working in the coworking space is significantly different between the two estimated user groups.
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Chapter 1: Introduction

This chapter will introduce the subject of this master’s thesis and explain how this research will be performed. First, section 1.1 details the background of the subject of coworking and user characteristics. The research gap is also addressed in this section. Then, in section 1.2, the research objective is described, followed by the research questions and the preliminary conceptual model. In sections 1.3 and 1.4, the practical and theoretical relevance of the research are presented. A draft of the research design is given in section 1.5. The research approach and the outline of this master’s thesis are provided in section 1.6.

1.1 Background

A well-known phrase in economics is that “supply and demand should be in balance”. In other words, in a healthy market, supply will respond to demand. Currently, there is a structural vacancy in the office market. The vacancy rate in the Netherlands is 15.8% of the total available space, which corresponds to almost 8.0 million m² office space (DTZ Zadelhoff, 2015). There is a structural vacancy because the supply no longer meets the demands of tenants; there is a mismatch between supply and demand (De Vries & van den Besselaar, 2013). “Mismatch of demand and supply of office space on the market, location or building level causes an oversupply of office buildings” (Remøy, 2010, pp. 48). In order to meet future demand, real estate markets must respond to market trends to prevent a continuously growing mismatch between office space supply and demand.

Trends in the market have created a new paradigm in office space usage (Calder & Courtney, 1992). Many industries and sectors are shifting towards an increasingly complex, unpredictable and dynamic knowledge environment (Saurin et al., 2008). In a market that requires constant changes, the concept of corporate accommodation must by nature be flexible, in order for organizations to be able to adapt to market developments and organizational changes (Laterveer, 2011). Flexibility in the duration of the lease (contract), flexibility in the use of services and in the choice of space (Gibson & Lizieri, 1999). Until the 1990s, leases for longer than 25 years were relatively normal; currently, long-term leases are risky because of uncertain and volatile economic circumstances (Ketting, 2014; Laterveer, 2011). In addition to flexibility, other trends in the labor market has influences the use of office space, such as the increasing number of self-employed workers, growth in the use of technologies and a decreasing amount of workspace allocated to individuals (Green, 2014; De Vries & Van de Besselaar, 2013; Barber, Laing, & Simeone, 2005,). New ways of working, new generations and new lifestyles bring new office space needs (van Meel & Vos, 2001), such as different space needs (surfaces, layouts, spaces, etc.), contracts (for a day, a month, a year, etc.) and services (catering, ICT, administration, etc.) (Ketting, 2014; Laterveer, 2011; Calder & Courtney, 1992). The changing demands of office space usage have led to the growth of a new type of property, namely: the multi-tenant office (Peltier, 1992).

According to Weij-Perrée and Appel-Meulenbrok (2015), the definition of a multi-tenant office is a building in which office space and possibly a number of shared facilities and/or services are offered to multiple organizations. The competitive advantages of this, when compared to single-tenant offices, are the benefits of sharing facilities and services, creating cost-savings and knowledge spillovers (Fuji, Clifton & Loudon, 2014). Multi-tenant offices hereby add value to organizations and their users (Hartog, 2015). Several studies (Weij-Perrée & Appel-Meulenbrok, 2015; Ketting, 2014; van den Berg & Strijnenbosch, 2009; Calder & Courtney, 1992) have analyzed the different types of multi-tenant offices. According to Weij-Perrée and Appel-Meulenbrok (2015), a distinction can be made between four types of multi-tenant offices: the regular business center, the serviced office, the coworking space and the incubator. Each of these types focus on a different part of the market, such as on the tenant type, atmosphere, services, spaces and the overarching goal (Weij-Perrée & Appel-Meulenbrok, 2015).

In the previous decade, a growing trend regarding coworking has become visible. This popularity is the result of “a shifting attitude towards work” (Sykes, 2014, p. 142). The 2008 crisis led people leaving the traditional workplace, as they were either forced to or chose to, and to starting businesses on their own. The “freelance economy” then arose (Fuji et al. 2014, pp. 4). Freelancers and self-employed workers were not able to find an appropriate workplace. Some workers became tired of the loneliness of working at home and the frontiers between private and professional lives became fuzzy or disappeared (Moriset, 2014). Other workers went to local cafes or libraries to work and were exhausted by the distractions they experienced there (Fuji et al., 2014). The rise of coworking spaces was a reaction to the absence of an appropriate workplace for this group of workers; it can be seen as a bottom-up solution (Merkel, 2015). Coworking spaces are creative and energetic places where people can interact, share, build and co-create (Fuji, 2015). According to the Global Coworking Survey by Deskmag (2015), an online magazine about the coworking phenomenon, there were 7,800 coworking spaces worldwide in 2015 in comparison with 310 in 2009, and the number of coworkers in 2015 was 510,000 in comparison with 43,000 in 2011. It is clear that coworking spaces have become a very popular type of multi-tenant office. "The growth of
coworking spaces has been 100% annually for the last seven years” (Green, 2014, pp. 53). In addition to distraction and loneliness, there are further reasons to use coworking spaces. For instance, financial benefits (save money by sharing space and services), economic benefits (increase sales or access to capital), environmental benefits (sharing recourses) and a wide range of positive social effects (increase social circle and build friendships) (Kwiatkowski & Buzynski, 2011). Deskmag (2015) found that coworkers value working in a coworking space due to casual small talk, sharing knowledge, enjoying other’s company and brainstorming with coworkers.

Coworking is often associated with freelancers and self-employed workers (Parinno, 2015). However, according to multiple surveys (Fuzi, 2015; Parinno, 2015; Merkel, 2015; Weijis-Perrée & Appel-Meulensbroek, 2015; Gandini, 2014; Fuzi et al. 2014; Sykes, 2014; Moriset, 2013; Spinuzzi, 2012; Leforestier, 2009), these coworkers are a more heterogeneous group than simply freelancers and self-employed workers. The following user groups can be distinguished from the literature: self-employed workers, freelancers, entrepreneurs, small firms, large firms, extended workers and students. However, many studies on coworking have not examined the coworkers in much detail. In the academic literature, coworkers are assigned to one of the abovementioned groups; however, the characteristics per user have not received much attention. Each user has other geographical characteristics (e.g., residential, city or village), demographic characteristics (e.g., age, gender, income and level of education), psychographic characteristics (e.g., interests, activities and values) and behavioral characteristics (e.g., brand loyalty, readiness to buy or degree of loyalty) (Kotler, 1994).

Multiple studies (Deskmag, 2015; Gandini, 2015; Sykes, 2014; Spinuzzi, 2012; Leforestier, 2009) wrote about basic subjects, such as what is coworking, who coworks and where does it happen. Coworking has been well covered by a variety of media, but has been almost completely ignored in the academic literature (Moriset, 2013; Merkel, 2014). There is relatively little critical understanding of coworking and its assumed effects, although there are certainly studies that focus on specific subjects. For instance, Parinno (2015) studied whether the physical co-presence of coworkers stimulates knowledge exchange. Parinno found that an organizational platform where coworkers can meet and ask questions is of more importance in the exchange of knowledge. Moriset (2013), which studied coworking spaces in relation to the creativity in the city, found that coworking spaces contributes a creative working environment within the city. Fuzi (2015) performed research on how to promote entrepreneurship in spare entrepreneurial environments and found that coworking spaces have to be combined with other concepts, such as incubators, to promote entrepreneurship.

Most of the relevant current academic research concerns the output and outcome of coworking. The focus in the current study is on the input of coworking. Input regards the resources used to create a product (new workplace concept); output concerns the conditions that are created through the input (increased knowledge sharing) and outcome is the resultant changes or benefits (increased innovation within the organization) (Van der Voordt et al., 2016). Despite the importance of coworking spaces in the current market of multi-tenant offices, too little attention has been paid to the characteristics (the input) of coworking spaces, in particular, user preferences for the characteristics of coworking spaces. Each user has different user characteristics and therefore probably different preferences regarding coworking space characteristics.

1.2 Research objective and research questions

The research objective of this study was derived from the description of the background (1.1). It is clear that user characteristics and the corresponding preferences of coworking space characteristics are an under examined subject. To complement the limited research on this subject, the preferences of users in coworking spaces will be examined. The research objective is therefore as follows:

To identify the user characteristics of the different users of coworking spaces and determine whether their preferences for coworking space characteristics differ on user characteristics.

The main question will be answered through several sub-questions on two topics. The first topic examines the subject of coworking and specifically coworking space characteristics. The second topic includes a study on user characteristics. According to the abovementioned research objective, the following research question was formulated:

Can different user groups be identified based on their preferences for coworking space characteristics and do they differ on user characteristics?
To be able to answer this research question, the following sub-questions must be answered:

- What are the typical characteristics of coworking spaces?
- Which types of users can be identified in coworking spaces and with which characteristics can they be described?
- What are the user characteristics of coworkers in general?
- What are the user preferences for coworking space characteristics?
- Can different user groups be identified based on their preferences?
- What are the differences between these user groups based on user characteristics?

Figure 1.1 shows the preliminary conceptual model examined in this study. The independent factor (user characteristics) influences the dependent factor (user preferences for coworking space characteristics).

![Figure 1.1: Preliminary conceptual model](image)

### 1.3 Practical relevance

This study provides further insight into the relation between user characteristics and their preferences for coworking space characteristics. This study is relevant for providers, developers and users of coworking spaces.

By understanding the preferences of the tenants/coworkers, coworking spaces can be developed more effectively because providers and developers can respond to the needs of the user. The work environment can be adjusted to the user preferences resulting from the research. This investigation is also relevant for providers and developer because the different user characteristics of coworkers are revealed. In this manner, it becomes clear who actually use these types of multi-tenant offices. Eventually it becomes clear if the preferred characteristics of coworking spaces differ on user characteristics. An example of this is that self-employed workers might have a preference according an open layout with an industrial atmosphere, while employees of a firm attach value to a closed layout with a modern atmosphere. In this way, providers and developers will be able to focus on a specific group with certain preferences.

Secondly, this research is of interest to current and future users of coworking spaces. It gives insight in the present variants and the characteristics of coworking spaces. Multiple coworking spaces in the Netherlands will be analyzed and corresponding characteristics come across. This study provides also an overview of the users’ motivations to work in a coworking space. In this manner, future users know what the intentions are of current users in order to see if corresponds to their own intentions.

### 1.4 Theoretical relevance

This study offers important theoretical insights into coworking and coworking spaces. First of all, the concept of coworking has received a large amount of attention from various media, but has been almost completely ignored by the academic literature (Merkel, 2014; Moriset, 2013). By means of this investigation, scientific knowledge in the area of coworking will be expanded by means of detailing user characteristics and user preferences. To date, very little attention has been paid to the characteristics of coworking spaces. Since coworking is a relatively new type of multi-tenant office, no previous research has been performed into the input (characteristics) of coworking spaces. While this is the case with single-tenant offices and other types of multi-tenant offices. Furthermore, coworking is mostly associated with freelancers and self-employed workers (Parinno, 2015), this research also examines if there more user groups can be identified. Each user group contains a great variety of users with a different set of user characteristics, and no previous study has defined these characteristics. However, the distinctive value of this investigation comes through answering whether user groups can be identified based on their preferences regarding the characteristics of coworking spaces and if these user groups differ on user characteristics.

### 1.5 Research design draft

The chapter regarding coworking and user characteristics will be composed based on a literature review. The quantitative analysis will reveal which user groups make use of coworking spaces and what their preferences are for coworking space characteristics. To achieve the most representative picture, coworkers from different locations and different coworking providers will be surveyed by the use of an online questionnaire. The coworking spaces in the Netherlands will be selected from multiple websites. A part of the total population of coworkers will form the sample of this research, the so-called
sample-based research (Baarda & De Goede, 2006). The research unit in this study is ‘the user of a coworking space’. In the coworking spaces, the coworkers (respondents) will be selected. Everyone who is present in a coworking space is seen as a user of a coworking space and is covered by the research unit. Data will be collected through the use of survey questions and an attribute based stated choice method. The data will be analyzed by several descriptive analysis methods, a multinomial logit model, a latent class logit model, chi-square tests and independent samples T-tests.

The data for the ‘user characteristics’ factor will be collected through survey questions. Questions will be asked about geographic, demographic and psychographic characteristics to identify the user. Behavioral characteristics will not be included in the questionnaire because it is mainly focused on actual customer behavior towards a product, such as brand loyalty, readiness to buy and degree of loyalty than on the user. The data for the ‘user preferences of coworking space characteristics’ factor will be collected through the use of a stated preference method. This method attempts to use discrete choices (A over B; B over A and C) in order to infer positions of the items (A, B and C) (Louviere, Hensher & Swait, 2000). The respondents must make discrete choices concerning the different coworking spaces A, B and C, in order to decide which characteristics they prefer.

To analyze the user characteristics of coworkers, multiple descriptive analysis methods will be used. To define the user preferences for coworking spaces characteristics, a multinomial logit model will be estimated. Different groups of coworkers will be identified based on preferred coworking space characteristics, by estimating a latent class logit model. In this model, a number of classes will be estimated based on matching user preferences. The classes will be characterized by using chi-square tests and independent samples T-tests, which determines the difference between the estimated user groups (classes) based on user characteristics.

1.6 Research approach and outline

This section introduces the subject of this study and explains how the research will be performed throughout this thesis. In the following chapter, a literature review is performed. The subject of coworking (dependent factor) will initially be addressed, as this will form the framework for the subject of user characteristics (independent factor). In the first part of chapter 2, the characteristics of a coworking space will be described and the first sub-question, “What are the typical characteristics of coworking spaces?” will be answered. Chapter 2 will describe which user groups can be identified in coworking spaces and how to analyze their user characteristics. This chapter will also provide an answer to the second sub-question, “Which types of users can be identified in coworking spaces and with which characteristics can they be described?” In chapter 3, the research design will be clarified. The methodology of the data collection and data analysis will be explained in further detail. The operationalization of the variables, as well as the reliability and validity of this study, will also be presented in chapter 3. The data are described in chapter 4, where the independent variables are analyzed. In this chapter, the third sub-question “What are the user characteristics of coworkers in general?” will be answered. The data analysis forms the central topic in chapter 5; the data are here analyzed using multiple methods. The sub-questions “What are the user preferences for coworking space characteristics?”, “Can different user groups be identified based on their preferences?” and “What are the differences between these user groups based on user characteristics?” will be answered in this chapter. Finally, in chapter 6, the conclusions of this study will be drawn. The research question “Can different user groups be identified based on their preferences for coworking space characteristics?” will be answered, and multiple recommendations will be given. Figure 1.2 shows the structure of this thesis, showing the chapters and corresponding sub-questions.

![Outline](image)

Figure 1.2: Outline of the chapters and corresponding research questions
Chapter 2: Literature Review

The research questions addressed by literature review are as follows: “What are the typical characteristics of coworking spaces?” and “Which types of user can be identified in coworking spaces and with which characteristics can they be described?”

To create a clear view of what coworking spaces are, the market of multi-tenant offices will first be introduced in section 2.1. What is the definition of a multi-tenant office? How did they arise? And which types can be distinguished? In section 2.2, the main topic of this investigation will be introduced. The basic principles of coworking will be discussed, such as, what is coworking? How did it emerge? How can it be defined? Section 2.3 takes account of the five core-values of coworking on which the coworking phenomenon is based. In section 2.4, the motivations of coworking are highlighted. The typical characteristics of coworking spaces are presented in section 2.5.

Coworking is often associated with freelancers and self-employed workers (Parinno, 2015). However, according to multiple surveys, the number of user groups is larger. Each user group contains a great variety of users with different sets of user characteristics. In this chapter, also a literature review of user characteristics will be carried out. An introduction in market segmentation and user characteristics is given in section 2.6. The different user groups found in coworking spaces are identified in section 2.7. Finally, in section 2.8, the conclusions of the literature review are given and both sub-questions addressed in this chapter will be answered.

2.1 The multi-tenant office market

“A multi-tenant office is a building in which spaces and some common facilities and/or services are offered to multiple organizations” (Weijs-Perrée & Appel-Meulenbroek, 2015, p. 23). The emergence of multi-tenant offices was initiated in the late 1960s, in response to an increasing demand for office space with secretarial and telephony services (Peltier, 1992). In the 1980s, many office buildings were built in response to easily available funding. Real estate was a popular investment product by then. Landlords offered lucrative deals to providers of multi-tenant offices (for example, HQ Business Centers and OfficePLUS, Regus originated in the early 1990s) in the form of rent-free periods or free interior design. Landlords offered incentives to entice multi-tenant office providers to locate themselves in their buildings, multi-tenant offices were seen as a profitable business. The market multiplied as a result (Peltier, 1992). In the mid-1980s, few centers were built due to a turnaround in the economy. The oversupply of multi-tenant offices decreased (Peltier, 1992). At the end of the 1980s, the rental market for multi-tenant offices collapsed due to the saving and loan crisis and the real estate crisis, as tenants cancelled or did not renew their lease contracts (Peltier, 1992). A substantial growth in self-employed workers and small businesses, due to a changing labor market, resulted in the early 1990s to an increased demand for office space in multi-tenant offices (Calder & Courtney, 1992). A series of mergers between providers ensured that a number of major providers arose in the market of multi-tenant offices (Peltier, 1992). Providers and owners attempted to differentiate themselves, as a result of a larger competitive market, by offering other services and facilities to attract a specific group of tenants. For example, by offering a service package in prime locations that attracted larger organizations. Providers entered a specific market. According to Ketting (2014) the two archetypal multi-tenant offices have historically been the serviced office and the incubator. Both of these types emerged from different philosophies. The purpose of an incubator is to help startup companies to mature. The incubator find its origins due to the forced resignations of employees of industrial enterprises which started on their own (Ketting, 2014). The purpose of a serviced office is to offer flexibility in services, space and lease duration. Serviced office spaces originated in taking care of tenants by offering multiple services (Somsen, 2002; Ketting, 2014).

The rise of multi-tenant offices was a result of companies becoming aware of the rapidly evolving, changing and volatile markets (Somsen, 2002). Working environments need to be adaptable, since businesses require flexibility, such as flexibility in the duration of the lease, flexibility in the use of services and flexibility in the choice of space (Gibson & Lizieri, 1999). In addition to flexibility and the increasing number of self-employed workers, other trends in the labor market, such as growth in the use of technologies and a decreasing amount of workspace allocated to individuals, influenced the use of office space (De Vries & van de Besselaar, 2013; Barber, Laing, & Simeone, 2005; Green, 2014). Each organization sooner or later needs a workspace and prefers it flexible manner. Multi-tenant offices provide that kind of flexible space (Calder & Courtney, 1992). Furthermore, municipalities have increased their focus on facilitating low-cost office space in multi-tenant offices. In this way, businesses have easier access to accommodation, which has positive effects on the economy (Mensen & van Rijt-Veltman, 2005).

By outsourcing real estate management, organizations became flexible and able to anticipate the volatile markets (Somsen, 2002). Corporate real estate was considered as a non-core business by most of the organizations. Organizations had to focus on the fields in which distinctive value could be achieved, and outsource the ones in which they do not have a
competitive advantage (Peltier, 1992; Laterveer, 2011; McAllistar, 2002). Furthermore, outsourcing leads to cost savings (reducing capital investments and operational costs) and spreads risk. Providers saw opportunities here and started to ‘bundle’ space and services (McAllistar, 2002). In this way, the multi-tenant office type of serviced office space arose. A long rental period provided a steady flow of income for the landlord, a lease period of longer than 25 years was the standard in the 1970s and 1980s. It appeared to be inflexible to meet the demands of a more volatile economic environment (Hamilton, Lim & McCluskey, 2005). Long-term contracts provided a weak relationship between tenants and landlords, because there were limited incentives to improve the offered quality and services. The landlord treated the building purely as a financial product. Providers of multi-tenant offices, in contrast to single-tenant offices, ensured the quality and services of the management of the real estate. A tailored product, adjusted to the demands of the tenant, ensured a good relationship between landlord and tenant (Ketting, 2014; McAllistar, 2002). In a multi-tenant office, the occupier took no responsibility for the property and took advantages of a fully-serviced office (Gibson and Liziéri, 1999).

The benefit for the landlord of a multi-tenant office, compared to a single-tenant office, is that when a tenant fails to pay their rent, (e.g., after bankruptcy), it is a less severe circumstance than in a single-tenant building. In a multi-tenant office, this reduction in income of lease can be buffered by the other remaining tenants. In a single-tenant office, the sole tenant disappears, which is very detrimental to the landlord.

Types of multi-tenant offices
Several studies (Weijs-Perrée, Appel-Meulenbroek, De Vries, & Romme, 2016; Ketting, 2014; Van den Berg & Stijnenbosch, 2009; Calder & Courtney, 1992) have analyzed the multi-tenant office market. Each study assigned a definition to the concept of multi-tenant offices and identified the different types of multi-tenant offices, each in a different manner. Weijs-Perrée et. al (2016) analyzed the types of multi-tenant offices, which were identified in the previous literature, and assessed whether the existing types varied in certain characteristics (objectives, business models, leases, tenants, facilities/services, spaces, building type and capacity). The classification and definition by Weijs-Perrée et. al (2016) were based on previous relevant research. The different types of multi-tenant offices are as follows:

- Regular business center;
- Serviced office;
- Incubator; and
- Coworking space.

Regular business center
According to Weijs-Perrée and Appel-Meulenbroek (2015), the specific purpose of the regular business center is to provide office space with a low service level. Calder and Courtney (1992) were the first to study the market of multi-tenant offices, at that time a relatively new property industry. “Business centers include all types of commercial property which offer small units on flexible letting terms” (Calder & Courtney, 1992, p. 2). Regular business centers are primarily aimed at providing office space and in addition services such as cleaning, maintenance and security (Weijs-Perrée & Appel-Meulenbroek, 2015). Compared to the other types, the regular business center has no overarching theme. This makes the regular business center the plainest type of multi-tenant office, with the focus on providing office space. According to Weijs-Perrée and Appel-Meulenbroek (2015) the regular business center has no specific target group of tenants and offer leases for longer time periods (e.g. two to five years).

Serviced office
Serviced offices offer flexible office space, business services, catering, facility management and different forms of technology (Weijs-Perrée & Appel-Meulenbroek, 2015; McAllistar, 2002). The tenants receive a fully working and equipped work environment with several services to carry on their business (Price & Spicer, 2002). There is no traditional relationship between the landlord and the occupier; the relationship rather focuses on the service than on the lease of space (Price & Spicer, 2002). Flexible accommodation is desirable in a highly volatile market. Flexibility is the most important asset of serviced office space, since organizations must be more agile in their production of goods and services. Providers develop a real estate product that responds to this demand for flexibility (McAllistar, 2002). According to Somsen (2002), flexibility in serviced office space is seen in three main aspects. First, the flexibility in provided services. In the serviced office, there is a standard set of services such as cleaning, reception services, telephone answering and utilities (Gibson & Liziéri, 1999). There are also additional services, which are based on the ‘pay what you use’ principle. For example, printing or mail services, for which extra costs are charged. The second aspect of flexibility is the flexibility of space. Organizations rent space depending on their demand. In times when the organization must deliver fewer services or products, the amount of office space can be scaled down. The final aspect is the duration of the lease. This is based on the ‘plug and play’ principle, which refers to the simple occupation of office space. Businesses can rent space on a daily, weekly, monthly or yearly basis. Trends in the market have changed lease periods (Ketting, 2014). Long term contracts are not in line with the flexibility needs of organizations. The users of serviced offices are small and medium-sized organizations and teams who use this
space as an extension of their core offices (McAllistar, 2002). The group of users is larger, according to Laterveer (2011) and Price and Spicer (2002). Self-employed workers, startups, virtual workers, staff overflow and new product development teams also use these spaces. Serviced office space is often the core office for smaller and starting organizations. Serviced office space is for larger organizations often an additional office to their core portfolio where employees can have meetings with external parties or for instance a creative sparring session (Gibson & Lizieri, 1999).

**Incubator**

As reported by Lesáková (2012), the goal of an incubator is to stimulate the development of new businesses within the local economy. Another common term for an incubator is a breeding place. The incubator is an Anglo-Saxon invention that focuses on developing startups under supervision, by offering advice services, to stimulate the local economy (Lesáková, 2012). The two main benefits for the city are new jobs and the additional revenue generated by the activities. Both elements can revitalize local economies (Weijs-Perrée et al., 2016; Lesáková, 2012). Moreover, incubators stimulate knowledge exchange in the region. Business incubators help startups by offering marketing assistance, access to capital, networking activities, advisory boards and much more. Incubators attempt to fill the gap that startups are unable to because of a lack of network, knowledge and capital. When startups are ready to ‘fly out,’ the startup leaves the incubation program and new ones are allowed in (Fuzi, 2015; Lesáková, 2012; Berg & Strijnenbosch, 2009). The matured startup also leave the incubator (the multi-tenant office). The target group of incubators are the kind of startups that have an innovative idea but are missing a concrete business plan to bring the product to market. Startups can join an incubator program that will ensure that the product can be brought to market (Hartog, 2015). Most of the incubators are public initiatives (Lesáková, 2012).

**Coworking space**

A coworking space is a type of multi-tenant office that focuses on creating a community among the tenants instead of providing office space (Weijs-Perrée et al., 2016; Hillman, 2011). According to Moriset (2014), the coworking office emerged for workers who could not find an appropriate workplace. Users became tired of the distraction and loneliness of working at home or at the local cafe (Fuzi et al., 2014). The most common user groups in coworking spaces are self-employed workers, entrepreneurs and freelancers. Coworking spaces are energetic and creative offices where people can interact, share, build and co-create (Fuzi, 2015). Coworking emerged in 2005 in San Francisco, and during the aftermath of the financial crisis of 2008, the amount of coworking space increased worldwide (Spinuzzi, 2012; Merkel, 2015). The ongoing rise of coworking spaces reflects the popularity of this type of multi-tenant office and is therefore an interesting research topic (Sykes, 2014). In the next section, the concept of coworking and the coworking space will be explained in further detail.

### 2.2 The emerging phenomenon of coworking

As reported by Bizzarri (2014), the economy is moving from an industrial economy to a knowledge economy, with digitalization and Information Technology as keywords. Fuzi, Clifton and Loudon (2014) went a step further by stating that we are moving away from a knowledge economy and are moving towards a creative economy. In the creative economy, innovation, technology and creative ideas are important values. "Creativity is increasingly seen as a new ‘Holy Grail’ in the economic world" (Fuzi et al., 2014, pp. 1). Coworking spaces are seen as workspaces that encourage and stimulate collaboration and serendipitous encounters with coworkers, boosting creativity and innovation (Fuzi et al., 2014). Sykes (2014) mentioned that coworking signposts a shifting attitude towards work focused on collaboration and fun. This paradigm shift regarding work has been caused by the redefinition of work. The new model of work centers on the context of collaborative work and a shared economy (Gandini, 2014; Merkel, 2015).

Throughout this study, the term ‘coworker’ will be used to refer to the user of coworking spaces. ‘Coworking’ will refer to the task/activity/work carried out in the coworking space by the coworker. There are two ways to write coworker, with or without a hyphen. Coworker is often misspelled in the academic literature and in various online blogs. Coworker spelled without the hyphen refers to the worker who works individually in a shared community-driven workplace. Co-worker spelled with a hyphen refers to the worker with whom one works on a particular project (Gandini, 2014). It is also important that coworking and coworking spaces not be confused. Therefore, these two concepts will now be explained.

It is difficult to define coworking using spatial and organizational characteristics (Parinno, 2015). According to Deskmag (2012), the online magazine about coworking, one definition of coworking sounds illusive. Coworking is a clustering of multiple words. According to Merkel (2015), the ‘co’ in ‘coworking’ refers to an aggregation of the words communication, community and collaboration. In order to create a clear view of what this entails, it is important to note the variety of definitions used by the following authors when discussing coworking:
Janet Merkel (2015, pp. 121): “A new form of urban social infrastructure enabling contacts and collaborations between people, ideas and connecting places” and “working alongside one another” (pp. 122);
Deskmag (2012, pp. 3): “Coworking is a self-directed, collaborative and flexible work style that is based on mutual trust and the sharing of common objectives and values between members”;
Döring (2010, pp. 19): “Coworking is a combination of working independently and interacting with others. Users of coworking spaces can decide where, when, how often and how long they work.”

The definition provided by Deskmag (2012) is the most accurate definition of the four. Deskmag made several long-term studies regarding the concept of coworking and analyzed the previous literature to establish this definition. Deskmag is by far the most popular website on this topic, and most of the academic studies on coworking refer to it.

Coworking spaces are of different sizes and have various characteristics; however, as unique as they are, they all have common characteristics. In an article from Deskmag written by Nina Pohler (2011), it was argued that every (co)worker has certain ideas about the concept of a coworking space. The imagination of this concept is a little vague and different for each (co)worker. For that reason, there is a discrepancy between the multiple definitions of a coworking space:

• Bruno Moriset (2013, pp. 1): “Coworking spaces (CS) are regarded as “serendipity accelerators,” designed to host creative people and entrepreneurs who endeavor to break isolation and to find a convivial environment that favors meetings and collaboration.”
• Alessandro Gandini (2014, pp. 194): “Coworking spaces are shared workplaces utilized by different sorts of knowledge professionals, mostly freelancers, working in various degrees of specialization in the vast domain of the knowledge industry.”
• Clay Spinuzzi (2012): A coworking space is a workspace for the community, where people can sit down and collaborate with each other. It is a low-cost workspace and easily accessible, containing shared knowledge from different business backgrounds that can contribute to the own business.
• Deskmag (2012, pp. 3): “Coworking spaces are shared workplaces that are used by various independent individuals as their place of business.”

The definition provided by Spinuzzi (2012) is the most accurate definition, because important characteristics of coworking spaces are mentioned, including community, collaboration and accessibility. These characteristics are reflected in the five core-values drafted by Kwiatkowski and Buczynski (2011), which will be presented in the next section.

Brad Neuberg, the initiator of the coworking movement, started a coworking space in 2005 in San Francisco. The first coworking space was the Hat Factory San Francisco at Spiral Muze, which was a healing and relaxation center (Spinuzzi, 2012; Merkel, 2015). This was meant to be a physical space where independent and mobile workers would come together (The coworking wiki, 2013). Brad Neuberg started this space because he wanted to work by himself, but in the middle of a community. His thoughts were that he wanted to work in a place like Google, but not for Google. A coworking space must be a replication of a ‘cool company.’ According to Neuberg, this involves having a shared context. Neuberg said the following thing about this shared context: “I go to bars and I see lots of people standing around but no one talks to each other. When I go to a house party and lots of people are standing around, everyone talks to each other, because there is a shared context. How to get that shared group identity without being in the same company?” (Deskmag, 2005). This quote describes the genesis of a coworking space. In the years after the emergence of coworking, the coworking movement spread over the United States of America (USA). During the aftermath of the financial crisis of 2008, the number of coworking spaces quickly increased (Merkel, 2015). According to Moriset (2013), the growth of coworking spaces may have been fueled by the bursting of the property bubble in North America and Europe, resulting in an economic downturn. In Spain, where the bursting of the property bubble was almost the worst in the world, now has the second highest number of coworking spaces in Europe. The USA and Europa are currently the main continents using coworking (Deskmag, 2013). This increase was a reaction against the anti-social environment of other types of multi-tenant offices (Merkel, 2015). Self-employed workers and freelancers do not have a connection with the other tenants (small and large firms). Coworking spaces responded to the needs of these user groups. Deskmag presents an annual survey regarding coworking, in which a broad perspective is examined. The ongoing worldwide rise of coworking spaces is reflected in the current study. At the beginning of 2009, just after the financial crisis, coworking spaces numbered approximately 3,010. In 2015, this number had increased to almost 7,800. The forecast published in 2014 by Deskmag stated that the number of coworking spaces worldwide will be approximately 37,000 by the end of 2018. The number of coworkers will also increase from 510,000 in 2015 to 2,370,000 in 2018 (Deskmag, 2014; Deskmag, 2015)
2.3 The five core-values of coworking

In this section, the five core-values of coworking, as described by Kwiatkowski and Buczynski (2011), are presented. These core-values reflect the coworking philosophy and are considered to be the cradle of the coworking phenomenon. According to Kwiatkowski and Buczynski, these values are purposefully vague and open to individual interpretation. In this way, coworking space providers and coworking hosts can attract the sort of coworkers who are dedicated to similar values, who then build a solid foundation for the coworking community. The five core-values of coworking are as follows:

- **Collaboration**: the willingness to cooperate with others to create shared value;
- **Openness**: free sharing of ideas, information and people;
- **Community**: a group with a shared purpose and shared thoughts about coworking;
- **Accessibility**: coworking spaces are accessible, both socially and economically, for every type of worker; and
- **Sustainability**: resources are used together, which brings economical and ecological benefits

**Collaboration and openness**

According to Hillman (2011), the core-value openness can be combined with the core-value collaboration. Openness is a less outspoken core-value as collaboration, but has a lot in common. Rohif (2011) stated that the more members are open to each, the more opportunities to give and to benefit from each other. Coworking spaces provide the possibility for collaboration with coworkers. According to Spinuzzi (2012), collaboration is a common result of the interaction that naturally occurs. Collaboration involves proposals, evaluations, questions and engaged actions (Appel-Meulenbroek, 2014). According to Hillman (2011), a coworking space can be typified as a ‘high contact’ environment, where serendipitous meetings often happen. Spontaneous interaction with partners from different business activities is a meaningful principle. Physical proximity will not automatically lead to a meeting, collaboration or partnership. Therefore, coworking hosts are called upon to create encounters, interaction, collaboration and mutual trust (Merkel, 2015; Merkel, 2015; Moriset, 2013).

The task of the coworking host is to develop a space that stimulates interaction between coworkers. Throughout the interviews with coworking hosts, performed by Merkel (2015), it could be seen that these hosts were willing to create a homey atmosphere and a diversity of work options. Coworkers need encouragement to come to work every day. Merkel (2015) also studied the role of the coworking host, usually the owners or the operators, in their collaboration, interaction, creativity and productivity amongst coworkers. “The host’s activities of curatorial practice can be summarized as assembling and arranging (people, spaces, objects), creating and signifying new meanings (collaborations, community, sustainability, openness and accessibility), reframing (work differently), caring (enabling community) and exhibiting (the work space and its community), all in order to create new work-related and social experiences in the city” (Merkel, 2015, pp.131). According to Merkel, there are two types of coworking hosts: ‘the service provider’ and the ‘visionary.’ The service provider focuses on the work aspect regarding the working environment, the visionary focuses on the ‘co’ aspects of coworking, as mentioned in the previous section. According to Fuzi (2015), the coworking host plays an important role in creating different modes of engagement that stimulate interaction, networking and collaboration. Collaboration in the form of knowledge exchange between coworkers can be stimulated by an organizational platform where coworkers can meet other coworkers and ask particular questions (Parinno, 2015).

According to Parinno (2015), the physical co-presence of coworkers stimulates knowledge exchange. However, as mentioned above, a physical presence alone is insufficient. “The physical proximity cannot produce its desired effects if it is not complemented by a certain degree of social and/or professional proximity” (Moriset, 2013, pp.8). Proximity in knowledge exchange is an important factor in coworking (Moriset, 2013). Appel-Meulenbroek (2014) argued that the layout of the building has a relationship with knowledge exchange. Important factors that ensure knowledge sharing are visibility, placement within the room, centrality and proximity in the building (Appel-Meulenbroek, 2014). The visibility mechanism, which concerns coworkers on the same floor, visible workplaces and compactness of the workplace, is able to increase collaboration. An open layout stimulates interaction between coworkers. The more open the space, the fewer boundaries for the community to collaborate (Hillman, 2011; Rohif, 2011).

Interaction is not always initiated from a professional point of view; the social aspects are just as important. Deij (2011) stated that having other entrepreneurs around appears to be more motivating. Support and professional feedback on business activities enhance the learning process of the individual entrepreneur and influences the human capital as well as the business possibilities. Support is available in the form of a mentorship, where a more knowledgeable person helps a less experienced worker. In this case, the mentor takes his/her protégé under his/her wing (Leforestier, 2009).

Working with coworkers in the same community leads to collaboration. For instance, a marketer requires help with the front-end development of a new website. A website developer in the coworking space desires to help the marketer, and in return the marketer will help the website developer in the marketing of his/her new company. A freelance journalist captures this conversation and approaches the same developer for a new website. According to Ferguson (2013), there exists a ‘pay it forward’ vibe present in coworking communities; it is a repeated loop of giving something and receiving something else in reverse. This happens in a natural context. It is sustainable as coworkers are not dependent on resources
outside the coworking space. The infrastructure, network and facilities are present within the coworking space. It is a type of self-sustaining environment (Ferguson, 2013).

In the case study presented by Deijl (2011), empirical research was carried out on the effect of economic growth. The study showed that the productivity of the coworkers increased, since they worked in a coworking space. “This could be due to the structure and external control this work space provides” (Deijl, 2011, pp.31). Coworking led to knowledge diffusion between coworkers, stimulated innovation and had a significant positive effect on the income of the coworker.

Community and sustainability

According to Hillman (2011), the core-value sustainability can be combined with the core-value community. In first attempt, sustainability is associated with the words ‘green’ and ‘ecological’ which reflect the classic thoughts about sustainability. A shared office is ecologically sustainable because resources are shared. Coworkers all use the electricity network, the furniture, coffee machine and various services such as reception and a mail service. The costs of renting space and additional services are relatively low, which is sustainable from an ecological and organizational perspective. But there is a lot more to sustainability. In a coworking space it is all about a sustain community. According to Ferguson (2013), “Sustainability in a coworking community is about supporting, nourishing, about ’buoying up’ our fellow coworkers.” Coworkers benefit from the presence of other coworkers. They become part of a larger community of like-minded individuals with whom they can share ideas and do business (Spinuzzi, 2012), and form contacts in different activities, different fields and disciplines of work. In contrast, coworkers must master every aspect of running a business, which is difficult. Coworkers must master accountancy, contracts, investment and so on. Often, this is not their core business and other coworkers can help which is sustainable form an organizational perspective (Kwiatkowski & Buczynski, 2011). The resources inside the ‘coworking system’ can be used. Spinuzzi (2012) gave an account of two types of relationships: those of temporary partnerships between businesses (good neighbors) and those of companies that complement each other’s shortcomings (good partners).

The most important theme in coworking is community. A coworking space offers a community consisting of different kinds of workers in different kinds of knowledge fields. Spinuzzi (2012) named coworking spaces community workspaces. The community has the distinctive character compared to other types of multi-tenant offices. For instance, incubators do not focus on the informal process of working together and do not stimulate collaboration, in contrast to coworking spaces (Leforster, 2009). The emphasis when working in regular business centers or serviced offices is not on the present community, but rather on the space and services provided (Weijst-Perrée et al, 2016). The space is a supportive value in the process of coworking, but is certainly not the focus. The community offers emotional and practical support for those who are cut off from these activities due to isolation in their home office or cafe. The people in the coworking space make the coworking space, the people build the community together. Hillman (2011) argued that the community (WE) is bigger than the person him or herself (ME). The main value of the community is that it is open to everyone and easily accessible. It concerns sharing experiences, learning new things, experimenting in new areas and celebrating each other’s successes. Coworkers value structure in their lives, as too much autonomy cripples the productivity (Moriset, 2013). The community helps coworkers create structures and discipline. This is confirmed in the study of Deijl (2011).

Accessibility

Hillman (2011) noted that a coworking space is quite remarkable. Each person present in the room is there because they chose to be there. Perhaps the workers of a corporate office do not like their work environment and prefer to be somewhere else. Coworkers choose for themselves where and when to work, and are surrounded by coworkers with similar thoughts. A coworker determines whether the community concerned is in line with their personal needs (Capdevila, 2013). In other words, it is accessible to everyone. Sykes (2014) and Deijl (2011) both mentioned that the attractiveness of coworking spaces is due to the reflected flexibility and mobility. The ‘plug and play’ principle is desirable for starting organizations; coworking spaces offer a low barrier to immediately commence working. The rent prices of coworking spaces are often low and the period is flexible; for instance, a day, a week or a month (Sykes, 2014). A large number of coworking space providers have coworking spaces at multiple locations. This gives the user the flexibility to choose where to work (Merkel, 2015; Fuzi, 2015; Spinuzzi, 2012; Deijl, 2011). According to Merkel (2015), joining a coworking space has financial advantages in contrast to renting a space. It is difficult for a starting organization or self-employed workers to rent office space at the beginning of their careers, as they lack the required capital and are not credit-quality rated for a long-term lease contract (Merkel, 2015; Green, 2014). In addition, rent within inner cities, where businesses want to locate themselves, are difficult to pay (high) and maintenance costs are high (Merkel, 2015). Bizzarri (2014) stated that economic reasons are the most important reasons for the rapid emergence of coworking. The low barrier of occupancy due to the rent level is decisive. Deskmag (2012) found that 47% of respondents stated that rent costs were the most important reason for coworking. In contrast, Capdevila (2013) argued that the main factors to consider joining were related to the location.
2.4 Motivations for coworking

The most cited reason for people to join coworking spaces is that working alone negatively influences their lives. “They are cut off from networking and trust-building opportunities, with limited access to infrastructure and without firm barriers between their personal and work lives” (Spinuzzi, 2012, pp. 402). According to Erler (2010), the virtualization of our personal lives, due to the rising knowledge economy, has caused a desire for more socialization. The increasing usage of mobile technology and attitude towards work has made it possible to work anywhere at any time; we have become digital nomads (Merkel, 2015; Green, 2014; Fuzi et al., 2014; Moriset, 2013; Spinuzzi, 2012). The increasing number of coworking spaces were a reaction to an appropriate workplace for lone eagles; it is a bottom-up solution (Merkel, 2015). Workers became tired of the loneliness of working at home or suffered from distraction in local cafes or libraries (Moriset, 2014; Fuzi et al., 2014; Fuzi, 2015). Green (2014) called this type of worker “the coffee shop entrepreneur”. Although it is likely that coworking spaces have emerged from cafes or other social settings, a recent study by Deskmag (2012) indicated that only 4% of the respondents previously worked from a café. It is perhaps more an expression. The majority of coworkers, approximately 60%, first worked at home before joining a collaborative space. Coworking spaces combine the best of both worlds, with elements of a café (social, energetic and creative) and elements of a workspace (productive and functional) (Orel, 2015). A form of professional isolation is built into the lives of these ‘lone eagles,’ because there is no form of collaboration and networking with other workers. According to Moriset (2013), they are in need of a so-called third place. Oldenburg (1989) mentioned three types of places for social surroundings, namely the home (first place), the workplace (second place) and the ‘anchors’ of a community such as cafes, clubs or parks (third place). According to Oldenburg, these ‘third places’ are important for civil society, democracy, civic engagement, and for establishing feelings of a sense of place. Fuzi (2015) argued that third places will replace the office at a certain moment. Workers who want to escape loneliness and boredom and who are in search of serendipity and potential interactions join one of these third places (Moriset, 2013). People lose the sense of community when they work from home; however, they gain independence. People lose freedom and autonomy when working in a traditional 9-to-5 corporate job; however, they gain a feeling of community and structure (Fuzi et al., 2014). Coworking spaces can be seen as third places regarding being anchors of a community. However, this depends on the contract that divides a second place from a third place. If someone is usually working in a coworking space, it then tends to be a workplace (second place).

There are several reasons and/or motivations regarding why workers join a coworking space. It is important to make a clear distinction between the different types of motivations. Multiple valued aspects of coworking are mentioned in the literature. “Social circles increase significantly, business networks grow, huge jumps in productivity are seen, health and private life factors improve, isolation decreases, and over one third of coworkers surveyed confirmed that their income increased since joining” (Deskmag, 2013, pp. 7). Reasons and/or motivations to join a coworking space are various in nature and can be expressed/labeled in three possible ways, namely input, output or outcome (Van de Voordt et al., 2016; Odhiambo, 2013). In the majority of the studies, input, output and outcome were used interchangeably, inviting confusion. Before continuing, it is important to make a clear distinction. This is important because the goal of this study regards the characteristics of coworking spaces, which can be considered as the input. In the enumeration presented below, the terms ‘input,’ ‘throughput,’ ‘output,’ ‘outcome’ and ‘impact’ will be clarified. In particular, the terms ‘input,’ ‘output’ and ‘outcome’ are of interest.

\[
\text{Input} \rightarrow \text{Throughput} \rightarrow \text{Output} \rightarrow \text{Outcome} \rightarrow \text{Impact} = \text{Added value}
\]

- **Input:** Which kind of resources are used \(\rightarrow\) Presented in section 2.5.
  - Examples: location, desk, chair.

- **Throughput:** Management of implementation

- **Output (first level of results):** What is produced through the resources in the short term; the results (tangible) \(\rightarrow\) Given in table 2.2.
  - Examples: vibrant and creative atmosphere, collaboration, networking.

- **Outcome (second level of results):** What is produced through the resources in the long term; the resultant changes or benefits (“Outcomes are the ultimate, possibly far-reaching results of outcomes” (Smith, 1995, pp. 202)). \(\rightarrow\) Given in table 2.3.
  - Examples: higher income, higher job satisfaction, increased stimulation.

- **Impact (third level of project results):** Long term or indirect effects of the activity (difficult to ascertain).
In the following three tables, the valued aspects of coworking space characteristics (table 2.1) and the motivations of coworking are expressed in output (table 2.2) and outcome (table 2.3). The multiple characteristics (input) and motivations (output and outcome) are derived from the literature. Most of the studies are descriptive studies and appoint the different forms of input, output and outcome but they do not use it as certain variables, like in this study. In this study the input characteristics will be used as a variable for the factor user preferences, and the output will provide variables for the factor user characteristics (motivations to work in a coworking space).

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<td>Ground accessibility (car, bike, PT)</td>
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<td>24 hour access</td>
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<td>Art shows</td>
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<table>
<thead>
<tr>
<th>Table 2.2: Output (motivations to attend a coworking space)</th>
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<tbody>
<tr>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>Feeling part of a community</td>
</tr>
<tr>
<td>Sharing ideas and knowledge with coworkers</td>
</tr>
<tr>
<td>Collaboration with coworkers</td>
</tr>
<tr>
<td>Interaction with coworkers</td>
</tr>
<tr>
<td>Professional support from coworkers</td>
</tr>
<tr>
<td>Vibrant and creative atmosphere</td>
</tr>
<tr>
<td>Access to broad network of possible partners</td>
</tr>
<tr>
<td>Affordable (low capital investment)</td>
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<tr>
<td>Professional meetings and encounters with coworkers</td>
</tr>
<tr>
<td>Emotional support from coworkers</td>
</tr>
<tr>
<td>Networking with coworkers</td>
</tr>
<tr>
<td>Sharing contacts of business partners with coworkers</td>
</tr>
<tr>
<td>Easy access to capital</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2.3: Outcome (motivations to attend a coworking space)</th>
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<tbody>
<tr>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>Increased social circle</td>
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<tr>
<td>Feeling less isolated, feeling an organizational structure</td>
</tr>
<tr>
<td>Increased innovation</td>
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<tr>
<td>Increased productivity (by higher job satisfaction)</td>
</tr>
<tr>
<td>Increased skill set</td>
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<tr>
<td>Higher income in long term (by increased productivity)</td>
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<tr>
<td>Increased stimulation of self-reflection and self-education</td>
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<tr>
<td>Getting a better work-life balance</td>
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<tr>
<td>Increased business network</td>
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<tr>
<td>Increased motivation</td>
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<tr>
<td>Higher job satisfaction (by flexibility of labour)</td>
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</tbody>
</table>
By means of these tables, the output and outcome of coworking spaces are presented. A certain input will cause a certain output; a certain output will cause a certain outcome. Concerning the output, the motivations ‘feeling part of a community,’ ‘sharing ideas and knowledge with coworkers’ and ‘collaboration with coworkers’ were commonly mentioned. Concerning the outcome, ‘increased social circle’, ‘feeling an organizational structure’, and ‘increased innovation’ were commonly mentioned as valued aspects.

2.5 Characteristics of coworking spaces

So far, a theoretical framework on the subjects coworking and coworking spaces is developed. The first sub-question is “What are the typical characteristics of coworking spaces?” The previous section showed the difference between input, output and outcome. In this study, the characteristics of coworking spaces are associated with input. Input concerns the physical characteristics (e.g., location, building and space) and non-physical characteristics (e.g., community and organizational platform). In order to answer the first sub-question, it is of importance to create a clear understanding of the characteristics of coworking spaces. In table 2.1, the valued characteristics of coworking spaces according to the literature were presented. This information is of importance when creating an overview of the typical characteristics of coworking spaces as no overview of these characteristics has thus far been presented.

Multiple studies (Rothe et al., 2011; Rovers, 2016; Leesman, 2013; Liebregts, 2013; Van Susante, 2014; Hartog, 2015) have examined preferred work environment characteristics. Several studies focused on single-tenant offices (Rothe et al., 2011; Leesman, 2013; Liebregts, 2013; Van Susante, 2014) and some on multi-tenant offices (Hartog, 2015; Rovers, 2016). However, research on preferred work environment characteristics in multi-tenant offices is still limited, especially in coworking spaces. Leesman (2015) surveyed over more than 1,200 workplaces and analyzed the responses of more than 140,000 employees. This database is known as the ‘Leesman database,’ and was used *inter alia* in the studies by Liebregts (2013) and Van Susante (2014). Liebregts and Van Susante both applied a factor analysis to the Leesman database to identify certain factors. Hartog (2015), who studied user satisfaction in multi-tenant offices, used the factor analysis by Van Susante and composed a table containing valued aspects of multi-tenant offices (*Appendix A*). Hartog divided the physical characteristics of multi-tenant offices into the following 10 characteristics:

- Location;
- Office exterior and division;
- Office décor;
- Facilities and services;
- Seclusion rooms;
- Office leisure;
- Flexibility;
- ICT and equipment;
- Privacy; and
- Office climate.

The list of characteristics of single-tenant offices was expanded to a list containing characteristics of multi-tenant offices. A shortcoming in the current study was that no distinctive variation was made to the valued aspects. Input, output and outcome are used interchangeably. In order to define an overview of the typical characteristics of coworking spaces, the valued characteristics of coworking spaces (table 2.1) and the list of characteristics of multi-tenant offices (*Appendix A*) were merged (table 2.4).

It is of importance to emphasize that the characteristics presented in table 2.4 are only the typical characteristics of coworking spaces; therefore, characteristics that truly define a coworking space. For instance, the characteristics of ‘security’ and ‘cleaning,’ which are covered by facilities and services, were not taken into account, because these characteristics do not differentiate a coworking space from another type of multi-tenant office. In addition, characteristics like ‘security’ and ‘cleaning,’ have the same character/capacity in every type of (multi-tenant) office and is therefore not included as a typical characteristic of a coworking space. However, multiple typical (multi-tenant) office characteristics (like ‘coffee and tea vending machine’, ‘reception and helpdesk’ and ‘collaborative spaces’) are nevertheless included in the overview of typical coworking space characteristics because these characteristics occur in a typical character/capacity. For instance, the place where the coffee and tea vending machine is located is a central spot where coworkers come together to collaborate. The reception and helpdesk is more explicitly present in coworking spaces and is, together with the coworking host, a binding factor between coworkers. The collaborative workspaces also occur in normal offices but in coworking spaces these are workspaces where separate workers (lone eagles) come together to co-work. Certain characteristics have another identity.
The characteristics location, office exterior and division, office décor and facilities and services are derived from Appendix A (Hartog, 2015). The characteristics collaboration and openness, community and sustainability and accessibility are derived from the study of Kwiatkowski and Buczynski (2011). The valued aspects (table 2.1) are subdivided over the corresponding characteristics. Now the typical coworking space characteristics are determined, the user groups and user characteristics will be examined in the following section.

### 2.6 Market segmentation and user characteristics

According to Goyat (2011), every company desires to focus on specific customers. To determine the groups on which to focus, segmentation of the consumer market is necessary. Market segmentation finds its origin in marketing, and is the first step in marketing strategy. The second phase is target marketing and the third phase is positioning the product (Kotler, 1994). According to Lin (2002), Smith (1956) was the first to introduce market segments. The markets are characterized by widely heterogeneous user characteristics, with widely spread customers. By dividing the market into smaller groups with distinct needs, characteristics or behaviors, it becomes viable to concentrate on specific user groups rather than on the entire market. Rothe et al. (2011) argued that it is incorrect to say that employees who work in an identical way also prefer identical work environment characteristics. The challenge is therefore to understand that different users are in need of a different work environment (Rothe et al., 2011). Organizations can adjust their marketing to particular users through the use of segmentation in order to provide a higher value that addresses the specific needs of a specific group. “The purpose of segmentation is to concentrate marketing and force on subdividing to gain a competitive advantage within the segment. It is analogous to the military principle of the concentration of force to overwhelm the enemy” (Goyat, 2011, pp. 1). Market segmentation also helps better understand a particular market and to develop an appropriate product for various segments (Guillet & Kucukusta, 2014).

There are two different ways of identifying different segments. According to Binge et al. (2008), researchers distinguish segmentation a priori and segmentation posteriori. The a priori segmentation is based on the segments of prior knowledge and the posteriori segmentation on a classification scheme founded on multiple attributes. Jansen (2009) mentioned these same two methods of coming to a concrete segmentation, but named them differently. Jansen described the top-down approach, in which specific criteria are used to segment the market. From coarse (market, country) to fine (characteristics of the consumer). Second, the bottom-up approach, in which consumer data are lumped together and analyzed in order to find similarities. In this way, consumers with similar needs together form a segment. The top-down method creates a priori classifications; important information may be incorrectly interpreted using this method (Jansen, 2009). The bottom-up method is the most accurate way of creating segments. In this thesis, both methods are used. In the next section, a priori segmentation is used to identify the different user groups within coworking spaces. Subsequently, the bottom-up method is used, by means of a latent class logit model, to create segments based on similarities in preferred coworking space characteristics. As there is a large amount of diversity in the markets, it is important that the customers are identified first.
According to Kotler (1994), marketers can apply geographic characteristics, demographic characteristics, psychographic characteristics and behavioral characteristics to segment consumer markets. Geographic, demographic and psychographic are related to the consumer characteristics. The behavioral characteristics are related to the consumer responses. In this master’s thesis, segmentation takes place based on the user preferences of coworking space characteristics. Coworkers with equal preferences will be grouped together. In order to describe these groups, the user characteristics are of particular interest. Therefore, the characteristics which are related to the consumer responses will not be included in further research. In order to determine the user characteristics of coworkers, the following characteristics will be examined:

- Geographic characteristics;
- Demographic characteristics; and
- Psychographic characteristics.

Moscardo et al. (2001) argued that geographic and demographic characteristics are associated with the *a priori* methodology. Psychographic characteristics are associated with the *posteriori* methodology. The characteristics which describe the consumer characteristics of the coworkers are divided into multiple variables, which now will be discussed.

**Geographic characteristics**

“Geographic segmentation calls for dividing the market into different geographical units such as nations, states, regions, countries, cities, or neighborhoods” (Kotler, 1994, pp. 148). In addition, geographic variables are also important to companies, the products of which rely on the climate, such as seasonal products (summer and winter gear). Geographic variables are necessary within this study to determine where a specific person lives. This method of segmentation is common when serving people in a particular area. The following geographic variables can be distinguished and are relevant to this investigation (Kotler, 1994; Moscardo et al., 2001; Goyat, 2011):

- Location of residence;
- Location of coworking space; and

**Demographic characteristics**

Demographic variables are required in order to determine who the customers are. Demographic characteristics are population characteristics. Demographic variables segment a market based on, for example, age, gender and income. Demographic segmentation is one of the most used forms of segmentation, because it illustrates a typical member of a group. The following demographic variables can be distinguished and are relevant to this investigation (Kotler, 1994; Moscardo et al., 2001, Goyat, 2011; Hartog, 2015; Rovers, 2016; Budie, 2016):

- Gender;
- Age;
- Nationality;
- Educational level;
- User group (different user groups according the literature are presented in the next section);
- Position in organization;
- Sector of organization;
- Level of income;
- Land of coworking space;
- Hours of working per week within the coworking space; and
- Transport to coworking space (e.g., car, public transport, bicycle).

**Psychographic characteristics**

Psychographic variables concern the lifestyles of consumers; their activities, interests and opinions. “Psychographic dimensions are the measurements of the consumer’s mind, which pinpoint how he or she thinks, feels, reacts and reflects” (Prasad & Arysari, 2010, pp.70). Psychographic characteristics are the not-so-visible characteristics; why certain users buy a product. The following psychographic variables can be distinguished and are relevant to this study (Kotler, 1994; Moscardo et al., 2001, Goyat, 2011):

- Motivations for working in a coworking space (are presented in table 2.2);
- Personality (e.g. introvert, extrovert); and
- Benefits (the benefits users are seeking in a particular product).
2.7 User groups in coworking spaces

The genesis of multi-tenant offices clearly shows that several types of multi-tenant offices emerged due to the differentiation of a specific user group (Ketting, 2014). For instance, regular business centers evolved as a reaction to the organizations that were in need of secretarial and telephony services (Peltier, 1992). Subsequently, serviced office spaces reacted to organizations that required different kinds of services and shared resources (Peltier, 1992). Incubators evolved as a reaction to startups that were in need of assistance in non-core fields. Coworking spaces originated in response to ‘lone eagles,’ who needed a third place to work due to boredom and isolation (Moriset, 2013). A difference exists in the needs of users of various types of multi-tenant offices. Each type responds to the specific needs and characteristics of the particular user.

Throughout the related literature, it became apparent that the users of coworking spaces are typified as a heterogeneous group (Spinuzzi, 2012; De Vries & van de Besselaar, 2013). Coworkers have overlapping concerns, and different workers require different kinds of spaces and different kinds of support. Contradictions exist regarding the needs for the characteristics of the space, both physical and non-physical (Spinuzzi, 2012). In this study, the relation between the user characteristics and the user preferences is examined. The geographic, demographic and psychographic characteristics of the coworkers will describe the user characteristics of the coworkers. In the relevant academic literature, the coworkers are assigned to specific user groups (see table 2.5) but are not described in much detail like this study will do. In order to draw a picture of the user groups in coworking, an overview is presented in table 2.5.

Table 2.5: User groups of coworkers according to the relevant literature

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<tbody>
<tr>
<td>Freelancers</td>
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<td>16</td>
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<tr>
<td>Entrepreneurs</td>
<td>x</td>
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<td>x</td>
<td>x</td>
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<tr>
<td>Self-employed workers</td>
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<td>Small firms</td>
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<td>Extended workers</td>
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<td>Large firms</td>
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<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
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<td>3</td>
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<tr>
<td>Students</td>
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</table>

The most common user groups are the self-employed workers, entrepreneurs and freelancers. Little attention has been paid to the user characteristics of these user groups. The study by Deijl (2011), which performed empirical research among 85 coworkers, focused on how coworking affects economic growth; however, it was quite limited in terms of geographical, demographical and psychographic user characteristics. In the majority of the studies, users were compartmentalized into boxes. User groups were nominally approached; they belonged to one or another user group, but not to several. For example, a user is a freelancer or a self-employed worker, but not both. Detailed information regarding the user groups in coworking spaces is currently missing in the literature.

Most of the authors affirmed that self-employed workers, freelancers and entrepreneurs are the main users of coworking spaces. The difference between a self-employed worker and a freelancer is largely the connotation. The term ‘self-employed worker’ (zelfstandige in Dutch) covers a larger number of forms and types of businesses than freelancers. The group of self-employed workers contains professional groups who are not associated with freelancers, such as independent lawyers and accountants. The creative sector is often attributed to freelancers. Freelancers more often work in sectors such as journalism, communication and design, and less in sectors such as construction, transport or healthcare. This is similar to entrepreneurs, although this definition is a little clearer. For an entrepreneur, this concerns the business itself. This may include several projects in various sectors. An entrepreneur is an entrepreneurial business owner.

Small and large firms are also mentioned as users of coworking spaces. An increasing number of organizations incorporate coworking into their business strategy to deal with strategic and management needs. For example, a research team or an individual extended worker can be situated outside their headquarters to become more productive and innovative (Parinno, 2015; Capdevila, 2013; Spinuzzi, 2012). In contrast, coworking spaces attract employees who demand a flexible workspace and work at flexible times (Spreitzer et al., 2015). Furthermore, corporate organizations are applying coworking space concepts in their own offices. In this way, organizations create an innovative and productive work environment between their own walls.

Deijl (2011) reported that students also make use of coworking spaces. They go to coworking spaces to study and work on their school assignments. This study is based on the concept of Seats2Meet, a Dutch coworking space provider. At Seats2Meet, no rent must be paid (economic capital); rather, lease of the working space is charged in social capital.
(knowledge). Users rent a workplace, and in exchange users must be open to the possibility of knowledge exchange. For that reason, Seats2Meet has low barriers for students, and they can also pay with social capital.

Spinuzzi (2012) studied nine coworking spaces in Austin, Texas, and interviewed coworkers and coworking operators to accurately define coworking. In Spinuzzi’s study, coworking is analyzed from a variety of perspectives, namely objects, actors, outcomes and contradictions in coworking. Throughout the study, it was observed that coworkers are a heterogeneous group of workers (Spinuzzi, 2012; De Vries & van de Besselaar, 2013). In contrast to other studies, Spinuzzi (2012) distinguished two main types of user groups. Table 2.5 shows that Spinuzzi acknowledged the different user groups; however, regarding object, actors, outcomes and contradictions, the types of users were reduced to two groups, namely good neighbors and good partners.

The good neighbors see parallel work as an outcome. These coworkers are searching for a professional space in which they can meet clients. Most of the time, these are small-business owners and consultants. The coworking space is a working place where they can leave their belongings unattended; they trust their coworkers as neighbors. It is important for the good neighbor to interact with the coworkers to gather feedback from different fields of work. Discussing business is the primary aim of this group. Like neighbors, coworkers do not have to be connected by the same field of work but are connected by thoughts of sharing and collaboration.

The good partners see cooperative work as an outcome. These coworkers are searching for face-to-face meetings with coworkers, generating cross-talk. Coworking is working with other fields of business and building trust that could lead to a partnership. Most of these coworkers are entrepreneurs and freelancers and provide services for businesses instead of products for customers; they do not see their clients face-to-face in the office. Being a good partner to coworkers and being cooperative in work is the primary aim of this group. Like partners, coworkers are connected through their work lives and social lives, which occurs within the coworking spaces.

According to the relevant literature, the following seven user groups make use of a coworking space and will be used in this study for the variable user groups:

- Entrepreneurs;
- Extended workers;
- Freelancers;
- Self-employed workers;
- Small firms;
- Students; and
- Large firms.

2.8 Conclusion

In this chapter, the following two sub-questions are answered: “What are the typical characteristics of coworking spaces?” and “Which types of users can be identified in coworking spaces and with which characteristics can they be described?”.

The classical physical design of a coworking space is an open floor plan with large tables, in which coworkers can have eye contact and easily interact with one another. The social areas in the space, such as the kitchen, meeting rooms and relaxation spots, turn it into a collaborative space in which workers can have social and professional discussions. Regarding ‘typical characteristics,’ the main characteristics involved distinguish coworking spaces from other types of multi-tenant offices. The distinctive characteristics were included in this investigation; the non-typical characteristics were outside the scope of this study. The table detailing coworking space characteristics consisted of six characteristics with 33 corresponding variables. The following typical characteristics of coworking spaces emerged based on the five core-values and the various characteristics of multi-tenant offices.

- Location;
- Office exterior and division;
- Office décor;
- Facilities and services;
- Collaboration and openness;
- Community and sustainability; and
- Accessibility.

Coworking is often associated with self-employed workers and freelancers; however, it became obvious that the users of coworking spaces are a more heterogeneous group. According to the relevant literature, the following user groups make use of a coworking space:
- Entrepreneurs;
- Extended workers;
- Freelancers;
- Self-employed workers;
- Small firms;
- Students; and
- Large firms.

Each user group contains a great variety of users with a different set of user characteristics. With the following characteristics, the just mentioned user groups can be typified:
- Geographic characteristics;
- Demographic characteristics; and
- Psychographic characteristics.

In this chapter, the theoretical framework is developed which is the basis for the rest of this master’s thesis. In the following chapter, the research design of the study according methodology, operationalization, reliability and validity is described. The conceptual model presented in figure 1.1 can be expanded with the independent factor of ‘user characteristics’ with three further characteristics (geographic, demographic and psychographic characteristics) and with the dependent factor of ‘user preferences for coworking space characteristics’ with seven further characteristics (location, office exterior and division, office décor, facilities and services, collaboration and openness, community, and sustainability and accessibility).
Chapter 3: Research Design

In the previous chapter, a literature review is carried out on the subjects coworking and user characteristics. From both subjects, variables emerged that indicate both the characteristics of coworking spaces and users of coworking spaces. The research design, concerning methodology and operationalization of the variables is further explained in this chapter. First in section 3.1, a résumé of the theoretical framework is given, which is translated into a more detailed conceptual model. This model shows the relation between the independent and dependent factors and corresponding variables. In section 3.2, the methodology for the data collection and for the data analysis is explained in more detail. The operationalization of the independent and dependent variables is carried out in section 3.3. In section 3.4, the distribution of the questionnaire is discussed as well as a description of the population of this research. The reliability and validity of the study is addressed in respectively section 3.5 and 3.6. The conclusion of the research design is drawn in section 3.7

3.1 Résumé theoretical framework and conceptual model

In this master’s thesis, the relation between user characteristics and their preferences for coworking space characteristics is examined. The preliminary conceptual model is presented in chapter one (figure 1.1). In the previous chapter, the characteristics and variables with which the model should be extended are mentioned. In table 2.4, seven characteristics with 45 corresponding variables are identified as typical characteristics of coworking spaces. Besides the design of the variable, the coworking phenomenon is described with reference to the history, definitions and motivations. The independent factor (user characteristics) has also been addressed in the previous chapter. The user groups in coworking spaces and the characteristics of these users (geographic, demographic and psychographic) are described in this chapter. The final conceptual model is shown in figure 3.1. The dependent characteristic collaboration and openness is removed from the conceptual model because the corresponding variables, which are asked in the questionnaire, better fit under the characteristics office exterior and division. The characteristic collaboration and openness focus on those typical characteristics that stimulate collaboration and openness, in particular the layout and type of spaces (e.g. collaborative spaces and event spaces). These variables are also covered by the variable layout and subdivision of the building of the characteristic office exterior and division. The variable architecture and lightning in the space are covered by the characteristic office exterior and division but not by the characteristic collaboration and openness. In summary, office exterior and division is a more complete characteristic.

In order to provide a clear image of the conceptual model, it is important to appoint the various parts of it. The independent variables (user characteristics) and the dependent variables (user preferences for coworking space characteristics) are called ‘factors’, which is a collection of multiple characteristics. For instance, user characteristics is called the factor and the geographic characteristics are characteristics of the factor user characteristics. Only the factor and their corresponding characteristics will be shown in the conceptual model. Each characteristic, for both the independent and dependent characteristic, consists of multiple variables. The variables of the independent factor are identified in section 2.6. The variables of the dependent factor are identified in section 2.5.

![User characteristics](image)

Figure 3.1: Conceptual model
3.2 Methodology

To clarify the used methodology in this research, the methods are split into two forms, namely: methods for data collection and methods for data analysis. Methods for collecting the data (survey questions and an attribute based stated choice method) will be discussed first in section 3.2.1, followed by the data analysis methods (descriptive analysis, multinomial logit model, latent class logit model, chi-square tests and independent samples T-tests) in section 3.2.2.

3.2.1 Methods for data collection

To collect the data for the factor user characteristics, survey questions are asked to determine the geographic, demographic and psychographic characteristics of a user. Collecting data with the aid of survey questions is according to Sapsford (1999) a reliable and objective method to collect information about peoples’ characteristics. To collect data for the factor preferred characteristics of coworking spaces, a stated preference method will be used. This type of method refers to an approach in which preference data is collected from subjects in hypothetical situations (Adamowicz et al., 1998). Hypothetical situations are shown based on, for instance, different alternatives, in which an alternative is a representation of a real situation. A question like ‘What is important?’ does not deliver a clear answer. According to Eeuwijk (2010), when considerations are not necessary to make a choice (everything is equally important). Respondents find everything important that is related to that particular choice. It is therefore necessary that respondents are faced with certain options to come to a particular choice. A respondent has to make choices according the advantages and disadvantages of a particular choice. The extent to which the individual preferences correspond to the properties of an object are decisive for the choice (Eeuwijk, 2010). When rankings, ratings and choices are of interest a stated preference method is recommended (Adamowicz et al., 1998).

Attribute based stated choice

There are two types of preference methods: the stated preference method and the revealed preference method (Adamowicz et al., 1998). In studies, which use the revealed preference method, choices are made in real world situations when observing individual behavior. Mostly used for comparing the influence of policies on consumer behavior. In a stated preference method, the choices are hypothetically (Louviere et al, 2010; Sanko, 2011). This type of method will be used in this study because hypothetical situations of a coworking space will be presented to the respondent in order to collect data. The characteristics of certain choices are independently variable of each other; they are orthogonal (their correlation is zero). This type of research method is often used since the mid-1990’s in agriculture and food economic, environmental and resource economics and health economics (Louviere et al., 2010). The following figure (figure 3.2) explains the possibilities of the stated preference method.

![Stated preference methods diagram](image)

Figure 3.2: Stated preference methods (Adamowicz et al., 1998)

In this thesis, the stated choice method named attribute based stated choice is used (ABSC-method). Attribute based stated choice methods are used when ratings or rankings are wanted (Louviere et al, 2010). Referendum contingent valuation, a form of stated choice method, is used for determining, for instance, the monetary value of environmental damages (Adamowicz et al., 1998; Kløgaard et al., 2012). By using the ABSC-method, respondents have to make choices between alternatives (e.g. coworking space A, B, C) based on varying attribute levels (e.g. location, décor and accessibility). The factor user preferences in coworking spaces consists of six characteristics (see figure 3.1). The objective of the ABSC-method is to place the respondent in a particular framework to compare choices/alternatives that are described by multiple attributes. Adamowicz et al. (1998) described the following advantages of an ABSC-method:

- Control of the stimuli (attributes are chosen);
- Control of the design matrix (greater statistical efficiency); and
- More robust models (wider range of attributes possible then in real world).
3.2.2 Methods for data analysis

The third sub-question of this research will be answered based on descriptive analysis. The fourth, fifth and sixth sub-question of this research will be answered based on a data analysis. This analysis will be made in chapter 5 but the explanation of these data analysis methods takes place in this sub-section. To analyze the sub-questions the following methods will be used:

- **Descriptive analysis (chapter 4)**
  - To analyze the user characteristics of coworkers in general (sub-question 3), descriptive analyses are used;

- **Multinomial logit model (chapter 5)**
  - To analyze what the user preferences are for coworking space characteristics (sub-question 4), a multinomial logit model (chapter 5) will be estimated;

- **Latent class logit model, chi-square tests and independent samples T-tests (chapter 5)**
  - To find different groups (classes) with similar preferences of coworking spaces characteristics (sub-question 5), a latent class logit model (chapter 5) is estimated; and
  - To determine the differences on user characteristics between the estimated classes (sub-question 6), multiple chi-square tests and independent samples T-tests will be performed (chapter 5).

**Descriptive analysis**

In the descriptive analysis, the collected data of the sample will be described by descriptive statistics (occurrence of variables, mean, standard deviation and range) and graphics that show the distribution of the variables. A descriptive analysis shall be applied only the independent variables. No descriptive analysis will be applied to the dependent variables because effect coding is used (-1; 0; 1) which will be explained in section 4.2. For the independent factor, it becomes clear what the geographic characteristics, demographic characteristics and psychographic characteristics are of the users in the sample. For instance, what is their level of education, sector of organization and motivations to work in a coworking space. The descriptive analysis will take place in chapter 4.

**Multinomial logit model**

Choice behavior exhibits substantial heterogeneity (Fiebig et al., 2010). The heterogeneity of a sample, according the preferences of particular attributes, can be of a varying identity (broad range). Often the dependent variable drives the choice of a model. When the dependent variable is binary (0 or 1), a binary logit model can be used. If the dependent variable is a continuous variable (for instance bodyweight), a normal linear regression model can be used. The reason a multinomial logit model is chosen, is that the dependent variable is a nominal variable, which consists of unordered categories. It does not make sense to use a linear regression in a nominal data set because this set consists of appointed numbers (1, 2, 3) to certain nominal data. With the aid of a multinomial logit model, an estimation can be made of which characteristics of a coworking space are the most preferred for coworkers. A multinomial logit model assumes homogeneity because all the data is lumped together (Borgers & Vosters, 2010). To test heterogeneity among respondents, a latent class logit model can be estimated. In this way, a distinction can be made in user characteristics related to the preferred coworking space characteristics. A multinomial logit model estimates utility weights of parameters, which will be set up in section 3.3.2. The respondents in the sample attain a certain level of utility to a characteristic of a coworking space (parameter). The parameter with the highest utility has the largest probability to be chosen; the parameter with the lowest utility has the lowest probability to be chosen. When adding up the utilities of all the parameters of certain attributes, the total utility value of a coworking space becomes clear. When people choose between alternatives, they prefer the one with the highest overall utility value (Hensher, Rose & Green, 2015). The following equitation determines the utility, by using the random utility theory:

\[
U_{iq} = V_{iq} + E_{iq} = \sum \beta_n X_{inq} + \epsilon_{iq}
\]

- \(U_{iq}\) = the overall utility of alternative I for respondent Q
- \(V_{iq}\) = the structural utility of alternative I for respondent Q
- \(E_{iq}\) = the random utility component
- \(\beta_n\) = the utility weight of attribute N
- \(X_{inq}\) = the score of alternative I on attribute N for respondent Q

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With the aid of the utility weights, derived from the multinomial logit model, the probability \( P_i \) that alternative I will be chosen can be calculated. The following equation determines this probability:

\[
P_i = \frac{\exp(V_i)}{\sum_j \exp(V_j)}
\]

\( P_i \) = probability that alternative I will be chosen

\( \exp(V_i) \) = structural utility of alternative I

\( \sum_j \exp(V_j) \) = sum of structural utility of alternative J

In order to determine if the analysis give reliable conclusions, the goodness of fit is calculated. Only when the goodness of fit show that the models are reliable, conclusion can be drawn from the results in the research. According to Kemperman & Timmermans (2008), the goodness of fit can be measured with the aid of two measurements: the log-likelihood of the estimated model (LL(\( \beta \))) and the Mc Fadden’s rho-square (\( \rho^2 \)). According to Train (2002), the log-likelihood is often used with discrete choice models to measure how well the models fit the data. The log-likelihood function of the estimated parameters can be calculated based on the following equation:

\[
LL(\beta) = \sum y_{qi} \ln(P_{qj})
\]

\( LL(\beta) \) = log likelihood function at estimated parameters;

\( N = \) sample size;

\( y_{qi} = \) choice of person \( q \) for alternative \( i \).

\( LL(0) \) is the likelihood function of the estimated parameters, \( LL(0) \) is the likelihood function when all the parameters are equal to zero. \( LL(0) \) is a benchmark for the function of the estimated parameters (Van Laarhoven, 2016). When all the parameters are equal to zero, then the estimated model is no better than no model. The lowest value a rho-square can take is 0 and the highest is 1. When the rho-square value is higher than 0.2, the model performs well. When the rho-square value is above 0.1 it can be considered as usable (Louviere et al., 2000). The following equation compares the prediction abilities of the estimated model with a base model (Kerkman, 2010):

\[
\rho^2 = 1 - \frac{LL(\beta)}{LL(0)}
\]

\( LL(\beta) \) = log likelihood function at estimated parameters;

\( LL(0) \) = log likelihood function at zero parameters

Mc Fadden’s rho-square adjusted takes the number of parameters into account in comparison with the rho-square method. The rho-square adjusted can be calculated based on the following equation:

\[
\rho^2_{adjusted} = 1 - \frac{LL(\beta)-K}{LL(0)}
\]

\( K = \) number of estimated parameters.

**Latent class logit model, chi-square tests and independent samples T-tests**

“Cluster analysis is the art of finding groups in data” (Kaufman & Rousseeuw, 2005, pp. 1). By means of clustering, structure is applied to unstructured data (Kaufman & Rousseeuw, 2005). In this way, data can be better and more easily interpreted (Everitt, Landau & Leese, 2001). In a cluster analysis, each object (respondent) belongs to a cluster and all clusters together form all the objects (Everitt, Landau & Leese, 2001). In this thesis, a latent class logit model is used to estimate groups in the multivariate categorical data, the so-called classes. A latent variable is a variable that is derived through a mathematical model, in this case through an attribute based stated choice method, and is not directly observed by direct measuring. With the use of NLOGIT, a software program for parameter estimation, data is estimated in latent classes (between 1 and the total number of respondents in the sample). In the context of this research, coworkers with matching preferences according coworking space characteristics form a latent class. The preferred characteristics in a latent class will be the same but the user characteristics in a class will differ. Often a respondent does not belong exactly to one class; this is always expressed in terms of probability. The respondent is assigned to the class with the highest probability. Every class consist of multiple respondents with different characteristics. “Once the utility of each activity for each latent class and the probability of belonging to a latent class are known, the probability that and individual makes a certain choice equals the expected value across segments of the segment specific probability” (Kemperman & Timmermans, 2008, pp. 311). With the following equation, it can be determined what the probability is of individual q belonging to class c:
\[ ex(\theta \cdot z^i) = \frac{\exp(\theta \cdot z^i)}{\xi \cdot \exp(\theta \cdot z^i)} \]

- \( P_{zc} \) is the probability of individual \( q \) belonging to class \( c \);
- \( \theta \) is the vector of utility weights belonging to characteristics \( z \) specified for class \( c \);
- \( z^i \) is vector of observed individual characteristics of individual \( q \).

According to Train (2002), the rho-square statistics can only be used for comparing nested models. For comparing non-nested models with the same data set, like the *multinomial logit model* and the *latent class logit model*, AIC and BIC is widely used. The models with the lowest Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) values represent the data best and contains the most represented information. The AIC and the BIC are calculated as follows (Akaike, 1973; Schwarz, 1978 as cited in Nijenhuis, 2012):

\[
AIC = -2 \cdot LL(\theta) - K \div N
\]

\[
BIC = -2 \cdot LL(\theta) + K \cdot LN(N) \div N
\]

“Each criterion reasons from another theoretical perspective: BIC reasons from the point of view that one of the models under consideration is true. BIC tries to identify the model with the highest probability of being the true model. AIC does not assume a true model, but looks at the predictive power of the models to select the most adequate model. AIC and BIC can give different conclusions in different conditions” (Nijenhuis, 2012, pp. 28).

For clarity, groups are formed based on preferences and not based on user characteristics. The form of the group (e.g. gender, education, sector organization) is unknown and should be analyzed by performing multiple chi-square tests and independent samples T-tests. In an independent samples T-test, two groups of data are compared. Cross tables between multiple user characteristics and their estimated class can be established with a chi-square test. In the end, it can be determined whether preferences of coworking spaces characteristics are linked to different user characteristics. A chi-square test is based on the following equation:

\[
\chi^2 = \frac{\sum(O_i - E_i)^2}{\sum E_i}
\]

- \( \chi^2 = \text{chi-square} \)
- \( O_i = \text{observed frequencies} \)
- \( E_i = \text{expected frequencies} \)

### 3.3 Operationalization of the independent and dependent variables

Data for the independent factor (user characteristics) and dependent factor (user preferences for coworking space characteristics) are collected by the use of an online questionnaire. A questionnaire consists of a series of questions to gain information about the variables. In order to collect information about the independent factor, operationalization of geographic, demographic and psychographic characteristics is necessary. Operationalization is the conversion of variables into a measurable form (Baarda & De Goede, 2006). The level of measurement (nominal, ordinal, interval, and ratio) and the type of item (how it is measured; e.g. multiple choice scale or open question) will describe the variable.

#### 3.3.1 Independent factor

In order to create a picture of the users of coworking spaces; geographic, demographic and psychographic characteristics are used. Each user group contains a great variety of users with a different set of user characteristics and no previous study has investigated what these characteristics are in The Netherlands. The different user characteristics, which are presented in this sub-section, are based on existing literature that is mentioned in section 2.6. The complete codebook is presented in Appendix B.

Table 3.1: Geographic variables (coworking space related characteristics)

<table>
<thead>
<tr>
<th>Geographic variable</th>
<th>Level of measurement</th>
<th>Type of question</th>
<th>Type of Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country coworking space</td>
<td>Nominal</td>
<td>Multiple choice (64)</td>
<td>1: The Netherlands, 2: Afghanistan, 3: America….</td>
</tr>
</tbody>
</table>

The operationalization of the geographic variable country coworking space happened based on a multiple-choice question with 64 options (part is shown in table 3.1). This questionnaire is distributed in several countries. All the possible countries, where the questionnaire is distributed, are included in this list. At a given moment, this list is extended with 12 countries. These countries are shown after 52 (option: ‘other...’).
In this study, a coworker will be typified among other things based on four personal characteristics namely: gender, age, nationality and education (shown in table 3.2). These four demographic characteristics draw a picture whether the respondent is a male or a female, how old he/she is, what his/her nationality is and what his/her highest education level is. The level of education differs per country; the differences are reflected in the questionnaires (see Appendix C). The above-described demographic variables are clustered at one page in the questionnaire regarding ‘personal characteristics’.

The following four demographic variables are also clustered at one page in the questionnaire under the title ‘work-related characteristics’ (shown in table 3.3).

Coworking spaces originated as response to ‘lone eagles’, which were in need of a third place to work due to boredom and isolation (Moriset, 2013). The first user group consists of these lone eagles in the form of self-employed workers, freelancers or entrepreneurs. The line between these user groups is quite thin. “A freelancer is almost always a self-employed worker, but a self-employed worker is not always a freelancer”. (De Groot, Van Dijk & Pijlman, N.D.). There is definitely a difference between these user groups, but considering that this difference is rather vague, the self-employed worker, freelancer and entrepreneur are combined in one user group. In the study of Deskmag (2016), a distinction is made between entrepreneurs and freelancers. They form both a separate user group, which is confusing. According the literature, small firms and large firms make also use of coworking spaces. The size of these companies is based on categories derived from the study of Hartog (2015), namely: 2-10 employees (2), 11-50 employees (3) and more than 50 employees (4). Deijl (2011) and Kojo & Nenonen (2014) stated that students make also use of a coworking space, therefore this user group is included as well. The user group of extended workers is deleted because this is not a concrete user group.

Another work-related characteristic is the users’ position in the organization. The operationalization is based on a multiple-choice question with five possible answers, namely: supporting staff (1), regular employee (2), manager (3), board/owner (4) or does not apply (5). ‘Does not apply’ (5) applies, for example, for a freelancer or a student. These user groups have no specific position in an organization.

The items of the demographic characteristics sector organization are derived from prior research of Deskmag (2016). Deskmag studied the professions of coworkers in 2013-2014 and 2015-2016. The last demographic characteristics related to the work characteristics is income. These different levels of income are derived from the study of Hartog (2015). The option (6) ‘I don’t know/I’d rather not say’, is added to this list for those respondents that do not what to share that piece of information (e.g. privacy).

The following two demographic variables are clustered at one page in the questionnaire under the title ‘coworking space characteristics’. The variable country coworking space also belongs to this group of question, but since this is a geographic characteristic, it is already mentioned.

| Table 3.2: Demographic variables (personal characteristics) |
|-----------------|-----------------|-----------------|-----------------|
| **Demographic variables** | **Level of measurement** | **Type of question** | **Type of item** |
| Gender | Nominal | Multiple choice (2) | 1: Male, 2: Female |
| Age | Ratio | Open question | 1: The Netherlands, 2: Afghanistan, 3: America... |
| Nationality | Nominal | Multiple choice (64) | 1: No education/elementary school, 2: Preparatory secondary education, 3: Senior general secondary education, 4: Pre-university education, 5: Intermediate vocational education, 6: Higher vocational education, 7: University (bachelor), 8: University (master), 9: University (PhD) |
| Education | Ordinal | Multiple choice (9) | 1: Student, 2: Supporting staff (desk attendant, receptionist etc.), 3: Regular employee, 4: Manager, 5: Board/owner, 6: Does not apply |

| Table 3.3: Demographic variables (work-related characteristics) |
|-----------------|-----------------|-----------------|-----------------|
| **Demographic variables** | **Level of measurement** | **Type of question** | **Type of item** |
| User group | Nominal | Multiple choice (5) | 1: Self-employed worker, freelancer or entrepreneur, 2: Employee of a company (1-20 employees), 3: Employee of a company (11-50 employees), 4: Employee of a company (more than 50 employees), 5: Student |
| Position in organization | Nominal | Multiple choice (5) | 1: Support staff (desk attendant, receptionist etc.), 2: Regular employee, 3: Manager, 4: Board/owner, 5: Does not apply |
| Sector organization | Nominal | Multiple choice (12) | 1: Consultancy, 2: Design, 3: Commerce, 4: IT, 5: Art, 6: Management, 7: Research, 8: Education, 9: Project management, 10: PR, marketing, sales, advertising, communication, 11: Writing, 12: Other |
| Income | Ordinal | Multiple choice (6) | 1: Less than 20000 a year, 2: 20001-30000 a year, 3: 30001-50000 a year, 4: 40001-50000 a year, 5: More than 50000 a year, 6: I don't know/I'd rather not say |
Table 3.4: Demographic variables (coworking space related characteristics)

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>Level of measurement</th>
<th>Type of question</th>
<th>Type of item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours in coworking space</td>
<td>Ratio</td>
<td>Open question</td>
<td></td>
</tr>
<tr>
<td>Transport coworking space</td>
<td>Nominal</td>
<td>Multiple choice</td>
<td>1; Car, 2; Bike, 3; By foot, 4; Public transport</td>
</tr>
</tbody>
</table>

The respondent has to fill in the average hours of working per week in a coworking space, this is an open question. The transport that is mostly used for traveling to the coworking space is derived from a multiple-choice question (shown in table 3.4). Possible answers to this question are by car (1), by bike (2), by foot (3) or by public transport (4).

The variables personality and benefits, mentioned in section 2.6, are clearly not the focus of this study so they will not be included in the questionnaire. The corresponding question of the psychographic characteristics is about the respondents’ motivation to work in a coworking space (see table 3.5). The ranking question offers ten possible motivations wherein the respondents have to choose their three top motivations in order of importance (1; most important motivation, 3; least important). The motivations are based on the output as shown in table 2.2. The following psychographic variable is mentioned as well under the title ‘coworking space characteristics’.

Table 3.5: Psychographic characteristics

<table>
<thead>
<tr>
<th>Psychographic variables</th>
<th>Level of measurement</th>
<th>Type of question</th>
<th>Type of item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation 1, 2 and 3</td>
<td>Nominal</td>
<td>Ranking question</td>
<td>1; Affordable accommodation, 2; The feeling of being part of a community, 3; Vibrant and creative atmosphere in the coworking space 4; Professional appearance for the company, 5; Professional supportive work environment (support services), 6; The opportunity to network with coworkers (possible new projects), 7; Social interaction with coworkers, 8; The possibility for work-related conversations with other coworkers (knowledge sharing, knowledge creation), 9; I was looking for a workplace outside the home (separating work and private life), 10; Flexibility (rental period, number of square meters)</td>
</tr>
</tbody>
</table>

The geographic, demographic and psychographic characteristics are now operationalized in respectively one, ten and three variables. In the following sub-section, the dependent factor will be operationalized.

3.3.2 Dependent factor

Sanko (2011) developed a guideline for the experimental design of an ABSC-method. In the statistical design, attributes and attributes’ levels are combined in order to create alternatives and choice games (see figure 3.3). The attributes can be seen as coworking space characteristics (variables) and the attributes’ levels as a variation on that specific characteristic. The operationalization of the dependent variable is established based on the framework of Adamowicz et al. (1998). To establish an ABSC-method, the following steps are necessary:

- Step 1: identify relevant attributes;
- Step 2: attribute level selection;
- Step 3: experimental design development;
- Step 4: questionnaire development;
- Step 5: sample sizing and data collection (happens in chapter 4); and
- Step 6: model estimation (happens in chapter 5).

Step 1: Identify relevant attributes

Given that the design is too large when all the typical characteristics of coworking spaces, as shown in table 2.4, are applied, a selection of the characteristics is made. A design of nine attributes is deemed feasible (Adamowicz et al., 1998). If respondents have to make a choice based on more than nine attributes, it is considered as not possible because it is too much to oversee. It is difficult to summarize all the input characteristics in just nine attributes. For that reason, a selection has been made in the variables. In total, eight attributes are derived. Each characteristic in the conceptual model (figure 3.1) is represented; six in total and two characteristics are mentioned twice. The attribute has to meet two criteria’s; it must be a typical characteristic of a coworking space (derived from table 2.4) and it has to vary on three attribute levels.
(step 2). The following eight attributes are arranged (between the brackets the variable is mentioned to which the attribute belongs according the conceptual model in figure 3.1):

- Attribute 1: accessibility of the location (location);
- Attribute 2: atmosphere and interior aesthetics (office décor);
- Attribute 3: layout of the space (office exterior and division);
- Attribute 4: diversity in supply spaces (office exterior and division);
- Attribute 5: reception and hospitality (facilities and services);
- Attribute 6: events (community and sustainability);
- Attribute 7: diversity of tenants (accessibility); and
- Attribute 8: type of lease contract (accessibility).

The most important typical characteristics are selected in order that the alternatives represent the best hypothetical situation of a coworking space. The first attribute, the accessibility of the location, is an important characteristic because this often determines the choice of a certain coworking space according to the study of Capdevila (2013). Location is in general the most important characteristic in real estate. Attribute two, atmosphere and interior aesthetics, is included because many coworking spaces have a specific appearance that could be of importance why a coworking space is chosen. There is great attention to interior design of coworking spaces and is considered as one of the important factors of the creative and energetic atmosphere in a coworking space (Fuji, 2015). The layout of a coworking space is tested in attribute 3. Some coworkers would rather work in an open area where others prefer a closed layout. Attribute 4, diversity in supply spaces, has been taken into account because this often varies in a coworking space. From a basic coworking space with just a collaborative workspace to a fully equipped coworking space, with for example a fitness center and bar. The characteristic facilities and services is reflected in the attribute reception and hospitality. According to Fuji (2015), the coworking host plays an important role in creating interaction and collaboration. The extent, to which a user attach value to this aspect, is expressed in that attribute. In a coworking space, there is often a creative and vibrant atmosphere where various kinds of events are organized. Whether or not a user prefers these events comes forward in the sixth attribute. Attribute 7 (diversity of tenants) and attribute 8 (type of lease contract) are covered by the accessibility of the coworking space. There are coworking spaces with a great diversity of tenants in various sectors but also coworking spaces that, for example, are focused on the sector design. According to multiple studies (Deijl, 2011; Spinuzzi, 2012; Fuji et al., 2014; Sykes, 2014) a flexible contract is a typical coworking space characteristic. A workplace or a space can be rented in several terms. All the eight attributes vary on three attribute levels, which will be explained in the next step.

**Step 2: Attribute level selection**

The attributes’ levels are specific for one attribute. The levels indicate a proper range of variation for each attribute (Adamowicz et al., 1998). The following attribute levels are identified:

**Accessibility of the location**

- Attribute level 0: by car and public transport;
- Attribute level 1: by car; and
- Attribute level 2: by public transport.

**Atmosphere and interior aesthetics**

- Attribute level 0: industrial;
- Attribute level 1: modern; and
- Attribute level 2: homey.

**Layout of the space**

- Attribute level 0: open layout (large open spaces);
- Attribute level 1: half-open layout (combination of open spaces and concentration rooms); and
- Attribute level 2: closed layout (enclosed and separate spaces).

**Diversity in supply spaces**

- Attribute level 0: basic coworking space (collaborative workspace + meeting rooms and kitchen area);
- Attribute level 1: standard coworking space (collaborative workspace + meeting rooms + kitchen area + event spaces and informal zones); and
- Attribute level 2: premium coworking space (collaborative workspace + meeting rooms + kitchen area + event spaces + informal zones + fitness center and bar).
Reception and hospitality
- Attribute level 0: no reception and no host;
- Attribute level 1: reception but no host; and
- Attribute level 2: reception and active host (active coworking host that connects coworkers to each other).

Events
- Attribute level 0: none;
- Attribute level 1: sometimes; and
- Attribute level 2: often.

Diversity of tenants
- Attribute level 0: no diversity of tenants (tenants in the same sector);
- Attribute level 1: moderate diversity of tenants (tenants in a few business fields); and
- Attribute level 2: strong diversity of tenants (a lot of different business fields present in the coworking space).

Type of lease contract
- Attribute level 0: no contract;
- Attribute level 1: short term (day or week or month); and
- Attribute level 2: long term (year or longer).

Step 3: Experimental design development
“A design is a sample of profiles (combinations of different attributes) which have a particular set of statistical properties that determines the utility specification(s) that can be estimated (i.e., identified)” (Adamowicz et al., 1998, pp. 13). There are two types of designs, which combine attributes and attribute levels to create alternatives, namely: full factorial designs and fractional factorial designs. In a full factorial design, every possible combination of attribute levels is expressed. The different effects between attributes (main-effects) and the corresponding effects between attributes (interaction effects) are both taken into account. This creates many alternatives ($3^8 = 6.561$ profiles) which is a big task for the respondent, so a full factorial design is a serious drawback and only practical for small problems (Sanko, 2011). Eight attributes with three corresponding levels will give many combinations (not a small problem anymore), so a full factorial design is considered not feasible as a design. In a fractional factorial design, all the interactions between attributes are ignored, which gives less scenarios. Only the main effects are taken into account. In a fractional factorial design, the attributes are independent of each other. In statistical terms, this means that the attributes are orthogonal and do not correlate.

The experimental design, as shown in table 3.6, consists of 27 alternatives. These 27 alternatives are presented in nine choice sets (N) with four choices/alternatives per choice set. Each alternative consists of eight attributes (characteristics), as mentioned in step 1, and each attribute can vary on three attribute levels, as mentioned in step 2. The numbers in the table are corresponding to the attribute levels of step 2.

Table 3.6: Experimental design

<table>
<thead>
<tr>
<th>#</th>
<th>Attribute 1</th>
<th>Attribute 2</th>
<th>Attribute 3</th>
<th>Attribute 4</th>
<th>Attribute 5</th>
<th>Attribute 6</th>
<th>Attribute 7</th>
<th>Attribute 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The experimental design, as shown in table 3.6, consists of 27 alternatives. These 27 alternatives are presented in nine choice sets (N) with four choices/alternatives per choice set. Each alternative consists of eight attributes (characteristics), as mentioned in step 1, and each attribute can vary on three attribute levels, as mentioned in step 2. The numbers in the table are corresponding to the attribute levels of step 2.
Step 4: Questionnaire development
Both the independent variables and dependent variables are included in the questionnaire system; the first 13 questions are about the independent factor; the last 9 questions are about the dependent factor.

In table 3.7, the experimental design of table 3.6 is completed with the attribute levels as mentioned in step 2. Each row in table 3.5 equals’ one choice/alternative, which is also known as, profiles (27 rows; 27 alternatives; 27 profiles).

Table 3.7: Experimental design with corresponding attribute levels

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Attribute 1</th>
<th>Attribute 2</th>
<th>Attribute 3</th>
<th>Attribute 4</th>
<th>Attribute 5</th>
<th>Attribute 6</th>
<th>Attribute 7</th>
<th>Attribute 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>By public transport and car</td>
<td>Industrial</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>No reception but no host</td>
<td>None</td>
<td>No diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>2</td>
<td>By public transport and car</td>
<td>Industrial</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>Often</td>
<td>Moderate diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>3</td>
<td>By public transport and car</td>
<td>Industrial</td>
<td>Closed layout</td>
<td>Premium coworking space</td>
<td>Reception and active host</td>
<td>Sometimes</td>
<td>Strong diversity of tenants</td>
<td>Short term (day or week)</td>
</tr>
<tr>
<td>4</td>
<td>By public transport and car</td>
<td>Modern</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception but no host</td>
<td>Sometimes</td>
<td>Strong diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>5</td>
<td>By public transport and car</td>
<td>Modern</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>Reception and active host</td>
<td>None</td>
<td>No diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>6</td>
<td>By public transport and car</td>
<td>Modern</td>
<td>Closed layout</td>
<td>Premium coworking space</td>
<td>No reception but no host</td>
<td>Often</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>7</td>
<td>By public transport and car</td>
<td>Homey</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception and active host</td>
<td>Often</td>
<td>Moderate diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>8</td>
<td>By public transport and car</td>
<td>Homey</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>None</td>
<td>No diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>9</td>
<td>By car</td>
<td>Industrial</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>10</td>
<td>By car</td>
<td>Industrial</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>11</td>
<td>By car</td>
<td>Industrial</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>Often</td>
<td>No diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>12</td>
<td>By car</td>
<td>Modern</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception and active host</td>
<td>None</td>
<td>Strong diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>13</td>
<td>By car</td>
<td>Modern</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception and active host</td>
<td>None</td>
<td>Strong diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>14</td>
<td>By car</td>
<td>Modern</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception and active host</td>
<td>None</td>
<td>No diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>15</td>
<td>By car</td>
<td>Homey</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception and active host</td>
<td>None</td>
<td>Strong diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>16</td>
<td>By car</td>
<td>Homey</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception and active host</td>
<td>None</td>
<td>No diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>17</td>
<td>By car</td>
<td>Homey</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception and active host</td>
<td>None</td>
<td>No diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>18</td>
<td>By car</td>
<td>Homey</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception and active host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>19</td>
<td>By public transport</td>
<td>Industrial</td>
<td>Open layout</td>
<td>Premium coworking space</td>
<td>Reception and active host</td>
<td>Often</td>
<td>Strong diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>20</td>
<td>By public transport</td>
<td>Industrial</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>Sometimes</td>
<td>No diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>21</td>
<td>By public transport</td>
<td>Industrial</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>None</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>22</td>
<td>By public transport</td>
<td>Modern</td>
<td>Open layout</td>
<td>Premium coworking space</td>
<td>No reception but no host</td>
<td>None</td>
<td>Moderate diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>23</td>
<td>By public transport</td>
<td>Modern</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception but no host</td>
<td>Often</td>
<td>Strong diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>24</td>
<td>By public transport</td>
<td>Modern</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>Reception and active host</td>
<td>Sometimes</td>
<td>No diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>25</td>
<td>By public transport</td>
<td>Homey</td>
<td>Open layout</td>
<td>Premium coworking space</td>
<td>Reception but no host</td>
<td>None</td>
<td>No diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>26</td>
<td>By public transport</td>
<td>Homey</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>Reception and active host</td>
<td>None</td>
<td>Moderate diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>27</td>
<td>By public transport</td>
<td>Homey</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>No reception but no host</td>
<td>Often</td>
<td>Strong diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
</tbody>
</table>

The questionnaire consists of nine choice sets. Each choice set consists of three randomly chosen alternatives (alternative 1,2 and 3) and one alternative ‘none of these option’ which reflects the respondent rather would work at home (or somewhere else) than at the coworking space. Three versions of choice sets are developed in order that not always the same alternatives are plotted against each other; this will cause order effects. There are three possible order effects: question order effect (order effect of the different choice options), order effect within the choice options and the attribute order effect (order effect of the alternatives and attributes) (Chrzan, 1994). The respondent gets the choice sets from either version 1, 2 or 3. This happens randomly in the questionnaire system. The following table (table 3.8) shows the version, the particular choice set and the alternatives (1, 2 and 3). The numbers in the alternatives are corresponding to a profile from table 3.7. For instance, in version 2, in the 1st choice set, alternative 1 (see table 3.8) is corresponding to row 16 in table 3.7, alternative 2 is corresponding to row 10 in table 3.7 and alternative 3 is corresponding to row 21 in table 3.7. An example of this choice set is also shown in table 3.9. In the online questionnaire, all the alternatives (1, 2, 3 and 4; none of the options) are plotted next to each other where all the choices/alternatives are presented vertically.

Table 3.8: Version, choice set and alternatives

<table>
<thead>
<tr>
<th>Version</th>
<th>Choice set</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Table 3.9: Example choice set (version 2, choice set 1, alternative 16, 10 and 21)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
<th>None of these options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>By car</td>
<td>By car</td>
<td>By public transport</td>
<td></td>
</tr>
<tr>
<td>Atmosphere and interior aesthetics</td>
<td>Homely</td>
<td>Industrial</td>
<td>Industrial</td>
<td></td>
</tr>
<tr>
<td>Layout of the space</td>
<td>Open layout</td>
<td>Open layout</td>
<td>Closed layout</td>
<td></td>
</tr>
<tr>
<td>Diversity in supply space</td>
<td>Standard coworking space</td>
<td>Standard coworking space</td>
<td>Standard coworking space</td>
<td></td>
</tr>
<tr>
<td>Reception and hospitality</td>
<td>No reception and no host</td>
<td>Reception but no host</td>
<td>Reception but no host</td>
<td></td>
</tr>
<tr>
<td>Events</td>
<td>None</td>
<td>Sometimes</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Diversity of tenants</td>
<td>Strong diversity of tenants</td>
<td>Moderate diversity of tenants</td>
<td>Moderate diversity of tenants</td>
<td></td>
</tr>
<tr>
<td>Type of lease contract</td>
<td>Long term (year or longer)</td>
<td>Short term (day or week or month)</td>
<td>No contract</td>
<td></td>
</tr>
</tbody>
</table>

3.4 Questionnaire distribution and description of the population

The questionnaire is developed as an online questionnaire. The questionnaire is translated into four languages (Dutch, English, German and Italian) and all the respondents can choose their preferred language. The complete questionnaires are enclosed in Appendix C. The questionnaire will be distributed with the help of partners from different universities and by multiple visits to coworking spaces in the Netherlands. Several academies (Politecnico di Milano, Italy; Aalto University Helsinki, Finland; The Bartlett School of Architecture London, England; Schweizer Hochschulen für Angewandte Wissenschaften Zürich, Switzerland) will help to spread the online questionnaire in foreign countries through a message with an introduction text and related links (e.g. website or via a message by the coworking operator). For the distribution in the Netherlands, multiple coworking spaces will be visited to hand over the questionnaire. An online questionnaire will be send to the workers that are willing to cooperate in the study to preferred characteristics. The respondents can fill in the questionnaire when it suits them, considering time, place and interest. A broad range of coworking spaces will be part of this research. For instance, large coworking spaces and small coworking spaces, coworking spaces with one location and coworking spaces with more locations, coworking spaces nearby the highway and coworking spaces nearby the central station etc. In this way, a varied sample of is obtained is obtained.

Description of the population

A part of the total population of coworkers will form the sample of this research, the so-called sample based research (Baarda & De Goede, 2006). The research unit in this study is ‘the user of a coworking space’. Everyone who is present in a coworking space is seen as a user of a coworking space and is covered by the research unit. Two studies (Deskmag, 2013; Deskmag, 2016) draw conclusions on the user characteristics on a global level. No scientific studies are done, neither on the composition of coworkers as on the preferences of coworking in specific countries. Response from the foreign countries must be of similar magnitude of the collected data in the Netherlands in order to make a comparison. If this is not the case, the foreign countries will be excluded from the analysis and only the Dutch cases will be included. Since there are only studies to coworking on a global level, the sample will be compared to these studies (Deskmag, 2013; Deskmag, 2016) and to studies on the national workforce.

3.5 Reliability of the study

Reliability and validity forms together the core of what is accepted as scientific proof (Shuttleworth, 2008). If a scientific study is reliable, researchers must be able to repeat the study and generate the same results. “Statistically significant results are those that are interpreted not likely to have occurred purely by chance and thereby have other underlying causes for their occurrence” (Kolxa, 2009, pp. 1). In order to repeat the study, the results of the study must be significant and not based on chance.

In the first part of the questionnaire, respondents have to choose either (nine times) their most preferable alternative of coworking spaces, alternative 1, 2, 3 or 4 ‘none of these options’. This part of the questionnaire is subjected to a judgment of the respondent, which can be effected by their current mood, time and place. When the respondent is in another mood, time and/or place, the answers according their preferred coworking space characteristics may differ. This influences the reliability of this study not more than in comparable studies so this may be neglected. On the other hand, the question rises about how reliable an attribute based stated choice method is. According to Danieles & Rotaris (2014), the reliability of an ABSC-method is related to the discrepancy between real choices and the stated ones. All the attributes that are used are derived from the literature; the stated choices (attributes) are consistent with the choices (attributes) in the real world. Besides that, multiple versions of the choice sets are made to avoid order effects, which influences the reliability of the method as well (Danieles & Rotaris, 2014).

The second part of the questionnaire about the personal characteristics, work-related characteristics and coworking space characteristics is not effected by mood, time and place, because these are factual answers. The answers cannot differ per moment, which benefits the reliability of the research. The study to preferred characteristics of coworking spaces for different user groups can be considered as reliable.
3.6 Validity of the study

According to Shuttleworth (2008), a valid study measures the data that is aimed to be measured. Validity comes in two different forms; external validity and internal validity. External validity is about whether the results are representative for the population or generalizable for other situations. Internal validity is about whether it actually is measured what intended to be measured.

The internal validity regarding this thesis means that the aspects are measured correctly. Would the respondents in real life also make the same choice? The independent and dependent variables and corresponding characteristics and attributes are measured in two different ways. The independent variables (geographic, demographic and psychographic characteristics) are measured in such way, that the questions are not influencing the dependent variable. The internal validity can be influenced by so called confounding, where the research group is influenced by the questions of the independent variable. The questions about the user characteristics of the coworker are asked after the ABSC-method. In this case, the independent variables do not influence the dependent variables. If this was the other way around (first questions about the independent variables), respondents perhaps made different choices in the choice sets, based on previous answers. For instance, the last question in the questionnaire is about motivations to go to a coworking space. If this question was asked prior to the choice sets, maybe this influenced the choice in the choice set. The introduction of the questionnaire states that all the questions are independent. Previous choices have no effect on the continuation of the questionnaire, which improves the internal validity. The dependent variables (preferred characteristics of coworking spaces) are measured by using an ABSC-method. The research design of this method is based on the framework of Adamowicz et al. (1998). To come to the specific design, the questionnaire is developed based on four steps (see section 3.3.2). The internal validity of this method is acceptable.

The external validity of a study depends on four aspects: the character of the research (sample selection type), the sample size, the response rate and the standard deviation. These four aspects influence whether the sample can be generalized to the population. The coworking spaces in the Netherlands and the foreign countries are selected based on permission of the coworking space operator to reach out the questionnaire to the coworkers. In the Netherlands, all the coworking spaces have been approached. A list of coworking spaces is composed with the aid of websites that focuses on coworking. In the foreign countries, the partners from the universities selected multiple coworking spaces to spread the questionnaire. The selection of the coworking spaces is a selective procedure as well as the selection of the coworkers, this did not occur randomly. The sample size of this research depends on the presence of coworkers in the coworking spaces. The spaces will be visited multiple times to ensure that the sample size is varied. A large sample and a high response rate seems an achievable goal because multiple coworking spaces in The Netherlands and abroad have agreed to cooperate in the data collection of this survey. The size of the sample and the amount of the response will be referred to in the following chapter. This survey can be considered as external valid. The conclusions of this study will be interpretable for other coworking spaces.

3.7 Conclusion

Data for this research will be collected by using an online-questionnaire. In the online-questionnaire, multiple survey questions will collect data for the independent factor user characteristics. With the aid of an attribute based stated choice method, data is collected for the dependent factor user preferences. In this chapter, all the variables are operationalized and a description is given about the distribution of the questionnaire. The methods can be considered as reliable and valid on an internal and external level.

The operationalization of the user characteristics is divided into geographical characteristics, demographical characteristics and psychographic characteristics. The operationalization led to 13 variables in a measurable form (one geographic variable, 10 demographic variables and one psychographic variable). The dependent variable has been operationalized with reference to the framework of Adamowicz et. al. (1998). Eight attributes have been drawn up (accessibility of the location, atmosphere and interior aesthetics, layout of the space, diversity in supply spaces, reception and hospitality, events, diversity of tenants and the type of lease contract) and each attribute varies on three attribute levels, which indicates a proper range of variation for each attribute. The attributes can be seen as coworking space characteristics, the attributes levels as a variation on that specific characteristic.

The questionnaire will be spread in multiple coworking spaces in the Netherlands and with the support of several universities (Politecnico di Milano, Italy; Aalto University Helsinki, Filand; The Bartlett School of Architecture Londen, England; Schweizer Hochschulen für Angewandte Wissenschaften Zürich, Zwitzerland) the questionnaire will be disseminated among user of coworking spaces abroad.
In this chapter, the research design is developed for the data collection of this master’s thesis. In the following chapter, a description is given of the collected data. The third sub-question about “What are the user characteristics of coworkers in general” will be answered.
Chapter 4: Data Description

In the fourth chapter of this research, a description of the data is given. A description of how, when and where the data is conducted is discussed in section 4.1. More information about the response rate of the questionnaire is also expressed in this section. In order to transform the data into a suitable form for the statistical analysis program SPSS and parameter estimation program NLOGIT 5, the data has to be prepared. A brief summary of the data preparation is expressed in section 4.2. In section 4.3, an overview of the user characteristics in coworking spaces is given. The independent variables are analyzed by means of descriptive statistics (occurrence of variables, mean, standard deviation and range) and graphics that show the distribution of the variables. In this chapter, the third sub-question “What are the user characteristics of coworkers in general?” will be answered. Finally, the conclusion of chapter 4 is drawn up in section 4.4.

4.1 Data collection
The data for this research is collected from 17th of October 2016 until the 14th of November 2016. At the beginning of October 2016, an e-mail was send to the operators of coworking spaces throughout the Netherlands with a short introduction/explanation of the research and the relevance for operators. In this e-mail, operators were asked if they would cooperate in the study to preferred coworking space characteristics. During the distribution of the questionnaire, it became clear that personal approaching the potential respondents was the most effective way of gathering data, even though the questionnaire was sent by e-mail. During the correspondence with coworking space operators was asked if it was possible to visit the coworking spaces personally to hand over the questionnaire to the present coworkers. If this was not possible, the coworking space operator could send the questionnaire to their coworkers by themselves. In total, 66 coworking spaces in the Netherlands were approached of which 25 coworking spaces were willing to cooperate in the research. Sixteen of these 25 coworking spaces were visited to spread the questionnaire and in nine coworking spaces, the coworking space operator distributed the questionnaire. In Appendix D, an overview is presented of all the approached coworking spaces. All the respondents received and e-mail with a short introduction text and corresponding link of the questionnaire in four languages (Dutch, English, Italian and German). The response of the completed questionnaires is 219 in total, which can be considered as the sample of this research. In the following section comes forward how this sample is established. In section 4.3, the sample will be clarified with descriptive statistics.

4.2 Data preparation
Data preparation is the process of collecting, cleaning and consolidating data into one file or data table for data analysis. The goal of the data preparation is creating a data file that can be directly entered into the analysis and estimation software. In order to clarify the process in the chapter, it is of importance to make a distinction between data collection methods and data analysis methods. The relevant methods were earlier mentioned in section 3.2.

To collect the data for both the independent and dependent variables an online questionnaire is used. To gather data for the independent variables, survey questions about geographic, demographic and psychographic characteristics are asked. To gather data for the dependent variables, the different steps of the attribute based stated choice method as presented in section 3.3.2 are followed.

To analyze the data for both the user characteristics and preferred coworking space characteristics, two software programs are used. By using SPSS, software for statistical analysis, descriptive statistics (frequency tables, descriptive statics tables and graphics) are made of the independent and dependent variables. By using NLOGIT, software for parameter estimation, a multinomial logit model and a latent class logit model will be estimated to examine respectively the preferences according the characteristics of a coworking space and to find groups in the multivariate categorical data. With the use of multiple chi-square test and independent samples T-tests, the relation between the independent and dependent variables is examined.

With the aid of these methods, respectively the fourth sub-question (“What are the user preferences for coworking space characteristics?”), the fifth sub-question (“Can different user groups be identified based on their preferences?”) and the sixth sub-question (“What are the differences between these user groups based on user characteristics”) will be answered. This takes place in the following chapter. For both the analytical software programs, the dataset have to be transformed in order to make it suitable for further analysis. First the data of the independent variable will be prepared and then the dependent variable.

Data preparation of the independent variables of user characteristics
For the data preparation of the independent variables, data is deleted, missing values are defined and multiple variables are recoded. The data has to be prepared for statistical analysis in SPSS. The following actions on the data are carried out:
• **Deleted countries.** In the first attempt, 261 respondents filled in the questionnaire. Coworkers from coworking spaces in America (1), Belgium (1), England (3), Finland (3), Italy (32), Poland (1) and Switzerland (1) completed the questionnaire. The response from America, Belgium, England, Finland, Poland and Switzerland can be considered as too low. For this reason, these 10 cases will not be included in further analysis. The 32 cases in Italy are also excluded out of the sample. These cases provide a 'contaminated' sample because it is possible that these cases are special (for instance; a very heterogeneous group) which will be averaged if the two countries are added together. If both countries had the same order of magnitude than the two countries were included. The total number of respondents (N) is 219 and consists only of coworkers of Dutch coworking spaces.

• **Missing values.** The demographic variable hours working in coworking spaces and the psychographic variable motivations for using a coworking spaces have respectively six and five missing values. These values are now defined as the number ‘99’ since this number does not appear in the data file. When information about these variables is required in the analysis, these specific cases will be excluded.

• **Recoded variables.** The demographic variables age, education, user groups, income and hours in coworking space are recoded into different variables. Recoding into a different variable transforms an original variable into a new variable in which values are grouped together. The next section shows gradually which variables are recoded and why they are recoded. There are three reasons for recoding variables. The first reason is that a better and clearer view of the variable can be created when categories are applied. Second reason is that variables that has a skewed distribution can approach a normal distribution by recoding. The last reason to recode variables is that variables should be approximately of the same order of magnitude. When ordinal groups are too small, these groups have to merge with another group.

• **Recoded variables.** The last question in the online questionnaire is about the motivations to work in a coworking space. This is a psychographic variable. The ranking question offers ten possible motivations where the respondents have to choose three motivations in order of importance (1; most important motivation, 3; least important). In order to analyze what the most chosen motivation is, all the motivations (motivation 1, 2 and 3) are added together in the descriptive analysis. Regarding the data analysis, all the three motivations are considered separately.

• **Recoded values.** The variable sector of the organization included the option ‘other, namely...’ in the questionnaire. When the remaining listed options did not fit with the profession of the coworkers, they could fill in their profession on the blank form. Twenty-three respondents used the blank form to fill in their profession. The list of profession, deducted from the research of Deskmag (2016), had a broad interpretation framework. All the 23 professions are nonetheless assigned to one of the listed professions because it turned out that all the 23 professions fit under a listed sector. For instance, a respondent mentioned ‘text editor’, which can included in the value ‘writing (11)’. Another respondent mentioned ‘travel agent’ which can be included in the value ‘commerce (3)’.

**Data preparation of the dependent variables of preferred coworking space characteristics**
The data of the dependent variables has to be prepared for the analysis in NLOGIT. The following action on the data are carried out:

• **Recoded preferences.** In the questionnaire, the respondents had to mark their preferred coworking space out of four alternatives (alternative 1, alternative 2, alternative 3 and alternative 4 ‘none of these option’). When a respondent selected, for instance, alternative 3, the recoded preference is 0010. In this way, the selected alternatives (alternatives with recoded preference 1) can be filtered.

• **Recoded values for NLOGIT.** All the variables of dependent factor were already coded in the questionnaire system, which provided the right quantitative data for the analysis. The eight attributes with the corresponding 24 attribute levels have to be recoded in order to make it suitable data for NLOGIT. The following encryptions are given to the attribute levels in order to recode, this process is called **effect coding**:
  - **Attribute level 0: 1 0;**
  - **Attribute level 1: 0 1;** and
  - **Attribute level 2: -1 -1.**
For instance, the attribute events consist of three attribute levels. Attribute level 0 (none) is recoded in the effect coding 1 and 0. Attribute level 1 (sometimes) is recoded in the effect coding 0 and 1. Attribute level 2 (often) is recoded in the effect coding -1 and -1 which is also the reference group of each attribute. With the use of this scheme, the utility values known as parameters (β) for each attribute level can be estimated. In effect coding, only minus one, zero and one are used to convey all of the necessary information on group membership. Also a constant parameter is estimated, which is equal to the grand mean of all the observations. The parameters are equal to difference between the mean of the attribute and the grand mean of all the observations. The complete scheme of effect coding of the attribute levels is shown in table 4.1

<table>
<thead>
<tr>
<th>Attribute level</th>
<th>Variable name</th>
<th>Variable value</th>
<th>Variable name</th>
<th>Variable value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Abc</td>
<td>1</td>
<td>Bbc</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>Abc</td>
<td>1</td>
<td>Bbc</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Abc</td>
<td>-1</td>
<td>Bbc</td>
<td>-1</td>
</tr>
</tbody>
</table>

4.3 Data description of the user characteristics

Section 4.3 shows the data description of the user characteristics. In section 3.4 was mentioned that the response from foreign countries have to be of similar magnitude of the collected data in the Netherlands in order to make a comparison. This is not the case, so all the data of the foreign countries is excluded for further analyses. This sample consists of 219 coworkers from the Netherlands. Two studies (Deskmag, 2013; Deskmag, 2016) draw conclusions on the following independent variables on a global level:

- Gender (Deskmag, 2016);
- User groups (Deskmag, 2013);
- Sector of organization (Deskmag, 2016);
- Transport to coworking space (Deskmag, 2016); and
- Motivations to work in a coworking space (Deskmag, 2016).

There are no scientific studies on the composition of coworkers in the Netherlands, which is one of the reasons why this research will be relevant. To get some indication, the data is compared to the results of the global studies on coworking and to studies about the general workforce in the Netherlands.

The data description is done on the basis of frequency tables and descriptive figures. The independent factor user characteristics consists of three characteristics, with between the brackets the corresponding variables, namely:

- Geographic characteristics (country of coworking space). All the coworkers in this study (219; 100%) are working from a coworking space in the Netherlands. Due to the low response in America (1), Belgium (1), England (3), Finland (3), Italy (32), Poland (1) and Switzerland (1), the characteristic geographic characteristics has become unnecessary. For reasons of completeness, this characteristic remains listed in the conceptual model.
- Demographic characteristics (gender, age, nationality, education, user group, position in organization, sector of organization, income, hours in coworking space, transport to coworking space);
- Psychographic characteristics (motivations to work in a coworking space).

The complete conceptual model of the independent variable is shown in Appendix E. This model gives a clear overview of the involved characteristics and corresponding variables.
Geographic characteristics
In total 219 Dutch respondents filled in the questionnaire. The goal of the research is to examine if different user groups can be identified based on their preferred coworking space characteristics. Since the questionnaire, in first attempt, would be spread in many countries, the exact city is not taken into account because too many cities (all over the world) would be mentioned.

Demographic characteristics
Ten demographic characteristics are analyzed in the questionnaire namely:

- Gender;
- Age;
- Nationality;
- Education;
- User group;
- Position in organization;
- Sector of organization;
- Income;
- Transport to a coworking space;
- Hours working in a coworking space;
- Transport.

Gender
The sample of 219 respondents consisted of 68% males and 32% females (see figure 4.1). According to The Fact Club (N.D.), 55% of the total work population of the Netherlands is male and 45% female, which indicates that the distribution of gender in the sample slightly differs from the work population. According to Deskmag (2016), the amount of woman who go coworking increased over the years. In 2016, 38% of the coworkers was a female, which is quite in line with the amount 32% of this study.

Age
With a range of 57 years, the youngest coworker in the sample was 18 years old and the oldest was 75 years old. Figure 4.2 shows that the age in coworking spaces is not normally distributed. The average age of a coworker (mean) is 34.61 with a dispersion around the average (standard deviation) of 11.2 years. The focus of the distribution is clearly under the mean. The variable age is a ratio variable with no categories. The variable age is recoded in the variable age groups to create categories, which provide a clearer overview of the variable. The ratio variable age will be used in the analysis. Figure 4.3 shows the dispersion of this variable. Table 4.2 provides a frequency table of the variable age groups.

Nationality
The number of nationalities is quite diverse, although in absolute numbers the Dutch (203) nationality is still best represented. Other counties represented in the coworking spaces are Afghanistan (1), America (1), Denmark (1), Germany (2), France (2), Hungary (1), Italy (1), Iran (1), Morocco (1), Romania (1), Turkey (2), South Africa (1) and 2 remain nationalities that not are represented in Appendix B.
Education

The nominal variable education consists of eight categories (initially nine but the variable “no education (option 1)” has not been chosen once). In order to create a variable with the same order of magnitude, the variable education is recoded into the variable education groups. Originally, this variable consists of three group, namely: low level of education (preparatory secondary vocational education), medium level of education (senior general secondary education, post-university education and intermediate vocational education) and high level of education (senior general secondary education, bachelor at university, master at university and Doctor of Philosophy (PhD) at university (CBS, 2013)). The reason to recode the variable education to education groups is to create less categories. Since the number of coworkers with a low level of education is strongly underrepresented (1.2%), this level is enclosed in the education level medium level of education. The two education groups are now: low-medium level of education and high level of education. From the 219 respondents, 32 coworkers (13.9%) have a low-medium level of education and 187 coworkers (86.1%) a high level of education. A frequency table of education categories is presented in table 4.3. Figure 4.4 shows the distribution of the high level of education (highlighted in yellow in table 4.3). In general, 28% of the total population in the Netherlands is highly educated (CBS, 2013). Compared to the highly educated group in the sample, which covers 86.1%, there is an extremely significant difference. An explanation for this percentage may be that office workers tend to be higher educated than people who work in, for instance, a factory.

Table 4.3: Frequency table variable education groups

<table>
<thead>
<tr>
<th>Education Groups</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparatory secondary vocational education</td>
<td>3</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Senior general secondary education</td>
<td>18</td>
<td>7.6</td>
<td>8.8</td>
</tr>
<tr>
<td>Pre-university education</td>
<td>5</td>
<td>2.8</td>
<td>11.6</td>
</tr>
<tr>
<td>Intermediate vocational education</td>
<td>6</td>
<td>2.4</td>
<td>13.9</td>
</tr>
<tr>
<td>Higher vocational education</td>
<td>79</td>
<td>33.3</td>
<td>46.2</td>
</tr>
<tr>
<td>University (bachelor)</td>
<td>18</td>
<td>7.9</td>
<td>54.1</td>
</tr>
<tr>
<td>University (master)</td>
<td>39</td>
<td>17.7</td>
<td>71.8</td>
</tr>
<tr>
<td>University (PhD)</td>
<td>8</td>
<td>3.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>219</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

User group

There are multiple user groups represented in a coworking space. In the second chapter of this research, an overview is given of the user groups in coworking spaces according the literature. Coworking is often associated with freelancers and self-employed workers (Parinno, 2015). This group, of the by Moriset (2013) called ‘lone eagles’, is the most dominant group in the sample with a share of 53%. The nominal variable user group consists of five possible categories and is recoded into the variable user group-groups with four categories: self-employed workers, freelancers or entrepreneurs, employee of a company (2-10 employees), employee of a company (11 or more employees) and students. The reason to recode the variable user groups is to create variables with the same order of magnitude. Employees of a company also appear to be well represented with a total of near 35%. In the sample of this research, 38 coworkers represent a company with 2-10 employees, and also 38 with 11 or more employees. Twenty-six of the total respondents (12%) were student, which is in line with the research of Deijl (2011) and Kojo & Nenonen (2014) who state that the coworking space is also a spot to work on school assignments. The number of users in a user group is reflected in cross table 4.4.

According to the global research of Deskmag (2016), 44% of the coworkers is a self-employed worker, freelancer or entrepreneur, 51% is an employee of a company and 5% is of another user group. The self-employed workers, freelancers and entrepreneurs are with 53% more represented in the Netherlands and then the 44% globally (Deskmag, 2016). In the Netherlands, the employees of a company have a share of almost 35%, which also differ from the 44% globally. A sufficient part in the sample are the students with 12%. Students are not recognized as a user group in the research of Deskmag (2016). Some coworking spaces in the Netherlands (Seats2Meet) are open for students; it may be possible that this is not the case in other coworking spaces worldwide.

Position in organization

Of the 219 coworkers in total in this sample, six respondents are supporting staff, 49 respondents are regular employees, 17 coworkers are manager, 93 respondents are in position of board/owner and 54 respondents does not apply to the question. It is striking that the percentage of respondents with a board/owner position is 42% (see table 4.4), which is quite high. In table 4.4, a crosstab, which crosses the variables position in the organization on the vertical axis and the variable user group on the horizontal axis, is presented. The crosstab shows that 81 of the 117 self-employed workers, freelancers or entrepreneurs occupies a board/owner position in the organization. This means that almost 70% of this user group owns an organization. The coworkers that filled in does not apply, are mostly self-employed workers, freelancers, entrepreneurs
or students. This makes sense for students because they have simply no position in an organization. It also makes sense for the user group of self-employed workers, freelancers and entrepreneurs because most of the time it is a one-man organization without specific positions.

Table 4.4: Crosstab position and user group

<table>
<thead>
<tr>
<th>Position</th>
<th>Self-employed worker, freelancer or entrepreneur %</th>
<th>Employee of a company (2-10 employees) %</th>
<th>Employee of a company (11 or more employees) %</th>
<th>Student %</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supporting staff</td>
<td>2 1%</td>
<td>3 1%</td>
<td>1 0%</td>
<td>0 0%</td>
<td>6 3%</td>
<td></td>
</tr>
<tr>
<td>Regular employee</td>
<td>3 1%</td>
<td>20 9%</td>
<td>22 10%</td>
<td>4 2%</td>
<td>49 22%</td>
<td></td>
</tr>
<tr>
<td>Manager</td>
<td>3 1%</td>
<td>2 1%</td>
<td>12 5%</td>
<td>0 0%</td>
<td>17 8%</td>
<td></td>
</tr>
<tr>
<td>Board/owner</td>
<td>81 37%</td>
<td>9 4%</td>
<td>3 1%</td>
<td>0 0%</td>
<td>93 42%</td>
<td></td>
</tr>
<tr>
<td>Don't apply</td>
<td>28 13%</td>
<td>4 2%</td>
<td>0 0%</td>
<td>12 5%</td>
<td>34 25%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>117 53%</td>
<td>38 17%</td>
<td>38 17%</td>
<td>26 12%</td>
<td>219 100%</td>
<td></td>
</tr>
</tbody>
</table>

### Sector of organization

The demographic characteristic sector of the organization is somewhat diverse. The sectors are derived out of previous research of Deskmag (2016). The sectors consultancy (25%), IT (21%) and PR / marketing / sales / advertising / communication (11%) have the largest share in the coworking space. In table 4.5, the results of this research are compared to the results of the Deskmag research. The second column of the table shows the occurrence of the variable in the sample. The share of the variable in the total occurrence is presented in the third column. The results of the Deskmag research are presented in the fourth column and the differences between the two studies in the fifth column. The results of this research are quite in line with the study of Deskmag (2016).

Table 4.5: Frequency table sector and comparison to Deskmag (2016)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Frequency sample</th>
<th>Percentage</th>
<th>Deskmag (2016)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy</td>
<td>55</td>
<td>25%</td>
<td>15%</td>
<td>10,0%</td>
</tr>
<tr>
<td>Design</td>
<td>17</td>
<td>8%</td>
<td>7%</td>
<td>1,0%</td>
</tr>
<tr>
<td>Commerce</td>
<td>31</td>
<td>6%</td>
<td>3%</td>
<td>3,0%</td>
</tr>
<tr>
<td>IT</td>
<td>46</td>
<td>21%</td>
<td>27%</td>
<td>-6,0%</td>
</tr>
<tr>
<td>Art</td>
<td>8</td>
<td>4%</td>
<td>3%</td>
<td>1,0%</td>
</tr>
<tr>
<td>Management</td>
<td>6</td>
<td>2%</td>
<td>5%</td>
<td>-3,0%</td>
</tr>
<tr>
<td>Research</td>
<td>11</td>
<td>5%</td>
<td>4%</td>
<td>1,0%</td>
</tr>
<tr>
<td>Education</td>
<td>19</td>
<td>9%</td>
<td>5%</td>
<td>4,0%</td>
</tr>
<tr>
<td>Project management</td>
<td>11</td>
<td>5%</td>
<td>4%</td>
<td>1,0%</td>
</tr>
<tr>
<td>PR, marketing, sales, advertising, communication</td>
<td>25</td>
<td>11%</td>
<td>5%</td>
<td>6,0%</td>
</tr>
<tr>
<td>Writing</td>
<td>8</td>
<td>4%</td>
<td>5%</td>
<td>-1,0%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>4%</td>
<td>17%</td>
<td>-9%</td>
</tr>
<tr>
<td>Total</td>
<td>251</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

### Income

The distribution of respondents could also be described by their income. The variable ‘income’ is recoded in the variable income groups, to create a new variable which consists of 3 income groups and a category ‘I do not know/I rather not say’ (see table 4.6). The reason to recode the variable income is to create variables with the same order of magnitude. Twenty-seven percent of the coworkers earns less than €20,000 a year. The majority of the respondents (36%) earn between the €20.001 and €50.000 per year and 14% of the coworkers earns €50.000 or more a year. In the Netherlands, the modal net annual income is €24,500 a year in 2015. The 27% of the coworkers who earns less than €20.000 a year consists for 55% of self-employed workers, freelancers or entrepreneurs and for 20% of students (see crosstab 4.6). The relatively high percentage of low income can be dedicated to both user groups. What is striking is that, although the survey was conducted anonymously, still 23% of the respondents do not know or rather not share their level of income.

Table 4.6: Crosstab income and user group

<table>
<thead>
<tr>
<th>Income groups</th>
<th>Self-employed worker, freelancer or entrepreneur</th>
<th>Employee of a company (2-10 employees)</th>
<th>Employee of a company (11 or more employees)</th>
<th>Student</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 20,000 a year</td>
<td>33</td>
<td>11</td>
<td>4</td>
<td>12</td>
<td>60</td>
<td>27%</td>
</tr>
<tr>
<td>20,001-50,000 a year</td>
<td>47</td>
<td>14</td>
<td>12</td>
<td>15</td>
<td>78</td>
<td>36%</td>
</tr>
<tr>
<td>More than 50,000 a year</td>
<td>15</td>
<td>4</td>
<td>12</td>
<td>0</td>
<td>21</td>
<td>14%</td>
</tr>
<tr>
<td>I don’t know/I’d rather not say</td>
<td>22</td>
<td>9</td>
<td>7</td>
<td>12</td>
<td>50</td>
<td>23%</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>38</td>
<td>38</td>
<td>26</td>
<td>219</td>
<td>100%</td>
</tr>
<tr>
<td>Percent</td>
<td>53%</td>
<td>17%</td>
<td>17%</td>
<td>12%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
Transport to coworking space

Figure 4.5 shows an overview, which transport the coworkers use to travel to the coworking space. The largest share goes by car (51%), followed by bike (22%) and by public transport (21%). Just 13 of the 219 (6%) coworkers walk to the coworking space. In comparison to the global research of Deskmag (2016), the biggest part (51%) goes by car, 22% by bike, 18% by foot and 8% by public transport. The sample of this research is, according to the share that goes by car and by bike, quite in line with the global results. The share that goes by public transport is bigger in the Netherlands than global. Cause for this may be that everything in the Netherlands is relatively easily accessible by public transport in comparison to the rest of the coworking spaces worldwide.

Hours working in coworking space

The amount of time working a week in the coworking space is shown in table 4.7. The ratio variable is recoded into a new variable that reflects the hours in a workday. What is striking is that 28.8% of the sample works 0 to 8 hours on average a week. A coworking space is probably used in this way as a temporary workspace. 13.7% of the sample works on average a full working week in the coworking space. The ratio variable of hours working in a coworking space will be used in the analyses.

Table 4.7: Hours in coworking space

<table>
<thead>
<tr>
<th>Hours in coworking space</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-8 hours/week</td>
<td>83</td>
<td>38.8%</td>
<td>38.8%</td>
</tr>
<tr>
<td>8-16 hours/week</td>
<td>33</td>
<td>15.1%</td>
<td>53.9%</td>
</tr>
<tr>
<td>16-24 hours/week</td>
<td>35</td>
<td>16.0%</td>
<td>70.0%</td>
</tr>
<tr>
<td>24-32 hours/week</td>
<td>40</td>
<td>18.3%</td>
<td>88.3%</td>
</tr>
<tr>
<td>32-40 hours/week</td>
<td>30</td>
<td>13.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>More than 40 hours/week</td>
<td>13</td>
<td>5.9%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

Finally, in table 4.8, the variables gender, user group, sector and way of transport to the coworking space are compared to the result of the studies of Deskmag (Deskmag, 2013; Deskmag, 2016). The variables gender, user group and sector of organization are quite in line with each other. The variable transport to the coworking space is quite different in The Netherlands compared to the rest of the world. An overview of the other variables (age groups, nationalities, level of education, position in organization, income and hours in coworking space) is presented in table 4.9.

Table 4.8: Comparison results to the Deskmag studies

<table>
<thead>
<tr>
<th>Gender</th>
<th>Deskmag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>63%</td>
</tr>
<tr>
<td>Female</td>
<td>37%</td>
</tr>
<tr>
<td>User group</td>
<td></td>
</tr>
<tr>
<td>Self-employed worker, freelancer or employee of a company</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>12%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sector of organization</th>
<th>Deskmag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy</td>
<td>25%</td>
</tr>
<tr>
<td>Design</td>
<td>8%</td>
</tr>
<tr>
<td>Commerce</td>
<td>16%</td>
</tr>
<tr>
<td>IT</td>
<td>21%</td>
</tr>
<tr>
<td>Art</td>
<td>4%</td>
</tr>
<tr>
<td>Management</td>
<td>2%</td>
</tr>
<tr>
<td>Research</td>
<td>5%</td>
</tr>
<tr>
<td>Education</td>
<td>9%</td>
</tr>
<tr>
<td>Project management</td>
<td>5%</td>
</tr>
<tr>
<td>PR, marketing, sales, advertising</td>
<td></td>
</tr>
<tr>
<td>Writing</td>
<td>4%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport to coworking space</th>
<th>Deskmag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>24%</td>
</tr>
<tr>
<td>Bike</td>
<td>47%</td>
</tr>
<tr>
<td>By foot</td>
<td>6%</td>
</tr>
<tr>
<td>Public transport</td>
<td>19%</td>
</tr>
</tbody>
</table>

Table 4.9: Overview results

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 year or younger</td>
<td>46%</td>
</tr>
<tr>
<td>25-34 year</td>
<td>39.3%</td>
</tr>
<tr>
<td>35-44 year</td>
<td>24.1%</td>
</tr>
<tr>
<td>45 year or older</td>
<td>14.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nationalities</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Netherlands</td>
<td>93%</td>
</tr>
<tr>
<td>Other countries</td>
<td>7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level of education</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-medium level of education</td>
<td>14%</td>
</tr>
<tr>
<td>High level of education</td>
<td>86%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Position in organization</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supporting staff</td>
<td>3%</td>
</tr>
<tr>
<td>Regular employee</td>
<td>22%</td>
</tr>
<tr>
<td>Manager</td>
<td>8%</td>
</tr>
<tr>
<td>Board/owner</td>
<td>42%</td>
</tr>
<tr>
<td>Does not apply</td>
<td>25%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 30.000 a year</td>
<td>47%</td>
</tr>
<tr>
<td>20.001-50.000 a year</td>
<td>30%</td>
</tr>
<tr>
<td>More than 50.000 a year</td>
<td>14%</td>
</tr>
<tr>
<td>I don't know/Id rather not say</td>
<td>23%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hours in coworking space</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-8 hours/week</td>
<td>28.3%</td>
</tr>
<tr>
<td>8-16 hours/week</td>
<td>15.1%</td>
</tr>
<tr>
<td>16-24 hours/week</td>
<td>16.0%</td>
</tr>
<tr>
<td>24-32 hours/week</td>
<td>18.3%</td>
</tr>
<tr>
<td>More than 40 hours/week</td>
<td>14.7%</td>
</tr>
</tbody>
</table>
Psychographic characteristics

The last user characteristics of the factor ‘user characteristics’ are motivations to use a coworking space (psychographic characteristics). According to Ahmad (2003), benefits sought in a particular product is a way to segment users according psychographic dimensions. The last question in the questionnaire is about respondents’ motivation to work in a coworking space. This ranking question offers 10 possible motivations. In order of importance (1; most important, 3; least important), the coworker had to select their motivation. To show the differences between the three motivations, a stacked bar chart is presented in figure 4.6. In this stacked bar chart, all the three choice options are added together which shows the share per rank of the total motivation. As an example, motivation 1: 75 respondents chose motivations 1 as their first motivation, 39 respondents chose it as their second motivation and 28 respondents as their third motivation.

Figure 4.6: Stacked bar chart motivations

1. I was looking for a workplace outside the home (separating work and private life).
2. Vibrant and creative atmosphere in the coworking space;
3. Affordable accommodation;
4. Social interaction with coworkers;
5. The opportunity to network with coworkers (possible new projects);
6. The possibility to work-related conversations with other coworkers (knowledge sharing, knowledge creation);
7. The feeling of being part of a community;
8. Flexibility (rental period, number of square meters);
9. Professional appearance for the company; and
10. Professional supportive work environment (support services);

Motivation 1: ‘I was looking for a workplace outside the home (separating work and private life)’ is overall the most chosen motivation to go to a coworking space. Seventy-five respondents (34.2%) chose this motivation as their main motivation. According to Moriset (2013), the frontiers between professional lives and private lives disappear when working from home. They want to break loneliness and escape from boredom. A better work/life balance can be achieved when working from somewhere else. Fuzi et al. (2014) mentioned that workers decided to go to a coworking space because they became exhausted of the distraction at home. The main motivation according the respondents of the questionnaire is in line with the motivations in the literature on coworking.

Coworking spaces are creative, social and energetic places (Fuzi, 2015; Orel, 2015). The second most chosen motivation overall is the motivation number 2: ‘vibrant and creative atmosphere in the coworking space’ with a share of 18.7%. Besides that, this motivation is the most chosen second motivation an also the most chosen third motivation.

Affordable accommodation is with 11.7% the third most important motivation overall to come to a coworking space. According to Sykes (2014) are the rent prices are often low in coworking spaces. What might have influenced the respondents who pick this motivation is the provider of the coworking space. Seats2Meet provides a workspace free in exchange for ‘social capital’ in which the coworker shares their knowledge.

The top three motivations are closely followed by the motivations ‘social interaction with coworkers’ and ‘the opportunity to network with coworkers’. Both motivations provide information about the interaction between coworkers. The literature (Leforestier, 2009; Deijl, 2011; Spinuzzi, 2012; Moriset, 2013) shows that this is an important motivation which is reflected in the sample of this research.
4.4 Conclusion

In this section, a conclusion is drawn of the fourth chapter about the data description of this research. The following sub-question is examined in this chapter: “What are the user characteristics of coworkers in general?”

Twenty-five coworking spaces were willing to cooperate in the study to preferred coworking space characteristics. The response of the completed questionnaires in 219 in total, which are all respondents (coworkers) that works in a Dutch coworking space. Since there are no scientific studies on the composition of coworkers in the Netherlands, it is not possible to generalize the sample of this study to the population of all the coworkers in the Netherlands. For that reason, two studies (Deskmag, 2013; Deskmag, 2016) that focuses on the composition of coworkers on a global level (according gender, user groups, sector of organization, transport to coworking space and motivations to work in a coworking space) gave an indication of the composition worldwide. In order to give answer to the sub-question “what are the user characteristics of coworkers in general?” a cross-sectional view is presented of the geographic, demographic and psychographic characteristics. Based on a sample of 219 respondents can be concluded, with appropriate caution, that the coworkers in the Netherlands:

- Are mostly men (68%) – similar to the world population (Deskmag, 2013);
- Are on average 35 years old;
- Are highly educated (86%) (higher vocational education or university (bachelor, masters or PhD));
- Are self-employed workers, freelancer or entrepreneurs (53%) – similar to the world population (Deskmag, 2016);
- Have mostly a board/owner position (42%) – similar to the world population (Deskmag, 2016);
- Earns between the €20,001 and €50,000 per year (36%)
- Are active in the sector consultancy (25%) and IT (21%) – similar to the world population (Deskmag, 2016);
- Are going to the coworking space by bike (47%) – not similar to the world population (Deskmag, 2016);
- Are working less than 24 hours (60%) per week in the coworking space; and
- Are going to the coworking space because they want to separate work and private life (21.6%), want to work in a vibrant and creative atmosphere (18.7%) and are in search of affordable accommodation (11.7%).

What the preferred characteristics of coworking spaces are and whether different groups can be defined in the preferred characteristics will be estimated with the aid of multiple models in the following chapter.
Chapter 5: Data Analysis and Results

In this chapter, the data analysis will be carried out and the results will be presented. In the previous chapter, the descriptive statistics of the user characteristics of coworkers in the Netherlands are given. The fourth sub-question is as follows: “what are the user preferences for coworking space characteristics?” This sub-question will be answered based on a multinomial logit model in section 5.1. This method analyses the results of the attribute based stated choice method of the dependent variable. The fifth sub-question is as follows: “Can different user groups be identified based on their preferences?” In order to find categories in the multivariate data of the preferences of coworking space characteristics, a latent class logit model is estimated in section 5.2. With the aid of this method, multiple classes with equal preferences will be estimated. To answer the sixth sub-question “What are the differences between these user groups based on user characteristics?” will be answered with the aid of multiple chi-square tests and independent samples T-tests. The conclusion of the data analysis and the results are drawn up in section 5.3.

5.1 Preferred coworking space characteristics (multinomial logit model)

With the aid of an attribute based stated choice method, data for the multinomial logit model is collected. With the aid of that model, the fourth sub-question “what are the user preferences for coworking space characteristics?” can be answered. The following attributes were submitted to the respondents:

- Accessibility of the location;
- Atmosphere and interior aesthetics;
- Layout of the space;
- Diversity in supply spaces;
- Reception and hospitality;
- Events;
- Diversity of tenants; and
- Type of lease contract.

The complete conceptual model of the dependent variable is shown in Appendix F.

The following descriptive statistics can be presented according to the data collection methodology of the dependent variables:

- 219 respondents had to choose 9 times their preferred alternative;
- 1.971 (219 times 9) choice sets are presented to 219 respondents which is equal to the number of observations;
- Each choice set consist of 4 choices/alternatives (alternative 1, alternative 2, alternative 3 an alternative 4 “none of these options);
- Each respondent had to face 36 choices/alternatives (9 times 4);
- In total 7.884 (2259 times 4) choices/alternatives were presented;
- In 394 of the 1971 (20%) choice sets, the respondent selected the option ‘none of these option’ (alternative 4), which represents that the coworker rather would work at home (or somewhere else) than in a coworking spaces;
- In 1.577 (1.971 minus 394) (80%) of the choice sets, the respondent selected one of the other alternatives (alternative 1, alternative 2 or alternative 3).

The overall preferences of coworking space characteristics, without considering user characteristics, can be determined with the aid of a multinomial logit model. First, the goodness of fit and descriptive statistics of the model will be determined and thereafter the utility values and significance of the parameters (coworking space characteristics).

Goodness of fit

In order to determine if the multinomial logit model performs well, the goodness of fit has to be calculated. The underlying equation for this method is presented in section 3.2.2. The log likelihood function of the estimated parameters is -2474.425 which can be found in Appendix G (green highlighted) and reflects the function of a set of parameters. The log likelihood function at the zero parameters is -2732.386 which can be found in Appendix H (yellow highlighted) and reflects the log likelihood of the model with no predictors. The log likelihood is defined up to an arbitrary additive constant. The log likelihood function at the zero parameters (restricted log likelihood) is derived from the output of NLOGIT of the latent class logit model. This can also be calculated by multiplying the number of observations (1971: 219 times 9) with Ln (0.25). Ln (0.25) stands for four alternatives, since the experimental design contained nine times four alternatives.
\[ \rho^2 = 1 - \frac{LL(\beta)}{LL(0)} \]

\[ LL(\beta) = \log \text{likelihood function at estimated parameters}; \]

\[ LL(0) = \log \text{likelihood function at zero parameters} \]

\[ \rho^2 = 1 - \frac{(-2474.425)}{(-2732.386)} = 1 - 0.9056 = 0.0944 \]

In section 3.2.2 it was mentioned that when the McFadden’s rho-square value is above 0.1, it can be considered as usable (Louviere et al., 2000). The model which estimated the preferred characteristics of a coworking space did not perform well enough (\(\rho^2 = 0.0944 < 0.1\)), however the result lies very close to the limit of 0.1. This does not mean that the model is not valid but that there is much unobserved heterogeneity between the respondents or many random errors (faults and indifferences) in the choices made (Kemperman & Timmermans, 2008). Therefore, the results will be further analyzed and interpreted carefully. In table 5.1, underlying statistics of the estimated model are presented.

Table 5.1: Descriptive statistics multinomial logit model

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log likelihood of the estimated parameters</td>
<td>-2474.43</td>
</tr>
<tr>
<td>Log likelihood of the zero model</td>
<td>-2732.39</td>
</tr>
<tr>
<td>McFadden’s Rho-square</td>
<td>0.0944</td>
</tr>
<tr>
<td>McFadden’s Rho-square adjusted</td>
<td>0.0812</td>
</tr>
<tr>
<td>Number of observation</td>
<td>1971</td>
</tr>
<tr>
<td>AIC criterion divided by number of observations</td>
<td>2.528</td>
</tr>
<tr>
<td>Number of parameters</td>
<td>17</td>
</tr>
<tr>
<td>Number of classes</td>
<td>1</td>
</tr>
</tbody>
</table>

Utility values and significance of the parameters

With the aid of the multinomial logit model, the utility values of the first two levels of all attributes are estimated as well as their corresponding significance. An attribute consists of three attribute levels (parameters) in which the utility value of the total attribute is reflected in the total attribute utility and the utility value of the attribute level is reflected in the part-worth utility (PWU). Each third parameter of an attribute \((\beta_3, \beta_5, \beta_6, \beta_{12}, \beta_{13}, \beta_{15}, \beta_{16}, \beta_{21})\) serves as a base point/reference of the corresponding attribute (see section 4.2). Relative to the base point, the utility values and level of significance of that specific attribute are estimated. No utility value and significance are estimated for the third level parameters because it is a base point. With a three-level attribute, two attribute levels are estimated \((\beta_3, \beta_5, \beta_6, \beta_7, \beta_8, \beta_{10}, \beta_{15}, \beta_{16}, \beta_{24}, \beta_{17}, \beta_{18}, \beta_{20}, \beta_{22}, \beta_{23})\). The utility value of the third attribute level can be derived from the first and second attribute level \((- (\beta_1 + \beta_2))\).

The utility values of the estimated model are presented in table 5.2. The constant parameter in this research reflects the utility value of the alternative ‘none of these option’ in which a respondent rather would work at home or somewhere else than in a presented coworking space. The utility value of the constant \(\beta_0\) is 0.16 in the estimated model. On average, when the total utility value of an alternative is below 0.16, the probability a coworker rather would work at home (or somewhere else) than in a presented alternative is larger (see table 5.3). The parameters \(\beta_{1…24}\) represent the main effects of the attribute levels (Borgers & Vosters, 2010). These part-worth utilities are presented in the fourth column in table 5.2. A positive part-worth utility (PWU) indicates that a parameter has a positive influence (utility) on the preferences of a coworking space. A negative part-worth utility indicates that a parameter has a negative influence (utility) on the preferences of a coworking space.

A significant parameter means that the parameter is significantly different from the mean since there has been made use of effect coding (see table 4.1). If dummy coding was used (zero and one), it was compared to zero. If a parameter is not significant, it tells something about how it differs from the average. In the fifth column, the significance of the part-worth utilities is presented. Only the significant parameters can be interpreted as so. “Statistically significant results are those that are interpreted not likely to have occurred purely by chance and thereby have other underlying causes for their occurrence” (Kaila, 2009, pp. 1). The following significance levels occur:

- When a coefficient has 3 stars (***) the part-worth utility is significant on a 1% level;
- When a coefficient has 2 stars (**) it is significant on a 5% level; and
- When a coefficient has no stars, it is not significant.

The total utility value of a coworking space is the sum of the corresponding part-worth utilities (PWU), which is presented (per attribute) in the sixth column. The negative part-worth utilities are made positive for this calculation because it is about the overall contribution of a specific attribute and not about positive or negative influence to the user’ preferences in a coworking space. The following table (table 5.2) shows every part-worth utility (PWU) and their level of significance. An overview of the output of NLOGIT when estimating a multinomial logit model is presented in Appendix G.
Table 5.2: Part-worth utility, total utility and significance of the parameters of the multinomial logit model

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Attribute level</th>
<th>β-level</th>
<th>PWU</th>
<th>Significance</th>
<th>Total Attribute Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>Constant***</td>
<td>β0</td>
<td>0.16</td>
<td>0.008</td>
<td>0.16</td>
</tr>
<tr>
<td>Accessibility of location</td>
<td>By car and public transport***</td>
<td>β1</td>
<td>0.48</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>By car***</td>
<td>β2</td>
<td>0.50</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>By public transport</td>
<td>β3</td>
<td>0.02</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Atmosphere and interior aesthetics</td>
<td>Industrial**</td>
<td>β4</td>
<td>0.13</td>
<td>0.010</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Modern</td>
<td>β5</td>
<td>0.01</td>
<td>0.846</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Homey</td>
<td>β6</td>
<td>0.13</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>Layout of the space</td>
<td>Open layout</td>
<td>β7</td>
<td>0.03</td>
<td>0.565</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Half open layout***</td>
<td>β8</td>
<td>0.28</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Closed layout</td>
<td>β9</td>
<td>0.30</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>Diversity in supply spaces</td>
<td>Basic coworking space</td>
<td>β10</td>
<td>0.04</td>
<td>0.398</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standard coworking space</td>
<td>β11</td>
<td>0.07</td>
<td>0.148</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Premium coworking space</td>
<td>β12</td>
<td>0.03</td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td>Reception and hospitality</td>
<td>No reception and no host***</td>
<td>β13</td>
<td>-0.17</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reception but no host***</td>
<td>β14</td>
<td>0.13</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reception and active host</td>
<td>β15</td>
<td>0.04</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td>Events</td>
<td>None***</td>
<td>β16</td>
<td>0.15</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sometimes***</td>
<td>β17</td>
<td>0.15</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>β18</td>
<td>0.004</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>Diversity of tenants</td>
<td>No diversity of tenants***</td>
<td>β19</td>
<td>-0.24</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate diversity of tenants***</td>
<td>β20</td>
<td>0.14</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strong diversity of tenants</td>
<td>β21</td>
<td>0.10</td>
<td>0.48</td>
<td></td>
</tr>
<tr>
<td>Type of lease contract</td>
<td>No contract***</td>
<td>β22</td>
<td>-0.51</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Short term***</td>
<td>β23</td>
<td>0.20</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long term</td>
<td>β24</td>
<td>0.71</td>
<td>1.42</td>
<td></td>
</tr>
<tr>
<td>Total utility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.56</td>
</tr>
</tbody>
</table>

The following enumeration and figure (5.1) shows, in order of importance, the contribution of attributes to a coworking space. Since none of the parameter of the attribute diversity in supply spaces is significant, this attribute will no longer be included.

1. **Type of lease contract (1.42)**
   - No contract: 0.51***;
   - Short contract: 0.20***;
   - Long term contract: -0.71;

2. **Accessibility of location (1.0)**
   - By public transport and car: 0.48***;
   - By public transport: 0.02;
   - By car: -0.50***;

3. **Layout of the space (0.61)**
   - Half-open layout: 0.28***;
   - Open layout: 0.03;
   - Closed layout: -0.30;

4. **Diversity of tenants (0.48)**
   - Moderate diversity of tenants: 0.14***;
   - Strong diversity of tenants: 0.10***;
   - No diversity of tenants: -0.24;

5. **Reception and hospitality (0.34)**
   - Reception but no host: 0.13***;
   - Reception and active host: 0.04;
   - No reception and no host: -0.17***;

6. **Events (0.31)**
   - Sometimes: 0.15***;
   - Often: 0.004;
   - None: -0.15***;

7. **Atmosphere and interior aesthetics (0.27)**
   - Homey: 0.13;
   - Modern: -0.01;
   - Industrial: -0.14**;

A visualization of the estimated utilities is presented in Appendix I (recommended).
The fourth sub-question is as follows: “what are the user preferences for coworking space characteristics?” In order to answer this sub-question, table 5.2 and the just presented enumeration will be used as a basis. The preferences are being treated in order of descending importance (total utility), so the most preferred characteristics of a coworking space will be presented first:

1. According the 219 respondents, the type of lease contract is the most preferred characteristic in a coworking space (total utility: 1.42). The coworkers significantly (p < 0.01) prefer no contract or a short contract (day, week or month) but certainly not a long contract (year or longer). The part-worth utility of the attribute level no contract is the highest of all the preferred characteristics and the part-worth utility of the attribute level long term contract (year or longer) is the lowest of all the presented characteristics. The most important characteristic of a coworking space is the type of lease contract with a strong preference for no contract or a short lease contract (day, week or month).

2. The accessibility of the location comes in second place of the most preferred attributes (total utility: 1.0). When the coworking space is both accessible by public transport and car, most utility value is assigned by the coworker (p < 0.01). Relatively little utility value is assigned to the parameter by public transport (0.02) which is remarkable since all the coworking spaces were well served by public transport. A good accessible coworking space by both public transport and car is of course more convenient. The participating coworking spaces in the sample were mainly located within urban areas which are better served by public transport than by car. The least utility value is assigned to a coworking space which is only accessible by car.

3. Coworkers significantly prefer (p < 0.01) a half-open layout over an open layout and a closed layout. In a half-open layout, there is a combination of open spaces with a concentration rooms, where an open layout mainly consists of large open spaces. A closed layout with enclosed and separate spaces is a drawback for a coworking space. Coworking spaces are known from their open and easy accessible environment, a closed layout is in contradiction with that. The total utility value of the layout of the space (0.61) indicates that it is of interest to the coworker how the space is organized. There has to be a sufficient amount of space for collaborative work, but it is also important that coworkers can concentrate somewhere, which is harder in a collaborative environment with a lot of distraction.

4. The diversity of tenants also plays a significant (p < 0.01) role in the coworking space (0.48). A coworking space is a community-driven environment of like-minded individuals where lots of business field can meet each other. This also comes forward in the sample of the study. When the tenants in the coworking space represent a few or a lot business fields, this has a positive effect on the preferred characteristics (0.14 and 0.10). No diversity of tenants is not preferred (-0.24).

5. Reception and hospitality finished in fifth position overall (0.34). Coworkers prefer (p < 0.01) to have a reception because the attribute levels reception but no host and reception and active host both scored a positive utility value while the attribute level no reception and no host scored relatively low. An active host that connects coworkers to each other is also a preferred characteristic for some coworkers in the sample.

6. The coworker prefers (p < 0.01) events in the coworking space (0.31). Multiple coworkers in the sample stated that they prefer to have sometimes an event in the coworking space, while other coworkers also stated that no value is attached to no events. There is a clear separation of coworkers according this attribute. The part-worth utility of the attribute level often is merely 0.004, which indicates that no value is attached to many events in the coworking space. Compared to the previous attributes, it appears that this attribute is one of the least important characteristics in a coworking space.

7. What is striking is that the atmosphere and interior aesthetics are relatively unimportant in a coworking space (0.27) while often a lot of attention is paid to the aesthetics of a coworking space. The styles modern and industrial have themselves a low utility that reflects that it has a negative influence on the preferences (p < 0.05).

In table 3.7, the experimental design with corresponding attribute levels was presented. The total utility of an alternative/coworking space can be calculated based on the part-worth utilities of every attribute. This is the sum of all the attribute level corresponding part-worth utilities. The total utility per alternative is presented in table 5.3. From the alternative with the highest total utility (alternative 8) to the alternative with the lowest total utility (alternative 12). This table clearly shows in which composition of attribute levels the most utility can be achieved. The utility values of the attribute diversity in supply spaces are ignored in the calculation of the total utility value because it is not significant.
Table 5.3: Total utility per presented alternative

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Attribute 1</th>
<th>Attribute 2</th>
<th>Attribute 3</th>
<th>Attribute 4</th>
<th>Attribute 5</th>
<th>Attribute 6</th>
<th>Attribute 7</th>
<th>Total Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>As public transport and car</td>
<td>Homey</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Strong diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>2</td>
<td>As public transport and car</td>
<td>Homey</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>3</td>
<td>As public transport and car</td>
<td>Homey</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>Sometimes</td>
<td>Strong diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>4</td>
<td>As public transport and car</td>
<td>Homey</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>5</td>
<td>As public transport</td>
<td>Western</td>
<td>Half-open layout</td>
<td>Basic coworking space</td>
<td>No reception but no host</td>
<td>None</td>
<td>No diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>6</td>
<td>As public transport</td>
<td>Industrial</td>
<td>Half-open layout</td>
<td>Closed coworking space</td>
<td>No reception but no host</td>
<td>None</td>
<td>No diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>7</td>
<td>As public transport and car</td>
<td>Industrial</td>
<td>Half-open layout</td>
<td>Basic coworking space</td>
<td>No reception but no host</td>
<td>None</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>8</td>
<td>As public transport</td>
<td>Industrial</td>
<td>Half-open layout</td>
<td>Basic coworking space</td>
<td>No reception but no host</td>
<td>None</td>
<td>Strong diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>9</td>
<td>As public transport</td>
<td>Industrial</td>
<td>Half-open layout</td>
<td>Basic coworking space</td>
<td>Reception but no host</td>
<td>None</td>
<td>No diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>10</td>
<td>As public transport</td>
<td>Industrial</td>
<td>Half-open layout</td>
<td>Basic coworking space</td>
<td>Reception but no host</td>
<td>None</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>11</td>
<td>As public transport</td>
<td>Industrial</td>
<td>Half-open layout</td>
<td>Basic coworking space</td>
<td>Reception but no host</td>
<td>None</td>
<td>Strong diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>12</td>
<td>As public transport and car</td>
<td>Western</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>No reception but no host</td>
<td>Often</td>
<td>Strong diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>13</td>
<td>As public transport and car</td>
<td>Western</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>Often</td>
<td>Moderate diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>14</td>
<td>As public transport and car</td>
<td>Western</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>None</td>
<td>Strong diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>15</td>
<td>As public transport and car</td>
<td>Western</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>None</td>
<td>Strong diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
<tr>
<td>16</td>
<td>As public transport and car</td>
<td>Western</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>Reception but no host</td>
<td>None</td>
<td>Moderate diversity of tenants</td>
<td>Long term (year or longer)</td>
</tr>
</tbody>
</table>

Alternative 8 is the most preferred alternative of all the presented alternatives with a total utility value of 1.48. This coworking space is accessible by public transport and car, the atmosphere of interior aesthetics is homey and has a half-open layout. What is striking is that this alternative does not have a reception and a host, low utility value is assigned to this attribute level according to table 5.2. This coworking space organize sometimes an event, has a strong diversity of tenants in multiple sectors and no form of lease contract need to be signed. In second place comes alternative 7 with a total utility value of 1.04. The relatively big difference in total utility is mainly due to attributes layout of the space (half-open or open) and type of lease contract (no contract or short term contract).

The probability that a coworker rather want to work at home (or somewhere else) is larger if the total utility of the alternative is lower than the constant (0.16). These alternatives are marked red. The higher the total utility value, the higher the probability a coworker choose the offered alternative instead of working from home or somewhere else. These alternatives are marked green. Alternative 12 reflects the least preferred coworking space characteristics of all presented alternatives with a total utility value of -2.05. All the parameters with the lowest utility of a specific attribute, with exception of the parameter often of the attribute events, comes together in this alternative. Basically, anything that does not reflect a typical coworking space.

In particular, the distribution of attribute levels of attribute 1 and attribute 8 stand out in table 5.3. Regarding attribute 1, there is a concentration of the attribute level by public transport and by public transport and car above the constant and a concentration of the attribute level by car under the constant. Public transport is the essence how coworkers get to the coworking space. Regarding attribute 8, there is a concentration in particular of the attribute levels no contract and short contract above the constant and concentration of the attribute level long term contract under the constant. A long rental contract goes against the principles of a coworking space.

The practical relevance of this study is providing insight in the user preferences for coworking space characteristics. By understanding the preferences of the coworkers, coworking spaces can be more effectively developed because providers and developers can respond to the needs of the user. The work environment can be adjusted to the user preferences resulting from the research. Twenty-five coworking spaces cooperated in the research of which 16 coworking spaces were visited (see Appendix D). In order to demonstrate the practical relevance, the total utility per coworking space is presented in table 5.4.

Table 5.4: Total utility per visited coworking space (practical relevance)

<table>
<thead>
<tr>
<th>Coworking space</th>
<th>Location</th>
<th>Attribute 1</th>
<th>Attribute 2</th>
<th>Attribute 3</th>
<th>Attribute 4</th>
<th>Attribute 5</th>
<th>Attribute 6</th>
<th>Attribute 7</th>
<th>Total Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amsterdam Central</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Homey</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Strong diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>Amsterdam Central</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Homey</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>Meet &amp; Discover</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Homey</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>Tribes</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Modern</td>
<td>Half-open layout</td>
<td>Standard coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>SpaceX</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Industrial</td>
<td>Half-open layout</td>
<td>Premium coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Strong diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>SpaceX</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Industrial</td>
<td>Half-open layout</td>
<td>Premium coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Strong diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>IndieHome</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Modern</td>
<td>Open layout</td>
<td>Basic coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>WestEnd</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Modern</td>
<td>Open layout</td>
<td>Standard coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>No contract</td>
</tr>
<tr>
<td>Wicked Grounds</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Industrial</td>
<td>Half-open layout</td>
<td>Basic coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>Smurf</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Modern</td>
<td>Half-open layout</td>
<td>Closed coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Moderate diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>Small</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Modern</td>
<td>Half-open layout</td>
<td>Closed coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Strong diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>Gee</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Modern</td>
<td>Half-open layout</td>
<td>Closed coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Strong diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
<tr>
<td>A-Lab</td>
<td>Amsterdam</td>
<td>By car and public transport</td>
<td>Modern</td>
<td>Half-open layout</td>
<td>Closed coworking space</td>
<td>No reception but no host</td>
<td>Sometimes</td>
<td>Strong diversity of tenants</td>
<td>Short term (day or week or month)</td>
</tr>
</tbody>
</table>

Constant | | | | | | | | | 0.16 |

58
Every visited coworking space has a higher total utility value than the utility value which is assigned to working from home (or somewhere else). The top three coworking spaces in the sample, based on total utility value, are Interpolis Carrousel (Tilburg), Amsterdam Connected (Amsterdam) and Meet & Discover (Amersfoort). What is striking, is that the total utility value of these coworking spaces all results in a higher total utility value than the top alternative (8) of table 5.3. (1.48). All the three coworking spaces are working with a booking-system from Seats2Meet in which free workspace is offered to ‘lone eagles’. Het Nieuwe Kantoor (Den Bosch) was only good accessible by car and the reasons that A Lab (Amsterdam) comparatively scores low is that is has a closed layout. Overall, the visited coworking spaces scored really high since the lowest utility value is 0.31 (see table 5.3). All the visited coworking spaces lie very close to the most preferred characteristics resulting from the estimation (table 5.2). Perhaps respondents are limited by the work environment and reflect mainly to their own environment or have little experience with other work environments.

5.2 Classes of preferred characteristics (latent class logit model)
In this sub-section, the fifth sub-question “Can different user groups be identified based on their preferences”’ and the sixth sub-question “What are the differences between these user groups based on user characteristics” are answered. In order to find latent classes in the multivariate data of the preferences of coworking space characteristics a latent class logit model is estimated. With the aid of chi-square tests and independent samples T-tests, it can be determined if there are significant differences between the estimated classes regarding demographic and psychographic characteristics. First, the goodness of fit and descriptive statistics of the model will be determined and thereafter the utility values and significance of estimated segments in preferences of coworking space characteristics. Finally, statements about the results of the chi-square tests and the independent samples T-tests will be presented which reflects the segment characteristics.

Goodness of fit and measures of fit
In order to determine if the latent class logit model performs well, the goodness of fit has to be calculated. The underlying equation at this method is presented in section 3.2.2. The goal of a latent class logit model is to identify classes in the gathered data. The gathered data is formed by a sample of respondents (N) of a total population. The classes (S) are unobservable and is between one and the total number of respondents in the sample. The number of classes will be between 1 and 219. Respondents who have similar observed variable distributions are grouped in the same class of data. These classes are called latent segments, latent clusters or latent classes and are undefined and unknown à priori (Swait, 1994; Nijënstein, 2012). “Through a latent segment classification mechanism, the membership likelihood functions determine the latent segment to which an individual belongs” (Swait, 1994, pp. 78). In order to determine which estimated model suits best, the following overview (table 5.5) has to be analyzed.

<table>
<thead>
<tr>
<th>Table 5.5: Descriptive statistics Latent Class Logit Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log likelihood of the estimated parameters</td>
</tr>
<tr>
<td>Log likelihood of the zero model</td>
</tr>
<tr>
<td>McFadden’s Rho-square</td>
</tr>
<tr>
<td>Number of observation</td>
</tr>
<tr>
<td>AIC criterion divided by number of observations</td>
</tr>
<tr>
<td>Number of parameters</td>
</tr>
<tr>
<td>Number of classes</td>
</tr>
</tbody>
</table>

Three latent class logit models were estimated. The estimated class that gives the most information should be used in further analyses. The likelihood of the estimated parameters (LLβ) becomes less negative with an increasing number of classes. For every additional model, 18 parameters more were estimated; 17 for each coded attribute level and one class probability parameter. The Akaike Information Criterion (AIC) looks at the predictive power of a model (Kemperman & Timmermans, 2008; Nijënstein, 2012). To identify the optimal number of classes, this predictor has to be analyzed which is presented in the fifth row of the table. The most optimal model is the model with the lowest AIC, which is the model with two estimated classes (2.524). The McFadden’s rho-square increased for all the four classes; however, the biggest increase is from class 1 to class 2. In addition, the models with three and four estimated classes show very high standard errors (see Appendix H). According the descriptive statistics of the models and the high standard errors, the model with two latent classes in the preferred characteristics of coworking spaces is chosen for further description.

Two classes are estimated in the data of preferred characteristics. The log likelihood function of the estimated parameters is -2451.916 which can be found in Appendix H (green highlighted). The log likelihood function at the zero parameters is -2732.386 which can be found in Appendix H (yellow highlighted). The log likelihood function at the zero parameters (restricted log likelihood) is derived from the output of the latent class logit model. In section 3.2.2. was mentioned that when the rho-square value is above 0.1. It can be considered as usable (Louviere et. al., 2000). The model which estimated segments in the preferred characteristics of a coworking space did perform well enough (two classes: ρ² = 0.103 > 0.1; three classes: ρ² = 0.109 > 0.1; four classes: ρ² = 0.111 > 0.1) for valid conclusions.
Utility values and significance of the parameters
The overview presented in table 5.6 is the output of NLOGIT (presented in Appendix H) when estimating a latent class logit model with two classes. As in the case of the multinomial logit model, the latent class logit model also estimates the part-worth utilities and corresponding significance. The largest difference with the multinomial logit model is that in this type of analysis, latent classes are gathered in the multivariate data.

Table 5.6: Part-worth utility, total utility and significance of the parameters of the latent class logit model

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Attribute level</th>
<th>Class 1</th>
<th>Class 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Significance</td>
<td>Total Attribute Utility</td>
</tr>
<tr>
<td>Constant</td>
<td>Constant</td>
<td>0.07</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>Diversity of tenants</td>
<td>(class 2: **)</td>
<td>-0.29</td>
</tr>
<tr>
<td></td>
<td>By public transport</td>
<td>4.87</td>
<td>-0.22</td>
</tr>
<tr>
<td></td>
<td>Industrial</td>
<td>0.12</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Modern</td>
<td>0.61</td>
<td>-0.04</td>
</tr>
<tr>
<td></td>
<td>Homely</td>
<td>2.26</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Open layout</td>
<td>0.52</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>Half open layout</td>
<td>0.20</td>
<td>-0.12</td>
</tr>
<tr>
<td></td>
<td>Closed layout</td>
<td>3.15</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>Basic coworking space</td>
<td>0.648</td>
<td>-0.06</td>
</tr>
<tr>
<td></td>
<td>Standard coworking space</td>
<td>0.236</td>
<td>-0.34</td>
</tr>
<tr>
<td></td>
<td>Premium coworking space</td>
<td>3.24</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>No reception and no host</td>
<td>0.458</td>
<td>-0.14</td>
</tr>
<tr>
<td></td>
<td>Reception but no host</td>
<td>0.338</td>
<td>-0.10</td>
</tr>
<tr>
<td></td>
<td>Reception and active host</td>
<td>1.04</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>0.644</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>Sometimes (class 2: ***)</td>
<td>0.679</td>
<td>-0.41</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>0.48</td>
<td>-0.52</td>
</tr>
<tr>
<td></td>
<td>No diversity of tenants (class 2: ***)</td>
<td>0.412</td>
<td>-0.26</td>
</tr>
<tr>
<td></td>
<td>Moderate diversity of tenants</td>
<td>0.276</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>Strong diversity of tenants</td>
<td>1.38</td>
<td>-0.26</td>
</tr>
<tr>
<td></td>
<td>No contract (class 2: *)</td>
<td>0.115</td>
<td>-0.19</td>
</tr>
<tr>
<td></td>
<td>Short term</td>
<td>0.863</td>
<td>-0.06</td>
</tr>
<tr>
<td></td>
<td>Long term</td>
<td>7.89</td>
<td>-0.13</td>
</tr>
<tr>
<td>Total utility</td>
<td>24.79</td>
<td>0.55</td>
<td>0.000</td>
</tr>
<tr>
<td>Probability class 1 and class 2: ***</td>
<td>0.45</td>
<td>0.000</td>
<td>0.55</td>
</tr>
</tbody>
</table>

In table 5.6, the total utility value of an attribute is presented as well as the part-worth utility of each parameter per class. Only the significant attribute levels (*, ** and ****) have underlying causes for their occurrence. It stands out that none of the parameters in class 1 is significant which means that they cannot be interpreted as so. Any kind of interpretation of class 1 can be omitted. The only thing that can be determined is that this estimated class of coworkers makes random choices so they have no stated preferences concerning the characteristics of a coworking space or are still very heterogeneous in their preferences. This type of model tries to find homogeneous sets of data. In fact, it can be said that all the parameters of class 1 are equal to zero. In class 2, five parameters are significant. Since none of the parameters of the attributes atmosphere and interior aesthetics, layout of the space and reception and hospitality are significant, those attributes will not be discussed. The following enumeration and figure (5.2) shows, in order of importance, the contribution of each significant attribute in class 2:

1. **Events (1.05)**
   - Sometimes: 0.41**;
   - None: 0.12;
   - Often: -0.52;

2. **Diversity in supply spaces (0.79)**
   - Premium coworking space: 0.40;
   - Basic coworking space: 0.06;
   - Standard coworking space: -0.34**;

3. **Accessibility of location (0.55)**
   - By public transport: 0.22;
   - By public transport and car: 0.06;
   - By car: -0.28**;

4. **Diversity of tenants (0.53)**
   - Strong diversity: 0.26;
   - Moderate diversity: -0.01;
   - No diversity: -0.25**;

5. **Type of lease contract (0.39)**
   - No contract: 0.19**;
   - Short contract: -0.06;
   - Long term contract: -0.13.

![Figure 5.2: Total utility of attributes class 2](image-url)
The fifth sub-question is as follows: “Can different user groups be identified bases on their preferences?” Two classes with equal preferences are estimated by the latent class logit model. It can be concluded that class 1 is still very heterogeneous or selected the alternatives in the questionnaires completely random. No further conclusion can be drawn on the preferences of class 1. Class 2 has somewhat distinct preferences. The attribute events have the highest total utility value (1.05; p < 0.05), followed by the diversity in supply spaces (0.79; p < 0.05) and the accessibility of the location (0.55; p < 0.55). A utility value of 0.26 is assigned if there is sometimes an event in the coworking space a low utility value is assigned if there is often an event. The coworkers in this class prefer a premium coworking space (collaborative workspace + meeting rooms + kitchen area + event spaces + informal zones + fitness center and bar) rather than a standard coworking space (collaborative workspace + meeting rooms + kitchen area + event spaces and informal zones). This class of coworkers prefers a coworking space which is accessible by public transport and rather not by car. According the diversity of tenants, this class of coworkers prefer a strong diversity and low utility is assigned to the parameters moderate diversity and no diversity. What is striking is that the type of lease contract is the least preferred attribute in this class, but still the highest utility value is attached to the parameter no contract.

Class characteristics

The probability certain coworkers (N=219) belong to class 1 or class 2, can also be calculated with the aid of a latent class logit model as presented in the end of Appendix H. The experimental design of this study, as shown in table 3.6, consists of 27 alternatives. These alternatives were presented in nine choice sets, with four choices/alternatives per choice set. One choice/alternative consisted of eight attributes. In total, there were 36 choices. For every choice/alternative, a probability is estimated whether a respondent belongs to class 1 or class 2. Eventually it can be determined whether a respondent belongs to class 1 or class 2 which is the average of all the possibilities of 36 choices. A respondent belongs to the class with the highest probability. The last sub-question of this master thesis is “What are the differences between these user groups based on user characteristics?” With the aid of chi-square tests and independent samples T-tests, it can be determined if there are significant differences between the two estimated classes regarding demographic characteristics and psychographic characteristics. Whether certain preferences are more associated with certain types of respondents. To indicate a clear difference between the preferences per class, an overview is presented, in order of attribute importance, in table 5.7.

Table 5.7: Number of respondents and preferred attributes per latent class

<table>
<thead>
<tr>
<th>Class</th>
<th>Number of respondents</th>
<th>Preferred attributes</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>82</td>
<td>No preferred attributes</td>
<td>Events</td>
</tr>
<tr>
<td>Class 2</td>
<td>137</td>
<td>Diversity in supply spaces</td>
<td>Accessibility of location</td>
</tr>
</tbody>
</table>

In total, class 1 contains 82 coworkers and class 2 contains 137 coworkers. In the following figures (5.3 – 5.12), overview is presented of the differences between the classes with regard to their demographic and psychographic characteristics. The demographic characteristics gender (figure 5.3), age groups (table 5.8 and table 5.9), level of education (figure 5.4), user group (figure 5.5), position in organization (figure 5.6), sector of organization (figure 5.7), income (figure 5.8), transport to coworking space (figure 5.9), hours in coworking space (table 5.8 and table 5.9) are analyzed. The motivations for working in a coworking space are also analyzed according the class characteristics. In order of importance (1; first motivation (figure 5.10), 2; second motivation (figure 5.11), 3; third motivation (5.12)), the coworker had to select their motivation. The demographic characteristics nationality and land of coworking space be disregarding because of the little variance. Almost all participants are of Dutch nationality due to the low response in other countries. Multiple sectors (design, commerce, art, management, research, project management and writing) are combined under ‘other’ because the occurrence of those sectors is too low to perform chi-square test. The five least important motivations (see figure 4.6) are also combined under ‘other’ because the occurrence of those motivations is also too low to perform a chi-square test.

In the stacked bar charts, the occurrence of respondents with corresponding percentage in a certain class are mentioned as well as, in the title of the figure, the chi-square (χ2) with corresponding probability (p-value). When the p-value is larger than 0.05, there is not a significant difference between class 1 and class 2 according that particular variable and has no underlying causes for their occurrence. When the p-value is less than 0.05, this indicates that there is a significant difference between class 1 and class 2 regarding that specific variable. In chapter 4, the variables age and hours working in a coworking space are recoded into ordinal variables to create a better and clearer view of the variables. A ratio variable contains more information, so for that reason the ratio variables are used in the analyses of the class characteristics. For the ratio variables age and hours working in the coworking space, independent samples T-tests are performed. Frequency tables of the number of respondents in class 1 and class 2 regarding the following characteristics are presented in Appendix J. The chi-square values with corresponding significance are also presented in Appendix J.
all the variables, the number of respondents in class 2 is larger than class 1. This gives a distorted view about quantities hence only something can be said about the level of significance.

Figure 5.3: Gender ($\chi^2 = 0.122; p = 0.73$)

Figure 5.4: Education ($\chi^2 = 1.389; p = 0.24$)

Figure 5.5: User group ($\chi^2 = 1.587; p = 0.66$)

Figure 5.6: Position organization ($\chi^2 = 2.37; p = 0.67$)

Figure 5.7: Sector organization ($\chi^2 = 2.439; p = 0.66$)

Figure 5.8: Income ($\chi^2 = 3.807; p = 0.28$)

Figure 5.9: Transport to coworking space ($\chi^2 = 1.143; p = 0.77$)
Figure 5.10: Motivation 1 ($\chi^2 = 6,476; \ p = 0,26$)

Figure 5.11: Motivation 2 ($\chi^2 = 10,471; \ p = 0,063$)

Figure 2.12: Motivation 3 ($\chi^2 = 2,732; \ p = 0,75$)
The coworking space characteristics are found in the class in 2 work significantly (p = 0.025) more hours per week in the coworking space than the coworkers in class 1. On average, the coworkers in class 1 working 18.5 hours a week in the coworking space while the coworkers in class 2 working 23 hours a week in the coworking space (see table 5.8). No significant differences are found between the classes according the ratio variable age. For all the other (nominal and ordinal) variables, the p-value is larger than the necessary 0.05 which indicates that there are no significant differences between the two estimated classes regarding gender, level of education, user group, position in organization, sector of organization, income, transport to coworking space and motivation to work in a coworking space. Besides that, a number of things stand out regarding the number of respondents. First of all, class 2 consists of more coworkers with a board/owner position in the organization than class 1. Moreover, class 2 consist of more coworkers that works in the consultancy sector than class 1. Finally, class 2 consist of more coworkers that goes to the coworking space by bike.

Class 2 has certain preferences for the attributes events, diversity in supply spaces, accessibility of location, diversity of tenants and the type of lease contract. This means that coworkers who spend more time in the coworking space have a certain preference for sometimes an event in the coworking space, a premium coworking space, accessibility by public transport, a strong diversity of tenants and no rental contract. Apparently, those coworking space characteristics becomes more important when more time is spent in the coworking space.

5.3 Conclusion

In this chapter about the data analysis and results of this study, the fourth, fifth and sixth sub-question are answered. With the aid of a multinomial logit model the sub-question “what are the user preferences for coworking space characteristics?” is answered. The rho-square of the model, which determines the goodness of fit, is 0.0944 which is smaller than 0.1. This indicates that the model does not perform very well because the rho-square should be larger than 0.1 to be useable. This means that there is much heterogeneity between the respondents or many random errors (faits and indifferences) in the choices made. The parameters of the model, the utility and significance of the parameters can be interpreted as such but some caution is advised because of the goodness of fit.

The most important characteristic of a coworking space is the type of lease contract, which posed a clear preference for a coworking space without a lease contract or a short-term lease contract. A long-term contract of a year or longer has a strong negative influence on the preferences of a coworker. Accessibility of the location comes in second place of most preferred coworking space characteristics. The coworkers in the sample prefer a coworking space that is accessible by car and public transport the most. The layout of the coworking space is important for coworkers. A combination of spaces for collaborative work and spaces for concentration work is the most preferred. This half-open layout is more preferred than a fully open layout. The diversity of tenants is also of importance in the coworking space. Low utility is allocated to the coworking spaces, which have no diversity of tenants. Relatively high utility is allocated to the coworking spaces, which have a moderate or strong diversity of tenants. The presence of a reception is appreciated in a coworking space. The lowest utility is assigned to the attributes events and atmosphere and interior aesthetics. Significant effects are shown for the attribute levels for sometimes an event and for often an event. Contrary to the expectation, relatively no value is attached.
to the aesthetics of a coworking space. The following coworking space characteristics are the most preferred characteristics in order of importance with between brackets the most preferred attribute level(s):

- Type of lease contract (no or short lease contract);
- Accessibility of the location (by car and public transport);
- Lay out of the space (half-open layout);
- Diversity of tenant (moderate or strong diversity);
- Reception and hospitality (reception but no host);
- Events (sometimes); and
- Atmosphere and interior aesthetics (homey);

The fifth sub-question of this master thesis is “Can different user groups be identified based on their preferences?” In order to answer this sub-question, a latent class logit model is estimated to find user groups with corresponding preferred coworking space characteristics. Two classes were found in the multivariate data of the dependent factor in which class 1 is still very heterogeneous and has no significant preferences according the characteristics. Class 2 has somewhat distinct preferences for sometimes an event, a premium coworking space, accessibility by public transport, a strong diversity of tenants and no lease contract. With the aid of multiple chi-square tests and independent samples T-tests, the last sub-question “What are the differences between these user groups based on user characteristics?” is answered. Only a significant difference is found between the two estimated classes regarding the ratio variable hours working in the coworking space. The coworkers in class 2 work significantly more hours per week in the coworking space than the coworkers in class 1. This means that coworkers who spend more time in the coworking space have a certain preference for sometimes an event in the coworking space, a premium coworking space, accessibility by public transport, a strong diversity of tenants and no rental contract. Apparently, those coworking space characteristics becomes more important as more time is spent in the coworking space.

The following chapter is the final chapter of this master’s thesis in which the conclusions are drawn and recommendations according the literature, methodology and the practical relevance. Furthermore, the possibilities of future research in the coworking framework are given as well.
Chapter 6: Conclusions and Recommendations

In the last chapter of this research, the conclusions and recommendations are presented. First in section 6.1, the research results are presented wherein the six sub-questions serve as a guidance. The reflection on the literature takes place in this section as well. In section 6.2, the limitations of this master’s thesis and the possibilities for future research are presented. Finally, the practical relevance of this study is discussed in section 6.3.

6.1 Research results

The coworking phenomenon is obviously risen on a global scale. There were 7,800 coworking spaces worldwide in 2015 in comparison with 310 in 2009, and the number of coworkers in 2015 was 510,000 in comparison with 43,000 in 2011. Despite the increasing popularity, the concept of coworking has almost completely ignored by the academic literature. Since coworking is a relatively new concept of multi-tenant office (originated in 2005 by Brad Neuberg), little research has been done in this field of user characteristics and coworking space characteristics. With the aid of this study, the geographic, demographic and psychographic user characteristics of coworkers in the Netherlands became clear. The typical characteristics of coworking spaces are an under-exposed subject as well and were discussed in this study.

The aim of this master’s thesis was to identify user groups based on user preferences and to analyze the differences between these user groups. The corresponding research question of this research objective is as follows:

“What can different user groups be identified based on their preferences for coworking space characteristics and do they differ on user characteristics?”

This research question was answered based on the following five sub-questions:

- What are the typical characteristics of coworking spaces?
- Which types of users can be identified in coworking spaces and with which characteristics can they be described?
- What are the user characteristics of coworkers in general?
- What are the user preferences for coworking space characteristics?
- Can different user groups be identified bases on their preferences?
- What are the differences between these user groups based on user characteristics?

In this research, a questionnaire was composed to collect data on the user characteristics of coworking spaces and the user preferences for coworking space characteristics. Geographic, demographic and psychographic characteristics are analyzed in relation to six characteristics of coworking spaces. In total, 219 coworkers with a wide range of user characteristics have indicated what their preferences for the accessibility of the location, layout of the space, diversity in supply spaces, reception and hospitality, events in the coworking space, diversity of tenants and the type of lease contract. Data for the user characteristics are collected with multiple survey questions, data for the user preferences are collected with the aid of an attribute based stated choice method. In this type of method, a coworker is placed in a particular framework to compare alternatives of coworking spaces that were described by multiple attributes. The respondent had to choose their most preferred coworking space/alternative. Twenty-five coworking spaces in the Netherlands were willing to cooperate in the study.

The existing literature showed that there is relatively little knowledge of user characteristics of coworkers, especially on a national level. So far, few studies focused on user characteristics, but these studies were performed on a global level. No studies focused on the user characteristics of coworkers on a national level. On the basis of the sample of this study, insight is given in the user characteristics of the coworkers in the Netherlands in general. A number of demographic characteristics are remarkable. First of all, the coworkers are highly educated (almost 90% of the sample) which reflects a higher vocational education or a university degree (bachelor, masters or PhD). Compared to the workforce of the Netherlands, in which 28% is highly educated, this percentage is quite high. Coworking is often associated with freelancers and self-employed workers, which is clearly confirmed by several authors. The coworkers in the sample are mostly (53%) self-employed workers, freelancer or entrepreneurs which is almost similar (44%) to the world population of coworkers. The rise of coworking spaces was a reaction to the absence of an appropriate workplace for this group of workers. In addition, almost 70% of this user group has a board/owner position which indicates that almost every coworker in that user group owns or controls an organization. Another remarkable demographic characteristic is that almost the half of the coworkers in the sample is active in the sector consultancy (25%) or IT (21%).

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The top three most important motivations (psychographic characteristics) for working in a coworking space is on the first place to separate work and private life. The frontiers between private and professional life becomes fuzzy when working from home and isolation and distraction is lurking. The most mentioned motivation in this study is clearly in line with the reason why coworking spaces emerged in the first place. Coworking spaces are energetic and creative multi-tenant offices where people can interact, share, build and co-create. The vibrant and creative atmosphere in the coworking space is appealing to most of the coworker and ends in second place. Third most important motivation is the affordable accommodation. Since the sample mostly consists of self-employed workers, freelancers and entrepreneurs is it likely that this user group has difficulties to rent an office space at the beginning of their career, as they lack the required capital or are not credit-quality rated for a long-term lease contract. In the studies of Deskmag (Deskmag, 2012; Deskmag, 2014; Deskmag, 2016), it comes forward that the community and interaction with people is the most important motivation to go to a coworking space, which ended in fourth place (social interaction with coworkers) and seventh place (the feeling of being part of a community) in this study. One reason may be that the coworkers in the Netherlands find it more important to work on an external (remote), relatively affordable and energetic/creative location and attach less value to the present community in the coworking space. The three most mentioned motivations concern in particular the characteristics of the coworking space, and to a lesser extent the community present in the coworking space.

With the aid of a multinomial logit model, the most preferred characteristics of a coworking space are estimated. A side note is that there is much heterogeneity between the respondents or many random errors (faults and indifferences) because the goodness of fit is slightly less than required (0.094 $<0.1$. The parameters of the model, the utility values and significance of the parameters can be interpreted as such but some caution is advised. The following coworking space characteristics are the most preferred characteristics of a coworking space, in order of importance with between the brackets the most preferred attribute level:

1. Type of lease contract (no lease contract or a short lease contract (day, week or month));
2. Accessibility of the location (by car and public transport);
3. Layout of the space (half-open layout);
4. Diversity of tenants (moderate or strong diversity);
5. Reception and hospitality (reception but no host to stimulate user interaction);
6. Events (sometimes an event in the coworking space); and
7. Atmosphere and interior aesthetics (homey).

Location is often mentioned as most important characteristic in real estate. Capdevila (2013) stated that location is also the most preferred characteristic of a coworking space. Considering the results of this research, location is not the most important characteristic of a coworking space but the type of lease contract. Location still comes in second place. Coworkers attach value to no contract or a short contract which includes a lease contract for a day, a week or a month. Coworkers in need of flexibility in lease contract and the current market of coworking spaces provides that kind of flexibility, based on the visited coworking spaces in the Netherlands. Sykes (2014) and Deijl (2011) mentioned that the attractiveness of coworking spaces is due to the reflected flexibility and mobility, which is desirable for starting organizations. The rent prices are often low and the period of lease is flexible. Mobility refers to the ‘plug and play’ principle of coworking spaces in which the coworkers can immediately start working. A large number of coworking space providers have coworking spaces at multiple location. This gives the user the flexibility to choose where to work. Bizzarri (2014) and Deskmag (2012) stated that economic reasons are the most important reasons for the rapid emergence of coworking worldwide. The low barrier of occupancy due to the rent level is decisive. Deskmag (2012) found that 47% of respondents stated that rent costs were the most important reason for coworking. The literature and the results of this study indicate that the low threshold and flexibility of the coworking spaces (rent price, lease period, multiple locations) are attractive to coworkers and contribute positively to the popularity of this type of multi-tenant office. Many coworking spaces have specific appearance and great attention is paid to the interior design which is one of the important factors of the creative and energetic atmosphere in a coworking (Fuzi, 2015). However, just little utility value is assigned to this attribute. Less attention needs to be paid to the appearance of the space and more attention to the structure of the lease contract (period and price). Also more attention should be paid to the layout of the space. The coworkers prefer a half open layout in the coworking space, which is a combination of workspaces for collaboration and closed workspaces. The coworkers prefer a moderate or strong diversity of tenants, so multiple sectors of organizations are preferred.

The fifth sub-question of this master’s thesis is focused on identification of different user groups in the data of preferred characteristics. With the aid of a latent class logit model, two latent classes are estimated containing coworkers with corresponding preferred coworking space characteristics. What is striking is that no significant parameters were found in the estimation of class 1 which could indicate that this class is still very heterogeneous or selected randomly and has no significant preferred coworking space characteristics. Class 2 has somewhat distinct preferences. The following coworking
space characteristics are the most preferred characteristics of a coworking space of class 2, in order of importance with between the brackets the most preferred attribute level:

1. Events (sometimes an event);
2. Diversity in supply spaces (premium coworking space);
3. Accessibility of location (by public transport);
4. Diversity of tenants (strong diversity); and
5. Type of lease contract (no contract).

The coworkers in class 2 clearly wants some extras in the coworking space. With the aid of multiple chi-square test and independent samples test, the differences between the two estimated classes based on user characteristics is determined. Only a significant difference is found between the two estimated classes regarding the ratio variable hours working in the coworking space. The coworkers in class 2 work significantly more hours per week in the coworking space than the coworkers in class 1. This means that coworkers who spend more time in the coworking space have a certain preference for sometimes an event in the coworking space, a premium coworking space, accessibility by public transport, a strong diversity of tenants and no rental contract. Apparently, those coworking space characteristics becomes more important as more time is spent in the coworking space. What is striking is that the most important characteristic of a coworking space in general, the type of lease contract, ends in last place of the preferences in class 2.

In conclusion, two user groups are identified based on their preferences for coworking space characteristics. One user group has no significant preferences for coworking space characteristics and the other user group certainly want some extras in the coworking space. This user groups spends more time in the coworking space.

6.2 Limitations of the study

Multiple methods are used in this study. The data on the preferred characteristics of coworking spaces are collected with the aid of an attribute based stated choice method and multiple survey questions are asked to collect data of the user characteristics. The data on the preferred characteristics of coworking spaces is analyzed with a multinomial logit model, latent class logit model and multiple chi-square tests and independent samples T-tests.

Adamowicz et al. (1998) stated that a design of nine attributes is deemed feasible. In this study, eight attributes were used. During the distribution of the questionnaire there were many complaints about the comprehensiveness of the choice sets, as an example is shown in table 3.9. This questionnaire has shown that the comprehensibility of the attribute levels is even as important as the number of attributes, perhaps even more important. ‘Only’ eight attributes were used in the choice sets, perhaps relatively too difficult attribute levels were applied. Before the nine choice sets were presented to the respondent, an explanation was given of the attribute levels of the attributes layout of the space, diversity in supply spaces, reception and hospitality and diversity of tenants (see Appendix C). These levels needed further explanation because without explanation they were hard to interpret. Especially the attribute levels of the attribute diversity in supply spaces (basic coworking space, standard coworking space and premium coworking space) were difficult to interpret, according multiple respondents, without a clear explanation. Perhaps, this might be a reason why this attribute has no significant utility values in the estimated multinomial logit model. What can be learned from this, is that the attribute levels should be understandable and clear at a glance.

Besides the comprehensiveness of the choice sets, there is also something to note about the sequence in the questionnaire. First, the preferred coworking space characteristics are questioned with the aid of an attribute based stated choice method, thereafter survey questions were asked according the geographic, demographic and psychographic characteristics of the respondent. Regarding the reliability of the study (see section 3.5), the sequence was deliberately chosen. It has been noticed that the questionnaire far more started than finished. For instance, the Dutch questionnaire was more than 400 times started of which 219 respondents actually finished it. There is a remarkably large discrepancy (almost 50%). Perhaps the attribute based stated choice method had a deterred effect on the respondents, due to the complexity and comprehensibility of the choice sets. This probably could be prevented by first asking the survey questions about the user characteristics and thereafter the questions about the preferred characteristics of coworking spaces. The questions about the user characteristics of the respondents are less complex. In this way, the respondents were already more advanced (‘warmed up’) in the questionnaire and finishing would be less effort because the respondents already invested time in it. What can be learn from this is that it might be better to ask questions with the use of an attribute based stated choice method further down the questionnaire in order to get a higher number of respondents which finishes the complete questionnaire.
Another limitation according the attribute based stated choice method is the external validity. The method is based on stated preferences in which choices are hypothetically. The question rises if respondents would make the same choices in real world situations (revealed preference method). In real life, users of coworking spaces perhaps prefer other attributes which are not mentioned the study or their choices for a specific coworking spaces are not based on listed attributes. Future research could be done two see whether hypothetical choices will also be made in real world situations. This would influence the external validity in a positive way. However, it will be very difficult to test specific attributes since real world situations will bring more external influences. Moreover, future research, with the use of an attribute based stated choice method, can also be done with the use of other typical attributes since there are more coworking space characteristics identified (see table 2.4).

Most of the data is collected by personal approaching potential respondents in the coworking space. Different foreign academics collaborated in the collection of the data. Unfortunately, the number of respondents in those countries was too low to include in the sample which resulted otherwise in a ‘contaminated’ sample (possibility of a very heterogeneous groups). The low number of respondents in the foreign countries had perhaps on the one hand to do with not approaching the potential respondents personally, on the other hand with the degree of complexity of the questionnaire. When these aspects would have been better (personal approaching/less complex questionnaire), the probability of a larger number of respondents would have been higher. Data from different countries are now not included in this study and future research could be done on coworking space preferences in foreign countries. When different countries are included in the sample, multiple comparisons can be made between countries according the preferences of coworking space characteristics.

The possibilities in coworking spaces became clear and multiple coworking spaces are analyzed on their characteristics. The visited coworking spaces in this research are quite limited, relative to the total number of coworking spaces in the Netherlands. In addition, the interpretation of the attribute levels is completed by own conception. Overall, the visited coworking spaces scored really high since the lowest utility value is 0.31 which is clearly above the constant of 0.16 which reflects that a coworker rather would work at home or somewhere else. The limitation in this overview is that respondents are limited and reflect mainly to their own environment. This gives somewhat a distorted view of the coworking spaces because the visited spaces lie very close to the most preferred characteristics resulting from the estimation.

The coworkers which spend more hours per week in a coworking space attach value to certain characteristics. Other significant differences were not found between the estimated user groups. Possibly other user characteristics have to be applied in order to find significant relations between the estimated user groups. Future research could be done in the context of other geographic, demographic and psychographic characteristics of coworkers in order to find possible relations. When other user characteristics are asked, possibly more differences based on user characteristics could be found. Future research could also be done on user characteristics of coworkers in other countries over the world, on a national level, since this kind of research is quite limited.

With a larger sample size, more relations between user characteristics and user preferences could have been explored. A larger sample size, especially in the Netherlands, should have increased the validity of the study and the possibility to generalize the sample to the whole population. The sample of this master’s thesis is too small (219) to say something about the total population of coworkers in the Netherlands. It is very likely that a larger sample size would also generate better models (multinomial logit model and latent class logit model) and therefor better conclusions. The goodness of fit of the multinomial logit model scored too low (0.094 < 0.01), which indicated that there is much heterogeneity or many random errors (faults and indifferences) between the respondents.

6.3 Practical implications

To meet the future demand, real estate markets must respond to trends in order to prevent a continuously growing mismatch between office space supply and demand. In the introduction of this master’s thesis was stated that this study is relevant for providers and developers of coworking spaces. The preferred coworking space characteristics became clear and the work environment can be adjusted to the user preferences resulting from the research. In this way, the coworking space can be developed more effectively. Providers and developers of coworking spaces can make more thoughtful decisions about the developing and establishing of coworking spaces, for both physical and non-physical characteristics.

The more preferred attributes, derived from this research, are applied in the coworking space, the more value coworkers attach to the coworking space and the closer it comes to the ‘ideal coworking space’. Location is one of the most important characteristics of real estate in general. However, it has become clear that the type of lease contract is a more preferred characteristic regarding coworking spaces. Coworkers attach value to no contract or a short contract, which reflects a
The literature and the results of this study indicate that the low threshold and flexibility of the coworking spaces (rent price, lease period, multiple locations) are attractive to coworkers and contribute positively to the popularity of this type of multi-tenant office. In order to attract more coworkers, it is of importance to pay attention to the structure of the lease contract, preferably no contract. No lease contract is perhaps not easy achievable for coworking space operators since no rental income will be derived. An accessible short-term contract is also strongly preferred. In the present market of coworking spaces in the Netherlands, this lease structure is already well implemented. A long rental contract (year or longer) goes against the (flexibility) principles of coworking spaces and should not be applied. When a coworking space is accessible by car and public transport, most utility is assigned. For the coworking spaces which are located in the inner cities, it could be difficult to offer both forms of accessibility due to little place to park and difficult/poor accessibility. The practical implication regarding the location is that it is key to be accessible by public transport. Even as a long rental contract, accessibility by car is against the principles of coworking spaces. Location and the rental contract are the most important factors on which coworking spaces have to focus.

With regard to the layout of the space, the coworkers prefer to have a half-open layout. The practical recommendation is that developers have to make a combination of collaborative spaces and concentration spaces (closed spaces) where coworkers are able to withdraw. It is of importance for operators to offer a moderate or strong diversity of tenants. No diversity of tenants, in which coworkers are active in only one sector is clearly not preferred. Therefore, developing a coworking space for a specific target group, regarding sector of organization, is not appealing for tenants. The more variation in sectors, the better. Regarding the literature, the coworking host plays an important role in the collaboration between coworkers. The study showed that this is not particular preferred and only a reception is sufficient. In most of the coworking spaces in the Netherlands, an online organizational platform is applied where coworkers can meet and ask questions. Apparently, such platform makes the coworking host unnecessary in connecting coworkers. The results showed that coworkers prefer to have sometimes an event, but since this characteristic finished in next to last place, not too much attention need to be paid on the attribute events. Finally, a lot of attention is paid to the atmosphere and interior aesthetics in coworking spaces while little utility value is assigned to this attribute. This attribute ended in last place of the preferred characteristics, coworking space providers have to focus way less on the appearance of the space.

This research also distinguished two classes of respondents with equally preferred coworking space characteristics. Coworkers who spend more time in the coworking space have a certain preference for sometimes an event in the coworking space, a premium coworking space, accessibility by public transport, a strong diversity of tenants and no rental contract. Apparently, those coworking space characteristics becomes more important as more time is spent in the coworking space. The practical implication for the providers and developers of coworking spaces is that they have to focus on those characteristics to attract and satisfy the coworkers which spend relatively more time in the coworking space.

This research is also of interest to current and future users of coworking spaces. Multiple coworking spaces in the Netherlands are analyzed based on multiple coworking space characteristics. Users and future users can determine which coworking space characteristics suits them in order to decide where they want to work. This helps the coworkers to search more specific what fits their personal needs. Furthermore, this study provides an overview of the user’s motivations to work in a coworking space (see table 2.2). The practical implication for the users and future users is that the majority of the coworkers in the Netherlands attach value to an external (remote), relatively affordable and energetic/creative location and attach less value to the present community. The users know what the average coworkers’ intentions are to use this type of multi-tenant office in order to see if it corresponds to their personal needs and requirements.
Reference list


Deijl, C.M. (2011). *Two heads are better than one. A case study of the co-working community in The Netherlands (master thesis)*. Rotterdam, Nederland: Erasmus University Rotterdam.


Jansen, J. (2009). Segmentatie van kantoorgebruikers op basis van bedrijfsstijl. Amsterdam, Nederland: Amsterdam School of Real Estate.


Oldenburg, R. (1989). The great good place: Cafés, coffee shops, bookstores, bars, hair salons and the other hangouts at the heart of a community. Massachusetts, USA: Cambridge.


## Appendix A - Valued aspects in multi-tenant offices

<table>
<thead>
<tr>
<th>Categories</th>
<th>Characteristics</th>
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<tbody>
<tr>
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<td>Architecture</td>
</tr>
<tr>
<td></td>
<td>Office type</td>
</tr>
<tr>
<td></td>
<td>Subdivision of building (adjacency, locality of spaces)</td>
</tr>
<tr>
<td>Office decor</td>
<td>Aesthetics (materials, colour) *</td>
</tr>
<tr>
<td></td>
<td>Openness and transparency (community) *</td>
</tr>
<tr>
<td></td>
<td>Plants and greenery</td>
</tr>
<tr>
<td></td>
<td>Art and photography</td>
</tr>
<tr>
<td></td>
<td>Diversity of workspace</td>
</tr>
<tr>
<td>Facilities and services</td>
<td>Access inside (lift, stairs)</td>
</tr>
<tr>
<td></td>
<td>Post/mail delivery</td>
</tr>
<tr>
<td></td>
<td>Security</td>
</tr>
<tr>
<td></td>
<td>Internal signage (way finding)</td>
</tr>
<tr>
<td></td>
<td>Reception and helpdesk</td>
</tr>
<tr>
<td></td>
<td>Booking system</td>
</tr>
<tr>
<td></td>
<td>Filing</td>
</tr>
<tr>
<td></td>
<td>Cleaning</td>
</tr>
<tr>
<td></td>
<td>Office opening hours</td>
</tr>
<tr>
<td></td>
<td>Support services (business counselling, advice, …) *</td>
</tr>
<tr>
<td></td>
<td>Secretarial services</td>
</tr>
<tr>
<td></td>
<td>Business services (administration, …) *</td>
</tr>
<tr>
<td></td>
<td>Network events/training/workshops *</td>
</tr>
<tr>
<td></td>
<td>A1Dx compliance (handicap etc.)</td>
</tr>
<tr>
<td>Seclusion rooms</td>
<td>Meeting room (number, size) *</td>
</tr>
<tr>
<td></td>
<td>Concentration room (number, size)</td>
</tr>
<tr>
<td></td>
<td>Social space (informal work areas/break-out zones) (number, size)</td>
</tr>
<tr>
<td>Office leisure</td>
<td>Canteen/restaurant</td>
</tr>
<tr>
<td></td>
<td>Coffee and tea vending machine</td>
</tr>
<tr>
<td></td>
<td>Entrée and sitting areas</td>
</tr>
<tr>
<td></td>
<td>Washroom facilities/showers</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Modular workplaces (flex-sharing) *</td>
</tr>
<tr>
<td></td>
<td>Fixed workplaces</td>
</tr>
<tr>
<td></td>
<td>Ergonomics (adaptability of furniture)</td>
</tr>
<tr>
<td></td>
<td>Personal control indoor climate</td>
</tr>
<tr>
<td>ICT and equipment</td>
<td>Access to work files or digital network *</td>
</tr>
<tr>
<td></td>
<td>Audio-visual equipment</td>
</tr>
<tr>
<td></td>
<td>Printing, copying and scanning machines</td>
</tr>
<tr>
<td>Privacy</td>
<td>Security</td>
</tr>
<tr>
<td></td>
<td>Space between work settings</td>
</tr>
<tr>
<td>Office climate</td>
<td>Temperature</td>
</tr>
<tr>
<td></td>
<td>Air quality (ventilation)</td>
</tr>
<tr>
<td></td>
<td>Lighting (daylight, artificial light)</td>
</tr>
</tbody>
</table>

* Important aspects of multi-tenant offices
### Appendix B – Code book of questionnaire

<table>
<thead>
<tr>
<th>Geographic variable</th>
<th>Level of measurement</th>
<th>Type of question</th>
<th>Type of item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country coworking space</td>
<td>Nominal</td>
<td>Multiple choice (64)</td>
<td>1; The Netherlands, 2; Afghanistan, 3; America 4; Australia, 5; Belgium, 6; Brazil, 7; Bulgaria, 8; Canada, 9; China, 10; Cyprus, 11; Denmark 12; Germany, 13; England, 14; Eritrea, 15; Estonia, 16; Philippines, 17; Finland, 18; France, 19; Ghana, 20; Greece, 21; Hungary, 22; Ireland, 23; India, 24; Indonesia 25; Italy, 26; Iraq, 27; Iran, 28; Japan, 29; Korea, 30; Croatia, 31; Luxembourg, 32; Norway, 33; Nigeria, 34; Malta, 35; Marocco, 36; Austria, 37; Pakistan, 38; Poland, 39; Portugal, 40; Romania, 41; Russia, 42; Thailand, 43; Czech Republic, 44; Turkey, 45; Schotland, 46; Slovenia, 47; Slovakia, 48; Suriname, 49; Spain, 50; South-Africa, 51; Sweden, 52; Other,, 53; Argentina, 54; Colombia, 55; Egypt, 56; Serbia, 57; Singapore, 58; Switzerland, 59; Tunisia, 60; United Arab Emirates, 61; Vietnam, 62; Vietnam, 63; Lithuania, 64; Albania</td>
</tr>
<tr>
<td>Demographic variables</td>
<td>Level of measurement</td>
<td>Type of question</td>
<td>Type of item</td>
</tr>
<tr>
<td>Gender</td>
<td>Nominal</td>
<td>Multiple choice (2)</td>
<td>1; Male, 2; Female</td>
</tr>
<tr>
<td>Age</td>
<td>Ratio</td>
<td>Open question</td>
<td>1;</td>
</tr>
<tr>
<td>Nationality</td>
<td>Nominal</td>
<td>Multiple choice (64)</td>
<td>1; The Netherlands, 2; Afghanistan, 3; America 4; Australia, 5; Belgium, 6; Brazil, 7; Bulgaria, 8; Canada, 9; China, 10; Cyprus, 11; Denmark 12; Germany, 13; England, 14; Eritrea, 15; Estonia, 16; Philippines, 17; Finland, 18; France, 19; Ghana, 20; Greece, 21; Hungary, 22; Ireland, 23; India, 24; Indonesia 25; Italy, 26; Iraq, 27; Iran, 28; Japan, 29; Korea, 30; Croatia, 31; Luxembourg, 32; Norway, 33; Nigeria, 34; Malta, 35; Marocco, 36; Austria, 37; Pakistan, 38; Poland, 39; Portugal, 40; Romania, 41; Russia, 42; Thailand, 43; Czech Republic, 44; Turkey, 45; Schotland, 46; Slovenia, 47; Slovakia, 48; Suriname, 49; Spain, 50; South-Africa, 51; Sweden, 52; Other,, 53; Argentina, 54; Colombia, 55; Egypt, 56; Serbia, 57; Singapore, 58; Switzerland, 59; Tunisia, 60; United Arab Emirates, 61; Vietnam, 62; Vietnam, 63; Lithuania, 64; Albania</td>
</tr>
<tr>
<td>Education</td>
<td>Ordinal</td>
<td>Multiple choice (9)</td>
<td>1; No education/elementary school, 2; Preparatory secondary vocational education, 3; Senior general secondary education, 4; Pre-university education, 5; Intermediate vocational education, 6; Higher vocational education, 7; University (bachelor), 8; University (master), 9; University (PhD)</td>
</tr>
<tr>
<td>User group</td>
<td>Nominal</td>
<td>Multiple choice (5)</td>
<td>1; Self-employed worker, freelancer or entrepreneur, 2; Employee of a company (2-10 employees), 3; Employee of a company (11-50 employees), 4; Employee of a company (more than 50 employees), 5; Student</td>
</tr>
<tr>
<td>Position in organization</td>
<td>Nominal</td>
<td>Multiple choice (5)</td>
<td>1; Supporting staff (desk attendant, receptionist etc.), 2; Regular employee, 3; Manager, 4; Board/owner, 5; Does not apply</td>
</tr>
<tr>
<td>Sector organization</td>
<td>Nominal</td>
<td>Multiple choice (12)</td>
<td>1; Consultancy, 2; Design, 3; Commerce, 4; IT, 5; Art, 6; Management, 7; Research, 8; Education, 9; Project management, 10; PR, marketing, sales, advertising, communication, 11; Writing, 12; Other</td>
</tr>
<tr>
<td>Income</td>
<td>Ordinal</td>
<td>Multiple choice (6)</td>
<td>1; Less than 20000 a year, 2; 20001-30000 a year, 3; 30001-500001 a year, 4; 40001-50000 a year, 5; More than 50000 a year, 6; I don't know/I'd rather not say</td>
</tr>
<tr>
<td>Hours in coworking space</td>
<td>Ratio</td>
<td>Open question</td>
<td>1;</td>
</tr>
<tr>
<td>Transport coworking space</td>
<td>Nominal</td>
<td>Multiple choice (4)</td>
<td>1; Car, 2; Bike, 3; By foot, 4; Public transport</td>
</tr>
<tr>
<td>Psychographic variables</td>
<td>Level of measurement</td>
<td>Type of question</td>
<td>Type of item</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------</td>
<td>-----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Motivation 1, 2 and 3</td>
<td>Nominal</td>
<td>Ranking question (10)</td>
<td>1: Affordable accommodation, 2: The feeling of being part of a community, 3: Vibrant and creative atmosphere in the coworking space 4: Professional appearance for the company, 5: Professional supportive work environment (support services), 6: The opportunity to network with coworkers (possible new projects), 7: Social interaction with coworkers, 8: The possibility for work-related conversations with other coworkers (knowledge sharing, knowledge creation), 9: I was looking for a workplace outside the home (separating work and private life), 10: Flexibility (rental period, number of square meters)</td>
</tr>
</tbody>
</table>
Appendix C - Questionnaire (English, Dutch, German, Italian)

Graduation research on coworking spaces

Dear user of a coworking space,

In the context of my thesis for the Master Real Estate Management & Development at the Technical University in Eindhoven I’m analyzing preferred characteristics of users of coworking spaces. The survey asks on the one hand for your preferred characteristics concerning coworking spaces by using nine choice sets and on the other hand for your personal characteristics. The survey should only take 5 to 10 minutes, and your responses are completely anonymous. If you have questions regarding the survey or the questionnaire, please contact via jaspervandekoevering@gmail.com.

Thank you in advance!

Sincerely,

Jasper van de Koevering

INTRODUCTION CHOICE SETS
The first 9 questions each show three different alternative coworking spaces with regard to their characteristics. You are asked to choose in each case which coworking space you would prefer to work at. If you would prefer to work at home, rather than in any of the three alternatives, please choose “none of these options.” All 9 questions/pages are independent of each other, so each time indicate the most appealing alternative for you. An example of these questions is shown here:

EXAMPLE CHOICE SET

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
<th>None of these options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>By public transport</td>
<td>By public transport and car</td>
<td>By car</td>
<td></td>
</tr>
<tr>
<td>Atmosphere and interior aesthetics</td>
<td>Industrial</td>
<td>Home</td>
<td>Modern</td>
<td></td>
</tr>
<tr>
<td>Layout of the space</td>
<td>Closed layout</td>
<td>Half-open layout</td>
<td>Open layout</td>
<td></td>
</tr>
<tr>
<td>Diversity supply spaces**</td>
<td>Premium coworking space</td>
<td>Standard coworking space</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reception and hospitality***</td>
<td>No reception and no host</td>
<td>Reception but no host</td>
<td>Reception and active host</td>
<td></td>
</tr>
<tr>
<td>Events</td>
<td>Sometimes</td>
<td>Often</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Diversity of tenants***</td>
<td>No diversity of tenants</td>
<td>Strong diversity of tenants</td>
<td>Moderate diversity of tenant</td>
<td></td>
</tr>
<tr>
<td>Type of lease contract</td>
<td>No contract</td>
<td>Short term (day or week or month)</td>
<td>Long term (year or longer)</td>
<td></td>
</tr>
</tbody>
</table>

**Your choice:**

- Open layout (large open spaces)
- Half-open layout (combination of open spaces and concentration rooms)
- Closed layout (enclosed and separate spaces)

***Diversity supply spaces***:

- Basic coworking space (collaborative workspace + meeting rooms and kitchen area)
- Standard coworking space (collaborative workspace + meeting rooms + kitchen area + event spaces and informal zones)
- Premium coworking space (collaborative workspace + meeting rooms + kitchen area + event spaces + informal zones + fitness center and bar)

***Reception and hospitality***:

- No reception and no host
- Reception but no host
- Reception and active host (active coworking host that connects coworkers to each other)
****Diversity of tenants****:
- No diversity of tenants (tenants in the same sector)
- Moderate diversity of tenants (tenants in a few business fields)
- Strong diversity of tenants (a lot of different business fields present in the coworking space)

Now nine choice sets will follow (one example presented below)

**Which coworking space do you prefer?**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
<th>None of these options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>By public transport and car</td>
<td>By public transport</td>
<td>By car</td>
<td></td>
</tr>
<tr>
<td>Atmosphere and aesthetics interior</td>
<td>Homey</td>
<td>Industrial</td>
<td>Industrial</td>
<td></td>
</tr>
<tr>
<td>Layout of the space</td>
<td>Half-open layout</td>
<td>Closed layout</td>
<td>Open layout</td>
<td></td>
</tr>
<tr>
<td>Diversity supply spaces</td>
<td>Standard coworking space</td>
<td>Standard coworking space</td>
<td>Standard coworking space</td>
<td></td>
</tr>
<tr>
<td>Reception &amp; hospitality</td>
<td>No reception and no host</td>
<td>Reception but no host</td>
<td>Reception but no host</td>
<td></td>
</tr>
<tr>
<td>Events</td>
<td>Sometimes</td>
<td>None</td>
<td>Sometimes</td>
<td></td>
</tr>
<tr>
<td>Diversity of tenants</td>
<td>Strong diversity of tenants</td>
<td>Moderate diversity of tenants</td>
<td>Moderate diversity of tenants</td>
<td></td>
</tr>
<tr>
<td>Type of lease contract</td>
<td>No contract</td>
<td>No contract</td>
<td>Short term (day or week or month)</td>
<td></td>
</tr>
</tbody>
</table>

**YOUR CHOICE:**

---

**THE FOLLOWING 4 QUESTION ARE ABOUT PERSONAL CHARACTERISTICS**

**What is your gender?**
- Male
- Female

**What is your age (in years)?**

**What is your nationality?**
- Afghan
- Albanian
- American
- Argentinian
- Australian
- Austrian
- Belgian
- Brazilian
- Bulgarian
- Canadian
- Chinese
- Chechen
- Cypriot
- Croatian
- Colombian
- Danish
- Dutch
- German
- Egyptian
- English
- Eritrean
- Estonian
- Filipino
- Finnish
- French
- Ghanaian
- Greek
- Hungarian
- Irish
- Indian
- Indonesian
- Italian
- Iraqi
- Iranian
- Japanese
- Korean
- Lithuanian
- Luxembourgish
- Norwegian
- Nigerian
- Maltese
- Moroccan
- Pakistani
- Polish
- Portuguese
- Romanian
- Russian
- Scottish
- Serbian
- Singaporean
- Slovenian
- Slovak
- Surinamese
- Spanish
- South-African
- Swedish
- Swiss
- Thai
- Tunisian
- Turkish
- United Arab Emirates
- Vietnamese
- Other

**What is your highest degree?**
- No education/elementary school
- Preparatory secondary vocational education
- Senior general secondary education
- Pre-university education
- Intermediate vocational education
- Higher vocational education
- University (bachelor)
- University (master)
- University (PhD)
THE FOLLOWING 4 QUESTIONS ARE ABOUT WORK RELATED CHARACTERISTICS

Which of the following descriptions best represents your situation?
- Self-employed worker, freelancer or entrepreneur
- Employee of a company (2-10 employees)
- Employee of a company (11-50 employees)
- Employee of a company (more than 50 employees)
- Student

What is your current position in your organization?
- Supporting staff (desk attendant, receptionist etc.)
- Regular employee
- Manager
- Board/owner
- Does not apply

In which sector does your company operates most?
- Consultancy (legal advice, organizational advice etc.)
- Design (graphic, web, product, games etc.)
- Commerce (buyer, salesman, etc.)
- T (software engineer, web developer etc.)
- Art (filmmaker, painter, photographer, music, etc.)
- Management (account management, risk management, higher management etc.)
- Research (scientist, analyst, researcher, etc.)
- Education (coaching, training, teaching, etc.)
- Project management (events, community, culture etc.)
- PR, marketing, sales, advertising, communication
- Writing (journalist, writer, copywriter, blogger, etc.)
- Other, namely:

What is your annual net income?
- Less than €20,000 a year
- €20,001 - €30,000 a year
- €30,001 - €40,000 a year
- €40,001 - €50,000 a year
- More than €50,000 a year
- I don't know/I'd rather not say

THE LAST 4 QUESTIONS ARE ABOUT COWORKING SPACES

In which country is your coworking space located?
- Albania America Argentina Australia Austria Belgium Brazil Bulgaria Canada China Colombia Croatia Cyprus Czech
- Republic Denmark Germany Egypt England Eritrea Estonia Finland France Ghana Greece Hongary Ireland India Indonesia Italy Iraq Iran Japan Korea Lithuania Luxembourg The Netherlands Norway Nigeria Malta Marocco Pakistan Philippines Poland Portugal Romania Russia Scotland Serbia Singapore Slovenia Slovakia Suriname Spain South-Africa Sweden Switzerland Thailand Tunisia Turkey United Arab Emirates Vietnam Other

How many hours do you work at the coworking space per week (on average)?

How do you usually move to the coworking space?
- Car
- Bike
- By foot
- Public transport
What are your three most important motivations to go to a coworking space? Please indicate in order of importance. Motivation 1 is the most important. You may not give twice the same motivation

**Motivation 1**
- Affordable accommodation
- The feeling of being part of a community
- Vibrant and creative atmosphere in the coworking space
- Professional appearance for the company
- Professional supportive work environment (support services)
- The opportunity to network with coworkers (possible new projects)
- Social interaction with coworkers
- The possibility for work-related conversations with other coworkers (knowledge sharing, knowledge creation)
- I was looking for a workplace outside the home (separating work and private life)
- Flexibility (rental period, number of square meters)

**Motivation 2**
- Affordable accommodation
- The feeling of being part of a community
- Vibrant and creative atmosphere in the coworking space
- Professional appearance for the company
- Professional supportive work environment (support services)
- The opportunity to network with coworkers (possible new projects)
- Social interaction with coworkers
- The possibility for work-related conversations with other coworkers (knowledge sharing, knowledge creation)
- I was looking for a workplace outside the home (separating work and private life)
- Flexibility (rental period, number of square meters)

**Motivation 3**
- Affordable accommodation
- The feeling of being part of a community
- Vibrant and creative atmosphere in the coworking space
- Professional appearance for the company
- Professional supportive work environment (support services)
- The opportunity to network with coworkers (possible new projects)
- Social interaction with coworkers
- The possibility for work-related conversations with other coworkers (knowledge sharing, knowledge creation)
- I was looking for a workplace outside the home (separating work and private life)
- Flexibility (rental period, number of square meters)

You have reached the end of this questionnaire.
Thanks for your time! If you have any question/comments regarding this survey or research project, please contact via jaspervandekoevering@gmail.com. Press the button below (end), so that the survey will be saved correctly.
Appendix C2 - Dutch questionnaire

Afstudeeronderzoek naar coworking spaces

Beste gebruiker van een coworking space,

In het kader van mijn afstudeeronderzoek voor de master Real Estate Management & Development aan de Technische Universiteit in Eindhoven voer ik momenteel een onderzoek uit naar coworking spaces. De enquête vraagt u enerzijds naar uw geprefereerde karakteristieken betreffende coworking spaces aan de hand van negen keuzesets en anderzijds naar uw persoonlijke karakteristieken. De enquête zal 5 tot 10 minuten van uw tijd in beslag nemen en al uw antwoorden zullen anoniem blijven. Heeft u vragen met betrekking tot het onderzoek of deze questionnaire, kunt u contact opnemen via jas pervandekoevering@gmail.com.

Alvast bedankt!

Met vriendelijke groet,
Jasper van de Koevering

INTRODUCTIE KEUZESETS

De volgende 9 pagina’s geven telkens drie complete alternatieven ten aanzien van de kenmerken van coworking spaces. U wordt gevraagd om telkens aan te geven in welke coworking space u het liefst zou werken. Als u liever thuis wilt werken dan in een van de 3 genoemde alternatieven, kiest u voor ‘geen van deze opties’. Geef per pagina telkens opnieuw uw meest aansprekende keuze. Alle pagina’s zijn onafhankelijk van elkaar. Hieronder volgt een voorbeeldvraag:

<table>
<thead>
<tr>
<th>VOORBEELD KEUZESET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenmerken</td>
</tr>
<tr>
<td>Bereikbaarheid</td>
</tr>
<tr>
<td>Sfeer en esthetica interieur</td>
</tr>
<tr>
<td>Lay-out van de ruimte*</td>
</tr>
<tr>
<td>Diversiteit aanbod ruimtes**</td>
</tr>
<tr>
<td>Receptie en hospitality***</td>
</tr>
<tr>
<td>Evenementen</td>
</tr>
<tr>
<td>Diversiteit aan huurders****</td>
</tr>
<tr>
<td>Type huurcontract</td>
</tr>
<tr>
<td><strong>UW KEUZE:</strong></td>
</tr>
</tbody>
</table>

*Layout van de ruimte*:
  - Open layout (grote open ruimtes)
  - Half-open layout (combinatie van open ruimten en concentratie ruimten)
  - Gesloten layout (afgesloten en separate ruimtes)

**Diversiteit aanbod ruimtes**:
  - Basis coworking space (collaborative workspace + vergaderruimten en keuken)
  - Standaard coworking space (collaborative workspace + vergaderruimten + keuken + evenement ruimten en informele zones)
  - Premium coworking space (collaborative workspace + vergaderruimten + keuken + evenement ruimten + informele zones + fitnessruimte en bar)
***Receptie en hospitality***:
- Geen receptie en geen host
- Receptie maar geen host
- Receptie en een actieve host (actieve coworking host die coworkers met elkaar in verbinding brengt)

****Diversiteit aan huurders****:
- Geen diversiteit van huurders (huurders actief in dezelfde sector)
- Matige diversiteit van huurders (huurders in een aantal verschillende sectoren)
- Sterke diversiteit van huurders (huurders in veel verschillende sectoren aanwezig in de coworking space)

Nu volgen 9 keuzesets (één voorbeeld wordt hieronder gepresenteerd)

**Welke coworking space heeft uw voorkeur?**

<table>
<thead>
<tr>
<th>Kennmerken</th>
<th>Alternatief 1</th>
<th>Alternatief 2</th>
<th>Alternatief 3</th>
<th>Geen van deze opties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereikbaarheid</td>
<td>Met de auto</td>
<td>Met de auto</td>
<td>Met het openbaar vervoer</td>
<td></td>
</tr>
<tr>
<td>Steer en esthetica interior</td>
<td>Huwelijk</td>
<td>Industrieel</td>
<td>Industrieel</td>
<td></td>
</tr>
<tr>
<td>Lay-out van de ruimte</td>
<td>Open lay-out</td>
<td>Open lay-out</td>
<td>Gestolen lay-out</td>
<td></td>
</tr>
<tr>
<td>Diversiteit aanbod ruimtes</td>
<td>Standaard coworking space</td>
<td>Standaard coworking space</td>
<td>Standaard coworking space</td>
<td></td>
</tr>
<tr>
<td>Receptie en hospitality</td>
<td>Geen receptie en geen host</td>
<td>Reception maar geen host</td>
<td>Reception maar geen host</td>
<td></td>
</tr>
<tr>
<td>Evenementen</td>
<td>Geen</td>
<td>Soms</td>
<td>Geen</td>
<td></td>
</tr>
<tr>
<td>Diversiteit aan huurders</td>
<td>Sterke diversiteit van huurders</td>
<td>Matige diversiteit van huurders</td>
<td>Matige diversiteit van huurders</td>
<td></td>
</tr>
<tr>
<td>Type huurcontract</td>
<td>Lange termijn (jaar of langer)</td>
<td>Korte termijn (dag of week of maand)</td>
<td>Geen contract</td>
<td></td>
</tr>
</tbody>
</table>

_Uw keuze:_
- Alternatief 1
- Alternatief 2
- Alternatief 3
- Geen van deze opties

DE VOLGENDE 4 VRAGEN HEBBEN BETREKKING OP PERSOONLIJKE KARakteristieken

Wat is uw geslacht?
- Man
- Vrouw

Wat is uw leeftijd (in jaren)?

Wat is uw nationaliteit?
- Nederlands
- Afghaans
- Amerikaans
- Australisch
- Belgisch
- Braziliaans
- Bulgaars
- Canadees
- Chinees
- Cypriotisch
- Deens
- Duits
- Engels
- Eritrese
- Estlands
- Filipijns
- Finlands
- Frans
- Ghaneees
- Grieks
- Hongaars
- Iers
- Indiaas
- Indonesisch
- Italiaans
- Iraaks
- Japans
- Koreaans
- Kroatisch
- Luxemburgs
- Noors
- Nigeriaans
- Maltees
- Marokkaans
- Oostenrijks
- Pakistaans
- Pools
- Portugese
- Roemeens
- Russisch
- Thais
- Tsjechisch
- Turks
- Schots
- Sloveens
- Slowaaks
- Surinaams
- Spaans
- Zuid-afrikaans
- Zweeds
- Anders

Wat is uw hoogst behaalde diploma?
- Geen onderwijs/basisonderwijs/lagere school
- VMBO (kader, beroepsgerechte en theoretische leerweg)
- HAVO
- VWO (atheneum en gymnasium)
- MBO
- HBO
- WO (bachelor)
- WO (master)
- WO (PhD)
**DE VOLGENDE 4 VRAGEN HEBBEN BETREKKING OP WERKGERELETEERDE KARAKTERISTIEKEN**

**Onder welke gebruikersgroep valt u?**
- Zelfstandige zonder personeel (zzp'er), freelancer of entrepreneur
- Medewerker van een bedrijf (2-10 medewerkers)
- Medewerker van een bedrijf (11-50 medewerkers)
- Medewerker van een bedrijf (meer dan 50 medewerkers)
- Student

**Wat is uw huidige positie binnen uw organisatie?**
- Ondersteunend personeel (baliemedewerker, receptionist(e) etc.)
- Reguliere werknemer
- Manager
- Directie/bestuur/eigenaar
- Niet van toepassing

**In welke sector is uw bedrijf actief?**
- Consultancy (juridisch advies, organisatorisch advies etc.)
- Design (grafisch, web, product, games etc.)
- Handel (inkoper, verkoper etc.)
- IT (software engineer, web developer etc.)
- Kunst (filmmaker, schilder, fotograaf, muziek etc.)
- Management (accountmanagement, risicomanagement, hoger management etc.)
- Onderzoek (wetenschapper, analist, onderzoeker etc.)
- Onderwijs (coaching, training, lesgeven etc.)
- Project management (evenementen, community, cultuur etc.)
- PR, marketing, sales, reclame, communicatie
- Schrijfwerk (journalist, schrijver, copywriter, blogger etc.)
- Anders, namelijk:

**Wat is uw (netto)jaarinkomen?**
- Minder dan €20.000 per jaar
- €20.001 - €30.000 per jaar
- €30.001 - €40.000 per jaar
- €40.001 - €50.000 per jaar
- Meer dan €50.000 per jaar
- Dat weet ik niet/zeg ik liever niet

**DE LAATSTE 4 VRAGEN HEBBEN BETREKKING OP COWORKING SPACES**

**In welk land is uw coworking space gelocationeerd?**
- Nederland
- Afghanistan
- Amerika
- Australië
- België
- Brazilië
- Bulgarije
- Canada
- China
- Cyprus
- Denemarken
- Duitsland
- Engeland
- Eritrea
- Estland
- Filipijnen
- Finland
- Frankrijk
- Ghana
- Griekenland
- Hongarije
- Ierland
- India
- Indonesië
- Italië
- Irak
- Iran
- Japan
- Korea
- Kroatië
- Luxemburg
- Noorwegen
- Nigeria
- Malta
- Marokko
- Oostenrijk
- Pakistan
- Polen
- Portugal
- Roemenië
- Rusland
- Thailand
- Tsjechoë
- Turkije
- Schotland
- Slovenië
- Slowakije
- Suriname
- Spanje
- Zuid-Afrika
- Zweden
- Anders

**Gemiddeld hoeveel uur per week werkt u in een coworking space?**

**Hoe ga je meestal naar de coworking space toe?**
- Auto
- Fiets
- Te voet
- Openbaar vervoer
**Wat zijn voor u de drie belangrijkste motivaties om naar een coworking space te gaan?** (a.u.b. aangeven in volgorde van belangrijkheid waarbij motivatie 1 voor u het belangrijkst is. U mag niet twee keer dezelfde motivatie geven.)

**Motivatie 1**
- Betaalbare huisvesting
- Het gevoel onderdeel te zijn van een community
- Levendige en creatieve sfeer in de coworking space
- Professionele uitstraling voor het bedrijf
- Professioneel ondersteunende werkomgeving (facilitaire diensten)
- De mogelijkheid om te netwerken met coworkers (mogelijke nieuwe projecten)
- De mogelijkheid tot sociale interactie met andere coworkers
- De mogelijkheid tot werk-gerelateerde gesprekken met andere coworkers (kennisdeling, kenniscreatie)
- Ik zocht een werkplek buitenshuis (scheiding werk en privé)
- Flexibiliteit (huurperiode, aantal vierkante meter)

**Motivatie 2**
- Betaalbare huisvesting
- Het gevoel onderdeel te zijn van een community
- Levendige en creatieve sfeer in de coworking space
- Professionele uitstraling voor het bedrijf
- Professioneel ondersteunende werkomgeving (facilitaire diensten)
- De mogelijkheid om te netwerken met coworkers (mogelijke nieuwe projecten)
- De mogelijkheid tot sociale interactie met andere coworkers
- De mogelijkheid tot werk-gerelateerde gesprekken met andere coworkers (kennisdeling, kenniscreatie)
- Ik zocht een werkplek buitenshuis (scheiding werk en privé)
- Flexibiliteit (huurperiode, aantal vierkante meter)

**Motivatie 3**
- Betaalbare huisvesting
- Het gevoel onderdeel te zijn van een community
- Levendige en creatieve sfeer in de coworking space
- Professionele uitstraling voor het bedrijf
- Professioneel ondersteunende werkomgeving (facilitaire diensten)
- De mogelijkheid om te netwerken met coworkers (mogelijke nieuwe projecten)
- De mogelijkheid tot sociale interactie met andere coworkers
- De mogelijkheid tot werk-gerelateerde gesprekken met andere coworkers (kennisdeling, kenniscreatie)
- Ik zocht een werkplek buitenshuis (scheiding werk en privé)
- Flexibiliteit (huurperiode, aantal vierkante meter)

**U bent aan het einde gekomen van deze vragenlijst.**
Bedankt voor uw tijd! Mocht u nog vragen/opmerkingen hebben met betrekking tot deze enquête of het afstudeeronderzoek kunt u contact opnemen via jaspropervandekoevering@gmail.com. Graag op onderstaande button (einde) drukken zodat de enquête juist wordt opgeslagen.
Appendix C3 - German questionnaire

Studienabschluss Forschung zu Coworking Spaces

Lieber Nutzer eines Coworking-Space,


Vielen Dank im Voraus,

Mit freundlichen Grüßen,
Jasper van de Koevering

EINFÜHRUNG FRAGEBOGEN (CHOICE SETS)

Die ersten 9 Fragen zeigen jeweils drei verschiedene Coworking-Spaces im Hinblick auf deren qualitative Eigenschaften. Sie werden gebeten für jeden Fall zu wählen, in welchem Coworking-Space Sie es bevorzugen würden zu arbeiten. Wenn Sie es eher bevorzugen würden von zu Hause aus zu arbeiten als in einer der drei Alternativen, wählen Sie bitte „Keine dieser Optionen“. Alle neun Fragen/Seiten sind unabhängig voneinander. Daher geben Sie bitte immer die am meisten auf Sie zutreffende Wahlmöglichkeit an. Ein Beispiel für solch eine Frage ist Folgende:

*Layout des Raumes*:
- Offener Layout (großzügige Freiflächen)
- Halb offener Layout (Kombination aus Freiflächen und Konzentrationsräumen)
- Geschlossener Layout (abgeschlossene und separate Räume)

**Vielfalt des Flächenangebots**: 
- Basic Coworking Space (Gemeinsamer Arbeitsbereich + Konferenzräume und Küchenbereich)
- Standard Coworing Space (Gemeinsamer Arbeitsbereich + Konferenzräume + Küchenbereich + Veranstaltungsräume und informelle (Pausen-) Bereiche)
- Premium Coworking Space (Gemeinsamer Arbeitsbereich + Konferenzräume + Küchenbereich + Veranstaltungsräume + informelle (Pausen-) Bereiche + Fitnesscenter and Theke)

Beispiel Choice Set

<table>
<thead>
<tr>
<th>Eigenschaften</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
<th>Keine dieser Optionen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erreichbarkeit</td>
<td>Mit öffentlichen Verkehrsmitteln</td>
<td>Mit öffentlichen Verkehrsmitteln und dem Auto</td>
<td>Mit dem Auto</td>
<td></td>
</tr>
<tr>
<td>Atmosphäre und Raumästhetik</td>
<td>Industriel</td>
<td>Heimisch</td>
<td>Modern</td>
<td></td>
</tr>
<tr>
<td>Layout des Raumes*</td>
<td>Geschlossener Layout</td>
<td>Halb offener Layout</td>
<td>Offener Layout</td>
<td></td>
</tr>
<tr>
<td>Vielfalt des Versorgungsraumes**</td>
<td>Premium Coworking Space</td>
<td>Basis Coworking Space</td>
<td>Standard Coworking Space</td>
<td></td>
</tr>
<tr>
<td>Empfang und Gästebetreuung***</td>
<td>Kein Empfang und keine Gästebetreuung</td>
<td>Empfang aber keine Gästebetreuung</td>
<td>Empfang und aktive Gästebetreuung</td>
<td></td>
</tr>
<tr>
<td>Events</td>
<td>Manchmal</td>
<td>Oft</td>
<td>Keine</td>
<td></td>
</tr>
<tr>
<td>Vielfalt der Mieter****</td>
<td>Keine Vielfalt</td>
<td>Starke Vielfalt</td>
<td>starke Vielfalt</td>
<td></td>
</tr>
<tr>
<td>Art des Mietvertrages</td>
<td>Kein Vertrag</td>
<td>Kurzzeitig (Tag oder Wochen oder Monate)</td>
<td>Langfristig (ein Jahr oder länger)</td>
<td></td>
</tr>
</tbody>
</table>

IHRE WAHL: O X O O
***Empfang und Gästebetreuung***:
- Kein Empfang und keine Gästebetreuung
- Empfang aber keine Gästebetreuung
- Empfang und aktive Gästebetreuung (aktiver Coworking Betreuer der die Coworker miteinander vernetzt)

****Vielfältigkeit der Mieter****:
- Keine Vielfältigkeit (Mieter/Pächter in der gleichen Branche)
- Mäßige Vielfältigkeit (Mieter/Pächter in einigen wenigen Geschäftsfeldern)
- Starke Vielfältigkeit (viele verschiedenen Geschäftsfelder im Coworking Space vertreten)

Nun folgen neun Choice Sets (Ein Beispiel ist im Folgenden dargestellt)

**Welchen Coworking Space bevorzugen Sie?**

<table>
<thead>
<tr>
<th>Eigenschaften</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
<th>Keine dieser Optionen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erreichbarkeit</td>
<td>Mit dem Auto</td>
<td>Mit dem Auto</td>
<td>Mit öffentlichen Verkehrsmitteln</td>
<td></td>
</tr>
<tr>
<td>Atmosphäre und Raumgestaltung</td>
<td>Heimisch</td>
<td>Industriel</td>
<td>Industriel</td>
<td></td>
</tr>
<tr>
<td>Layout des Raumes</td>
<td>Offenes Layout</td>
<td>Offenes Layout</td>
<td>geschlossenes Layout</td>
<td></td>
</tr>
<tr>
<td>Verteilung des Versorgungsraumes</td>
<td>Standard Coworking Space</td>
<td>Standard Coworking Space</td>
<td>Standard Coworking Space</td>
<td></td>
</tr>
<tr>
<td>Empfang und Gästebetreuung</td>
<td>Kein Empfang und keine Gästebetreuung</td>
<td>Empfang aber keine Gästebetreuung</td>
<td>Empfang aber keine Gästebetreuung</td>
<td></td>
</tr>
<tr>
<td>Events</td>
<td>Keine</td>
<td>Manchmal</td>
<td>Keine</td>
<td></td>
</tr>
<tr>
<td>Vielfältigkeit der Mieter</td>
<td>Starke Vielfältigkeit</td>
<td>Mäßige Vielfältigkeit</td>
<td>Mäßige Vielfältigkeit</td>
<td></td>
</tr>
<tr>
<td>Art des Mietertrages</td>
<td>Langfristig (ein Jahr oder länger)</td>
<td>Kurzfristig (Tage, Wochen oder Monate)</td>
<td>Kein Vertrag</td>
<td></td>
</tr>
</tbody>
</table>

**IHRE WAHL:**
- [ ]
- [ ]
- [ ]
- [ ]

DIE FOLGENDEN 4 FRAGEN BEZIEHEN SICH AUF PERSÖNLICHE EIGENSCHAFTEN

Welchen Geschlechts haben Sie?
- Männlich
- Weiblich

Was ist Ihr Alter (in Jahren)?

Was ist Ihre Nationalität?
- Afghan
- American
- Australian
- Austrian
- Belgian
- Brazilian
- Bulgarian
- Canadian
- Chinese
- Chech
- Cypriot
- Croatian
- Danish
- Dutch
- English
- Eritrean
- Estonian
- Filipino
- Finnish
- French
- German
- Ghanaian
- Greek
- Hungarian
- Irish
- Italian
- Japanese
- Korean
- Luxembourgish
- Norwegian
- Nigerian
- Maltese
- Maroccan
- Pakistani
- Portuguese
- Romanian
- Russian
- Slovak
- Slovenian
- Surinamese
- Spanish
- South African
- Swedish
- Other

Was ist Ihr höchster Bildungsabschluss?
- Kein Abschluss/Grundbildung
- Allgemeinbildender Schulabschluss (Hauptschule)
- Sekundarabschluss (Realschule, Mittlere Reife)
- Weiterführende Schulen allgemeinbildender oder berufsbildender Art (Ausbildung)
- Fachhochschulreife, Abschluss einer Fachoberschule (FOS, BOS 12)
- Abitur, allgemeine oder fachgebundene Hochschulreife (Gymnasium, BOS 13)
- Universität (bachelor)
- Universität (master)
- Universität (Doktortitel)
DIE FOLGENDEN 4 FRAGEN BEZIEHEN SICH AUF ARBEITSBEDINGTE EIGENSCHAFTEN

Welche der folgenden Beschreibungen trift am meisten auf Sie zu?
- Selbstständiger, Freiberufler oder Unternehmer
- Angestellter eines Unternehmens (2-10 Mitarbeiter)
- Angestellter eines Unternehmens (11-50 Mitarbeiter)
- Angestellter eines Unternehmens (mehr als 50 Mitarbeiter)
- Student

Was ist Ihre aktuelle Position in Ihrer Organisation?
- Unterstützender Mitarbeiter (Sekretär, Rezeptionist, etc.)
- Festangestellter Mitarbeiter
- Geschäftsführer
- Vorstand/Eigentümer
- Trifft nicht zu

In welchem Bereich operiert Ihre Firma hauptsächlich?
- Unternehmensberatung (Rechtsberatung, Organisationsberatung, etc.)
- Design (Graphik, Web, Produkt, Spiele, etc.)
- Handel (Käufer, Verkäufer, etc.)
- IT (Softwareentwicklung, Webentwicklung, etc.)
- Kunst (Filmmacher, Zeichner, Fotograf, Musik, etc.)
- Management (Kundenbetreuung, Risikomanagement, oberes Management, etc.)
- Forschung (Wissenschaftler, Analytiker, Forscher)
- Bildung (Coachings, Trainings, Lehrgänge, etc.)
- Projektmanagement (Veranstaltungen, Gemeinde, Kultur, etc.)
- PR, Marketing, Sales, Werbung, Kommunikation
- Journalist, Schriftsteller, Werbetexter, Blogger, etc.
- Andere, nämlich:

Wie hoch ist Ihr jährliches Nettoeinkommen?
- Weniger als 20.000 € pro Jahr
- 20.001 € - 30.000 € pro Jahr
- 30.001 € - 40.000 € pro Jahr
- 40.001 € - 50.000 € pro Jahr
- Mehr als 50.000 € pro Jahr
- Ich weiß es nicht/Ich möchte keine Angabe machen

DIE LETZTEN 4 FRAGEN BETREFFEN COWORKING SPACES

In welchem Land liegt Ihr Coworking Space?
- Afghanistan
- America
- Australia
- Austria
- Belgium
- Brazil
- Bulgaria
- Canada
- Chinese
- Czech Republic
- Cyprus
- Croatia
- Denmark
- England
- Eritrea
- Estonia
- Finland
- France
- Germany
- Ghana
- Greece
- Hongary
- Ireland
- India
- Indonesia
- Italy
- Iraq
- Iranian
- Japan
- Korea
- Luxembourg
- The Netherlands
- Norway
- Nigeria
- Malta
- Marocco
- Pakistan
- Philippines
- Polen
- Portugal
- Romania
- Russia
- Thailand
- Turkey
- Scotland
- Slovenia
- Slovakia
- Suriname
- Spain
- South-Africa
- Sweden
- Other

Wieviel Stunden Ihrer Arbeitszeit verbringen Sie am Coworking Space pro Woche (im Durchschnitt)?

Wie kommen Sie normalerweise an den Coworking Space?
- Auto
- Fahrrad
- Zu Fuß
- Öffentlichen Verkehrsmitteln
Was sind die drei Hauptgründe die Sie motivieren an einem Coworking Space zu arbeiten?
Bitte nach Wichtigkeit angeben. Motivation 1 ist die Wichtigste. Bei Möglichkeit nicht zweimal die gleiche Motivation angeben.

Motivation 1
- Erschwingliche Unterkunft
- Das Gefühl Teil einer Gemeinschaft zu sein
- Dynamische und kreative Atmosphäre am Coworking Space
- Professioneller Auftritt der Firma
- Professionelles unterstützendes Arbeitsumfeld (Unterstützungsdienste)
- Die Chance sich mit anderen Coworkern zu vernetzen (mögliche neue Projekte)
- Die Möglichkeit soziale Unterstützung von anderen Coworkern zu erhalten
- Die Gelegenheit arbeitsbezogene Konversationen mit andern Coworkern zu haben (Wissensaustausch, Wissensschaffung)
- Ich habe nach einem Arbeitsplatz außerhalb von zu Hause gesucht (Trennung von Arbeit und Privatem)
- Flexibilität (Mietzeit, Anzahl an Quadratmetern)

Motivation 2
- Erschwingliche Unterkunft
- Das Gefühl Teil einer Gemeinschaft zu sein
- Dynamische und kreative Atmosphäre am Coworking Space
- Professioneller Auftritt der Firma
- Professionelles unterstützendes Arbeitsumfeld (Unterstützungsdienste)
- Die Chance sich mit anderen Coworkern zu vernetzen (mögliche neue Projekte)
- Die Möglichkeit soziale Unterstützung von anderen Coworkern zu erhalten
- Die Gelegenheit arbeitsbezogene Konversationen mit andern Coworkern zu haben (Wissensaustausch, Wissensschaffung)
- Ich habe nach einem Arbeitsplatz außerhalb von zu Hause gesucht (Trennung von Arbeit und Privatem)
- Flexibilität (Mietzeit, Anzahl an Quadratmetern)

Motivation 3
- Erschwingliche Unterkunft
- Das Gefühl Teil einer Gemeinschaft zu sein
- Dynamische und kreative Atmosphäre am Coworking Space
- Professioneller Auftritt der Firma
- Professionelles unterstützendes Arbeitsumfeld (Unterstützungsdienste)
- Die Chance sich mit anderen Coworkern zu vernetzen (mögliche neue Projekte)
- Die Möglichkeit soziale Unterstützung von anderen Coworkern zu erhalten
- Die Gelegenheit arbeitsbezogene Konversationen mit andern Coworkern zu haben (Wissensaustausch, Wissensschaffung)
- Ich habe nach einem Arbeitsplatz außerhalb von zu Hause gesucht (Trennung von Arbeit und Privatem)
- Flexibilität (Mietzeit, Anzahl an Quadratmetern)

Sie haben das Ende des Fragebogens erreicht.
Vielen Dank für Ihre Zeit! Wenn Sie Fragen oder Anregungen zu der Umfrage oder dem Forschungsprojekt haben sollten, wenden Sie sich bitte per Mail an jas ervandekoevering@gmail.com. Klicken Sie unten auf (Ende), damit die Umfrage ordnungsgemäß gespeichert werden kann.
Appendix C4 - Italian questionnaire

Tesi su spazi di coworking

Gentile fruitore di spazi di coworking,

Per la mia tesi di laurea specialistica in Real Estate Management & Development presso l’Università Tecnica Di Eindhoven, sto analizzando le preferenze dei fruitori di spazi di coworking. Questo breve questionario ha l’obiettivo di indagare, da una parte, le caratteristiche personali degli utenti, e dall’altra le preferenze relative agli spazi di coworking. La compilazione del sondaggio richiede 5-10 minuti e le risposte saranno del tutto anonime. Per qualsiasi domanda riguardo la mia ricerca o questo questionario, potete contattarmi per email all’indirizzo jaspervandekoevering@gmail.com (in lingua inglese), oppure scrivere alla nostra referente presso il Politecnico di Milano all’indirizzo: chiara.tagliaro@polimi.it (in lingua italiana).

Grazie in anticipo!

Cordialmente
Jasper van de Koevering

Introduzione ai set di scelta
Le prossime 9 domande presentano una per una 3 spazi di coworking con caratteristiche differenti l'uno dall'altro. Ti viene chiesto di scegliere in quale di questi 3 spazi alternativi preferiresti lavorare. Se preferiresti lavorare da casa, anziché in uno dei tre spazi alternativi proposti, seleziona l’opzione “preferisco lavorare da casa”. Tutte le 9 domande/pagine sono indipendenti l’una dall'altra, quindi ti viene chiesto di indicare ogni volta l’alternativa per te più attraente. Un esempio di queste domande è mostrato qui:

*Struttura degli spazi*:
- Struttura aperta (ampi spazi aperti, del tipo open-space)
- Struttura semi-aperta (combinazione di spazi aperti del tipo open-space e salette per la concentrazione)
- Struttura chiusa (uffici chiusi e spazi confinati)

**Varietà di spazi a disposizione**:
- Spazi di coworking Base (Spazio collaborativo + sale riunioni + spazio cucina)
- Spazi di coworking Standard (Spazio collaborativo + sale riunioni + spazio cucina + spazio eventi e zona relax)
- Spazi di coworking Premium (Spazio collaborativo + sale riunioni + spazio cucina + spazio eventi + zona relax + centro fitness e bar)

***Reception e accoglienza***:
- Nessuna reception e nessun servizio di accoglienza
- Reception, ma nessun servizio accoglienza
- Reception con servizio accoglienza attivo (servizio attivo per creare interrelazioni tra i lavoratori)

****Diversità di affittuari****:
- Nessuna diversità (affittuari impegnati nello stesso settore di business)
- Diversità moderata (affittuari impegnati in pochi diversi settori di business)
- Forte diversità (tanti diversi settori presenti nello stesso spazio di coworking)

Seguono nove pagine/set di scelta (Un esempio è presentato di seguito)

Quale spazio di coworking preferisci?

<table>
<thead>
<tr>
<th>Caratteristiche</th>
<th>Spazio 1</th>
<th>Spazio 2</th>
<th>Spazio 3</th>
<th>Preferisco lavorare da casa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibilità</td>
<td>Con i mezzi pubblici e auto</td>
<td>Con i mezzi pubblici</td>
<td>In auto</td>
<td></td>
</tr>
<tr>
<td>Atmosfera ed estetica degli interni</td>
<td>Familiare</td>
<td>Industriale</td>
<td>Industriale</td>
<td></td>
</tr>
<tr>
<td>Struttura degli spazi</td>
<td>Struttura semi aperta</td>
<td>Struttura chiusa</td>
<td>Struttura aperta</td>
<td></td>
</tr>
<tr>
<td>Varietà di spazi a disposizione</td>
<td>Spazi di coworking standard</td>
<td>Spazi di coworking standard</td>
<td>Spazi di coworking standard</td>
<td></td>
</tr>
<tr>
<td>Reception e accoglienza</td>
<td>Nessuna reception e Nessun servizio di accoglienza</td>
<td>Reception ma nessun servizio accoglienza</td>
<td>Reception ma nessun servizio accoglienza</td>
<td></td>
</tr>
<tr>
<td>Eventi</td>
<td>A volte</td>
<td>Nessuno</td>
<td>A volte</td>
<td></td>
</tr>
<tr>
<td>Diversità di affittuari</td>
<td>Forte diversità</td>
<td>Diversità moderata</td>
<td>Diversità moderata</td>
<td></td>
</tr>
<tr>
<td>Tipo di contratto di locazione</td>
<td>Nessun contratto</td>
<td>Nessun contratto</td>
<td>A breve termine (giornaliero o settimanale o mensile)</td>
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LA TUA SCELTA:

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**LE SEGUENTI 4 DOMANDE RIGUARDANO LE TUE CARATTERISTICHE PERSONALI**

Qual è il tuo genere?
- Maschio
- Femmina

Qual è la tua età (in anni)?

Qual è la tua nazionalità?
- Italian
- Afghan
- American
- Australian
- Austrian
- Belgian
- Bulgarian
- Canadian
- Chinese
- Chech
- Cypriot
- Croatian
- Danish
- Dutch
- German
- English
- Eritrean
- Estonian
- Filipino
- Finnish
- French
- Ghanaian
- Greek
- Hungarian
- Irish
- Indian
- Indonesian
- Italian
- Iranian
- Japanese
- Korean
- Luxembourgish
- Norwegian
- Nigerian
- Maltese
- Moroccan
- Pakistani
- Polish
- Portuguese
- Romanian
- Russian
- Scottish
- Slovenian
- Slovak
- Surinamese
- Spanish
- South-African
- Swedish
- Other

Qual è il tuo livello più avanzato di istruzione?
- Nessuna formazione / scuola elementare
- Scuola media
- Istituto tecnico o professionale
- Liceo
- Istruzione e formazione professionale (IFP) – percorsi triennali e quadriennali
- Istruzione e formazione post-secondaria non terziaria – percorsi post-qualifica e post-diploma, istruzione e formazione tecnica superiore IFTS
- Laurea triennale
- Laurea quinquennale, specialistica o master di I e II livello
- Dottorato, PhD
LE SEGUENTI 4 DOMANDE RIGUARDANO INFORMAZIONI RELATIVE AL TUO LAVORO

Quale dei seguenti tipi di inquadramento professionale rappresenta meglio il tuo profilo?
- Lavoratore autonomo, libero professionista o imprenditore
- Dipendente di una società (2-10 dipendenti)
- Dipendente di una società (11-50 dipendenti)
- Dipendente di una società (più di 50 dipendenti)
- Studente

Qual è la tua attuale posizione all’interno della tua organizzazione?
- Assistenza, supporto (front-desk, reception, ecc)
- Dipendente regolare
- Direttore / Proprietario
- Altro/nessuno dei precedenti

In quale settore opera la tua azienda?
- Consulenza (consulenza legale, consulenza organizzativa, ecc.)
- Design (grafica, web, prodotti, giochi, ecc.)
- Commercio (buyer, addetto alle vendite, ecc.)
- IT (ingegneria del software, sviluppo web, ecc.)
- Arti (produzione video, pittura, fotografia, musica, ecc.)
- Management (account management, risk management, top management ecc.)
- Ricerca (scienziato, analista, ricercatore, ecc.)
- Istruzione (istruttore, formazione, didattica, ecc.)
- Project management (eventi, comunità, cultura, ecc.)
- PR, marketing, vendite, pubblicità, comunicazione
- Scrittura (giornalista, scrittore, copywriter, blogger, ecc.)
- Altro, cioè:

Qual è il tuo reddito netto annuale?
- Meno di € 20,000 l’anno
- € 20,001 - € 30,000 l’anno
- € 30,001 - € 40,000 l’anno
- € 40,001 - € 50,000 l’anno
- Più di 50,000 € l’anno
- Non lo so / Preferisco non dirlo

LE ULTIME 4 DOMANDE RIGUARDANO GLI SPAZI DI COWORKING IN CUI LAVORI

In quale paese si trova lo spazio di coworking che utilizzi in questo momento?
- Italy
- Afghanistan
- America
- Australia
- Austria
- Belgium
- Brazil
- Bulgaria
- Canada
- Chinese
- Czech
- Republic
- Cyprus
- Croatia
- Denmark
- Germany
- England
- Eritrea
- Estonia
- Finland
- France
- Ghana
- Greece
- Hongary
- Ireland
- India
- Indonesia
- Iraq
- Iranian
- Japan
- Korea
- Luxembourg
- The Netherlands
- Norway
- Nigeria
- Malta
- Marocco
- Pakistan
- Philippines
- Polen
- Portugal
- Romania
- Russia
- Thailand
- Turkey
- Scotland
- Slovenia
- Slovakia
- Suriname
- Spain
- South-Africa
- Sweden
- Other

Mediamente quante ore alla settimana lavori in uno spazio di coworking?

Come arrivi allo spazio di coworking, abitualmente?
- In auto
- In bicicletta
- A piedi
- Con i mezzi pubblici
Quali sono le tre motivazioni più importanti per le quali utilizzi uno spazio di coworking? Si prega di indicarle in ordine di importanza. La motivazione 1 è la più importante. Non puoi dare due volte la stessa motivazione:

**Motivazione 1**
- Postazione di lavoro a prezzo accessibile
- Sensazione di essere parte di una comunità
- Atmosfera vibrante e creativa che si respira
- Presentazione professionale della propria attività
- Supporto professionale al proprio lavoro (servizi di supporto, es. accoglienza)
- Opportunità di “fare rete” con altri coworker (possibili nuovi progetti)
- Interazione sociale con altri coworker
- Possibilità di discutere di tematiche di lavoro con altri coworker (condivisione e creazione di conoscenze)
- Disponibilità di una postazione di lavoro fuori casa (necessità di separare gli spazi di lavoro da quelli della vita privata)
- Flessibilità d’uso (periodo di affitto, metri quadri)

**Motivazione 2**
- Postazione di lavoro a prezzo accessibile
- Sensazione di essere parte di una comunità
- Atmosfera vibrante e creativa che si respira
- Presentazione professionale della propria attività
- Supporto professionale al proprio lavoro (servizi di supporto, es. accoglienza)
- Opportunità di “fare rete” con altri coworker (possibili nuovi progetti)
- Interazione sociale con altri coworker
- Possibilità di discutere di tematiche di lavoro con altri coworker (condivisione e creazione di conoscenze)
- Disponibilità di una postazione di lavoro fuori casa (necessità di separare gli spazi di lavoro da quelli della vita privata)
- Flessibilità d’uso (periodo di affitto, metri quadri)

**Motivazione 3**
- Postazione di lavoro a prezzo accessibile
- Sensazione di essere parte di una comunità
- Atmosfera vibrante e creativa che si respira
- Presentazione professionale della propria attività
- Supporto professionale al proprio lavoro (servizi di supporto, es. accoglienza)
- Opportunità di “fare rete” con altri coworker (possibili nuovi progetti)
- Interazione sociale con altri coworker
- Possibilità di discutere di tematiche di lavoro con altri coworker (condivisione e creazione di conoscenze)
- Disponibilità di una postazione di lavoro fuori casa (necessità di separare gli spazi di lavoro da quelli della vita privata)
- Flessibilità d’uso (periodo di affitto, metri quadri)

**Il questionario è finito.**
Grazie per il tuo tempo! Se hai domande o commenti a proposito di questo progetto di ricerca, puoi contattarmi via mail all’indirizzo: jaspervandekoevering@gmail.com (in lingua inglese), oppure scrivere alla nostra referente presso il Politecnico di Milano all’indirizzo: chiara.tagliaro@polimi.it (in lingua italiana). Premere il pulsante qui sotto (Fine!) per salvare correttamente il questionario compilato.
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Appendix E – Conceptual model of the independent variable

Country of coworking space

Gender

Age

Nationality

Education

User group

Position in organization

Sector of organization

Income

Hours in coworking space

Transport to coworking space

Motivation to go to a coworking space

Geographic characteristics

Demographic characteristics

User characteristics

User preferences for coworking space characteristics

Psychographic characteristics
Appendix F – Conceptual model of the dependent variable

User preferences for coworking space characteristics

- Location
  - Accessibility of location
    - By public transport and car
    - By car
    - By public transport

- Office decor
  - Atmosphere and interior aesthetic
    - Industrial
    - Modern
    - Homey

- Office exterior and division
  - Layout of the space
    - Open layout
    - Half-open layout
    - Closed layout

- Office exterior and division
  - Diversity in supply spaces
    - Basic coworking space
    - Standard coworking space
    - Premium coworking space

- Facilities and services
  - Reception and hospitality
    - No reception and no host
    - Reception but no host
    - Reception and active host

- Community and sustainability
  - Events
    - None
    - Sometimes
    - Often

- Accessibility
  - Diversity of tenants
    - No diversity of tenants
    - Moderate diversity of tenants
    - Strong diversity of tenants

- Accessibility
  - Type of lease contract
    - No contract
    - Short contract (day or week or month)
    - Long contract (year or longer)
Appendix G – Output NLOGIT Multinomial Logit Model

Discrete choice (multinomial logit) model
Dependent variable Choice
Log likelihood function -2474.42529
Inf.Cr.AIC = 4982.9 AIC/N = -2.528
Model estimated: Jan 02, 2017, 21:26:35
R2=1-LogL/LogL* Log-L fncn R-sqrd R2Adj
Constants only -2708.2549 .0863 .0837
Response data are given as ind. choices
Number of obs.= 1971, skipped 0 obs

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Note: ***,**,* ==> Significance at 1%, 5%, 10% level.
Appendix H – Output NLOGIT Latent Class Logit Model (2, 3 and 4 classes estimated)

Latent Class Logit Model (2 classes)

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Estimation based on N = 1971, K = 35
Inf.Cr.AIC = 4973.8 AIC/N = 2.524

Model estimated: Jan 04, 2017, 14:43:54
R²=1-LogLL/LogL* Log-L fnc R-sqrd R²Adj
No coefficients -2732.3862 .1026 .0973
Constants only -2708.2549 .0947 .0893
At start values -2474.4450 .0091 .0032
Response data are given as ind. choices
Number of latent classes = 2
Average Class Probabilities

.450 .550

Number of obs.= 1971, skipped 0 obs

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| Utility parameters in latent class --> | BEVEN 1 | -.14265 | .14394 | -.99 | .3217 | -.42477 | .13948 |
| BEVEN 2 | -.09587 | .15259 | .39 | .6948 | -2.3920 | .35894 |
| BEVEN 3 | -.27741** | .11980 | -2.32 | .0206 | -5.1222 | -.04261 |
| BEVEN 4 | .02196 | .11539 | -.19 | .8490 | -2.0420 | .24813 |
| BEVEN 5 | -.04012 | .10983 | -.37 | .7149 | -2.5539 | .17515 |
| BEVEN 6 | -.13971 | .11077 | 1.26 | .2072 | -0.0773 | .35682 |
| BEVEN 7 | -.11853 | .19481 | -.61 | .5429 | -5.0035 | .26328 |
| BEVEN 8 | -.06113 | .10678 | -.57 | .5670 | -2.7041 | .14815 |
| BEVEN 9 | -.33613** | .16282 | -2.06 | .0390 | -6.5525 | -.01702 |
| AREC 2 | -.13729 | .11549 | -1.19 | .2345 | -3.6364 | .08906 |
| BREC 2 | -.09568 | .11733 | -.82 | .4148 | -1.3429 | .32564 |
| ABEVEN 2 | -.11918 | .11524 | 1.06 | .2882 | -0.09988 | .33618 |
| ABEVEN 3 | -.40523*** | .10212 | 3.97 | .0001 | 2.0509 | .60538 |
| ABEVEN 4 | -.24855** | .12175 | -2.04 | .0412 | -4.8718 | -.00991 |
| ABEVEN 5 | -.01438 | .10870 | -.13 | .8948 | -2.2743 | .19867 |
| ABEVEN 6 | .19379* | .11367 | 1.70 | .0882 | -0.0290 | .41659 |
| BREC 3 | -.05612 | .15362 | -.37 | .7149 | -3.3572 | .24497 |

Estimated latent class probabilities

| PrbcLs1 | .48980** | .06594 | 6.82 | .0000 | .32056 | .57903 |
| PrbcLs2 | .85200*** | .06594 | 8.34 | .0000 | 4.2097 | .67944 |

Note: ***, **, * ==> Significance at 1%, 5%, 10% level.
**Latent Class Logit Model (3 classes)**

Dependent variable: KEUZE

- **Log likelihood function**: -2434.89653
- **Restricted log likelihood**: -2732.38619
- **Chi squared [53 d.f.]**: 594.97931
- **Significance level**: .00000
- **McFadden Pseudo R-squared**: .108854

Estimation based on N = 1971, K = 53

Inf.Cr.AIC = 4975.8 AIC/N = 2.525

Model estimated: Jan 04, 2017, 14:44:24

R2=1-LogLL/LogL* Log-L fnecn R-sqrd R2Adj

No coefficients -2732.386  .1089  .1008

Constants only -2708.2549  .1009  .0928

At start values -2474.4621  .0160  .0071

Response data are given as ind. choices

Number of latent classes = 3

Average Class Probabilities

.444 .150 .407

BHHH estimator used for asympt. variance

Number of obs. = 1971, skipped 0 obs

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Latent Class Logit Model (4 classes)

Dependent variable KEUZE
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Restricted log likelihood -2732.38619
Chi squared [ 71 d.f.] 610.79469
Significance level .00000
McFadden Pseudo R-squared .3117699
Estimation based on N = 1971, K = 71
Inf.Cr.AIC = 4996.0 AIC/N = -2.535

Model estimated: Jan 04, 2017, 14:44:42
R2=1-LogL/LogL* Log-L fncl R-sqrd R2Adj
No coefficients -2732.3862 .1118 .1010
Constants only -2708.2549 .1039 .0930
At start values -2474.4727 .0192 .0073
Response data are given as ind. choices
Number of latent classes = 4
Average Class Probabilities
.490 .157 .165 .189
BHHH estimator used for asymp. variance
Number of obs.= 1971, skipped 0 obs

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<td>-23.24592</td>
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</table>

| Utility parameters in latent class --=> 2 |
| ICONST | -4.60337 | 111.986 | -0.00 | 0.967 | -2184.05534 | 2174.84859 |
| ALOC | 4.28305 | 2304.424 | -0.00 | 0.985 | -4512.30418 | 4520.87029 |
| BLOC | -4.38237 | 1178.489 | -0.00 | 0.970 | -2314.17883 | 2305.41409 |
| ASFEE | 1.82159 | 1767.138 | -0.00 | 0.992 | -3461.70583 | 3465.34900 |
| BSFEER | 1.74445 | 1762.731 | -0.00 | 0.992 | -3453.14521 | 3456.63411 |
| ALAYOU | 3.63775 | 1153.120 | -0.00 | 0.975 | -2256.43611 | 2263.71161 |
| BLAYOU | -1.86434 | 1138.650 | -0.00 | 0.987 | -2233.57724 | 2229.84855 |
| ADIV_R | -4.77597 | 2705.969 | -0.00 | 0.996 | -5308.37844 | 5298.82649 |
| BDIV_R | 1.75321 | 1593.444 | -0.00 | 0.991 | -3121.33904 | 3124.84546 |
| AREC | 2.84868 | 1116.981 | -0.00 | 0.998 | -2186.39417 | 2192.09190 |
| BREC | 3.03027 | 1099.881 | -0.00 | 0.997 | -2151.09688 | 2159.55742 |

Note: ***, **, * ==> Significance at 1%, 5%, 10% level.
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<td>BDIV_R</td>
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<td>BLAYOU</td>
<td>4</td>
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<td>ALAYOU</td>
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<tr>
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<tr>
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<tr>
<td>BDIV_R</td>
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<td>ALAYOU</td>
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<tr>
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<tr>
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**Utility parameters in latent class**

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**Utility parameters in latent class**

<table>
<thead>
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**Estimated latent class probabilities**

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<td>PrbCls3</td>
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Note: ***, **, * => Significance at 1%, 5%, 10% level.

Command to create class probability:
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<td>pl0 = 0 ; p2 = 0 $</td>
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<tr>
<td>NAMELIST</td>
<td>cp = p1,p2$</td>
</tr>
<tr>
<td>DISCRETECHOICE;Lhs = Keuze</td>
<td></td>
</tr>
<tr>
<td>;Choices = 1,2,3,4</td>
<td></td>
</tr>
<tr>
<td>;Rhs</td>
<td></td>
</tr>
<tr>
<td>icont,Aloc,Bloc,Asfeer,Bsfeer,Alayout,Blayou,ADiv_rui,BDiv_rui,Areu,Brec,Aeven,Beven,</td>
<td></td>
</tr>
<tr>
<td>ADIV_hu,BDiv_hu,Atypco,Btypco</td>
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<tr>
<td>;lcm</td>
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<tr>
<td>;classp=cp$</td>
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</tr>
</tbody>
</table>
```
Appendix I – Part-worth utilities of the dependent variable

User preferences for coworking space characteristics

- Location
  - Accessibility of location
    - By public transport and car
      - By public transport
        - Industrial
          - Modern
            - Homey
    - By car
      - Industrial
        - Modern
          - Homey
    - By public transport
      - Industrial
        - Modern
          - Homey

- Office decor
  - Atmosphere and interior aesthetic
    - Industrial
      - Modern
        - Homey
    - Modern
      - Homey
    - Homey

- Office exterior and division
  - Layout of the space
    - Open layout
      - Industrial
        - Modern
          - Homey
    - Half-open layout
      - Industrial
        - Modern
          - Homey
    - Closed layout
      - Industrial
        - Modern
          - Homey

- Office exterior and division
  - Diversity in supply spaces
    - Basic coworking space
      - Industrial
        - Modern
          - Homey
    - Standard coworking space
      - Industrial
        - Modern
          - Homey
    - Premium coworking space
      - Industrial
        - Modern
          - Homey

- Facilities and services
  - Reception and hospitality
    - No reception and no host
      - Industrial
        - Modern
          - Homey
    - Reception but no host
      - Industrial
        - Modern
          - Homey
    - Reception and active host
      - Industrial
        - Modern
          - Homey

- Community and sustainability
  - Events
    - None
      - Industrial
        - Modern
          - Homey
    - Sometimes
      - Industrial
        - Modern
          - Homey
    - Often
      - Industrial
        - Modern
          - Homey

- Accessibility
  - Diversity of tenants
    - No diversity of tenants
      - Industrial
        - Modern
          - Homey
    - Moderate diversity of tenants
      - Industrial
        - Modern
          - Homey
    - Strong diversity of tenants
      - Industrial
        - Modern
          - Homey

- Accessibility
  - Type of lease contract
    - No contract
      - Industrial
        - Modern
          - Homey
    - Short contract (day or week or month)
      - Industrial
        - Modern
          - Homey
    - Long contract (year or longer)
      - Industrial
        - Modern
          - Homey

Utilities:
- Location: 1.0
- Office decor: 0.27
- Office exterior and division: 0.61
- Facilities and services: 0.36
- Community and sustainability: 0.31
- Accessibility: 0.48
- Type of lease contract: 1.42
### Appendix J – Frequency tables of the user characteristics of the latent classes

#### Demographic characteristics

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<th>Category</th>
<th>Class 1</th>
<th>%</th>
<th>Class 2</th>
<th>%</th>
<th>Total</th>
<th>%</th>
<th>Chi-square</th>
<th>P - value</th>
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<td>24</td>
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<td>16%</td>
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<tr>
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<td>51</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low - medium education level</td>
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<td>26%</td>
<td>23</td>
<td>72%</td>
<td>32</td>
<td>16%</td>
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<td>High education level</td>
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<td>Self-employed worker, freelancer or</td>
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<td>72</td>
<td>62%</td>
<td>117</td>
<td>53%</td>
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<td>71%</td>
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<td>23</td>
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<td>17%</td>
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<td>68%</td>
<td>95</td>
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<td>19</td>
<td>9%</td>
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</tr>
<tr>
<td>PR, marketing, sales, advertising, communication</td>
<td>8</td>
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<td>11%</td>
<td></td>
<td></td>
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<tr>
<td>Other</td>
<td>26</td>
<td>35%</td>
<td>48</td>
<td>65%</td>
<td>74</td>
<td>34%</td>
<td>2.439</td>
<td>0.656</td>
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<tr>
<td><strong>Income</strong></td>
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<tr>
<td>Less than 20,000 a year</td>
<td>22</td>
<td>37%</td>
<td>38</td>
<td>63%</td>
<td>60</td>
<td>27%</td>
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<td>20,001-50,000 a year</td>
<td>35</td>
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<td>55%</td>
<td>78</td>
<td>36%</td>
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<td>20</td>
<td>65%</td>
<td>31</td>
<td>14%</td>
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<td></td>
</tr>
<tr>
<td>I don't know/ld rather not say</td>
<td>14</td>
<td>28%</td>
<td>36</td>
<td>72%</td>
<td>50</td>
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<tr>
<td>0-8 hours/week</td>
<td>32</td>
<td>51%</td>
<td>31</td>
<td>49%</td>
<td>63</td>
<td>29%</td>
<td></td>
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</tr>
<tr>
<td>8-16 hours/week</td>
<td>11</td>
<td>33%</td>
<td>22</td>
<td>67%</td>
<td>33</td>
<td>15%</td>
<td></td>
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</tr>
<tr>
<td>16-24 hours/week</td>
<td>18</td>
<td>40%</td>
<td>21</td>
<td>60%</td>
<td>35</td>
<td>16%</td>
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</tr>
<tr>
<td>24-32 hours/week</td>
<td>11</td>
<td>28%</td>
<td>29</td>
<td>73%</td>
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<td>11</td>
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<td>19</td>
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<td>14%</td>
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</tr>
<tr>
<td>More than 40 hours/week</td>
<td>1</td>
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<td>77%</td>
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<td>6%</td>
<td>7.83</td>
<td>0.166</td>
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<td><strong>Transport to coworking space</strong></td>
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<td></td>
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<tr>
<td>Car</td>
<td>15</td>
<td>32%</td>
<td>32</td>
<td>58%</td>
<td>47</td>
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<tr>
<td>Bike</td>
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<tr>
<td>By foot</td>
<td>5</td>
<td>38%</td>
<td>8</td>
<td>62%</td>
<td>13</td>
<td>6%</td>
<td></td>
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<tr>
<td>Public transport</td>
<td>20</td>
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<td>27</td>
<td>57%</td>
<td>47</td>
<td>21%</td>
<td>1.143</td>
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Psychographic characteristics

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<tr>
<th>Motivation</th>
<th>Class 1</th>
<th>%</th>
<th>Class 2</th>
<th>%</th>
<th>Total</th>
<th>%</th>
<th>Chi-square</th>
<th>P-value</th>
</tr>
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<tr>
<td>1. I was looking for a workplace outside the home</td>
<td>35</td>
<td>47%</td>
<td>40</td>
<td>53%</td>
<td>75</td>
<td>34%</td>
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<tr>
<td>2. Vibrant and creative atmosphere in the coworking space</td>
<td>12</td>
<td>32%</td>
<td>26</td>
<td>68%</td>
<td>38</td>
<td>17%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Affordable accommodation</td>
<td>7</td>
<td>25%</td>
<td>21</td>
<td>75%</td>
<td>28</td>
<td>13%</td>
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<td></td>
</tr>
<tr>
<td>4. Social interaction with coworkers</td>
<td>8</td>
<td>40%</td>
<td>9</td>
<td>60%</td>
<td>17</td>
<td>7%</td>
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</tr>
<tr>
<td>5. The opportunity to network with coworkers</td>
<td>2</td>
<td>20%</td>
<td>8</td>
<td>80%</td>
<td>10</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Other</td>
<td>20</td>
<td>38%</td>
<td>33</td>
<td>62%</td>
<td>53</td>
<td>24%</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Class 1</th>
<th>%</th>
<th>Class 2</th>
<th>%</th>
<th>Total</th>
<th>%</th>
<th>Chi-square</th>
<th>P-value</th>
</tr>
</thead>
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<td>1. I was looking for a workplace outside the home</td>
<td>8</td>
<td>21%</td>
<td>31</td>
<td>79%</td>
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<td>18%</td>
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<tr>
<td>2. Vibrant and creative atmosphere in the coworking space</td>
<td>16</td>
<td>35%</td>
<td>30</td>
<td>65%</td>
<td>46</td>
<td>21%</td>
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<td></td>
</tr>
<tr>
<td>3. Affordable accommodation</td>
<td>13</td>
<td>54%</td>
<td>11</td>
<td>46%</td>
<td>24</td>
<td>13%</td>
<td></td>
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</tr>
<tr>
<td>4. Social interaction with coworkers</td>
<td>13</td>
<td>52%</td>
<td>12</td>
<td>48%</td>
<td>25</td>
<td>11%</td>
<td></td>
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</tr>
<tr>
<td>5. The opportunity to network with coworkers</td>
<td>7</td>
<td>32%</td>
<td>19</td>
<td>68%</td>
<td>26</td>
<td>12%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Other</td>
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<td>40%</td>
<td>38</td>
<td>60%</td>
<td>63</td>
<td>29%</td>
<td>10.471</td>
<td>0.063</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Class 1</th>
<th>%</th>
<th>Class 2</th>
<th>%</th>
<th>Total</th>
<th>%</th>
<th>Chi-square</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I was looking for a workplace outside the home</td>
<td>10</td>
<td>36%</td>
<td>18</td>
<td>64%</td>
<td>28</td>
<td>13%</td>
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<tr>
<td>2. Vibrant and creative atmosphere in the coworking space</td>
<td>16</td>
<td>41%</td>
<td>23</td>
<td>59%</td>
<td>39</td>
<td>18%</td>
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<tr>
<td>3. Affordable accommodation</td>
<td>9</td>
<td>36%</td>
<td>16</td>
<td>64%</td>
<td>25</td>
<td>11%</td>
<td></td>
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</tr>
<tr>
<td>4. Social interaction with coworkers</td>
<td>12</td>
<td>43%</td>
<td>16</td>
<td>57%</td>
<td>28</td>
<td>13%</td>
<td></td>
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</tr>
<tr>
<td>5. The opportunity to network with coworkers</td>
<td>3</td>
<td>23%</td>
<td>17</td>
<td>77%</td>
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<td>10%</td>
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</tr>
<tr>
<td>6. Other</td>
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<td>39%</td>
<td>47</td>
<td>61%</td>
<td>77</td>
<td>35%</td>
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